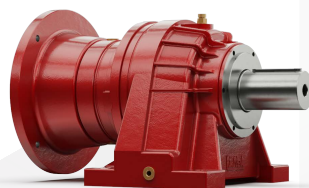




Planet Redüktörler
Planetary Gear Units

P00



SERIES
iPR

2024

TRIENIDE

Gearboxes and Drives / Moto Réducteurs

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Teknik Özellikler

Planet redüktörlerin güç transferinde kullanılması, basit yapı ve küçük alanlarda uygulama talepleri için verilebilecek en modern cevap niteliğindedir. Planet Dişli Sistemli redüktörler her türlü makine ve teçhizat tahriki için dizayn edilmiştir. Planet dişli kutuları direkt veya dolaylı olarak bir elektrik veya hidrolik motora akuple edilebilir. Planet dişli kutuları her çeşit uygulamada ister endüstriyel, ister mobil, sabit veya hareketli sahada olsun; kimya sanayii, makina sanayii, tarım, orman, madencilik, inşaat, denizcilik sektörü, rüzgar jeneratörleri ve enerji alanlarında başarı ile kullanılmaktadır.

Technical Characteristics

The use of planetary gear units in the field of power transmission is the modern answer to the demand for compactness, constructive simplicity and product reliability. The Planetary gearboxes are designed for transmitting power inside operating devices. Gearboxes can be connected directly or indirectly to either an electric motor or hydraulic motor. The planetary gearboxes are used for many different type of applications, both industrial or mobile some of which are mechanical industry, the chemical and plastic industry, the food industry, building and constructions, mining, agriculture and forestry, transporting and lifting, marine sector, windgenerators and energy.

Technische Beschreibung

Im Vergleich zum stirnradgetriebe , bei dem nurein Zahn die Kräfte überträgt, wird das momentam Zentrirad des planetengetriebes auf drei Zahneingriffe aufgeteilt. Diese Konstruktion fuehrtzu kleinen Getriebeabmessungen, kompakter Bauweise und einem geringen Eigengewicht. Die planetengetriebe von Planetary drive Systems werden für die Leistungsübertragung im inneren von Arbeitsmaschinen konzipiert und gefertigt. Sie können direkt oder indirekt an einen Elektromotor oder einen Hydraulikmotor angeschlossen werden. Die Planetengetriebe werden sowohl in der industrie ,als auch im Fahrzeugbau in verschiedenen Anwendungen eingesetzt, darunter. Maschinenbau, chemische und Kunststoff verarbeitende Industrie , Lebensmittelindustrie, Bauwirtschaft, Bergbau, Land-und-Forstwirtschaft, Transport-und Hubtechnik, Schiffbau, Windkraftanlagen.

Tasarım Özellikleri

- * Yüksek moment değerleri
- * M ve FV modellerinde konik seri rulmanların kullanılması ile yüksek eksenel ve radyal yük taşıma kapasiteleri.
- * Yüksek Verim
- * Dişli kutuları içinde parçalar frezeli geçişler kullanılarak yüksek emniyetli olarak yapılmaktadır.
- * Planet dişlileri kendi kendini merkezleyen taşıyıcılar ile montaj edilerek, planet dişlileri arasında en uygun yük dağılımı sağlanmaktadır.

Design Features

- * High torque density
- * High overhang and axial load capacity due to heavy duty tapered roller bearings featured on M and FV versions.
- * High Efficiency
- * Inner parts are coupled to each others with splined connectors rather than keys.
- * Planetary gears mounted onto selfcentering carriers to ensure the most even load distribution among planetary gears.

Mehr Design

- * Hohes übertragbares
- * Hohe Belastungskapazität für Radial-und Axialkräfte an den Abtriebswellen , dank des Einsatzes von Kegelrollenlager bei den Versionen M und FV.
- * Hohe Wirkungsgrade
- * Verbindungen zwischen den inneren Organen mittels Nut-profilen ,es werden keine Passfedern verwendet.
- * Untersetzungsstufen mit schwimmenden Planetenrad-trägern zur Belastungsverteilung auf die planetenrader.

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P_t (kW)

Termal Güç

Termal güç sürekli çalışma durumunda, çarpmalı yağlama ile redüktör yağ sıcaklığı 90°C yi aşmayacak şekilde transfer edebileceği maksimum güçtür. Redüktör teknik sayfalarındaki değerler;

- * Devamlı çalışma
- * Giriş devri 1500 d/d
- * Yağ ISO 150
- * Ortam sıcaklığı 20°C
- * Dişli kutusu yatay şekilde
- * Soğutma düşünülmezsizin tablanmıştır.

Kullanılmak istenen güç termal gücü aşıyor ise bu durumda soğutmaya ihtiyaç duyulur.

P_t değerleri ayaklı tiplerde %15 fazla alınabilir. (IPR 111 - IPR 113 tiplerinde)

P_t (kW)

Termal Power

The thermal power is the maximum power the planetary gearbox can transmit in continuous duty with oil splash lubrication and without exceeding an oil temperature of 90°C. The P_t values shown in the single product technical card indicate the maximum values at the below conditions.

- * Continuous duty
- * Input speed 1500 min⁻¹
- * Oil ISO VG 150
- * Ambient temperature 20°C.
- * Gearbox in horizontal position
- * Not subject to air recirculationIf the required power exceeds the values indicated in the gearbox technical information, a lubricant cooling system is needed. P_t value can be given %15 higher from given value for foot version planetary gearboxes from IPR 111- IPR 113 serie

P_t (kW)

Termal Power

WarmeleistungEs handelt sich um die maximale Leistung, die das Getriebe bei Dauerbetrieb und normaler Schmierweise übertragen kann, ohne dass die Öltemperatur von 90°C überschritten wird. Die in den jeweiligen technischen Datenblättern aufgeführten P_t werten sind maximalwerte unter den folgenden Betriebsbedingungen;

- * Dauerbetrieb ohne Unterbrechungen
- * Drehzahl n₁ = 1500 min
- * Öl ISO 150
- * Umgebungstemperatur 20°C
- * Waagerechte Einbaulage
- * Nicht der Luftzirkulation ausgesetzt

Solte die geforderte Leistung die im technischen Datenblatt das Getriebes aufgeführten Werte übersteigen wird ein Schmiermittel Kühlsystem erforderlich. Der P_t-wert der getriebe in Faussaussführung kann um 15% erhöht werden IPR 111- IPR 113 serie

Giriş gücü müsaade edilen ısıal gücü aşıyor veya dişli kutusu ufak bir hacim içinde çalışıyor ve hava akışı çok zayıf ise, bir yağ soğutma düzeneği tavsiye edilir.

If the power applied in input to the gearbox exceeds the permitted thermal power or if the gearbox is working inside a small compartment or with only a small change of air, we suggest an oil recirculation type cooling device.

Falls die am Eingang vom Planetengetriebe anliegende Leistung die zulässige warmeleistung übersteigt oder falls das Planetengetriebe in einem Fach mit reduzierten Abmessungen oder schlechter Luftzirkulation montiert wird, muss eine Ölkühlung installiert werden.

F_{r1}, F_{r2}

Giriş/çıkış Radyal Yük

Giriş ve çıkış milleri üzerindeki radyal yüklerin her bir tip planet redüktör bilgi kartındaki değerden daha küçük veya eşdeğer olduğunu görün. Eğer radyal yük listedeki değerden büyük ise redüktör giriş/çıkış mil tipini, büyüklüğünü veya rulman aranjmanını değiştirmek gerekir. Giriş ve çıkış miller üzerindeki radyal yükleri tanımlamak;

F_{r1}, F_{r2}

Input/output Radial Load

Check that radial loads exerted on input and output shafts are lower than or equal to values indicated in the tables on gearbox technical charts for each type of gearbox. In case they are greater the indicted value, change either gearbox output version, gearbox size or bearing arrangement.

To check proceed as follows; Define radial loads F_{r1} at input and F_{r2} at output.

F_{r1}, F_{r2}

Querlast am Eingang/Ausgang

Überprüfen, ob die auf die Antriebs- und Abtriebswelleneinwirkenden Radialkräfte unter den Wert die in den entsprechenden Tabellen der technischen Eigenschaften oder in den Diagrammen für jede Getriebebauform angegeben werden liegen, oder gleichwertig sind. Erhalt man bei dieser Kontrolle ein negatives ergebnis müb man die Abtriebsversion des Getriebes für diese Baugrößen wodie Möglichkeit vorgesehen ist ändern, die Getriebebaugröße wechseln, oder die Last durch anderweitige Mittel stützen. Für die Durchführung dieser Kontrolle geht man wie folgt vor; die Radialkräfte F_{r1} am Antrieb und F_{r2} am Antriebestimmen

T_{1,2req}: Giriş ve Çıkış için istenen moment Nm

d : Mil üzerine monte edilen parçanın çapı mm

K: Radyal yük stres sabiti;
Zincir dişli : 1

$$F_{r1}, F_{r2} = \frac{2000 \cdot T_{1,2req} \cdot K_r}{d}$$

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Yük Sınıflaması

Load Classification

Belastungskennwert

U Sabit / Uniform / Gleichmassig - M Orta / Moderate / Mittelschwer - H Ağır / Heavy / Schwer

Kompresörler, Fanlar

Blowers, Ventilators

Genlase, Förderer

Bloverler	Blowers	Gebłase	U
Soğutma kule fanları	Cooling tower fans	Kühlturnlüfter	M
İnduced cereyanlı fanlar	Induced draught fans	Saugzugeblase	M
Döner piston blovırları	Rotary piston blowers	Drehkolbengeblase	M
Turbo bloverler	Turbo blowers	Turboğebłase	U

Kompresörler

Compressors

Verdicter, kompressoren

Pistonlu kompresörler	Piston compressors	Kolbenkompressoren	H
Turbo kompresörler	Turbo compressors	Turbokompressoren	M

Kimya Endüstrisi

Chemical Industry

Chemische Industrie

Sıvı materyal hazırlayıcılar	Stirrers (liquid materials)	Rührwerke (flüssige Stoffe)	U
Yarı sıvı materyal hazırlayıcılar	Stirrers (semi-liquid materials)	Rührwerke (halbflüssige Stoffe)	M
Ağır santrifüj	Centrifugal machines (Heavy)	Zentrifugen (schwer)	M
Hafif santrifüj	Centrifugal machines (light)	Zentrifugen (leicht)	U
Soğutma tamburu	Cooling drums	Kühltrommeın	M
Kurutma tamburu	Drying drums	Trocknungstrommeın	M
Karıştırıcılar	Mixers	Mischer	M

Taşıyıcılar

Conveyors

Förderer

Düz konveyörler	Slat conveyors	Plattenförderband	M
Asansör konveyörler	Ballast elevators	Ballastheber	M
Bant konveyörler	Belt pocket conveyors	Sackförderband	M
Bant konveyörler (dökme malz.)	Belt conveyors (bulk material)	Fördermaschinen (Schüttgut)	M
Bant konveyörler (tane malz.)	Belt conveyors (piece goods)	Fördermaschinen (Stückgut)	H
Kova konveyörler	Bucket conveyors for flours	Becherförderwerke	U
Zincir konveyör	Chain conveyör Circular	Kettenförderer	M
Dairesel konveyörler	Conveyors	Kreiselförderer	M
Vinç	Hoists/Inclined hoist	Lastenaufzüge	H
Eğimli vinç	Steel conveyor belt	Geneigte Lastenaufzüge	H
Çelik bantlı konveyör	Passanger lifts	Förderbander aus	M
İnsan asansörleri	Screw conveyors	Personenautzüge	M
Vidalı konveyörler	Concave belt conveyor	Schneckenförderer	M
İç bükey bant konveyör	Winches hauling	Hohlbandförderer	M
Vinç konveyör	Conveyor crane	Förderwinden	M

Vinçler

Cranes

Krane

Derik Vinçler	Derricking jib gear	Bohrvorrichtung	M
Kaldırma mekanizması	Hoist mechanism	Hebwerke	U
Dönme mekanizması	Slewing mechanism	Rotationmeckanik	M
Yürüyüş mekanizması	Travelling mechanism	Fahrwerke	H

Uygulamalar

Dredgers

Begger

Kova konveyörler	Bucket conveyors	Eimerkettenbagger	M
Kova dişliler	Bucket wheels	Schaufelräder	M
Kesme kafaları	Cutter heads	Schneidköpfe	M
Manevra vinci	Manoeuvring winch	Manövrierwinden	M
Pompalar	Pumps	Saugpumpen	H
Dönüş dişlileri	Slewing gear	Schwenkwerke	U
Caterpillar yürütme	Travelling gear (tracked vehicle)	Fahrwerke (Raupe)	M
Ray yürütme	Travelling gear (rails)	Fahrwerke (Schiene)	M

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Yük Sınıflaması

Load Classification

Belastungskennwert

U Sabit / Uniform / Gleichmassig - M Orta / Moderate / Mittelschwer - H Ağır / Heavy / Schwer

Inşaat Makinaları

Building Machinery

Baumaschinen

Beton mikserleri	Concrete mixers	Betonmischmaschinen	M
Vinçler	Hoists	Bauaufzüge	M
Yol yapım makinaları	Road construction machines	Stassenbaumaschinen	M

Çamaşırhane

Laundries

Waschereimaschinen

Merkezkaç	Tumblers	Trommeltrockner	M
Yıkama makinaları	Washing machines	Waschmaschinen	M
Pres makinaları	Pressing machines	Bügelmaschinen	M

Yiyecek Endüstrisi Makinaları

Food Industry Machinery

Nahrungsmittelmaschinen

Şişeleme ve teneke dolum mak.	Bottling and container filling mach.	Abfüllmaschinen	U
Kamış kırıcı	Cane crushers	Zuckerrohrbecher	M
Kamış bıçakları	Cane knives	Zuckerrohrschneider	H
Kamış değirmenleri	Cane mills	Zuckerrohmühlen	M
Yoğurma makinaları	Kneading machines	Knetmaschinen	M
Ezme	Mash tubs (crystallizers)	Maischen	H
Paketleme makinaları	Packaging machines	Verpackungsmaschinen	U
Pancar kesiciler	Sugar beet cutters	Zuckerrübenschneider	M
Pancar yıkama	Sugar beet washing machines	Zuckerrübenwascher	M

Jeneratör ve Transformatörler

Generators and Transformers

Generatoren und Transformatoren

Frekans transformatörler	Frequency transformers	Frequenztransformatoren	H
Jeneratörler	Generators	Generatoren	H
Kaynak makinası jeneratörleri	Generators for welding mach.	Generatoren für Schweißmaschinen	H

Metal Silindirleri

Metal Rollers

Walzwerke

Hadde makasları	Shears for rolling mills	Scheren für Walzstraben	H
Zincir tahriki	Chain transfers	Kettenschlepper	M
Soğuk haddeleme	Cold rolling mills	Kaltwalzwerke	H
Devamlı döküm hattı	Continuos casting plant	Stangggussanlagen	H
Soğutma yatakları	Cooling beds	Kühlbetten	M
Kırpma makasları	Cropping shears	Schopsfscheren	H
Ağır ve orta plaka eziciler	Heavy and medium plate mills	Plattenwalz-werk	H
Kabuk soyucular	Descaling machines	Blocktransportanlagen	H
Manipülâtör	Manipulators	Verschiebevomchtungen	H
Külçe iticileri	Ingot pushers	Blechpressen	H
Rulo düzeltici	Plate tilters	Rollenrichtmaschinen	M
Ağır ezici levhalar	Roller tables (heavy)	Rollgange (schwer)	H
Hafif ezici levhalar	Roller tables (light)	Rollgange (leicht)	H
Tüp kaynak makinaları	Tube welding machines	Rohrschweissmaschinen	M
Şerit ve tel sarma makinaları	Winding machines (strip and wire)	Wickler	M
Tel çekme makinaları	Wire drawing banches	Drahtzüge	M

Metal İşleri Makinaları

Machines For Working Metal

Metallbearbeitungsmaschinen

Sayaç milleri	Counter shafts, shafts in line	Gegenwellen, Welle in Linie	U
Sıcak ezme	Press for hot-pressing	Presse für Heibstanzung	H
Çekiçleme	Hammers	Hammer	H
Yardımcı kılavuz tezgahları	Auxiliary guides, machine tools	Werkzeugmaschinen Hilfsantriebe	U
Ana kılavuz tezgahları	Main guides, machine tools	Hauptführungen Werkzeugmaschine	M
Metal işleme makinası	Machine for metal planning	Hobelmaschinen für Metall	H
Sac düzeltici	Rectifier for metal sheet	Gleichrichter für Bleche	H
Presler	Presses	Pressen	H
Dövme presleri	Presses for forging	Stanzpressen	H
Makaslar	Shears	Scheren	M
Katlanır metal makinası	Machine for folding metals	Metallbiegenmaschinen	M

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Yük Sınıflaması

Load Classification

Belastungskennwert

U Sabit / Uniform / Gleichmassig - M Orta / Moderate / Mittelschwer - H Ağır / Heavy / Schwer

Pompalar

Pumps

Pumpen

Santrifüj pompalar, hafif sıvı	Centrifugal pumps(light liquids)	Kreiselpumpen(zahne Flüssigkeit)	U
Santrifüj pompalar, yoğun sıvı	Centrifugal pumps(viscous liquids)	Kreiselpumpen(leichte Flüssigkeit)	H
Piston pompalar	Piston pumps	Kolbenpumpen	H
Dalgıç pompalar	Plunger pumps	Plungerpumpen	H
Basınçlı pompalar	Pressure pumps	Presspumpen	H

Petrol Endüstrisi

Oil industry

Ölindustrie

Boru hattı pompaları	Pipeline pumps	Pompes pour pipeline	M
Döner delme ekipmanları	Rotary drilling equipment	Bohrvorrichtungen	H

Kağıt Makinaları

Paper Machines

Papiermaschinen

Pres makinası	Calendars	Kalender	H
Kol	Couches	Gautschen	H
Kurutma silindirleri	Drying cylinders	Trockenzylinder	H
Cam silindirler	Glazing cylinders	Galtzylinder	H
Kağıt hamuru makinası	Pulpers	Hollander	H
Taşlama	Pulp grinders	Holzschleifer	H
Emiş makaraları	Suction rolls	Saugwalzen	H
Emiş presleri	Suction presses	Saugpressen	H
Yaş presler	Wet presses	Nasspressen	H
Kıyma makinası	Willows	Reisswolf	H

Kauçuk Makinaları

Rubber Machinery

Kunststoffmaschinen

Pres makinası	Calendars	Kalender	M
Ekstruder	Extruders	Extruder	H
Karıştırıcılar	Mixers	Mischer	M
Buldog değirmenler	Pug mills	Knetwerke	H
Döner değirmen	Rolling mills	Walzwerke	H

Plastik Makinaları

Plastic Industry Machinery

Kunststoffmaschinen

Pres makinası	Calendars	Kalender	M
Kırcılar	Crushers	Zerkleinerungsmaschinen	M
Ekstruder	Extruders	Extruder	M
Karıştırıcılar	Mixers	Mischer	M

Tekstil Makinaları

Textile Machines

Textilmaschinen

Dozajlama	Batchers	Dosierer	M
Dokuma tezgahı	Looms	Webstühle	M
Baskı boyama makinası	Printing and dyeing machines	Druckerei-Farbereimaschinen	M
Boyama tankı	Tanning vats	Gerbwanne	M
Kıyma tezgahı	Willows	Reisswolf	M

Taş ve Kil Makinaları

Stone and Clay Machines

Steine, Erden

Çekiç değirmenler	Hammer mills	Hammermühlen	H
Çırpıcı değirmenler	Beater mills	Walzwerk	H
Kırcılar	Breakers	Brecher	H
Tuğla presleri	Brick presses	Ziegelpresen	H
Döner fırınlar	Rotary ovens	Drehöfen	H
Tüp değirmenler	Tube mills	Rohrmühlen	H

Su Arıtma

Water Treatment

Wasseraufbereitung

Aeratör	Aerators	Kreiselbelüfter	M
Vidalı pompalar	Screw pumps	Wasserschnecken	M

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Radyal Ve Aksiyel Yük Kontrolü

Giriş ve çıkış milleri üzerinde, müsadde edilen yükü rulman ömrü ve mil üzerindeki yük noktası biliniyorsa nasıl tayin edebiliriz.

Radyal yük eğrileri her bir redüktör çıkış mili için katalog sayfalarında verilmiştir.

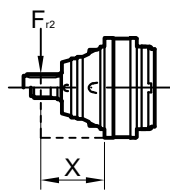
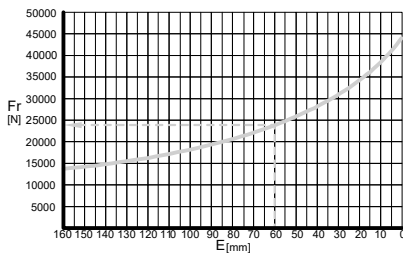
Ömür faktörü 10^5 'den farklı ise bu durumda radyal yük düzeltme katsayısı ilgili diyagramdan bulunarak radyal yük ile çarpılır. Bu durumda uygulanan yük bu çarpımdan küçük ise daha büyük redüktör seçilmelidir.

Radyal yükü ve uygulama noktasını bildiğimiz durumda, giriş/çıkış mil rulman ömrünü nasıl tayin edebiliriz.

Bu durumda x mesafesinde uygulanan yükü maksimum müsadde edilen yüke oranlarız, buradan çıkan katsayı yardımı ile diyagramdan $n_2 \cdot h$ değerini buluruz.

Örnek 1

Radyal yükün etki noktasını ve ömür katsayısını bilmemiz durumunda IPR 117 MS tipi dişli kutusunda çıkış mili üzerinde uygulanabilecek radyal yükün bulunması.



Checking Radial And Axial Loads

How we can determine the admissible radial load of an input or output shaft version knowing the required bearing life time and the load position.

The curves of the radial loads are given in the sections relative to each reduction gear size, based on the type of output support.

If the duration factor required $f_{h,2}$ is different from 10^5 (value on the basis of which the curves are obtained) you have to multiply the maximum applicable load by a corrective coefficient $k_{r,2}$, which is found by way of the relative curves. If the radial load you intend applying is greater than the applicable load, you have to go to the next higher size gearbox.

How to determine the bearing service life of an input or output shaft version knowing the applied radial load and its load position.

Wanting to calculate the duration factor consequential to the application of a radial load $F_{r,2}$ in position x , $k_{r,2}$ has to be calculated as the ratio between the applied load and the maximum applicable load in x (gleaned from the curve relative to the output support considered); entering with this value on the curve that provides $k_{r,2}$ as a function of the duration factor, it is possible to find the duration of the output support in terms of $n_2 \cdot h$.

Example 1

Knowing the position of the radial load $x=60$ mm and the duration factor required $n_2 \cdot h = 500000$, we want to know the radial load $F_{r,2}$ that can be applied on the output shaft of the IPR 117 MS gearbox.

Kontrolle von Querlasten Und Achslasten

Wie wird die Radiallast einer Vollwelle in Anoder Abtrieb festgestellt, wenn die geforderte Lebensdauer der Lager und der Eingriffspunkt der Last bekannt sind.

Die Kurven der Querlasten sind in den Abschnitten der einzelnen Planetengetriebe angegeben, je nach Ausgangslager

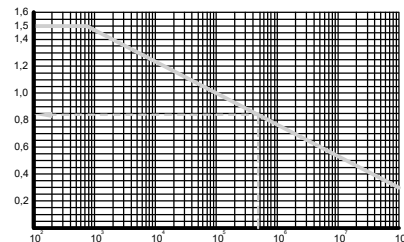
Wenn ein anderer Zeitfaktor $f_{h,2}$ als 10^5 verlangt wird (Wert, anhand dessen die Kurven berechnet wurden), muss die maximal anlegbare Last mit einem Korrekturfaktor $k_{r,2}$ multipliziert werden, der den entsprechenden Kurven entnommen werden kann.

Wie wird die Lebensdauer der Lager einer Vollwelle in Anoder Abtrieb festgestellt, wenn die Radiallast und der entsprechende Eingriffspunkt vorgegeben sind.

Sollte die Querlast, die angelegt werden soll, größer sein als der Wert der maximal anlegbaren Querlast, muss ein größeres ausgelegtes Planetengetriebe. Wenn der Zeitfaktor für das Einwirken einer Querlast $F_{r,2}$ in Position x berechnet werden soll, muss $k_{r,2}$ als das Verhältnis von anliegender Last und maximal anlegbarer Last in Punkt x berechnet werden (welche der Kurve vom berücksichtigten Ausgangslager entnommen werden kann). Mit diesem Wert kann anhand der Kurve von $k_{r,2}$ in Abhängigkeit vom Zeitfaktor die Dauer vom Ausgangslager als $n_2 \cdot h$ abgeleitet werden.

Beispiel 1

Bei einer Position der Achslast $x=60$ mm und einem verlangten Zeitfaktor von $n_2 \cdot h = 500000$, soll die Querlast $F_{r,2}$ ermittelt werden, die an der Ausgangswelle vom Planetengetriebe IPR 117 MS angelegt werden kann.



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Radyal yük eğrisinden 60mm mesafede uygulanabilecek değeri 2400 N olarak bulabiliriz. Bu değer ömür değeri 10^5 ten farklı olduğu için düzeltme yapılmalıdır. İkinci eğriden $k_{r,2}$ 0,84 olarak bulunur ve aşağıdaki şekilde;

In the radial load graph we can find the nominal applicable value at 60mm, equal to 2400 N. This value has to be corrected by means of $k_{r,2}$ in order to take into account the duration factor different from 10^5 ; in the second graph, where the abscissa $n_2 \cdot h = 500000$ is, we can find the $k_{r,2}$ value we are looking for, equal to 0,84. So, the maximum radial load can be applied in position x equal to ;

Aus der Querlastkurve wird der bei 60mm anlegbare Nennwert ermittelt, der 2400 N entspricht. Dieser Wert muss mit dem Faktor $k_{r,2}$ korrigiert werden, um den von 10^5 abweichenden Zeitfaktor zu berücksichtigen. Aus der zweiten Kurve kann auf Höherer X-Koordinate $n_2 \cdot h = 500000$ der gesuchte Wert $k_{r,2}$ entnommen werden, der 0,84 entspricht. In Position x kann also eine maximale Querlast mit folgendem Wert angelegt werden ;

$$F_{r,2} = F_{r,nom} \times k_{r,2} = 2400 \times 0,82 = 2016 \text{ N}$$

Örnek 2

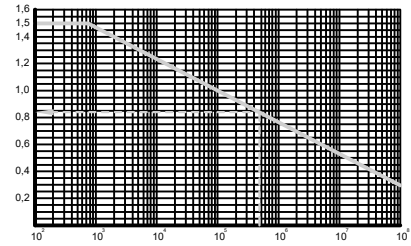
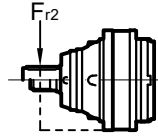
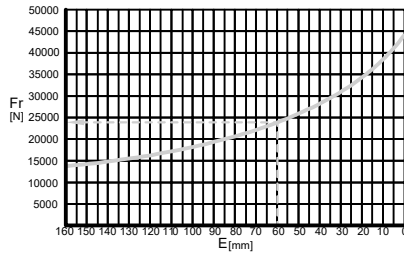
60 mm mesafedeki uygulanan yükün 1750 N olduğunu biliyoruz. Bu durumda çıkış IPR 117 MS için yatağının ömür sabitini bilmek istiyoruz.

Example 2

Knowing the position of the radial load $x=60\text{mm}$ and its $F_{r,2}=1750 \text{ N}$ value, we want to know the output support's duration factor for the IPR 117 MS reduction gear

Beispiel 2

Bei einer Position der Achslast $x=60\text{mm}$ und deren Wert $F_{r,2} = 1750 \text{ N}$ soll der Zeitfaktor vom Ausgangslager für das Planetengetriebe IPR 117 MS ermittelt



1, eğriden uygulanabilecek yük 2400 N. Buradan düzeltme katsayısı $k_{r,2}$ bulunur.

From the ratio between the nominal load applicable in x, equal to 2400 N, and the load applied, we have the corrective coefficient $k_{r,2}$.

Aus dem Verhältnis von anlegbarer Nennlast in x, die 2400 N entspricht, und angelegter Last erhält man den Korrekturfaktor $k_{r,2}$.

$$k_{r,2} = F_{r,2} / F_{r,2 \text{ nom}} = 1750 / 2400 = 0,73$$

Termal güç kontrolü

Nakledilecek güç katalog bilgi sayfalarındaki termal güç değerinden büyüğe yardımcı soğutma sistemi gereklidir. Termal güçler 20°C ortam sıcaklığı ve 1500 Dev/dak. Esas alınarak tablanmıştır. Çalışma koşulları bu değerlerden sapma gösterirse bu durumda P_t ; K_t ve K_v sabiti ile tekrar düzenlenmelidir.

Checking thermal power

If the power transmitted by the reduction gear, that is, the power required in input P_{r1} , is higher than thermal power P_t an auxiliary cooling system is necessary. Since the value of the reduction gears' thermal power is calculated hypothesising $t_a=20^\circ\text{C}$ and $n_1=1000 \text{ min}^{-1}$, when the actual operating conditions deviate from this condition the P_t value has to be corrected by means of the K_t factors, the temperature factor, and K_v and the speed factor which can be found in the following tables.

Kontrolle der Wärmeleistung

Wenn die vom Planetengetriebe übertragene Leistung, d.h. die am Eingang verlangte Leistung P_{r1} größer ist als die Wärmeleistung P_t , muss ein zusätzliches Kühlsystem vorgesehen werden. Da der Wert der Wärmeleistung der Planetengetriebe unter der Annahme berechnet wird, dass $t_a=20^\circ\text{C}$ und $n_1=1000 \text{ min}^{-1}$, muss der Wert P_t bei Abweichung von diesen Bedingungen mit dem Temperaturfaktor K_t und dem Geschwindigkeitsfaktor K_v korrigiert werden, die den Tabellen entnommen werden können

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K _t	Bir saat içinde çalışma zamanı Operating minutes per hour Minuten Betrieb/pro Stunde		t _a			
			10 C°	20C°	30C°	40C°
Devamlı çalışma Continuous duty Dauerbetrieb	60	100%	0,9	1	1,15	1,45
	48	80%	0,8	0,9	1	1,25
Aralıklı çalışma Intermittent duty Aussetzbetrieb	36	60%	0,7	0,75	0,9	1,1
	24	40%	0,6	0,65	0,8	0,95
	12	20%	0,5	0,6	0,7	0,85

n ₁ min-1	K _v
500	1,08
750	1,04
1000	1,00
1500	0,89
1750	0,82
2250	0,66
2500	0,59
2900	0,49

Modifiye edilmiş termal güç P_t aşağıdaki formül ile hesap edilir;

The corrected thermal power P_t is calculated with the formula;

Die korrigierte Wärmeleistung P_t wird anhand folgender Formel berechnet:

$$P_t = \frac{P_t \times K_v}{K_t}$$

Sonuç P_{r1} > P_t ise yardımcı bir soğutma sistemi kullanılmalı, bunun ısı kapasitesi aşağıdaki formül ile bulunur:

If the result is P_{r1} > P_t an auxiliary cooling system has to be installed to get rid of the thermal power in excess, found with the formula:

Wenn P_{r1} > P_t muss ein zusätzlichen Kühlsystem installiert werden, um die übermäßige Wärmeleistung abzuleiten, die anhand folgender Formel berechnet werden kann:

$$P_s = \frac{(P_{r1} - P'_t) \times C_{rt}}{860}$$

C_{rt} sabiti ise aşağıdaki tablodan dişli kutusu modeline ve yağ seviyesine göre bulunur.

Where C_{rt} is a coefficient that is found in the following table, based on the configuration of the reduction gear and on the filling up type (illustrated further on in the lubricating tables)

wobei der Koeffizient C_{rt} anhand der Konfiguration vom Planetengetriebe und der Art der Füllung der Tabelle unten entnommen werden kann (siehe auch Kapitel Schmierung.)

C _{rt}	Yarım dolu Filled halfway Halb gefüllt	Tam dolu Filled to the top Ganz gefüllt
S1	21	25
S2	43	52
S3	62	77
S4	84	97

L/dak. Akış oranı, gücü Ps bulmak için aşağıdaki şekilde hesaplanır.

The flow rate of oil in litres a minute, necessary to get rid of power Ps, is calculated as:

Der Öldurchsatz in Litern pro Minute, der zum Ableiten der Leistung Ps erforderlich ist, wird wie folgt berechnet:

$$q = \frac{(P_{rt} - P'_t) \times C_{rt} \times 0,07}{t - t_s}$$

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Örnek

Aşağıdaki şartlarda çalışan bir IPR113 S3 tablosundan 17 kW olarak bulunur.

- Giriş devri: $n_1=1500$ d/dk
- Giriş gücü: $P_{r1}=30$ kW
- Yağ seviyesi: Yarım
- Ortam Sıcaklığı: $t_a=30^\circ$
- Her saatte 24 dk çalışma
- Termal güç kapasitesi IPR 113 S3 tablosundan 17 kW olarak bulunur.
- K_t ve K_v değerleri ile ilgili tablolardan bulunur.

Example

An IPR 113 S3 reduction gear works at the following conditions:
- Input speed $n_1=1500$ min⁻¹;
- Power required in input $P_{r1} = 30$ kW;
- Filled halfway;
- Ambient temperature $t_a=30^\circ\text{C}$;
- 24 Minutes working every hour. The thermal power value $P_t=17$ kW of the subject reduction gear is found in the IPR 113 S3 reduction gears table and has to be corrected by introducing factors K_t and K_v taken from the relative tables:

Beispiel

Ein Planetengetriebe IPR 113 S3 funktioniert unter folgenden Bedingungen:
- Geschwindigkeit am Eingang $n_1=1500$ min⁻¹;
- Verlangte Leistung am Eingang $P_{r1} = 30$ kW;
- Halbe Füllung;
- Umgebungstemperatur $t_a=30^\circ\text{C}$;
- 24 Minuten Betrieb pro Stunde. Aus der Tabelle mit den technischen Daten der Planetengetriebe IPR 113 S3 kann der Wert für die Wärmeleistung $P_t=17$ kW vom Planetengetriebe entnommen werden. Dieser Wert muss mit den Faktoren K_t und K_v korrigiert werden, die den jeweiligen Tabellen entnommen werden können:

$$\frac{P_t \times K_v}{K_t} = \frac{17 \times 0,89}{0,80} = 18,9 \text{ kW}$$

Böylece termal gücün redüktör termal kapasitesinden küçük olduğu görülür. Bu durumda yardımcı bir soğutma ünitesine ihtiyaç duyulur. Bunun gücü;

Since the power required is greater than the thermal power the reduction gear is able to get rid of, an auxiliary cooling system needs to be installed to get rid of a power equivalent to;

Da die verlangte Leistung größer ist als die Wärmeleistung, die das Planetengetriebe ableiten kann, muss ein zusätzliches Kühlsystem zur Wärmeableitung mit folgender Leistung installiert werden;

$$\frac{(P_{r1} - P_t) \times C_{rt}}{860} = \frac{(30 - 18,9) \times 50}{860} = 0,64 \text{ kW}$$

C_{rt} değeri tablodan alınır. Yağ sirkülasyonunda soğutucu radyatöre giren yağın $t_r=90^\circ\text{C}$, çıkan yağın ise 65°C olduğu varsayılarak yağ debisi hesaplanır.

where the C_{rt} value was taken from the relative table for the L3 reduction gear. Utilising an oil recirculating cooling system, assuming that the temperature of the oil entering the exchanger is $t_r=90^\circ\text{C}$ while when it leaves the exchanger it is $t_s=65^\circ\text{C}$, the rate necessary to get rid of such a power is equivalent to:

wobei der Wert C_{rt} der entsprechenden Tabelle für das Planetengetriebe L3 entnommen werden kann. Bei Einsatz eines Kühlsystems mit Ölrücklauf und unter der Annahme, dass die temperatur vom Öl am Eingang vom Wärmeaustauscher $t_r=90^\circ\text{C}$ und am Ausgang $t_s=65^\circ\text{C}$ beträgt, ist folgender Durchsatz zur Ableitung der Wärmeleistung erforderlich:

$$\frac{(P_{r1} - P_t) \times C_{rt} \times 0,07}{t_r - t_s} = \frac{(30 - 18,9) \times 50 \times 0,07}{90 - 65} = 1,6 \text{ l/min}$$

Bu sonuca göre soğutucu modellerinden uygun olan seçilir.

Consult the lubrication chapter to choose the most suitable auxiliary cooling system out of those proposed.

Nähere Informationen zur Auswahl vom geeigneten zusätzlichen Kühlsystem können dem Kapitel "Schmierung" entnommen werden.

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Yağlama

Doğru bir yağlama dişli kutularının verimli çalışması için gereklidir. Bundan dolayı aşağıdaki kriterler çalışma esnasında kontrol edilmelidir.

- Bütün yağ tapalarının önerilen çalışma pozisyonuna göre uygun monte edilip edilmediği kontrol edilmelidir.
- Yatay montaj edilmiş redüktörleri ; düz veya ayna mahrutili oluşuna bakılmaksızın yarısına kadar yağ ile doldurunuz. Görsel olarak kontrol için merkez hattı üzerindeki tapa gevşetilir ve yağ seviyesi kontrol edilir.
- Doksan derece ayna mahrutli ünitesi montajlı tiplerde yağ serbestçe dolaşmalıdır. Doldurma işlemi montaj pozisyonuna göre yerde her iki yönden ama aynı anda yapılmamalıdır. Bu şekilde yağın bölümler arasında yer değişmesine olanak vererek ve uygun miktarda yağ almasını sağlayacak şekilde olmalıdır.
- Dik olarak montaj edilmesi gereken modellere daha özel bir ihtimam gösterilmelidir. Bu durumda ünite tamamıyla doldurulmalıdır. Bu gibi durumlarda yağ genleşme kabı kullanımı tavsiye edilir ki ayrı olarak talep edilmesi halinde temin edilir. Bu tank dişli kutusu ünitesinin en uç noktasına monte edilerek genleşen yağ miktarını rezerve etmesi sağlanır. Dişli kutusu soğumaya başladığında bu yağ tekrar redüktör içine giderek yağ kaybını önleyerek zaman içinde olası tahribatları engeller.
- Devamlı çalışma şartları altında ve fazla yağ ile çalışan dişli kutularında daha düşük vizkositeli yağlar kullanılmalıdır.
- Dişli kutularının ilk çalışma zamanlarında temas yüzeylerine bağlı olarak metal parçalarına rastlanabilir. Hiç kuşkusuz bu metal parçaları dişli kutusu içinde hem dişli grupları hem de rulmanlar için bazı olumsuzluklar meydana getirebilirler. Bunu önlemek için redüktör yağını ilk 100 saat sonunda değiştirin. Manyetik tapaları düzenli olarak temizleyin tavsiye edilen yağ listesi devam eden sayfalarda bulabilirsiniz.

Lubrication

Correct lubrication is required to run drives efficiently. Therefore, check the following conditions during installation:

- Make sure that all plugs are correctly mounted with respect to the installation position specified in the order and according to the mounting position.
 - Fill horizontally mounted units up to the central line regardless of a linear or angular configuration. To visually check the oil level, unscrew the plug located just above the center line.
 - For right angle units, the bevel gear is connected so that the oil is free to circulate. In any case, carry out the filling operation on both ends but not simultaneously, and while the unit is on the ground, based on the correct mounting position. This will speed up the operation and ensure that the correct quantity of oil is introduced regardless of how long it would take for the oil to go from one chamber to the other.
 - Particular attention should be paid to vertically mounted units which must be completely filled by means of elbows and extensions supplied with the unit. For these positions it is recommended to use an expansion tank, which can be supplied separately on request. This tank must be positioned above the highest point of the drive and is designed to collect any oil expansions or to ensure that the units mounted in hard to reach places can be topped up.
 - Units running under continuous duty conditions may overheat due to the large quantity of oil they contain. In these cases, use oil with a lower viscosity.
- During the first hours of operation of the reduction gears, due to the contact between surfaces that have not been run in, you will find metallic particles in the oil. Undoubtedly the separate particles have a negative effect on the life of gears and bearings. To reduce the number of metallic particles in the oil we recommend:

- Changing the oil after the first 100 hours of operation;
- Cleaning the magnetic plugs regularly; The recommended lubricants are listed below;

Schmierung

Nur eine korrekte Schmierung gewährleistet den problemlosen Betrieb des Getriebes. Es wird deshalb empfohlen, bei der Installation folgende Bedingungen zu überprüfen:

- Kontrollieren, ob je nach bestellter Montageposition die Einfüllstutzen korrekt montiert sind, vgl. dazu die Angaben im Abschnitt EINBAULAGE.
- Ist das Getriebe waagrecht montiert, muß es bis zur Mitte aufgefüllt werden; Sichtkontrolle des Ölstandes vornehmen, indem der Öleinfüllstopfen abgeschraubt wird.
- Bei Winkelgetrieben ist der rechtwinklige Teil so angebaut, daß das Öl ungehindert zirkulieren kann; es empfiehlt sich jedoch, das Öl am Boden einzufüllen, wobei es auf beiden Seiten geöffnet, aber nicht gleichzeitig eingefüllt wird; der Vorgang wird dadurch beschleunigt und man kann gleichzeitig sicher sein, die erforderliche Ölmenge einzufüllen, da das Öl Zeit braucht, um von einer Kammer in die andere zu fließen.
- Besondere Sorgfalt ist bei Getrieben erforderlich, die senkrecht montiert werden; sie müssen mit Hilfe der beigelegten Kniestücke und Verlängerungen vollständig aufgefüllt werden. Für diese Einbauposition wird die Verwendung eines Ausgleichsbehälter empfohlen, der auf Anfrageseparat geliefert wird. Das Gefäß muß oberhalb des höchsten Getriebepunktes positioniert werden und soll überschüssige Ölmengen aufnehmen bzw. bei Getrieben in unzugänglichen Positionen ein sicheres Einfüllen gewährleisten.
- Außerdem kommt es bei Getrieben, die im Dauerbetrieb arbeiten, aufgrund der darin enthaltenen großen Ölmengen leicht zu Überhitzung; in diesem Fall wird die Verwendung von Öltypen mit niedriger Viskosität empfohlen. Während der ersten Betriebsstunden der Planetengetriebe gelangen durch den Kontakt der nicht eingelaufenen Oberflächen Metallpartikel ins Öl. Das Vorhandensein dieser Metallpartikel wird sich deutlich zum Nachteil der Lebensdauer von Zahnrädern und Lagern aus. Zur Reduzierung der Metallpartikel im Öl wie folgt vorgehen:
 - Nach den ersten 100 Betriebsstunden einen Ölwechsel durchführen; machen; Kühlsystem filtern.
 - Die empfohlenen Schmiermittel können der Tabelle unten entnommen werden.

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Yağ Değişimi

- İlk yağ değişimi redüktör işletmeye alındığı zamandan itibaren 100 saatir.
- Daha sonraki değişimler ise 2000 saat veya yılda birkezdir, hangisi önce gelirse.
- Değişim esnasında yağ kalıntılarında kurtulmak için sıcak olmasında fayda vardır.
- Bütün tapalar temizlenmelidir.
- Yeni yağı koymadan önce yağ üreticisinin tavsiye edeceği sıvı bir deterjanla dişli kutusu temizlenmelidir.
- Redüktör çalışmadığı durumlarda belli periyodlar içinde yağ kaçaqları ve seviyesi kontrol edilmelidir. Gerekirse aynı tip yağ ile tamamlanmalıdır.

Oil Changes

- The first oil change should be done after 100 hours of duty
- Subsequent oil changes should take place after 2000 hours or at least once a year.
- To avoid sludge deposits, change the oil while the drive is still hot.
- Clean all plugs.
- Before adding the new oil, the unit should be flushed with a liquid detergent recommended by the lubricant supplier.
- Periodically check for oil leaks and the oil level while the unit is idling. If needed, top up using the same type of oil,

Schmierung

- Der erste Ölwechsel sollte nach 100 Betriebsstunden vorgenommen werden.
- Weitere Ölwechsel sollten nach 2000 Betriebsstunden bzw. mindestens einmaljährlich erfolgen.
- Das Öl bitte bei noch warmen Getriebeablassen. Auf diese Weise werden Ablagerungen vermieden.
- Ölstopfen reinigen. • Vor dem Auffüllen mit neuem Öl, das Getriebe innen mit einem vom Schmierstoffhersteller empfohlenen Reinigungsmittel auswaschen.
- Getriebe regelmäßig auf Dichtigkeit prüfen sowie sicherstellen, daß bei Stillstand das Öl bis zum vorgesehenen Ölstand reicht. Sofern erforderlich, ist Öl nachzufüllen; der Öltyp muß mit dem im Getriebe bereits enthaltenen Öl unbedingt übereinstimmen.

Genellikle Planet redüktörler yağsız olarak sevk edilirler.

Generally, Planetary Drives are supplied without lubricant.

HINWEIS: saemtliche Getriebe Planetary Drives werden ohne Oelfüllung ausgeliefert.

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Yağ Değişimi

Oil Changes

Schmierung

Kullanılacak olan diğer sentetik yağların NBR tip yağ keçesi ile uyumlu olduğu kontrol edilmelidir.

If other synthetic lubricants are used, always check their compatibility with the NBR oil seals used in the reduction gear.

Bei Verwendung synthetischer Schmiermittel muss die Kompatibilität mit den im Planetengetriebe montierten Öldichtungen aus NBR geprüft werden.

Farklı tiplerdeki sentetik yağlar birbirine karıştırılmamalıdır.

Do not mix different types of synthetic lubricants together.

Unterschiedliche Typen von synthetischen Schmiermitteln dürfen nicht gemischt werden.

Eğer planet dişli kutusunun çalışma sıcaklığı devamlı olarak 60°C ve üzerinde seyrediyorsa bu durumda sentetik yağ kullanılması sağlık verileriyle dişli kutusu içindeki parçaların aşırı ısınmadan meydana gelebilecek aşınmalardan korunması sağlanır. Dişli kutusu içindeki yağ sıcaklığının 90°C yi aşmaması gerekir.

If the operating conditions of the reduction gear entail prolonged periods of operation such that the oil temperature rises considerably (>60°C), we suggest using a synthetic oil to guarantee less wear of the components and to prolong the intervals between replacing them. Maximum temperature of the lubricant inside the reduction gear must not exceed 90°C.

Wenn die Betriebsbedingungen von Planetengetriebe längere Betriebszeiten vorsehen, die zu hohen Öltemperaturen führen (>60°C), wird zur Verwendung von synthetischem Öl geraten, das für einen geringeren Verschleiß der Teile und größere Abstände zwischen den Ölwechseln garantiert. Die Temperatur des Schmiermittels im Planetengetriebe darf 90°C nicht übersteigen.

Montaj ve tapa pozisyonları

Aşağıdaki resimlerde montaj pozisyonlarını bulabilirsiniz. Sipariş esnasında montaj pozisyonu da bildirilmelidir. Bu şekilde uygun tapalama ve yağ miktarı seçilir.

Mounting positions and plug positions

You can see the possible mounting positions in the figures below. The relative initial must be specified when ordering the reduction gear. The layout and type of plugs as well as the minimum lubricant level are also indicated, as per the legend.

Montageposition und Anordnung der Deckel

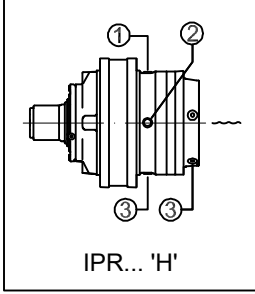
Die Abbildungen unten zeigen die möglichen Montagepositionen, deren Kürzel bei der Bestellung vom Planetengetriebe angegeben werden muss. Außerdem sind die Anordnung und der Typ der Deckel sowie der Mindestölstand angegeben (siehe Legende).

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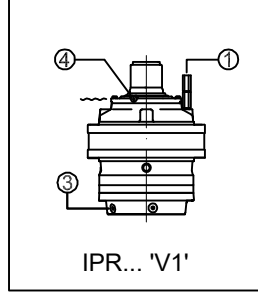
Montaj Pozisyonları

Mounting Positions

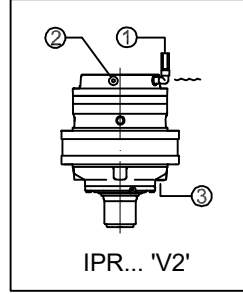
Montageposition



IPR... 'H'

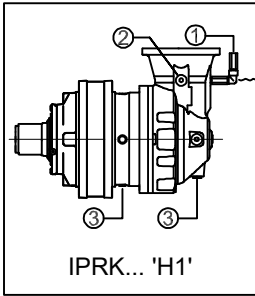


IPR... 'V1'

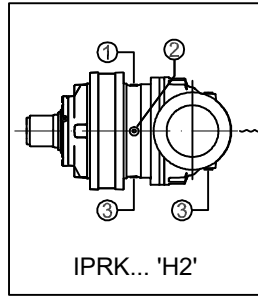


IPR... 'V2'

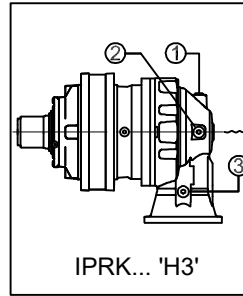
①	Nefeslik / Vent plug Entlüftungstopfen
②	Seviye / Level plug Ölstandstopfen
③	Boşaltma / Drainage Ablassstopfen
④	Doldurma / Filling Einfüllstopfen



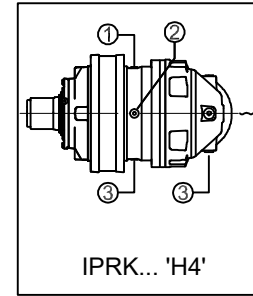
IPRK... 'H1'



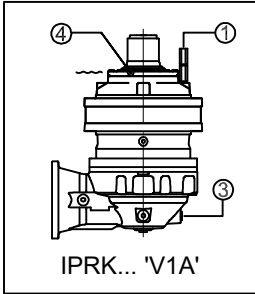
IPRK... 'H2'



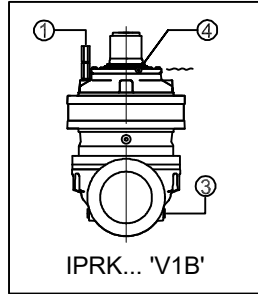
IPRK... 'H3'



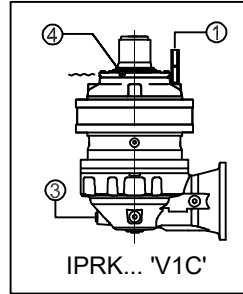
IPRK... 'H4'



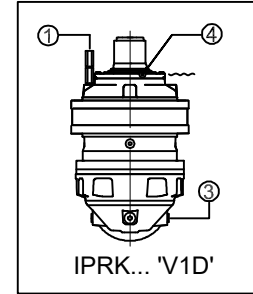
IPRK... 'V1A'



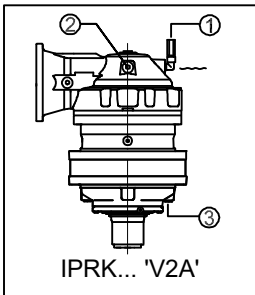
IPRK... 'V1B'



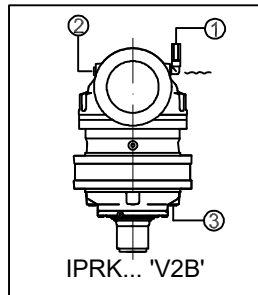
IPRK... 'V1C'



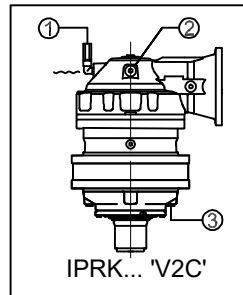
IPRK... 'V1D'



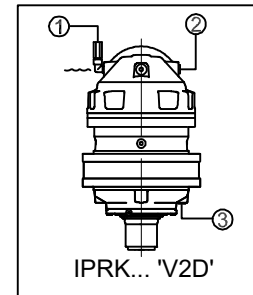
IPRK... 'V2A'



IPRK... 'V2B'



IPRK... 'V2C'



IPRK... 'V2D'

Sipariş esnasında montaj pozisyonunu dikkatlice belirtilmesi doğru tapan yerleşimi için gereklidir.

Please specify the mounting position carefully with the order for the correct plugging.

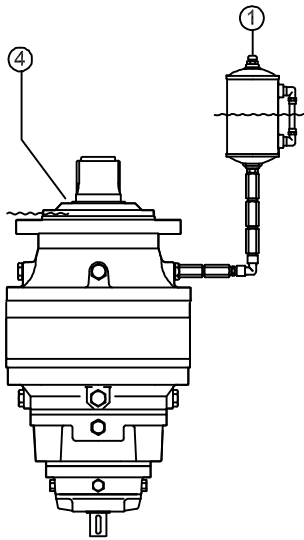
Bitte geben Sie die Position Montage sorgfältig mit dem Auftrag für die korrekte plugging.

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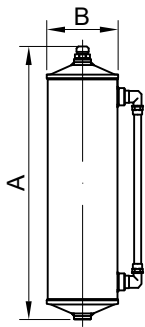
Genleşme Tankı

Dikey montaj uygulamalarında, genişleyen yağın toplanması için genişleme kabı kullanılması tavsiye edilir. Bu düzenek talep halinde servis edilir.

Genleşme tankı redüktör üzerine öyle yerleştirilmelidir ki, yağ seviyesi tüp üzerindeki ufak göstergelerden görünecek şekilde montaj pozisyonuna göre en üst seviyede ve daima nefeslik tapasının altında olmalıdır.



Aşağıdaki tablodan uygun tank tipi seçilir.



ET...

Expansion Tank

For vertical applications, it is recommended to use an expansion tank that can absorb any oil expansions and/or ensure topping up in hard to reach places. This fitting can be supplied onrequest.

The expansion tank must always be placed so the level of oil, which can be seen by means of a small transparent tube placed in parallel with the tank for instance (standard in some kits), is above the highest point you wish to lubricate and, hence, above the venting plugs (4).

- 1 Doldurma ve havalandırma
Filling up and venting
Füllen und Entlüften
- 4 Doldurma ve havalandırma
Venting while filling up
Entlüften beim Füllen
- Minimum seviye
Minimum level
Mindestölstand

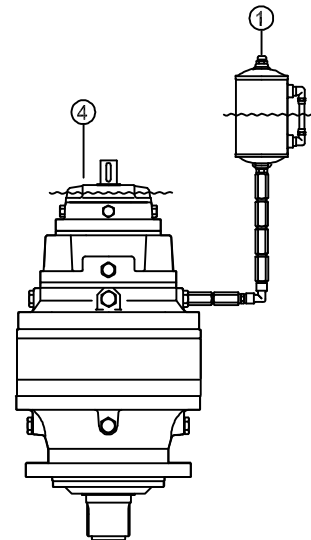
Please refer to the following table and relative figure for the sales codes and technical specifications of the tank kits.

Tip/Type/Typ	A (mm)	B (mm)	Kapasite / Capacity Fassung-vermögen [ml]
ET 150	115	60	135
ET 300	155	75	290
ET 1000	200	110	900
ET 1500	235	110	1500
ET 2000	300	120	2000

Ausgleichsbehälter

Fuer die vertikalen Einbaupositionen ist die Ausruestung mit einem Oelausgleichsbehaelter zu empfehlen. Dadurch ist gegeben, dass eventuelle Oeluebertritte vermieden und eine einfache Befuellung ermoeeglicht wird. Der Behaelter ist auf Nachfrage lieferbar.

Das Ausdehnungsgefäß muss so positioniert sein, dass sich der Ölstand, der zum Beispiel über eine durchsichtige Ölstandsanzeige parallel zum Gefäß (serienmäßig bei einigen Kits) angezeigt wird, oberhalb der höchsten Stelle befindet, die geschmiert werden soll, und damit oberhalb der Entlüftungsdeckel (4).



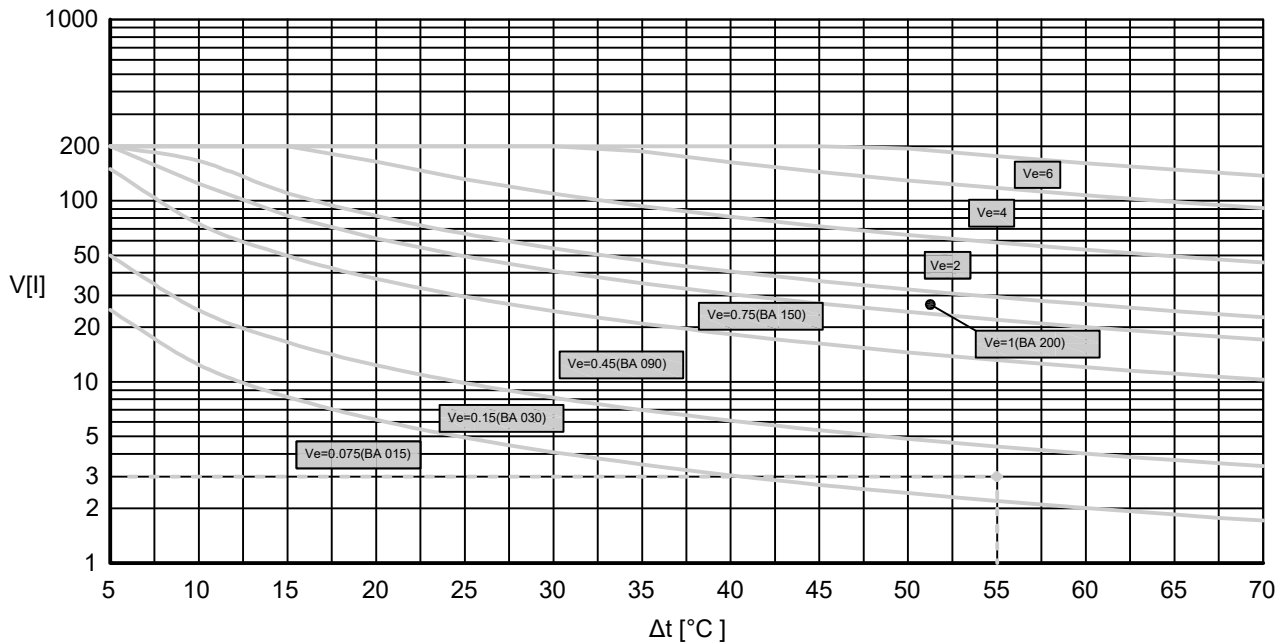
Die Bestellnummern und technischen Daten der Kits für Ausdehnungsgefäße können der Tabelle unten und der dazugehörigen Abbildung entnommen werden.

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Genleşme tankının seçimi genleşen yağ miktarının hacmine V_e 'ye bağlı olarak yapılır. Bu seçim aşağıdaki yol ile yapılır. Aşağıdaki grafikte, Δt farkını planet dişli kutusunun içindeki yağ sıcaklığı ile ortam sıcaklığının farkı alınır. V_e , redüktör içindeki gerekli yağ hacmi V eksenine ile Δ sıcaklık farkı eksenine birleştirilir. Bulunan nokta genleşen yağ miktarı V_e 'yi verir. V_e , tank bu hacmin iki misli olarak seçilir.

The selection of tank should be based on the volume of expanded oil V_e ; this can be found in the following way: in the following graph, find the point which has Δt difference between the reduction gear's oil temperature and ambient temperature as the abscissa and volume V of oil necessary to fill the reduction gear as the ordinate. On the basis of the area in which the point falls, you find the volume of expanded oil V_e and the tank is sized for double the volume calculated.

Für die Auswahl vom Behälter ist das Volumen vom ausgedehnten Öl V_e entscheidend, das wie folgt ermittelt werden kann: Auf der Grafik den Punkt ermitteln, dessen X-Koordinate die Differenz Δt zwischen der Öltemperatur im Getriebe und der Umgebungstemperatur ist und dessen Y-Koordinate das Volumen V vom Öl, das zum Füllen vom Getriebe erforderlich ist. Anhand des Bereichs auf der Grafik, in den der Punkt fällt, kann das Volumen V_e vom ausgedehnten Öl ermittelt werden. Der Behälter wird dann auf das doppelte Volumen des errechneten Werts ausgelegt.



Örnek

3 litre yağ kapasitesi olan bir planet dişli redüktör, 80°C de çalışıyor ve ortam sıcaklığı 25°C olan şartlarda bulunuyor. $\Delta t = 80 - 25 = 55^\circ\text{C}$ dereceyi Δt ekseninden 3 litre de V ekseninden olarak kesiştirelim. Bulunan noktanın genleşen yağ miktarı $V = 0,15$ litre alanında olduğu grafikten bulunur. Bu durumda tavsiye edilen tank hacmi iki misli olarak 0,30 litre olarak seçilir. Devam eden sayfalarda montaj şekline göre redüktörlerin yağ miktarları verilmiştir.

Example

Consider a reduction gear with an oil capacity of 3 litres at an operating temperature of 80°C and with an ambient temperature of 25°C. Finding the abscissa $\Delta t = 80 - 25 = 55^\circ\text{C}$ and ordinate $V = 3$ litres point on the graph, it belongs to the area with an expanded volume of $V_e = 0,15$ litres. The tank recommended should have a volume double that of V_e - that is 0.30 litres - so the ideal tank is the BA 030. On the following pages you will find the volumes of oil, purely indicative, necessary to fill up according to the assembly position.

Beispiel

Es wird von einem Getriebe mit einem Ölfassungsvermögen von 3 Litern bei Betriebstemperatur 80°C und Umgebungstemperatur 25°C ausgegangen. Es wird ein Punkt mit der X-Koordinate $\Delta t = 80 - 25 = 55^\circ\text{C}$ und der Y-Koordinate $V = 3$ ermittelt, der in den Bereich mit ausgedehntem Volumen von $V_e = 0,15$ lt fällt. Der Behälter sollte das Doppelte von V_e fassen, also 0,30 Liter. Geeignet ist damit der Behälter BA 030. Auf den folgenden Seiten sind reine Richtwertefür die Ölmenge angegeben, die zum Füllen in der entsprechenden Montageposition erforderlich sind.

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Schmiermenge

		Montaj pozisyonları (lt) 'H' Mounting positions (lt) 'H' Einbaulagen (lt) 'H'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPR 101	S1	0,5	0,5	0,5	0,5	0,5	-	0,8
	S2	0,7	0,7	0,7	0,7	0,7	-	1
	S3	0,9	0,9	0,9	0,9	0,9	-	1,2
	S4	1,1	1,1	1,1	1,1	1,1	-	1,4
IPR 103	S1	-	0,6	0,6	0,6	0,6	-	0,9
	S2	-	0,8	0,8	0,8	0,8	-	1,1
	S3	-	1	1	1	1	-	1,3
	S4	-	1,2	1,2	1,2	1,2	-	1,5
IPR 105	S1	-	1	1,2	0,8	1	1	1,5
	S2	-	1,3	1,5	1,1	1,3	1,3	1,8
	S3	-	1,5	1,7	1,3	1,5	1,5	2
	S4	-	1,7	1,9	1,5	1,7	1,7	2,2
IPR 107	S1	-	1,1	1,3	0,9	1,1	1,1	1,6
	S2	-	1,5	1,7	1,3	1,5	1,5	2
	S3	-	1,8	2	1,6	1,8	1,8	2,3
	S4	-	2	2,2	1,8	2	2	2,5
IPR 109	S1	-	-	1,6	1,6	1,6	-	2,4
	S2	-	-	2	2	2	-	2,8
	S3	-	-	2,3	2,3	2,3	-	3,1
	S4	-	-	2,5	2,5	2,5	-	3,3
IPR 111	S1	-	2,4	-	2,4	2,4	2,4	3,6
	S2	-	3,1	-	3,1	3,1	3,1	4,3
	S3	-	3,5	-	3,5	3,5	3,5	4,7
	S4	-	3,8	-	3,8	3,8	3,8	5
IPR 113	S1	2,6	-	4,3	1,9	2,6	2,6	3,9
	S2	3,3	-	5	2,6	3,3	3,3	4,6
	S3	3,7	-	5,4	3	3,7	3,7	5
	S4	4	-	5,7	3,3	4	4	5,3
IPR 115	S2	3,9	-	5,6	3,2	3,9	3,9	5,2
	S3	4,6	-	6,3	3,9	4,6	4,6	5,9
	S4	4,9	-	6,6	4,2	4,9	4,9	6,2
IPR 117	S1	3,7	3,7	-	2,9	-	2,9	3,7
	S2	4,6	4,6	-	3,8	-	3,8	4,6
	S3	5	5	-	4,2	-	4,2	5
	S4	5,3	5,3	-	4,5	-	4,5	5,3
IPR 119	S2	5,3	5,3	-	4,5	-	4,5	5,3
	S3	5,8	5,8	-	5	-	5	5,8
	S4	6,1	6,1	-	5,3	-	5,3	6,1
IPR 121	S1	4	4	-	3,3	-	3,3	4
	S2	5,5	5,5	-	4,7	-	4,7	5,5
	S3	6	6	-	5,2	-	5,2	6
	S4	6,3	6,3	-	5,5	-	5,5	6,3
IPR 123	S1	5,2	5,2	-	4,5	-	4,5	5,2
	S2	6,5	6,5	-	5,8	-	5,8	6,5
	S3	7,1	7,1	-	6,4	-	6,4	7,1
	S4	7,5	7,5	-	6,9	-	6,9	7,5

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		Montaj pozisyonları (lt) 'H' Mounting positions (lt) 'H' Einbaulagen (lt) 'H'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPR 125	S1	7,2	7,2	-	6,2	-	6,2	7,2
	S2	8,5	8,5	-	7,5	-	7,5	8,5
	S3	9,7	9,7	-	8,7	-	8,7	9,7
	S4	10,1	10,1	-	9,1	-	9,1	10,1
IPR 127	S1	8,7	-	-	8,7	-	8,7	8,7
	S2	10	-	-	10	-	10	10
	S3	11,2	-	-	11,2	-	11,2	11,2
	S4	11,6	-	-	11,6	-	11,6	11,6
IPR 129	S1	15	-	-	16,4	-	16,4	-
	S2	16,4	-	-	16,9	-	16,9	-
	S3	17,6	-	-	17,5	-	17,5	-
	S4	18,1	-	-	18,2	-	18,2	-
	S5	18,4	-	-	18,5	-	18,5	-
IPR 131	S1	21	-	-	21	-	21	-
	S2	23,4	-	-	23,4	-	23,4	-
	S3	24,8	-	-	24,8	-	24,8	-
	S4	25,2	-	-	25,2	-	25,2	-
	S5	25,5	-	-	25,5	-	25,5	-
IPR 133	S1	21	-	-	21	-	21	-
	S2	23,4	-	-	23,4	-	23,4	-
	S3	24,8	-	-	24,8	-	24,8	-
	S4	25,2	-	-	25,2	-	25,2	-
	S5	25,5	-	-	25,5	-	25,5	-
IPR 135	S1	42,5	-	-	42,5	-	42,5	-
	S2	46,5	-	-	46,5	-	46,5	-
	S3	47,9	-	-	47,9	-	47,9	-
	S4	48,7	-	-	48,7	-	48,7	-
	S5	49,1	-	-	49,1	-	49,1	-
IPR 137	S1	42,5	-	-	42,5	-	42,5	-
	S2	46,5	-	-	46,5	-	46,5	-
	S3	47,9	-	-	47,9	-	47,9	-
	S4	48,7	-	-	48,7	-	48,7	-
	S5	49,1	-	-	49,1	-	49,1	-
IPR 139	S1	50	-	-	50	-	50	-
	S2	60	-	-	60	-	60	-
	S3	62,5	-	-	62,5	-	62,5	-
	S4	63,5	-	-	63,5	-	63,5	-
	S5	64	-	-	64	-	64	-
IPR 141	S1	50	-	-	50	-	50	-
	S2	60	-	-	60	-	60	-
	S3	62,5	-	-	62,5	-	62,5	-
	S4	63,5	-	-	63,5	-	63,5	-
	S5	64	-	-	64	-	64	-

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		Montaj pozisyonları (lt) 'H' Mounting positions (lt) 'H' Einbaulagen (lt) 'H'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPR 101	S1	-	1	1	1	1	-	1,6
	S2	-	1,4	1,4	1,4	1,4	-	2
	S3	-	1,8	1,8	1,8	1,8	-	2,4
	S4	-	2,2	2,2	2,2	2,2	-	2,8
IPR 103	S1	-	1,2	1,2	1,2	1,2	-	1,8
	S2	-	1,6	1,6	1,6	1,6	-	2,2
	S3	-	2	2	2	2	-	2,6
	S4	-	2,4	2,4	2,4	2,4	-	3
IPR 105	S1	-	2	2,4	1,6	2	2	3
	S2	-	2,6	3	2,2	2,6	2,6	3,6
	S3	-	3	3,4	2,6	3	3	4
	S4	-	3,4	3,8	3	3,4	3,4	4,4
IPR 107	S1	-	2,2	2,6	1,8	2,2	2,2	3,2
	S2	-	3	3,4	2,6	3	3	4
	S3	-	3,6	4	3,2	3,6	3,6	4,6
	S4	-	4	4,4	3,6	4	4	5
IPR 109	S1	-	-	3,2	3,2	3,2	-	4,8
	S2	-	-	4	4	4	-	5,6
	S3	-	-	4,6	4,6	4,6	-	6,2
	S4	-	-	5	5	5	-	6,6
IPR 111	S1	-	4,8	-	4,8	4,8	4,8	7,2
	S2	-	6,2	-	6,2	6,2	6,2	8,6
	S3	-	7	-	7	7	7	9,4
	S4	-	7,6	-	7,6	7,6	7,6	10
IPR 113	S1	5,2	-	8,6	3,8	5,2	5,2	7,8
	S2	6,6	-	10	5,2	6,6	6,6	9,2
	S3	7,4	-	10,8	6	7,4	7,4	10
	S4	8	-	11,4	6,6	8	8	10,6
IPR 115	S2	7,8	-	11,2	6,4	7,8	7,8	10,4
	S3	9,2	-	12,6	7,8	9,2	9,2	11,8
	S4	9,8	-	13,2	8,4	9,8	9,8	12,4
IPR 117	S1	7,4	7,4	-	5,8	-	5,8	7,4
	S2	9,2	9,2	-	7,6	-	7,6	9,2
	S3	10	10	-	8,4	-	8,4	10
	S4	10,6	10,6	-	9	-	9	10,6
IPR 119	S2	10,6	10,6	-	9	-	9	10,6
	S3	11,6	11,6	-	10	-	10	11,6
	S4	12,2	12,2	-	10,6	-	10,6	12,2
IPR 121	S1	8	8	-	6,6	-	6,6	8
	S2	11	11	-	9,4	-	9,4	11
	S3	12	12	-	10,4	-	10,4	12
	S4	12,6	12,6	-	11	-	11	12,6
IPR 123	S1	10,4	10,4	-	9	-	9	10,4
	S2	13	13	-	11,6	-	11,6	13
	S3	14,2	14,2	-	12,8	-	12,8	14,2
	S4	15	15	-	13,8	-	13,8	15

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		Montaj pozisyonları (It) 'H' Mounting positions (It) 'H' Einbaulagen (It) 'H'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPR 125	S1	14,4	12,4	-	12,4	-	12,4	14,4
	S2	17	15	-	15	-	15	17
	S3	19,4	17,4	-	17,4	-	17,4	19,4
	S4	20,2	18,2	-	18,2	-	18,2	20,2
IPR 127	S1	17,4	17,4	-	17,4	-	17,4	17,4
	S2	20	20	-	20	-	20	20
	S3	22,4	22,4	-	22,4	-	22,4	22,4
	S4	23,2	23,2	-	23,2	-	23,2	23,2
IPR 129	S1	-	-	-	-	-	-	-
	S2	32,8	32,8	-	32,8	-	32,8	32,8
	S3	35,2	35,2	-	35,2	-	35,2	35,2
	S4	36,2	36,2	-	36,2	-	36,2	36,2
	S5	36,8	36,8	-	36,8	-	36,8	36,8
IPR 131	S1	-	-	-	-	-	-	-
	S2	46,8	-	-	46,8	-	46,8	46,8
	S3	49,6	-	-	49,6	-	49,6	49,6
	S4	50,4	-	-	50,4	-	50,4	50,4
	S5	51	-	-	51	-	51	51
IPR 133	S1	-	-	-	-	-	-	-
	S2	46,8	-	-	46,8	-	46,8	46,8
	S3	49,6	-	-	49,6	-	49,6	49,6
	S4	50,4	-	-	50,4	-	50,4	50,4
	S5	51	-	-	51	-	51	51
IPR 135	S1	-	-	-	-	-	-	-
	S2	93	-	-	93	-	93	93
	S3	95,8	-	-	95,8	-	95,8	95,8
	S4	97,4	-	-	97,4	-	97,4	97,4
	S5	98,2	-	-	98,2	-	98,2	98,2
IPR 137	S1	-	-	-	-	-	-	-
	S2	93	-	-	93	-	93	93
	S3	95,8	-	-	95,8	-	95,8	95,8
	S4	97,4	-	-	97,4	-	97,4	97,4
	S5	98,2	-	-	98,2	-	98,2	98,2
IPR 139	S1	-	-	-	-	-	-	-
	S2	120	-	-	120	-	120	120
	S3	125	-	-	125	-	125	125
	S4	127	-	-	127	-	127	127
	S5	128	-	-	128	-	128	128
IPR 141	S1	-	-	-	-	-	-	-
	S2	120	-	-	120	-	120	120
	S3	125	-	-	125	-	125	125
	S4	127	-	-	127	-	127	127
	S5	128	-	-	128	-	128	128

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		Montaj pozisyonları (lt) 'H1,H2,H3,H4' Mounting positions (lt) 'H1,H2,H3,H4' Einbaulagen (lt) 'H1,H2,H3,H4'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPRK 101	S2	-	2	2	2	2	-	2,3
	S3	-	2,2	2,2	2,2	2,2	-	1,2
	S4	-	2,4	2,4	2,4	2,4	-	1,4
IPRK 103	S2	-	2,1	2,1	2,1	2,1	-	2,1
	S3	-	2,3	2,3	2,3	2,3	-	2,3
	S4	-	2,5	2,5	2,5	2,5	-	2,8
IPRK 105	S2	-	2,6	2,8	2,8	2,8	2,8	3,1
	S3	-	2,8	3	3	3	3	3,3
	S4	-	3	3,2	3,2	3,2	3,2	3,5
IPRK 107	S2	-	3,1	3,1	3,1	3,1	3,1	1,6
	S3	-	3,2	3,2	3,2	3,2	3,2	2
	S4	-	3,3	3,3	3,3	3,3	3,3	2,3
IPRK 109	S2	-	-	3,6	3,6	3,6	-	4,4
	S3	-	-	3,8	3,8	3,8	-	4,6
	S4	-	-	4	4	4	-	4,8
IPRK 111	S2	-	4,4	-	4,4	4,4	4,4	5,6
	S3	-	5,1	-	5,1	5,1	5,1	6,3
	S4	-	6,5	-	6,5	6,5	6,5	7,7
IPRK 113	S2	4,6	4,6	-	4,6	4,6	4,6	5,9
	S3	5,3	5,3	-	5,3	5,3	5,3	6,6
	S4	6,5	6,5	-	6,5	6,5	6,5	7,8
IPRK 115	S2	5,6	5,6	-	5,6	5,6	5,6	6,9
	S3	5,9	5,9	-	5,9	5,9	5,9	7,2
	S4	6,6	6,6	-	6,6	6,6	6,6	7,9
IPRK 117	S2	6,6	6,6	-	5,8	-	5,8	6,6
	S3	7	7	-	6,2	-	6,2	7
	S4	9,1	9,1	-	8,3	-	8,3	9,1
IPRK 119	S2	-	-	-	-	-	-	-
	S3	8,2	8,2	-	7	-	7	8,2
	S4	10,2	10,2	-	9,4	-	9,4	10,2
IPRK 121	S2	6,7	6,7	-	5,8	-	5,8	6,7
	S3	8,2	8,2	-	7	-	7	8,2
	S4	10,2	10,2	-	9,4	-	9,4	10,2
IPRK 123	S2	8,5	8,5	-	5,8	-	5,8	8,5
	S3	9,1	9,1	-	7	-	7	9,1
	S4	10,5	10,5	-	9,4	-	9,4	10,5
IPRK 125	S2	-	-	-	-	-	-	-
	S3	11,7	11,7	-	10,7	-	10,7	11,7
	S4	14,2	14,2	-	13,2	-	13,2	14,2
IPRK 127	S2	-	-	-	-	-	-	-
	S3	13,2	13,2	-	13,2	-	13,2	13,2
	S4	15,7	15,7	-	15,7	-	15,7	15,7
IPRK 129	S2	-	-	-	-	-	-	-
	S3	20,1	20,1	-	20,1	-	20,1	-
	S4	20,6	20,6	-	20,6	-	20,6	-

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Yağ Miktarı

Oil Quantity

Schmiermenge

		Montaj pozisyonları (lt) 'H1,H2,H3,H4' Mounting positions (lt) 'H1,H2,H3,H4' Einbaulagen (lt) 'H1,H2,H3,H4'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPRK 131	S2	26,4	-	-	26,4	-	26,4	-
	S3	27,2	-	-	27,2	-	27,2	-
	S4	27,8	-	-	27,8	-	27,8	-
IPRK 133	S2	26,4	-	-	26,4	-	26,4	-
	S3	27,2	-	-	27,2	-	27,2	-
	S4	27,8	-	-	27,8	-	27,8	-
IPRK 135	S4	50,7	-	-	50,7	-	50,7	-
	S5	50,9	-	-	50,9	-	50,9	-
IPRK 137	S3	50,7	-	-	50,7	-	50,7	-
	S4	50,9	-	-	50,9	-	50,9	-
IPRK 139	S4	66,5	-	-	66,5	-	66,5	-
	S5	66,5	-	-	66,5	-	66,5	-
IPRK 141	S5	66,5	-	-	66,5	-	66,5	-

		Montaj pozisyonları (lt) 'V1,V2, (A,B,C,D)' Mounting positions (lt) 'V1,V2, (A,B,C,D)' Einbaulagen (lt) 'V1,V2, (A,B,C,D)'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPRK 101	S2	4	4	4	4	4	-	4,6
	S3	4,4	4,4	4,4	4,4	4,4	-	5
	S4	4,8	4,8	4,8	4,8	4,8	-	5,4
IPRK 103	S2	4,2	4,2	4,2	4,2	4,2	-	4,8
	S3	4,6	4,6	4,6	4,6	4,6	-	5,2
	S4	5	5	5	5	5	-	5,6
IPRK 105	S2	-	5,2	6	4,8	5,2	5,2	6,2
	S3	-	5,6	6,4	5,2	5,6	5,6	6,6
	S4	-	6	7,6	5,6	6	6	7
IPRK 107	S2	-	6,2	6	6,2	6,2	6,2	7,2
	S3	-	6,4	6,4	6,4	6,4	6,4	7,4
	S4	-	6,6	7,6	6,6	6,6	6,6	7,6
IPRK 109	S2	-	-	7,2	7,2	7,2	-	8,8
	S3	-	-	7,6	7,6	7,6	-	9,2
	S4	-	-	8	8	8	-	9,6
IPRK 111	S2	-	8,8	8,8	8,8	8,8	8,8	11,2
	S3	-	10,2	10,2	10,2	10,2	10,2	12,6
	S4	-	13	13	13	13	13	15,4
IPRK 113	S2	9,2	-	12,6	7,8	9,2	9,2	11,8
	S3	10,6	-	14	9,2	10,6	10,6	13,2
	S4	13	-	14,6	11,6	13	13	15,6
IPRK 115	S2	11,2	-	14,6	9,8	11,2	11,2	13,8
	S3	11,8	-	15,2	10,4	11,8	11,8	14,4
	S4	13,2	-	16,6	11,8	13,2	13,2	15,8

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Yağ Miktarı

Oil Quantity

Schmieroimenge

		Montaj pozisyonları (lt) 'V1,V2, (A,B,C,D)' Mounting positions (lt) 'V1,V2, (A,B,C,D)' Einbaulagen (lt) 'V1,V2, (A,B,C,D)'						
		MS - MC	FS - FC	HS - HC	SD	SF	S	FVS - C
IPRK 117	S2	13,2	13,2	-	7,8	-	9,2	11,8
	S3	14	14	-	9,2	-	10,6	13,2
	S4	18,2	18,2	-	11,6	-	13	15,6
IPRK 119	S3	16,4	16,4	-	14	-	14	16,4
	S4	20,4	20,4	-	18,8	-	18,8	20,4
IPRK 121	S2	13,4	4,2	-	11,6	-	11,6	13,4
	S3	16,4	4,6	-	14	-	14	16,4
	S4	20,4	5	-	18,8	-	18,8	20,4
IPRK 123	S2	17	17	-	15,6	-	15,6	17
	S3	18,2	18,2	-	16,8	-	16,8	18,2
	S4	22	22	-	20,6	-	20,6	22
IPRK 125	S3	23,4	23,4	-	21,4	-	21,4	23,4
	S4	28,4	28,4	-	26,4	-	26,4	28,4
IPRK 127	S3	26,4	-	-	26,4	-	26,4	24,4
	S4	31,4	-	-	31,4	-	31,4	28,9
IPRK 129	S3	24,4	-	-	22,5	-	22,5	24,4
	S4	28,9	-	-	27	-	27	28,9
IPRK 131	S3	52,8	-	-	52,8	-	52,8	-
	S4	54,4	-	-	54,4	-	54,4	-
	S5	55,6	-	-	55,6	-	55,6	-
IPRK 133	S3	52,8	-	-	52,8	-	52,8	-
	S4	54,4	-	-	54,4	-	54,4	-
	S5	55,6	-	-	55,6	-	55,6	-
IPRK 135	S4	101,4	-	-	101,4	-	101,4	-
	S5	101,8	-	-	101,8	-	101,8	-
IPRK 137	S4	101,4	-	-	101,4	-	101,4	-
	S5	101,8	-	-	101,8	-	101,8	-
IPRK 139	S4	131	-	-	131	-	131	-
	S5	133	-	-	133	-	133	-
IPRK 141	S4	131	-	-	131	-	131	-

Genellikle Planet dişli kutularımız, yağsız sevk edilirler.

Generally, Planetary Drives are supplied without lubricant.

HINWEIS: saemtliche Getriebe Planetary Drives werden ohne Oelfullung ausgeliefert.

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Yardımcı Soğutma

Sisteminin ana elemanları; yağ hava ısı eşanjörü, sabit debili bir dişli pompa, bir elektrik motor bir dönüş hattı üzerinde bir filtre(60 µm filtrelili) bir koaksiyel fan pompalı ve iki adet termostat dişli kutusu üzerine monteli bir adedi minimum çalışma sıcaklığı için 60°C'ye ayarlanmıştır. Bir diğeri ise maksimum sıcaklığa ayarlanmıştır. Bu sıcaklık aşırsa bir alarm verilebilir veya redüktör durdurulur. Aynı zamanda sistem basıncıda ölçülür.

Ek olarak montaj pozisyonlarına uygun olarak dik çalışma durumunda sisteme yağ genişleme tanklarından ilave edilmelidir. Uygun olan 2 lt.'lik modeldir.(ET2000)

Talep edilmesi halinde isteğe bağlı parçalar temin edilebilir.

- Akım ölçer görsel olarak yağ akışının izlenebilmesi için
- Basınç şalteri redüktör içindeki aşırı basıncı belirtmek için
- Devamlı sıcaklık ayarı ve bypass valfi ile kontrol edilir.
- Farklı filtreleme seçenekleri (10,25,90 ve 125 µm);
- Termostat farklı çalışma sıcaklıkları için(40°C veya 50°C)

Elektriksel ve hidrolik sistemlerin montajı çalıştırılması müşterinin sorumluluğundadır.

En uygun soğutma sistemi seçimi ısııl güç P_s dayak yapılmalıdır. Isıl güç ve sıcaklık farkı kullanılarak grafikten seçilir. $\Delta t = t_R - t_a$ dır.

t_R : Redüktör içindeki istenen yağ sıcaklığı

t_a : Ortam sıcaklığı

Auxiliary Cooling

Fundamental components of the auxiliary cooling system are: an oil-air heat exchanger, a gear pump (constant displacement type), an electric motor, a spin-on filter (with a filtering degree of 60 mm), a fan coaxial with the pump and two thermostats to install on the reduction gear, one set for the minimum system start-up temperature, which prevents the cooling unit starting until a temperature of 60°C is reached, and the other set for a maximum temperature which, when exceeded, can trigger an alarm and/or stop the reduction gear working and a gauge to see delivery pressure.

In addition, for the assembly positions with a vertical axis and, of course, wherever the reduction gear is filled up completely with lubricant, an expansion tank has to be mounted.

In these cases we recommend using the BA 200 expansion tank.

On request optional components can be supplied, such as:

- a flow meter so as to have a visual of the oil's passage;
- a pressure switch to indicate overpressures inside the reduction gear by the switching of an electrical contact;
- control unit with continuous adjustment of the temperature by means of a bypass valve;
- filter with a different filtering degree (10,25,90 or 125 µm);
- Thermostat with different start-up temperature (either 50°C or 40°C)

Connection of the electrical contacts and hydraulic circuit and all the material needed for it are the responsibility of the customer.

The choice of the most suitable system must be made based on the thermal power P_s you need to dissipate and on the D_i difference between the temperature of the oil inside the reduction gear t_R and ambient temperature t_a , using this graph to help you.

Kühlsystem

Das zusätzliche Kühlsystem umfasst folgende Komponenten: ein Öl-Luft-Wärmeaustauscher, eine Zahnradpumpe (mit vorgegebene Hubraum), ein Elektromotor, ein Spin-on Filter (Filterstärke 60 mm), ein koaxiales Gebläse zur Pumpe und zwei Thermostate, die am Planetengetriebe installiert werden. Ein Thermostat wird auf die Mindesttemperatur zum Starten vom Kühlsystem geeicht und verhindert das Einschalten vom Kühlsystem bis zu einer Temperatur von 60°C, der andere Thermostat wird auf die Höchsttemperatur geeicht, bei deren Überschreiten ein Alarm ausgelöst u/o das Planetengetriebe abgeschaltet werden kann und eine Manometer zu Anzeige vom Druck am Eingang.

Bei Montage in Position mit vertikaler Achse und immer dann, wenn mit voller Ölfüllung gearbeitet wird, muss außerdem ein Ausdehnungsgefäß installiert werden.

In diesen Fällen wird dazu geraten, das Ausdehnungsgefäß BA 200 zu installieren.

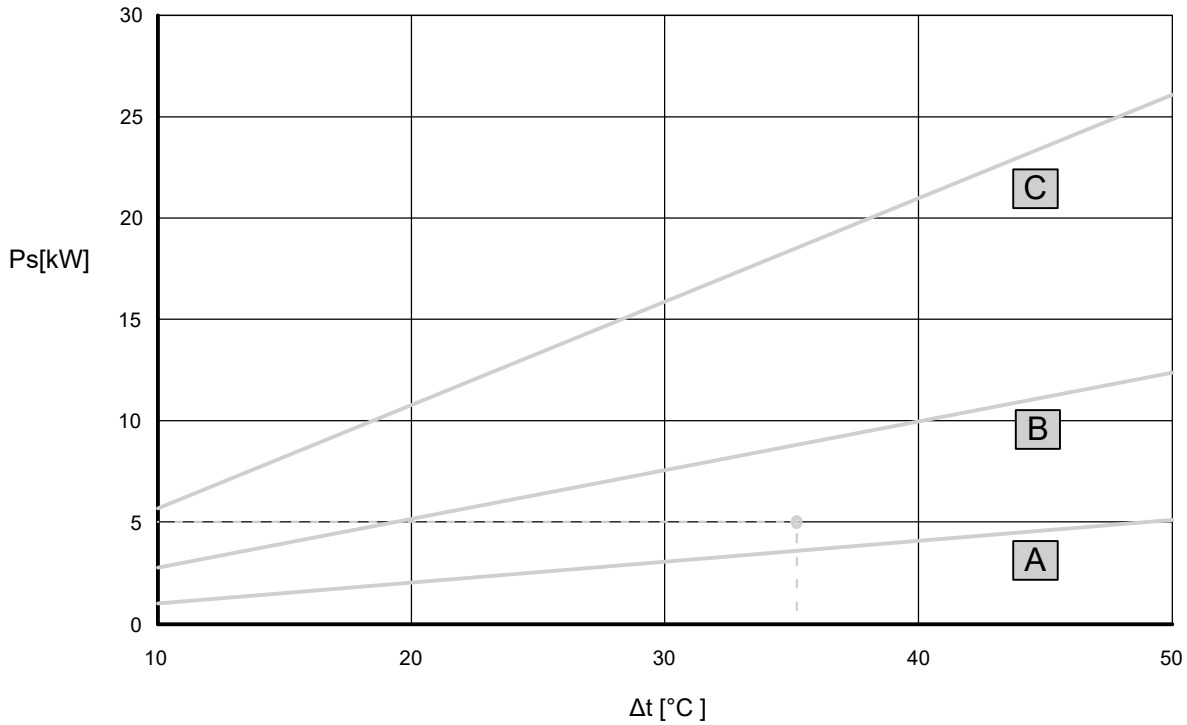
Auf Wunsch ist folgendes Zubehör erhältlich:

- Durchflussmesser mit Sichtglas für Ölfluss;
- Druckwächter zur Anzeige vom Überdruck im Planetengetriebe durch Umschalten eines elektrischen Kontakts;
- Steuergerät für stufenlose Temperaturregelung mittels Bypass-Ventil;
- Filter mit anderer Filterstärke (10, 25, 90 oder 125 µm);
- Thermostat mit unterschiedlicher Starttemperatur (50°C oder 40°C)

Für den Anschluss der elektrischen Kontakte und vom Ölkreislauf sowie die Bereitstellung des erforderlichen Materials ist der Kunde zuständig.

Das geeignete System wird anhand der Wärmeleistung P_s ausgewählt, die abgeleitet werden muss, und der Differenz D_t zwischen der Ötemperatur im Planetengetriebe t_R und der Umgebungstemperatur t_a , und zwar mit folgender Grafik:

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Örnek

Yardımcı bir soğutma sisteminin termal güç $P_s = 5 \text{ kW}$ için kullanıldığını düşünelim. Redüktör çalışma sıcaklığı 65°C ortam sıcaklığı 30°C 'dir. Bu durumda sıcaklık farkı $\Delta t = 65 - 30 = 35^\circ\text{C}$ bulunur. Δt ekseninde 35 ile P_s eksenindeki 5 kesiştirilirse bulunan noktanın B bölgesinde olduğu görülür ki uygun soğutma B tipidir.

Yardımcı soğutma sisteminin hidrolik tesisatı montaj pozisyonlarına bağlı olarak yağ girişlerinin ve çıkışlarının düzenli yağ akışına uygun olarak bağlanması gerekir. Bu şekilde yağın redüktör içinde düzenli değişmesi sağlanmalıdır. Eğer yağ girişi ufaksa bir kaç yerden giriş verilmeli ve pompa yağ akışına direnç azaltılmalıdır. Montaja bağlı olarak yağ genişleme tankı kullanılıyorsa ileriki sayfada görüleceği üzere, yağ çevrimine eklenmelidir.

Example

An auxiliary cooling system has to be sized to get rid of a thermal power of $P_s = 15 \text{ kW}$ from a reduction gear working at an operating temperature of 65°C with an ambient temperature of 30°C . Finding the abscissa $\Delta t = 65 - 30 = 35^\circ\text{C}$ and ordinate $P_s = 5 \text{ kW}$, point on the graph, it comes in the area marked with B. This means that the suitable system is, in fact, the B.

The hydraulic connection of the auxiliary cooling system must be done so as to intake the oil (and any detritus) from the lowest point (point (3) in the assembly positions figures) and have the delivery from a point far enough away from the intake to facilitate changing the oil from inside the reduction gear. If the intake hole is not big enough to get rid of the pump's flow, two or more intake points must be foreseen to guarantee against the risk of cavitation. Two or more connection holes may also be used for delivery, for example, in the case of multi-stage reduction gears

Beispiel

Ein zusätzliches Kühlsystem soll darauf ausgelegt werden, eine Wärmeleistung von $P_s = 5 \text{ kW}$ von einem Planetengetriebe abzuleiten, das mit einer Betriebstemperatur von 65°C und bei einer Umgebungstemperatur von 30°C läuft. Es wird ein Punkt mit der X-Koordinate $\Delta t = 65 - 30 = 35^\circ\text{C}$ und der Y-Koordinate $P_s = 5 \text{ kW}$, ermittelt, der im Bereich B liegt. Am besten geeignet ist damit das System B.

Der Hydraulikanschluss vom zusätzlichen Kühlsystem muss so erfolgen, dass das Öl (mit eventuellen Verunreinigungen) an der am weitesten unten liegenden Stelle (Punkt (3) auf den Abbildungen mit der Montageposition) angesaugt und die Druckleitung an einer Stelle angelegt wird, die sich in ausreichender Entfernung von der Ansaugleitung befindet, um den Ölaustausch im Planetengetriebe zu fördern. Sollte die Ansaugöffnung nicht groß genug sein, um den Durchsatz der Pumpe zu bedienen, müssen zwei oder mehr Ansaugstellen vorgesehen werden, um Hohlsockbildung zu vermeiden. Auch für die Druckleitung können zwei oder mehr Anschlüsse vorgesehen werden, zum Beispiel bei mehrstufigen Planetengetrieben

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Soğutma Sistemi Montaj Örnekleri

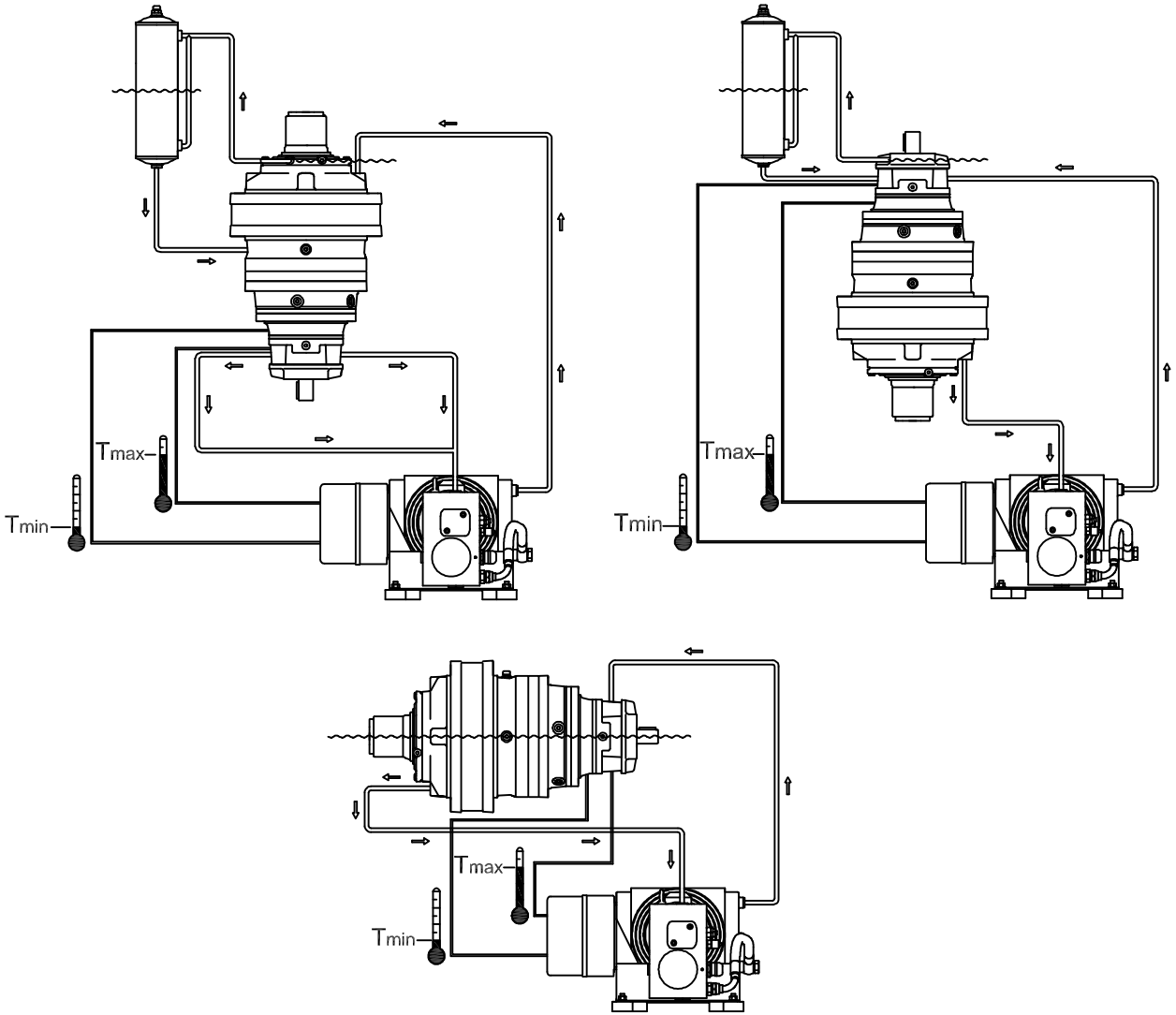
Yardımcı soğutma sisteminin montaj pozisyonlarına göre bağlantı şekillerine birkaç örnek görülmektedir. Yağ sisteminin giriş ve çıkış bağlantı şekilleri ve termostat montajları sistem çalışması yağ dengeleme tankının yağ sirkülasyonun ilavesine dikkat edilmektedir. Yağ sistem borularının montajında sistem basıncının çalışma sıcaklık aralığında (30°-90°) 2-3 bardan fazla müsaade edilmemelidir.

Cooling System Mounting Examples

The figure gives a few examples of connecting the auxiliary cooling system to the reduction gear, where you can see the intake and delivery hydraulic connections as well as the electrical connections of the thermostats that regulate system operation. The size of the delivery pipes must take into account the distance between the cooling unit and the reduction gear, being careful not to exceed an overall line pressure drop of 2-3 bar in the operating temperature range (30°C -90°C).

Kühlanlage Einbaumöglichkeiten

Die Abbildung zeigt einige Anschlussbeispiele vom Kühlsystem an das Planetengetriebe mit Angabe der Hydraulikanschlüsse von Saugund Druckleitung und der elektrischen Anschlüsse der Thermostate, die den Betrieb vom Kühlsystem regeln. Die Auslegung der Druckleitung muss den Abstand zwischen Kühlsystem und Planetengetriebe berücksichtigen. Dabei muss darauf geachtet werden, dass im Bereich der Betriebstemperatur (30°C-90°C) ein Druckabfall von insgesamt 2-3 Bar in der Leitung nicht überschritten wird.



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Eşanjör

Heat Exchanger

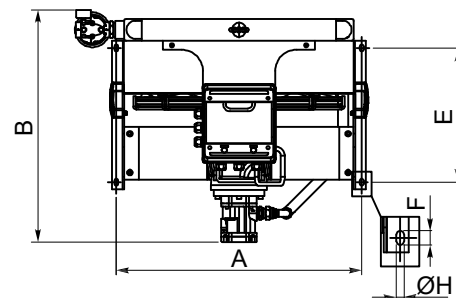
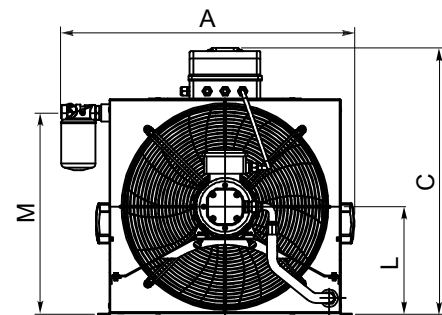
Wärmeaustauscher

		A	B	C
Yağ Debisi Oil Flow Rate Öldurchsatz	[l/min]	8	10	23
Isıl Güç Kapasitesi Thermal Power Dissipated Abgeleitete Wärmeleistung (per/where/für $\Delta t = t_R - T_a = 40^\circ\text{C}$)	[kW]	4	10	20
Hava Debisi Air Flow Rate Luftdurchsatz	[m³/h]	200	4080	4500
Güç Tüketimi Power Consumption Leistungsaufnahme	[kW]	5	0,75	1,1
Maksimum Basınç Maximum Pressure Höchstdruck	[bar]	6	6	6
Voltaj Power Voltage Versorgungsfrequenz	[V]	230/400	230/400	230/400
Güç Frekansı Power Frequency Versorgungsfrequenz	[Hz]	50/60	50/60	50/60
Koruma Sınırı Protection level Schutzart	IP	55	55	55
PDS KODU PDS Riduttori Code Code von PDS Riduttori	[-]	EA	EB	EC

Eşanjör yardımı ile kazanılan ısı güç ISO VG 150 yağ viskozitesi ile deniz seviyesindeki değerlerdir.

Power dissipated by the exchanger with oil viscosity: ISO VG 150 at 0 metres above sea level

Vom Wärmeaustauscher abgeleitete Leistung mit Öl mit Viskosität von ISO VG 150 bei 0 m ü. NN.



	A	B	C	D	E	F	ØH	L	M
EA	465	537	418,5	347	280	20	9	179,5	273,5
EB	682	549	616,5	555	300	20	9	278,5	471,5
EC	830	657	755	695	380	20	9	305	570,5

D,E,F,H: 4 sabitleme deliğın boyutları

D,E,F,H: Dimensions for the 4 fixing holes

D,E,F,H: Abmessungen bezogen auf die 4 Befestigungslöcher

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Redüktör Seçenekleri

Gearbox Options

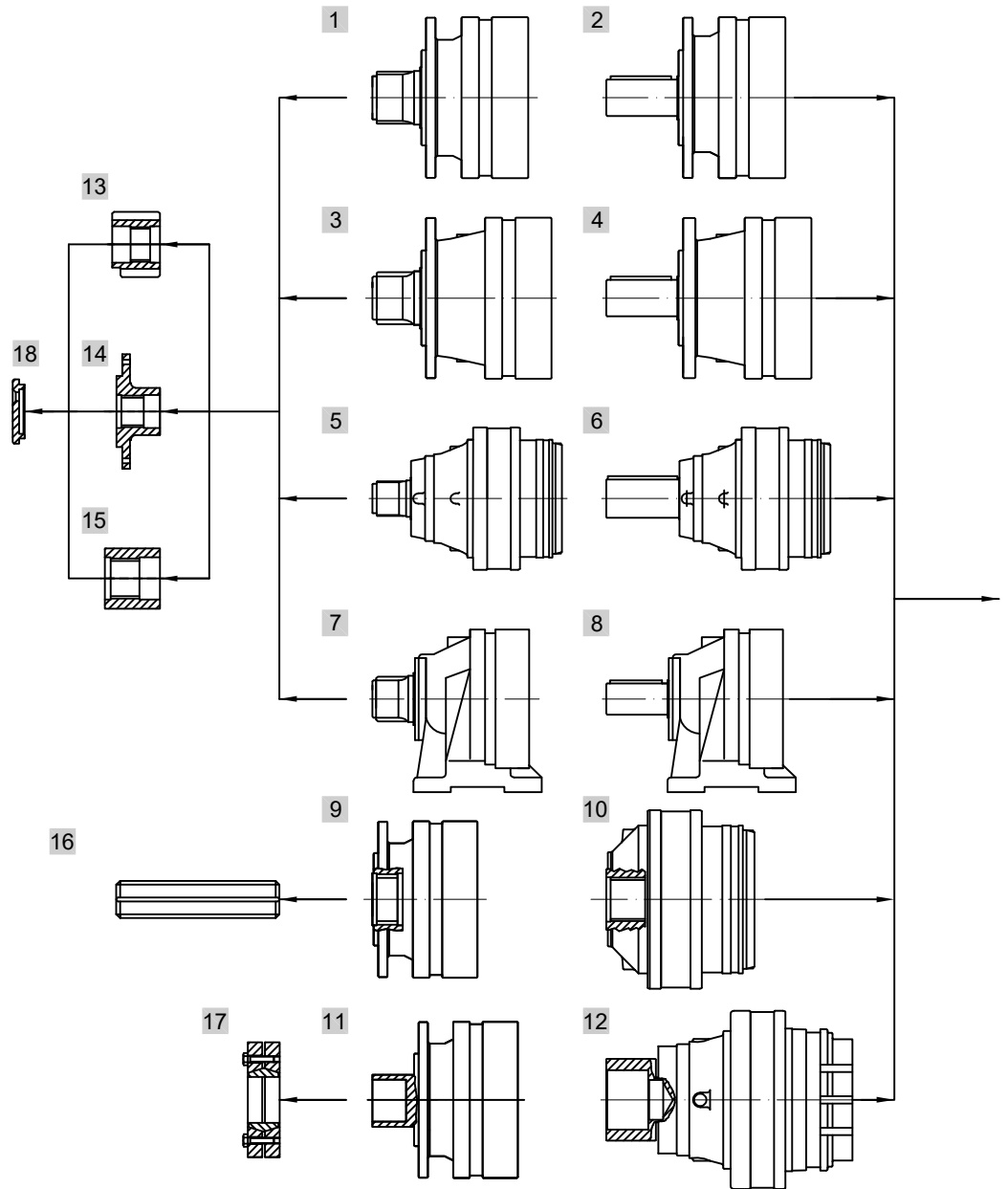
Getriebe Optionen

Çıkış Tipleri / Output Types / Output-Typen

- 1 FS
- 2 FC
- 3 HS
- 4 HC
- 5 MS
- 6 MC
- 7 FVS
- 8 FVC
- 9 SF
- 10 S
- 11 SDF
- 12 SD

Aksesuarlar / Accessories / Zubehör

- 13 PA / PB
- 14 FL
- 15 FK
- 16 FM
- 17 SB
- 18 SP



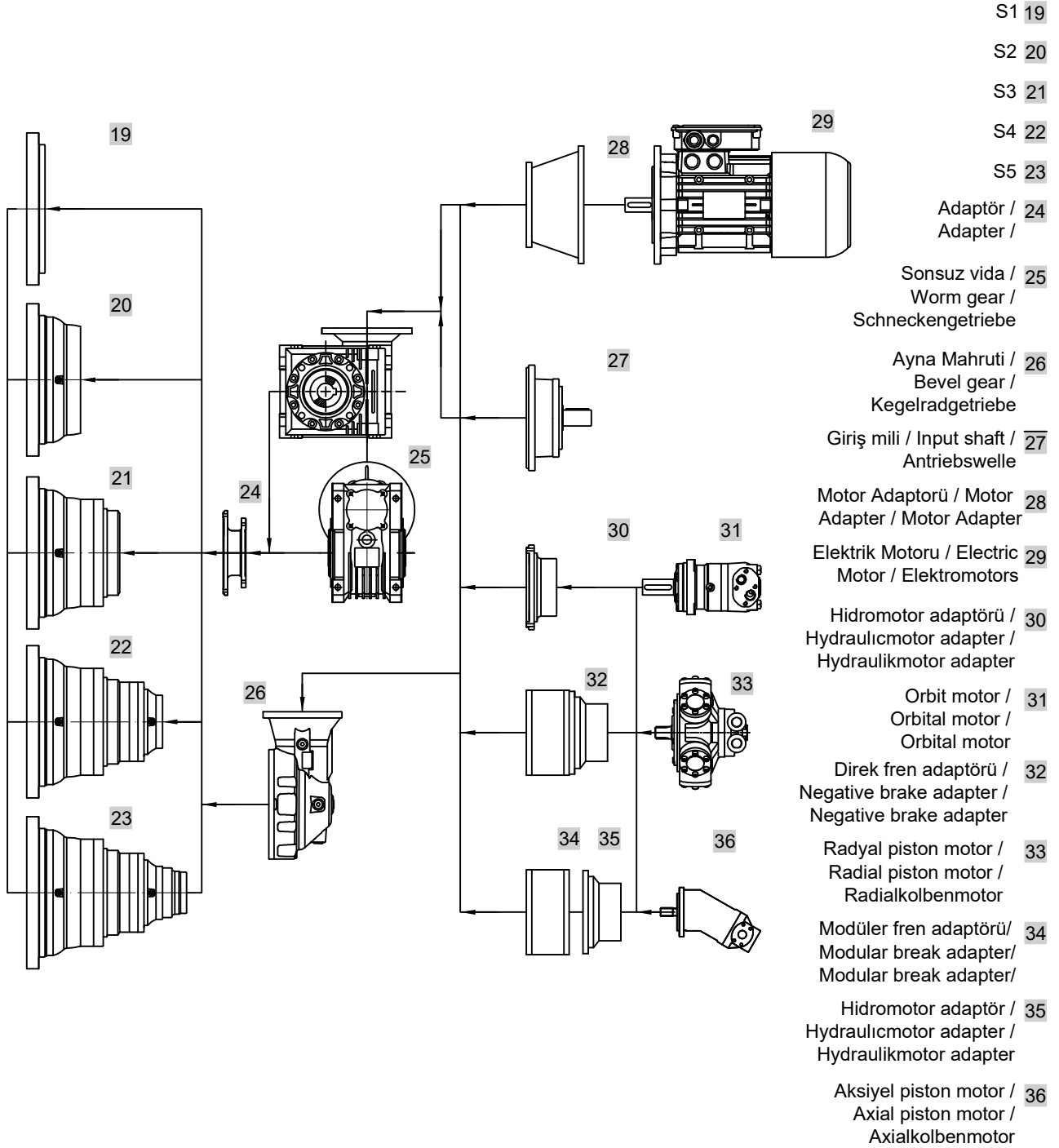
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Redüktör Seçenekleri

Gearbox Options

Getriebe Optionen

Redüktör kademeleri / Reduction Stages/ Stufenanzahl



BİLGİ/ INFORMATION / INFORMATIONEN

Sipariş Kodlaması

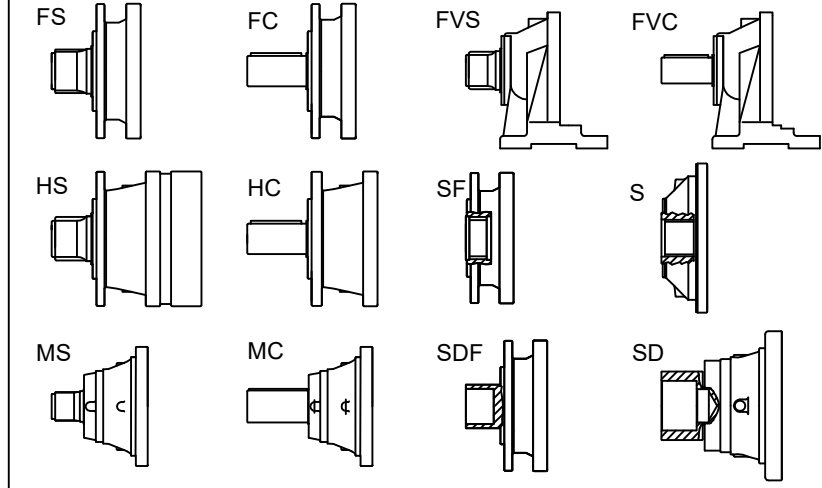
Ordering Code

Um Encoding

REDÜKTÖR / GEAR UNIT / GETRIEBE

I	P	R		1	0	1		S1		F	V	S							
---	---	---	--	---	---	---	--	----	--	---	---	---	--	--	--	--	--	--	--

Çıkış tipi / Output version / Ausgangsversion



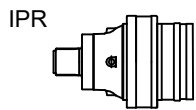
Redüksiyon kademesi / Reductions / N°Stufen

S1 , S2 , S3 , S4 , S5 , ...

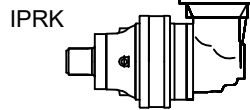
Redüktör boyutu / Gearbox frame size / Getriebebaugröße

101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,
131,133,135,137,139,141,143,145,147,149

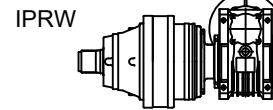
Redüktör tipi / Type of reduction unit / Bauform getriebestufen



IPR
Planet dişli redüktör
Inline gearbox
Inline getriebe



IPRK
Ayna mahrutu girişli planet dişli redüktör
Bevel stages planetary gear unit
Bevel Stufen Planetengetriebe



IPRW
Sonsuz vida girişli planet dişli redüktör
Worm gear stages planetary gear unit
Schneckengetriebe Stufen Planetengetriebe

BİLGİ/ INFORMATION / INFORMATIONEN

Sipariş Kodlaması

Ordering Code

Um Encoding

AKSESUARLAR / FITTINGS / BAUTEILE

G	M		V	1	M		P	B						
---	---	--	---	---	---	--	---	---	--	--	--	--	--	--

Çıkış Aksesuarları / Output Fittings / Zubehör Abtrieb

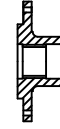
PA / PB



SP



FL



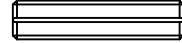
FK



FB



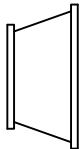
FM



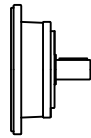
Çıkış aksesuarları için ilerideki teknik sayfalara bakınız. / For detailed information of output accesories see data pages. / Siehe datenblätter

MONTAJ POZİSYONU / MOUNTING POSITION / EINBAULAGEN

GİRİŞ / INPUT / EINGANG



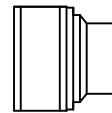
EM



GM

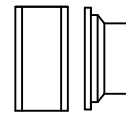


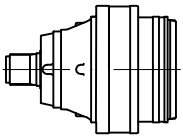
HM

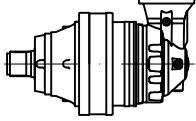


FNA

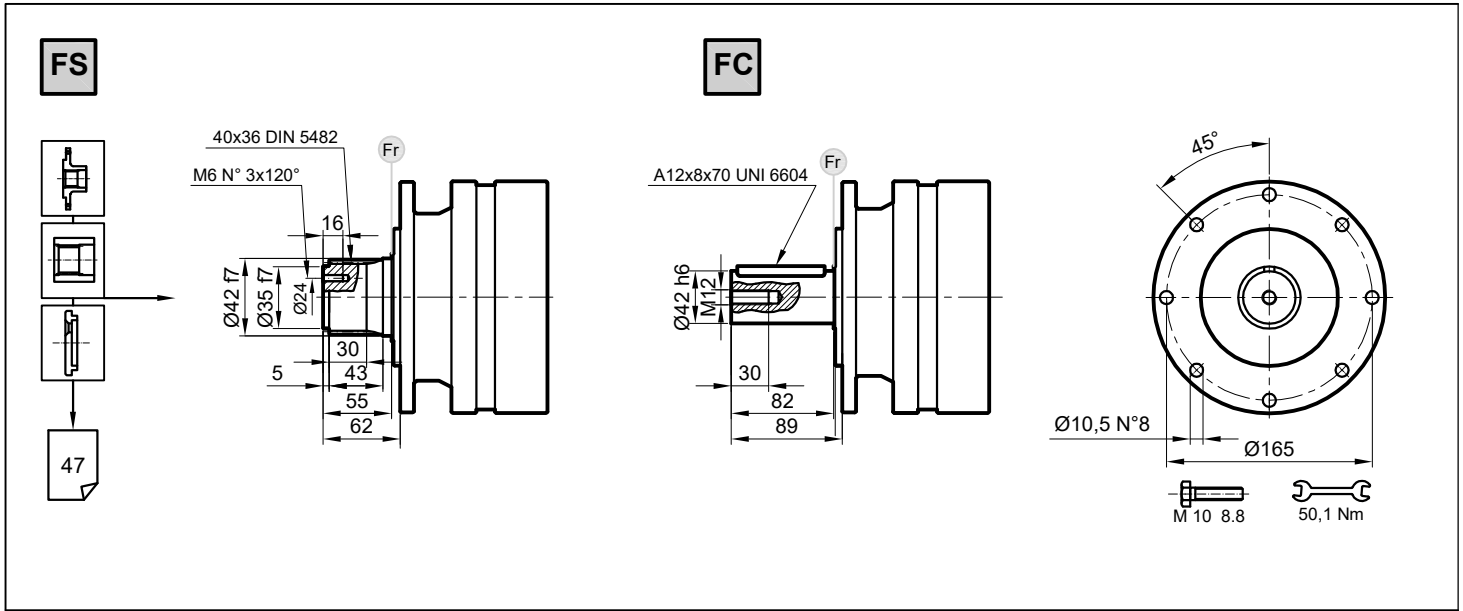
FN HM



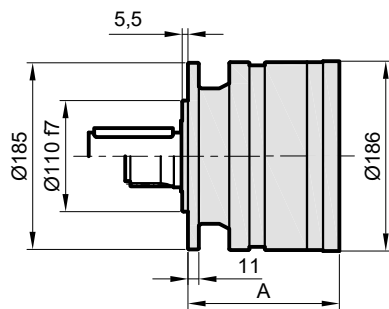
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 101 S1	3.55	1244	1100	945	832	2800	2220	12
	4.28	1244	1100	945	832	2800	2220	12
	5.60	901	800	683	601	2800	1590	12
	6.75	799	700	606	539	2800	1402	12
	8.67	512	450	388	343	2800	925	12
IPR 101 S2	12.6	1244	1100	945	832	2800	2220	8
	15.2	1244	1100	945	832	2800	2220	8
	19.9	1244	1100	945	832	2800	2220	8
	23.9	1244	1100	945	832	2800	2220	8
	28.9	1244	1100	945	832	2800	2220	8
	31.4	901	800	683	601	2800	1590	8
	37.8	901	800	683	601	2800	1590	8
	45.5	799	700	606	539	2800	1402	8
	58.5	799	700	606	539	2800	1402	8
IPR 101 S3	54.1	1244	1100	945	832	2800	2220	5
	65.3	1244	1100	945	832	2800	2220	5
	70.7	1244	1100	945	832	2800	2220	5
	78.7	1244	1100	945	832	2800	2220	5
	85.3	1244	1100	945	832	2800	2220	5
	102.8	1244	1100	945	832	2800	2220	5
	111.5	1244	1100	945	832	2800	2220	5
	134.3	1244	1100	945	832	2800	2220	5
	161.9	1244	1100	945	832	2800	2220	5
	172.5	1244	1100	945	832	2800	2220	5
	207.9	901	1100	683	601	2800	1590	5
	211.6	901	800	683	601	2800	1590	5
	255.1	901	800	683	601	2800	1590	5
	271.7	901	800	683	601	2800	1590	5
	307.5	799	700	606	539	2800	1402	5
	327.5	901	800	683	601	2800	1590	5
394.8	799	700	606	539	2800	1402	5	
IPR 101 S4	337.3	1244	1100	945	832	2800	2220	1.5
	365.7	1244	1100	945	832	2800	2220	1.5
	396.4	1244	1100	945	832	2800	2220	1.5
	440.8	1244	1100	945	832	2800	2220	1.5
	477.8	1244	1100	945	832	2800	2220	1.5
	531.3	1244	1100	945	832	2800	2220	1.5
	575.9	1244	1100	945	832	2800	2220	1.5
	624.4	1244	1100	945	832	2800	2220	1.5
	694.2	1244	1100	945	832	2800	2220	1.5
	752.6	1244	1100	945	832	2800	2220	1.5
	836.8	1244	1100	945	832	2800	2220	1.5
	907.1	1244	1100	945	832	2800	2220	1.5
	966.3	1244	1100	945	832	2800	2220	1.5
	1093.4	1244	1100	945	832	2800	2220	1.5
	1144.5	1244	1100	945	832	2800	2220	1.5
	1185.4	901	800	683	601	2800	1590	1.5
	1318.0	1244	1100	945	832	2800	2220	1.5
	1428.8	901	800	683	601	2800	1590	1.5
1692.3	1244	1100	945	832	2800	2220	1.5	
3422.1	799	700	606	539	2800	1402	1.5	



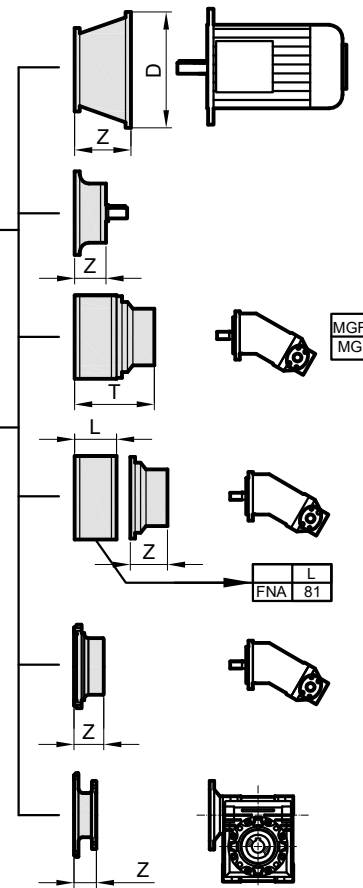
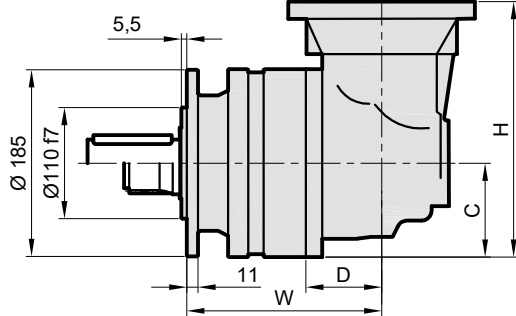
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 101 S2	10.4	1244	1100	945	832	2800	2220	8
	12.5	1244	1100	945	832	2800	2220	8
	16.4	901	800	683	601	2800	1590	8
	19.7	799	700	606	539	2800	1402	8
IPR 101 S3	37	1244	1100	945	832	2800	2220	5
	44.6	1244	1100	945	832	2800	2220	5
	53.8	1244	1100	945	832	2800	2220	5
	58.4	1244	1100	945	832	2800	2220	5
	70.3	1244	1100	945	832	2800	2220	5
	84.8	1244	1100	945	832	2800	2220	5
	91.9	901	800	683	601	2800	1590	5
	110.8	901	800	683	601	2800	1590	5
	133.6	799	700	606	539	2800	1402	5
	171.5	799	700	606	539	2800	1402	5
	IPR 101 S4	131.8	1244	1100	945	832	2800	2220
158.9		1244	1100	945	832	2800	2220	1.5
191.5		1244	1100	945	832	2800	2220	1.5
207.6		1244	1100	945	832	2800	2220	1.5
230.8		1244	1100	945	832	2800	2220	1.5
301.7		1244	1100	945	832	2800	2220	1.5
327		1244	1100	945	832	2800	2220	1.5
363.6		1244	1100	945	832	2800	2220	1.5
394.2		1244	1100	945	832	2800	2220	1.5
475.1		1244	1100	945	832	2800	2220	1.5
515.3		901	800	683	601	2800	1590	1.5
527.7		1244	1100	945	832	2800	2220	1.5
610.1		1244	1100	945	832	2800	2220	1.5
735.4		1244	1100	945	832	2800	2220	1.5
797.2		901	800	683	601	2800	1590	1.5
960.9		901	800	683	601	2800	1590	1.5
1158.2		799	700	606	539	2800	1402	1.5
1233.7		901	800	683	601	2800	1590	1.5
1487.1	799	700	606	539	2800	1402	1.5	



IPR..

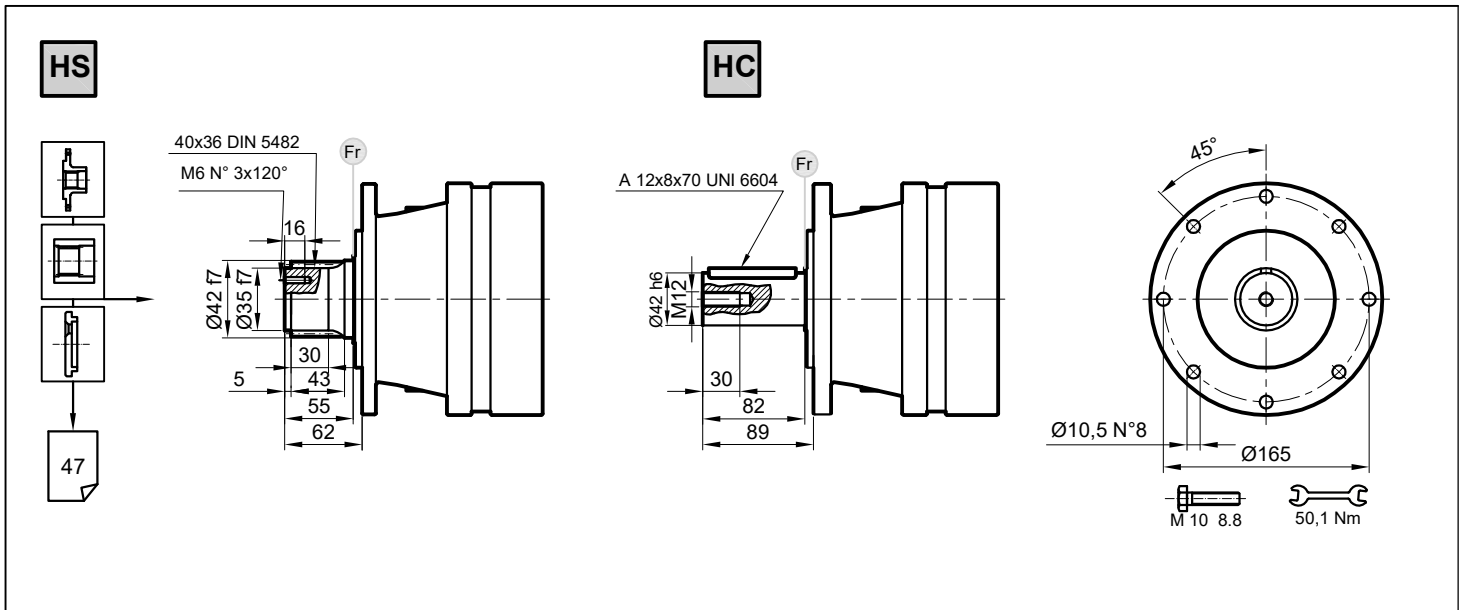


IPRK..

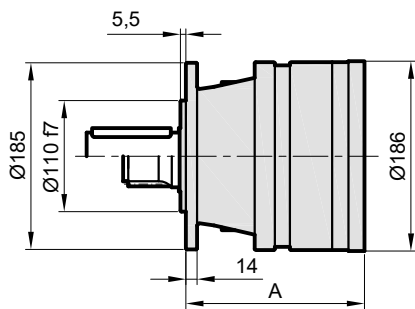


Stage	W	D	C	H	A	IPR		IPRK	
						F	U	F	U
S1	-	-	-	-	105	13	-	-	
S2	180	75	93	252	153	19	28		
S3	228	75	93	252	201	25	34		
S4	276	75	93	252	249	31	40		

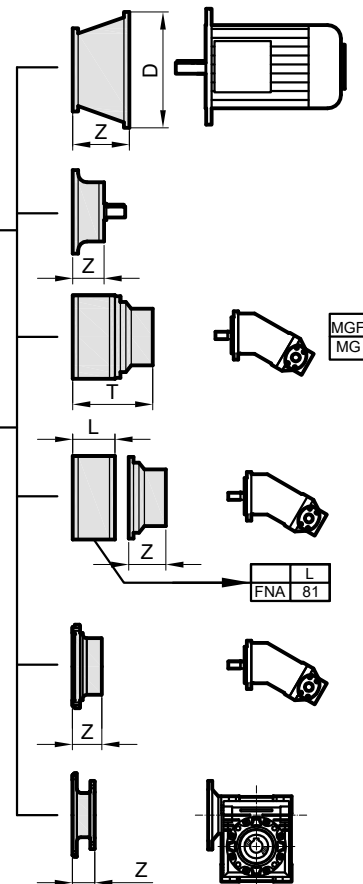
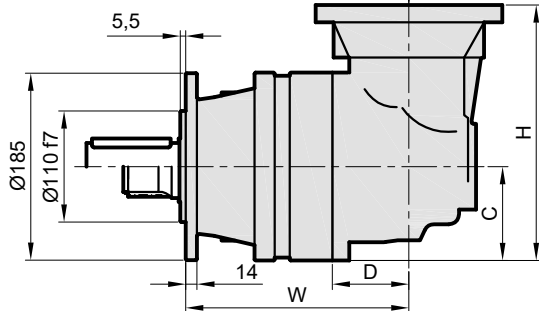
	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160/180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120



IPR..



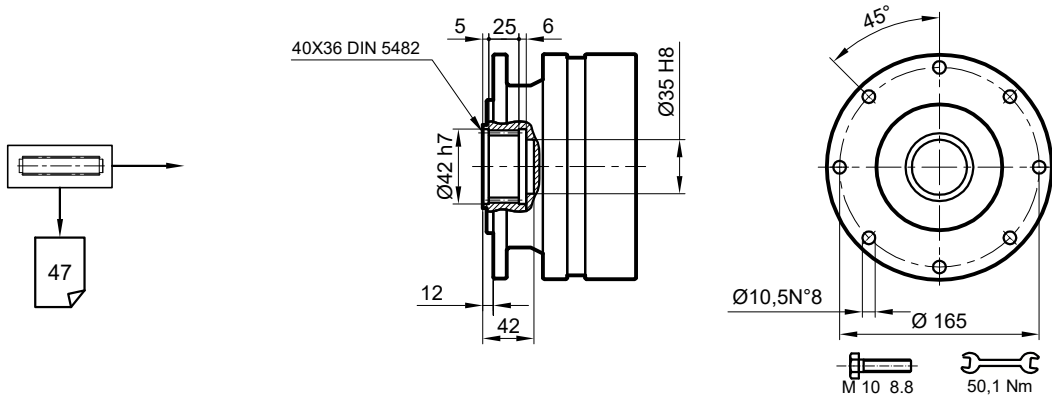
IPRK..



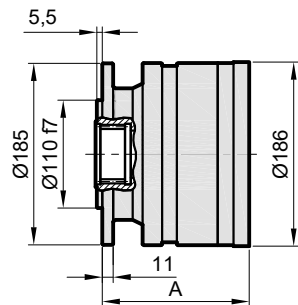
Stage	W	D	C	H	A	IPR H ₁	IPRK H ₁
S1	-	-	-	-	135	15	-
S2	210	75	93	252	183	21	30
S3	258	75	93	252	231	27	36
S4	306	75	93	252	279	33	42

	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

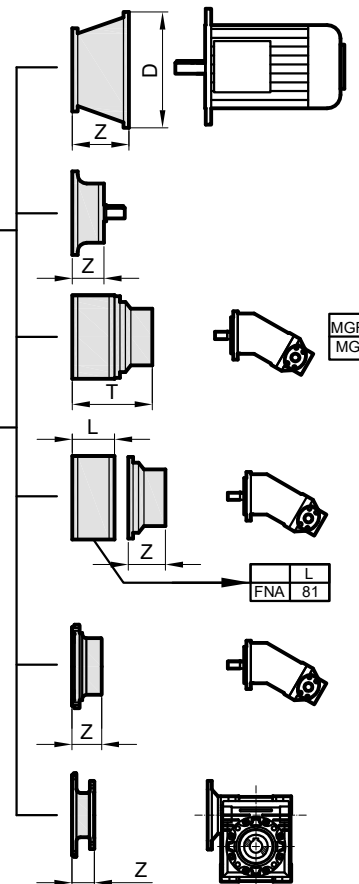
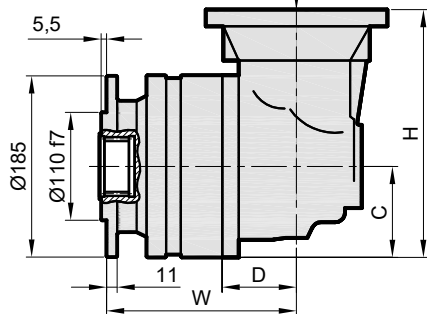
SF



IPR..



IPRK..



Stage	W	D	C	H	A	IPR		IPRK	
						SF	SF	SF	SF
S1	-	-	-	-	105	11	-	-	-
S2	180	75	93	252	153	17	26	-	-
S3	228	75	93	252	201	23	32	-	-
S4	276	75	93	252	249	29	38	-	-

Stage	IEC71		IEC 80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

SDF

47

$M_{max} = 2.2 \text{ kNm}$

45°

Ø10,5N°8

Ø165

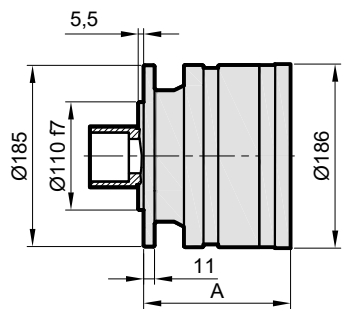
300 min.

M 10 8.8

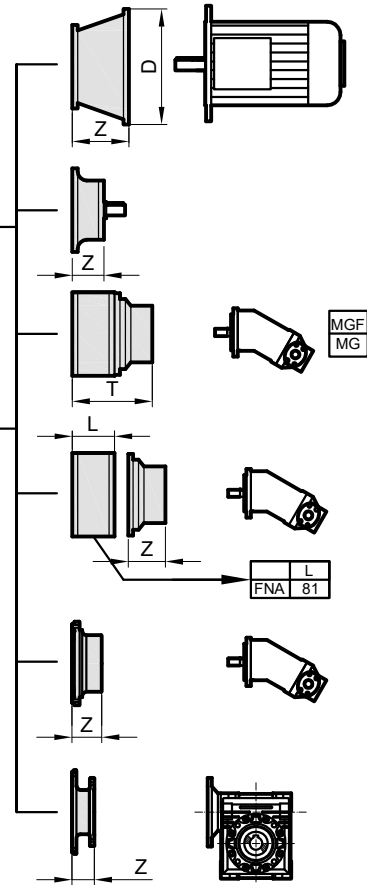
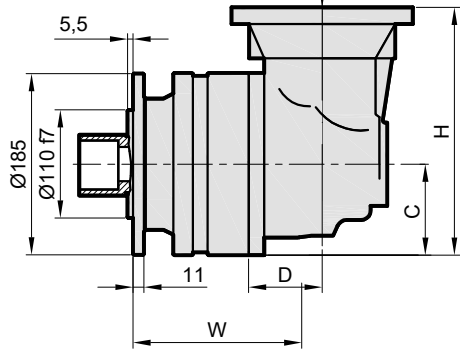
50,1 Nm

Belirtilen maksimum tork sadece I-Mak tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-Mak.
Das dargestellte , maximale Drehmoment gilt nur mit von I-Mak.

IPR..

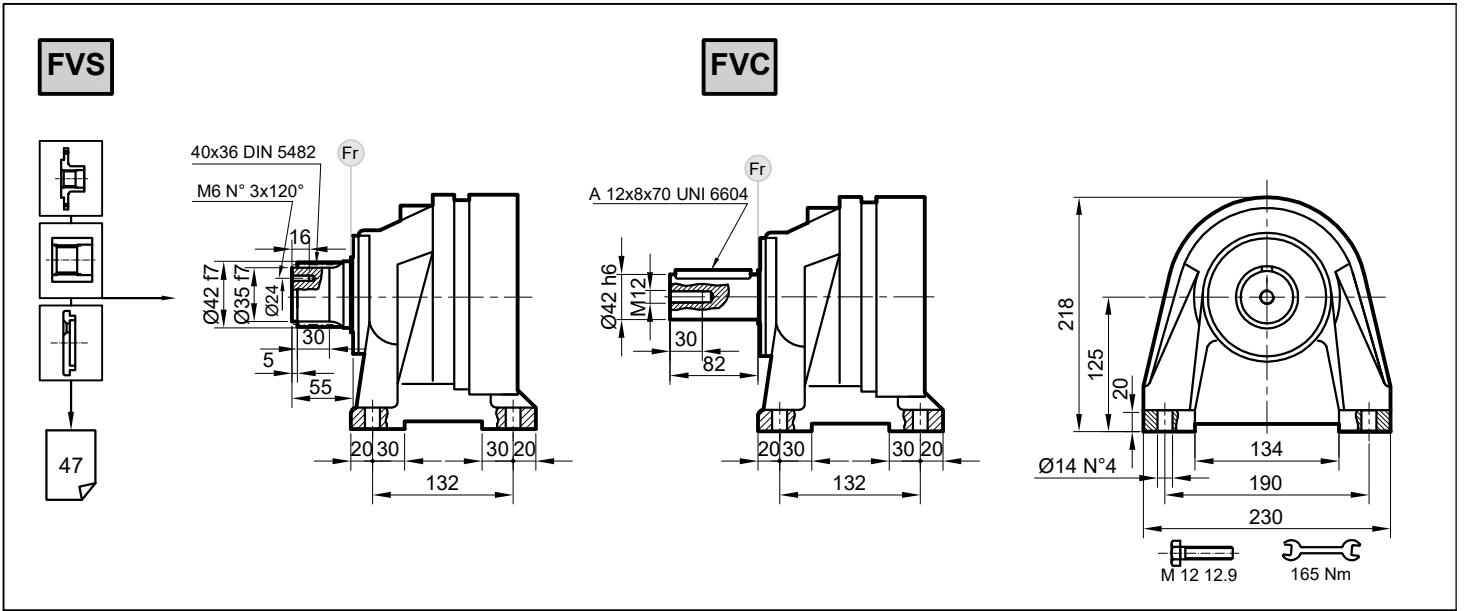


IPRK..



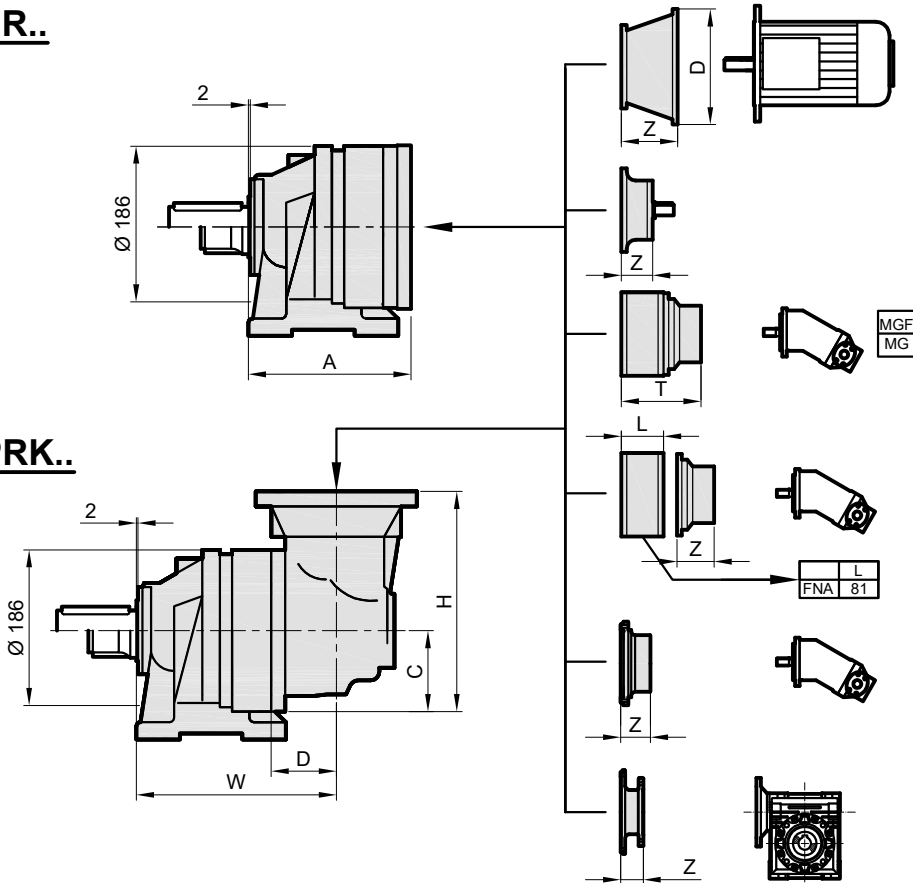
Stage	W	D	C	H	A	IPR		IPRK	
						SDF	SDF	SDF	SDF
S1	-	-	-	-	105	14	-	-	-
S2	180	75	93	252	153	20	29	-	-
S3	228	75	93	252	201	26	35	-	-
S4	276	75	93	252	249	32	41	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120



IPR..

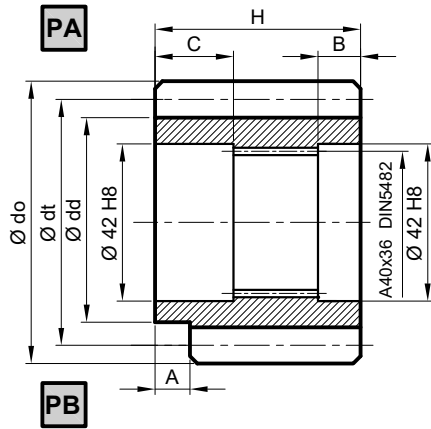
IPRK..



Stage	A	D	C	H	W	IPR FVC	IPRK FVC
S1	135	-	-	-	-	18	-
S2	183	75	93	252	217	24	33
S3	231	75	93	252	265	30	39
S4	279	75	93	252	313	36	45

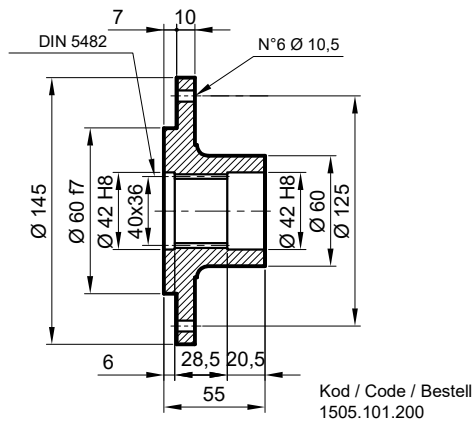
	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

P Pinyon / Pinion / Ritzel

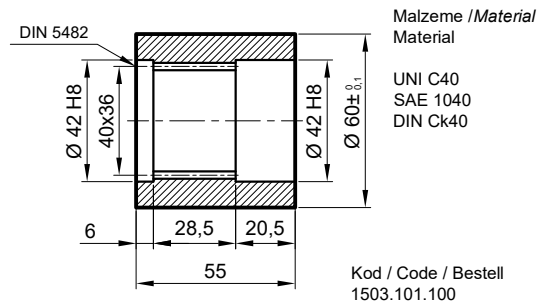
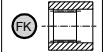


	m	z	x	dt	dd	do	H	A	B	C	Malzeme / Material	Kod / Code / Bestell
PA	5	14	0,500	70	62,5	62,5	65	0	10	53	39NiCrMo3	1501.101.001
PA	6	12	0,250	72	61	62,5	59	14	4	54	39NiCrMo3	1501.101.002
PB	6	14	0,500	84	73	62,5	65	0	10	54	39NiCrMo3	1502.101.001

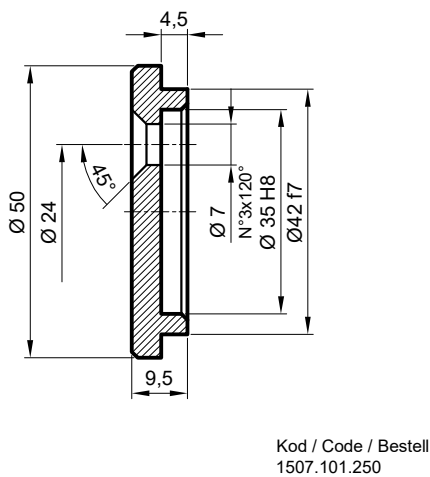
FL Flanş / Flange / Flansch



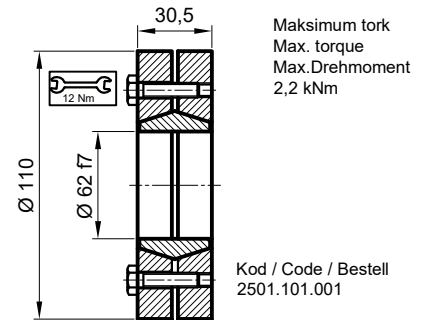
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



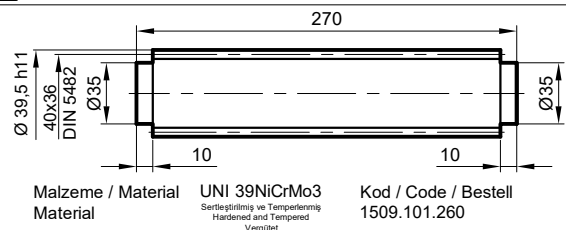
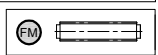
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



FM Frezeli Mil / Spined rod
Außenverzahnte Welle



RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

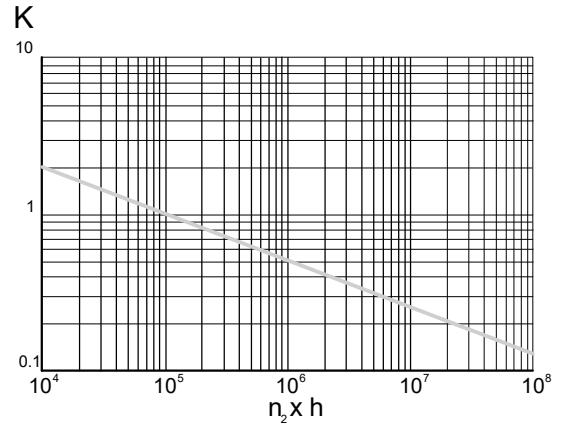
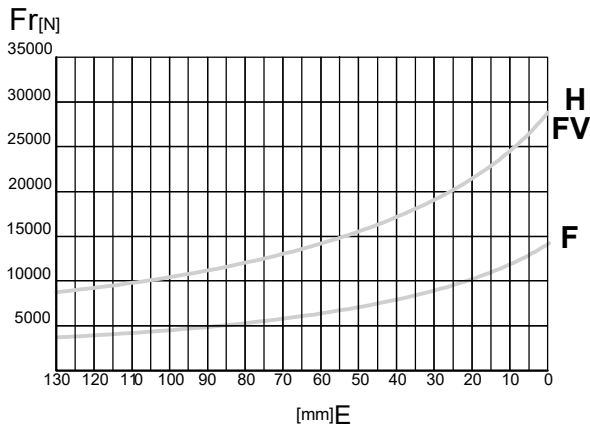
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

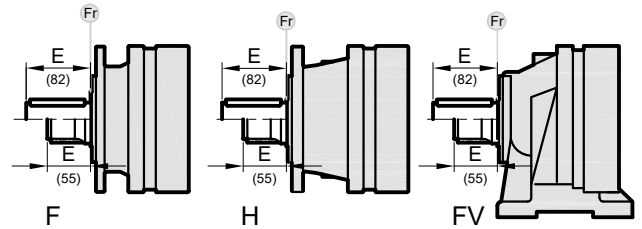
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

F-H-FV



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
F-H	Fr		$Fr \cdot K$		
FV	$Fr \cdot 0,75$		$Fr \cdot K \cdot 0,75$		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

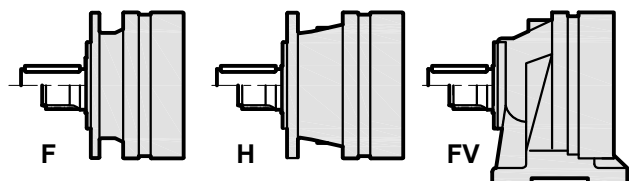
AXIAL LOADS (Fa)

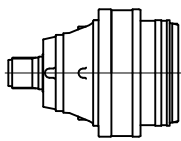
The values of the axial loads in the table refer to the output versions and load directions of application.

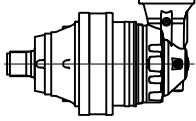
AXIALLAST (Fa)

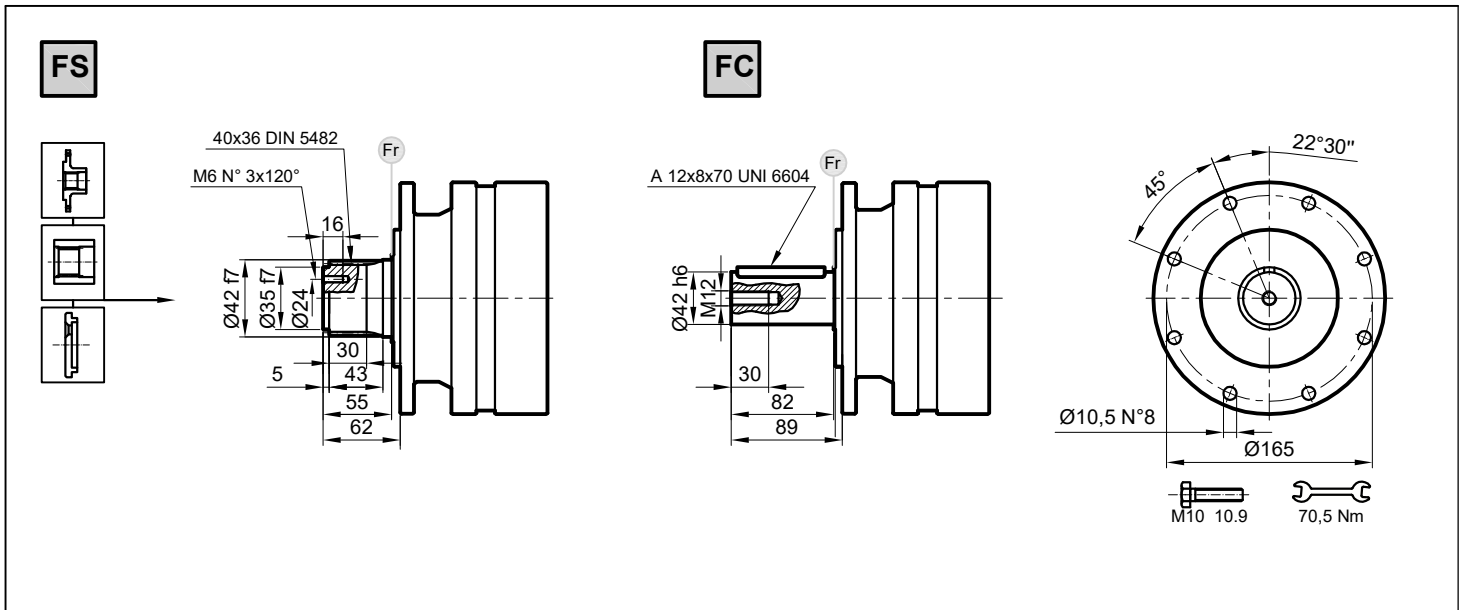
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	F	H-FV	← →
		16000	
	16000	18000	← →

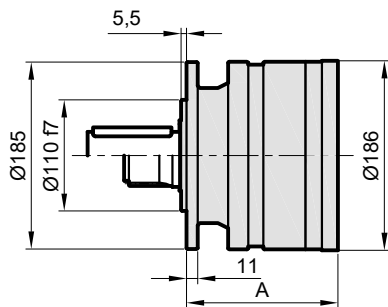


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 103 S1	3.55	1920	1700	1450	1280	2800	3400	12
	4.28	1920	1700	1450	1280	2800	3400	12
	5.60	1370	1210	1030	910	2800	2420	12
	6.75	1130	1000	850	750	2800	2000	12
	8.67	740	650	560	490	2800	1300	12
IPR 103 S2	12.6	1920	1700	1450	1280	2800	3400	8
	15.2	1920	1700	1450	1280	2800	3400	8
	19.9	1920	1700	1450	1280	2800	3400	8
	23.9	1920	1700	1450	1280	2800	3400	8
	28.9	1920	1700	1450	1280	2800	3400	8
	31.4	1370	1210	1030	910	2800	2420	8
	37.8	1370	1210	1030	910	2800	2420	8
	45.5	1130	1000	850	750	2800	2000	8
	58.5	1130	1000	850	750	2800	2000	8
IPR 103 S3	54.1	1920	1700	1450	1280	2800	3400	5
	65.3	1920	1700	1450	1280	2800	3400	5
	70.7	1920	1700	1450	1280	2800	3400	5
	78.7	1920	1700	1450	1280	2800	3400	5
	85.3	1920	1700	1450	1280	2800	3400	5
	102.8	1920	1700	1450	1280	2800	3400	5
	111.5	1920	1700	1450	1280	2800	3400	5
	134.3	1920	1700	1450	1280	2800	3400	5
	161.9	1920	1700	1450	1280	2800	3400	5
	172.5	1920	1700	1450	1280	2800	3400	5
	207.9	1920	1700	1450	1280	2800	3400	5
	211.6	1370	1210	1030	910	2800	2420	5
	255.1	1370	1210	1030	910	2800	2420	5
	271.7	1370	1210	1030	910	2800	2420	5
	307.5	1130	1000	850	750	2800	2000	5
327.5	1370	1210	1030	910	2800	2420	5	
394.8	1130	1000	850	750	2800	2000	5	
IPR 103 S4	337.3	1920	1700	1450	1280	2800	3400	1.5
	365.7	1920	1700	1450	1280	2800	3400	1.5
	396.4	1920	1700	1450	1280	2800	3400	1.5
	440.8	1920	1700	1450	1280	2800	3400	1.5
	477.8	1920	1700	1450	1280	2800	3400	1.5
	531.3	1920	1700	1450	1280	2800	3400	1.5
	575.9	1920	1700	1450	1280	2800	3400	1.5
	624.4	1920	1700	1450	1280	2800	3400	1.5
	694.2	1920	1700	1450	1280	2800	3400	1.5
	752.6	1920	1700	1450	1280	2800	3400	1.5
	836.8	1920	1700	1450	1280	2800	3400	1.5
	907.1	1920	1700	1450	1280	2800	3400	1.5
	966.3	1920	1700	1450	1280	2800	3400	1.5
	1093.4	1920	1700	1450	1280	2800	3400	1.5
	1144.5	1920	1700	1450	1280	2800	3400	1.5
	1185.4	1370	1210	1030	910	2800	2420	1.5
	1318.0	1920	1700	1450	1280	2800	3400	1.5
	1428.8	1370	1210	1030	910	2800	2420	1.5
1692.3	1920	1700	1450	1280	2800	3400	1.5	
3422.1	1130	1000	850	750	2800	2000	1.5	

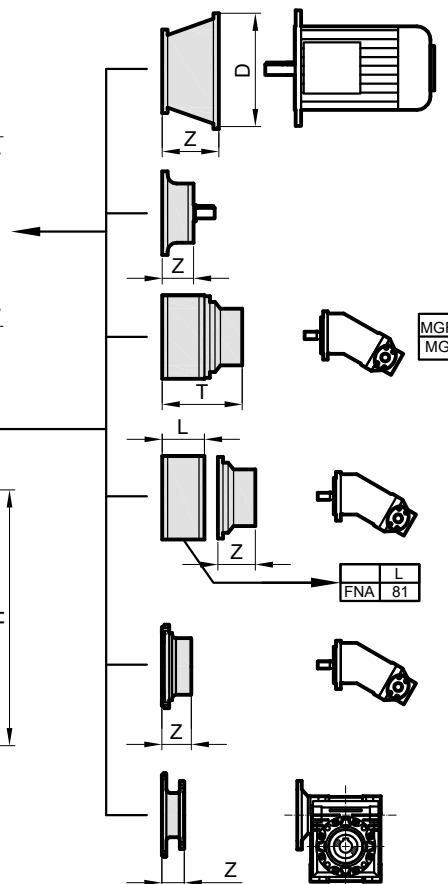
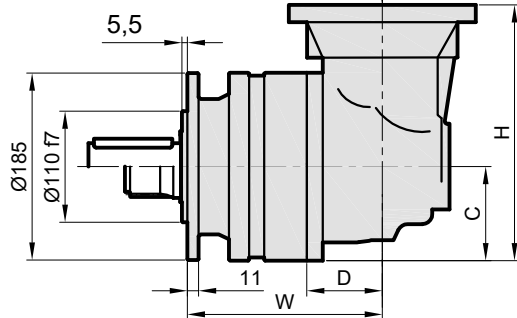
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 103 S2	10.4	1920	1700	1450	1280	2800	3400	8
	12.5	1920	1700	1450	1280	2800	3400	8
	16.4	1370	1210	1030	910	2800	2420	8
	19.7	1130	1000	850	750	2800	2000	8
IPRK 103 S3	37.0	1920	1700	1450	1280	2800	3400	5
	44.6	1920	1700	1450	1280	2800	3400	5
	53.8	1920	1700	1450	1280	2800	3400	5
	58.4	1920	1700	1450	1280	2800	3400	5
	70.3	1920	1700	1450	1280	2800	3400	5
	84.8	1920	1700	1450	1280	2800	3400	5
	91.9	1370	1210	1030	910	2800	2420	5
	110.8	1370	1210	1030	910	2800	2420	5
	133.6	1130	1000	850	750	2800	2000	5
	171.5	1130	1000	850	750	2800	2000	5
IPRK 103 S4	131.8	1920	1700	1450	1280	2800	3400	1.5
	158.9	1920	1700	1450	1280	2800	3400	1.5
	191.5	1920	1700	1450	1280	2800	3400	1.5
	207.6	1920	1700	1450	1280	2800	3400	1.5
	230.8	1920	1700	1450	1280	2800	3400	1.5
	301.7	1920	1700	1450	1280	2800	3400	1.5
	327.0	1920	1700	1450	1280	2800	3400	1.5
	363.6	1920	1700	1450	1280	2800	3400	1.5
	394.2	1920	1700	1450	1280	2800	3400	1.5
	475.1	1920	1700	1450	1280	2800	3400	1.5
	515.3	1370	1210	1030	910	2800	2420	1.5
	572.7	1920	1700	1450	1280	2800	3400	1.5
	610.1	1920	1700	1450	1280	2800	3400	1.5
	735.4	1920	1700	1450	1280	2800	3400	1.5
	797.2	1370	1210	1030	910	2800	2420	1.5
	960.9	1370	1210	1030	910	2800	2420	1.5
	1158.2	1130	1000	850	750	2800	2000	1.5
	1233.7	1370	1210	1030	910	2800	2420	1.5
1487.1	1130	1000	850	750	2800	2000	1.5	



IPR..

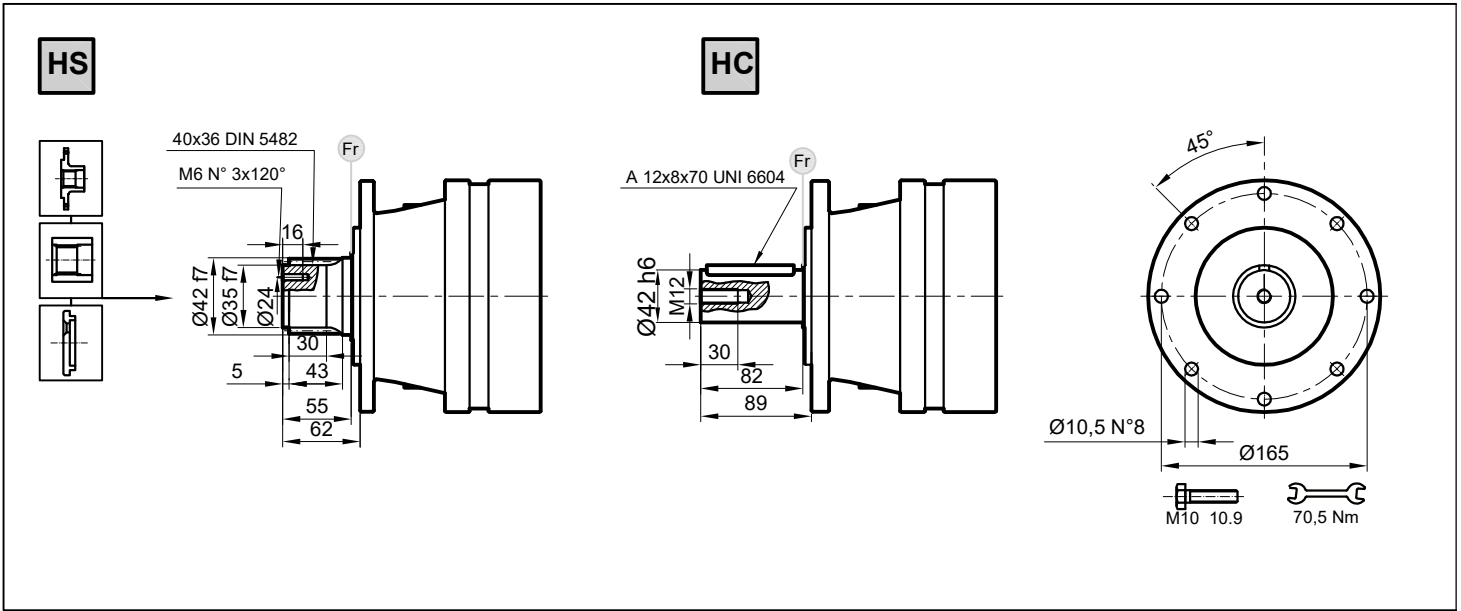


IPRK..

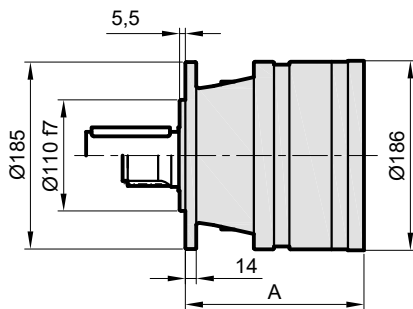


Stage	W	D	C	H	A	IPR		IPRK	
						F	Ü	F	Ü
S1	-	-	-	-	118	15	-	-	
S2	193	75	93	252	166	21	30		
S3	241	75	93	252	214	27	36		
S4	289	75	93	252	262	33	42		

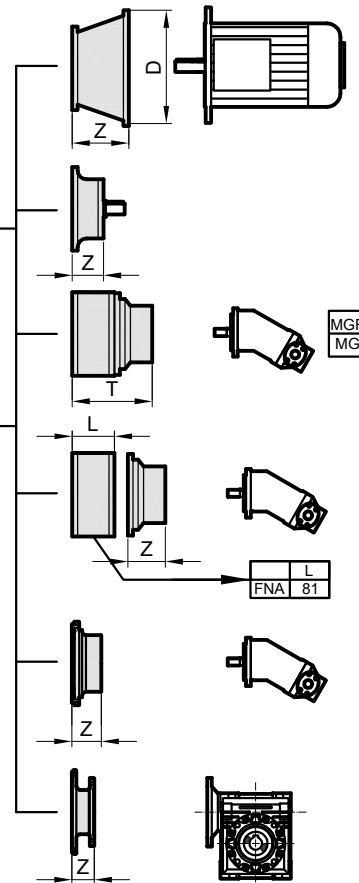
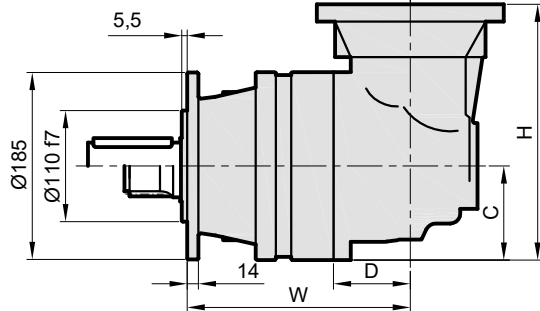
	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120



IPR..

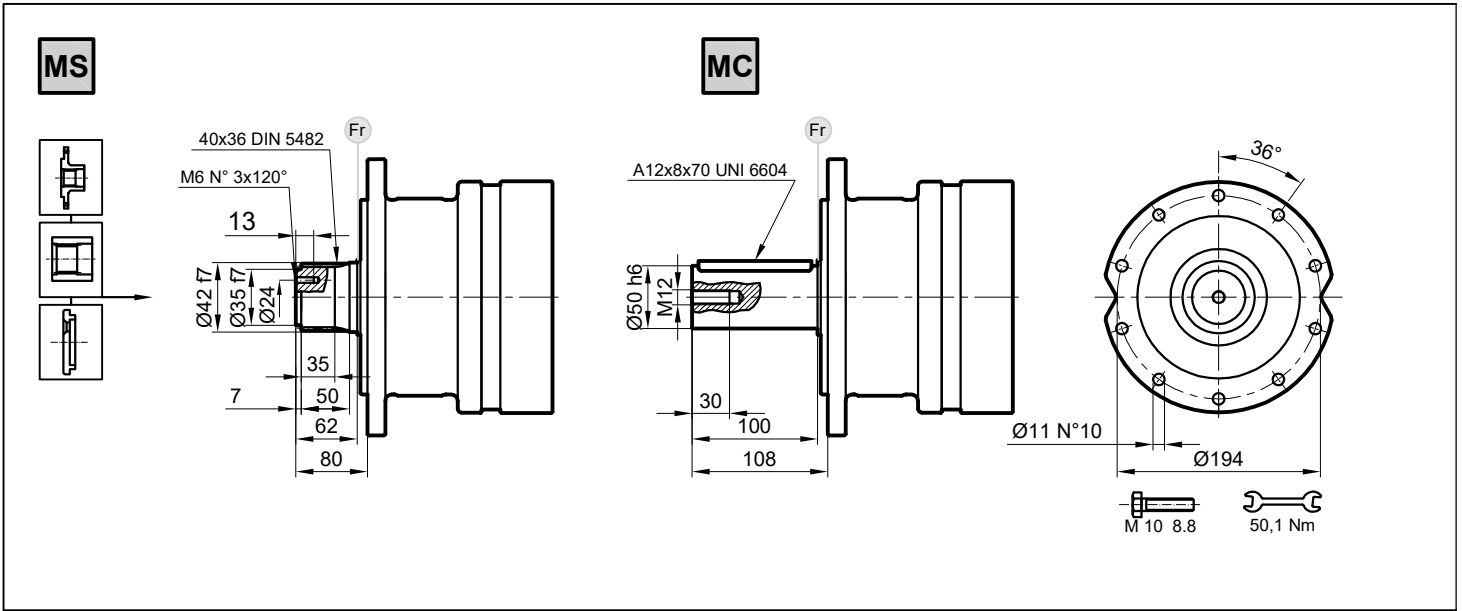


IPRK..

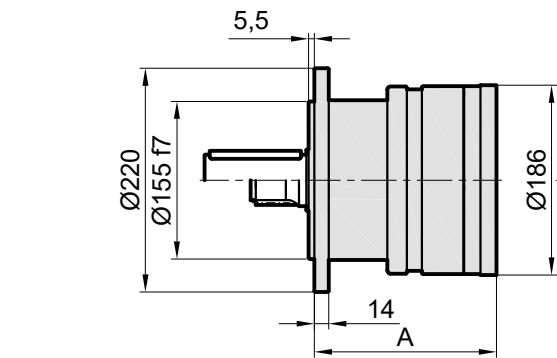


Stage	W	D	C	H	A	IPR H	IPRK H
S1	-	-	-	-	148	17	-
S2	223	75	93	252	196	23	32
S3	271	75	93	252	244	29	38
S4	319	75	93	252	292	35	44

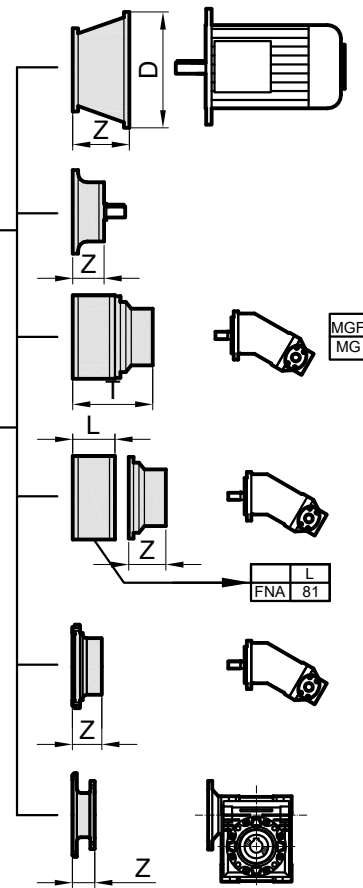
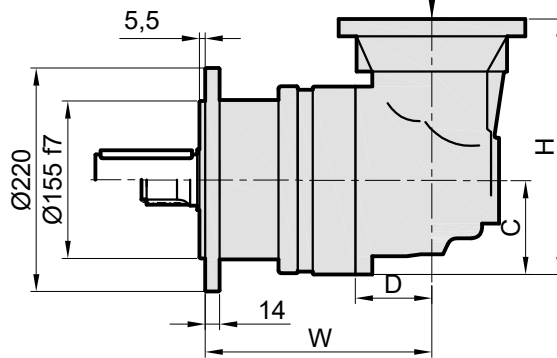
	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120



IPR..



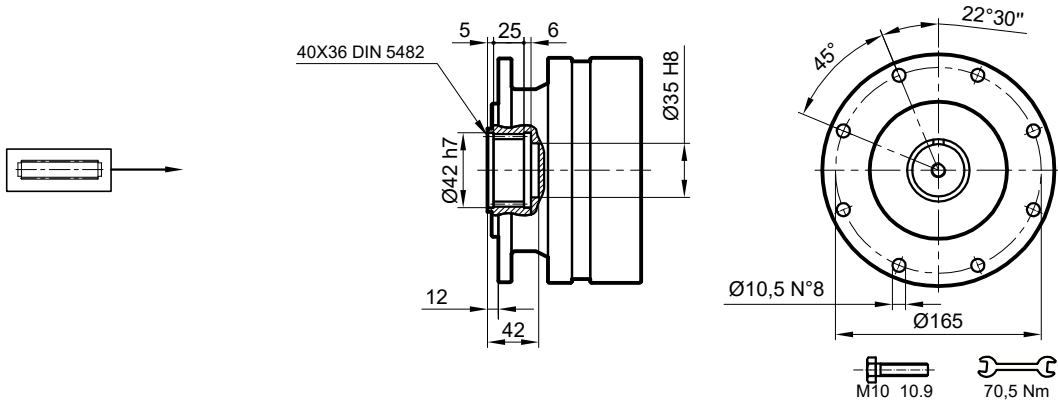
IPRK..



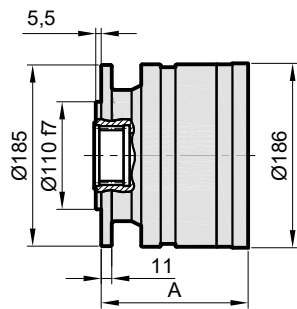
Stage	W	D	C	H	A	IPR		IPRK	
						H ₁	H ₂	H ₁	H ₂
S1	-	-	-	-	135	15	-	-	-
S2	210	75	93	252	183	21	30	-	-
S3	258	75	93	252	231	27	36	-	-
S4	306	75	93	252	279	33	42	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

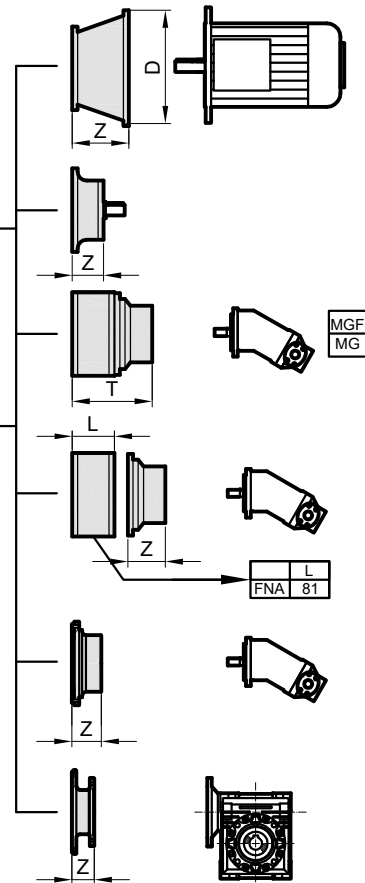
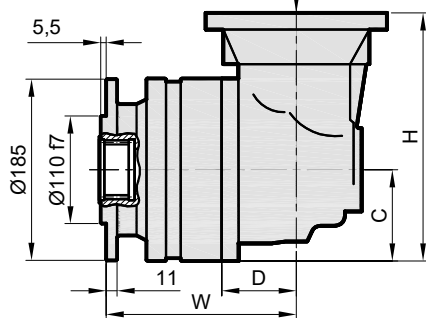
SF



IPR..



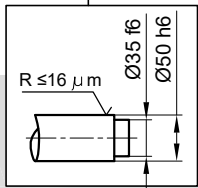
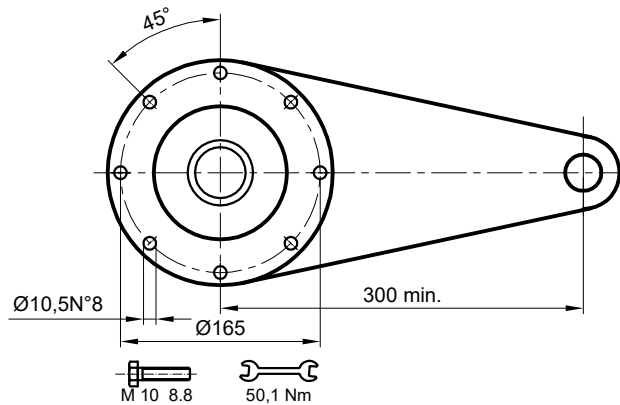
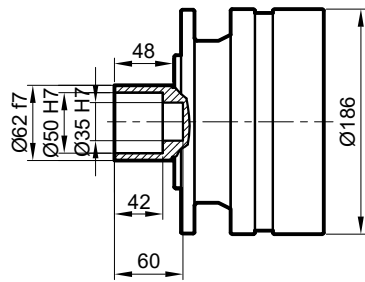
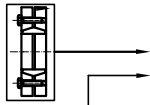
IPRK..



Stage	W	D	C	H	A	IPR		IPRK	
						S	⊕	S	⊕
S1	-	-	-	-	118	13	-	-	
S2	193	75	93	252	166	19	28		
S3	241	75	93	252	214	25	34		
S4	289	75	93	252	262	31	40		

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

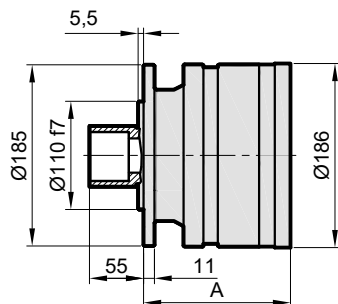
SDF



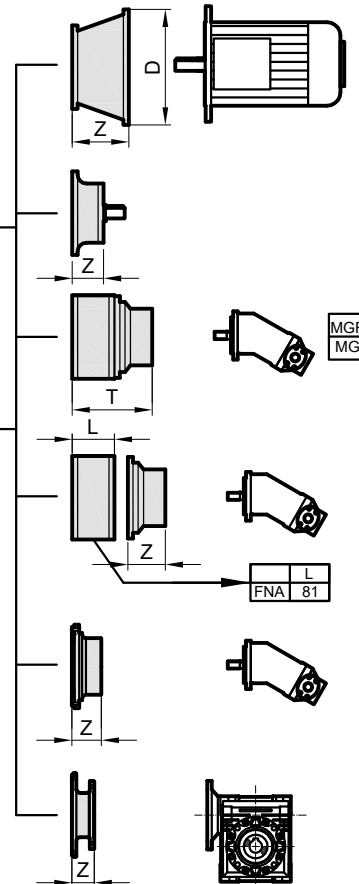
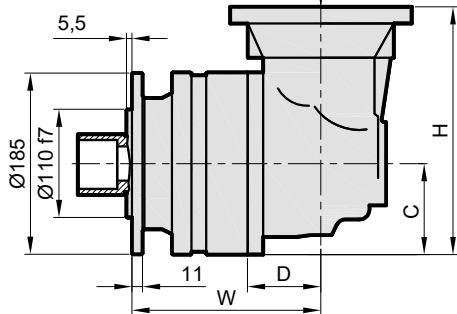
$M_{max} = 2.2 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



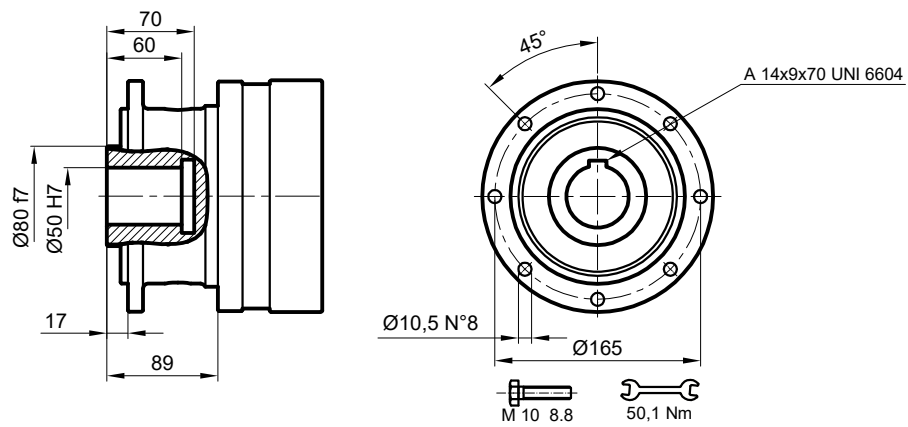
IPRK..



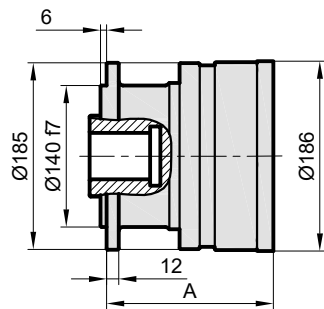
Stage	W	D	C	H	A	IPR		IPRK	
						SDF	IPR	SDF	IPRK
S1	-	-	-	-	118	16	-	-	-
S2	193	75	93	252	166	22	31	-	-
S3	241	75	93	252	214	28	37	-	-
S4	289	75	93	252	262	34	43	-	-

	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

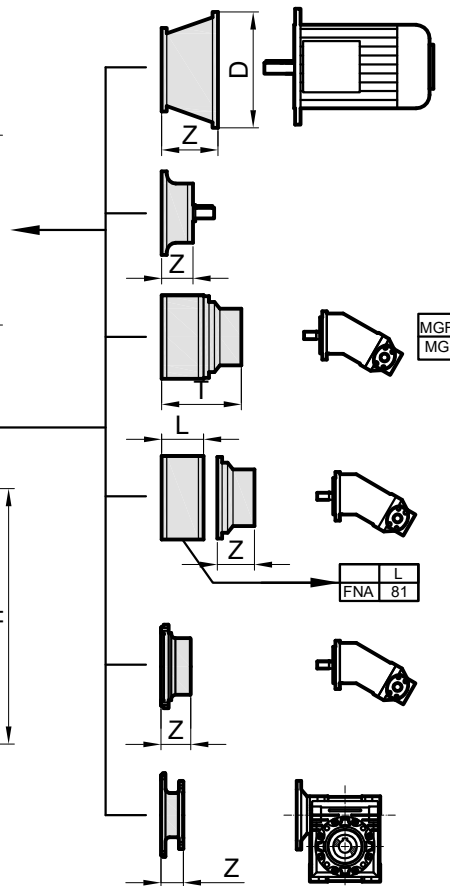
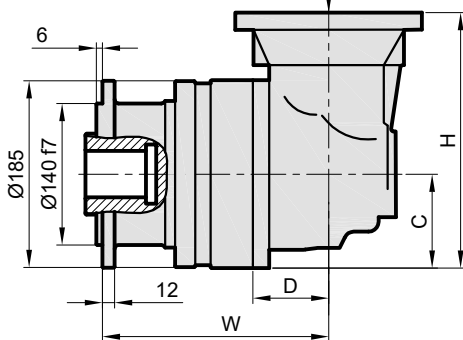
DKM



IPR..

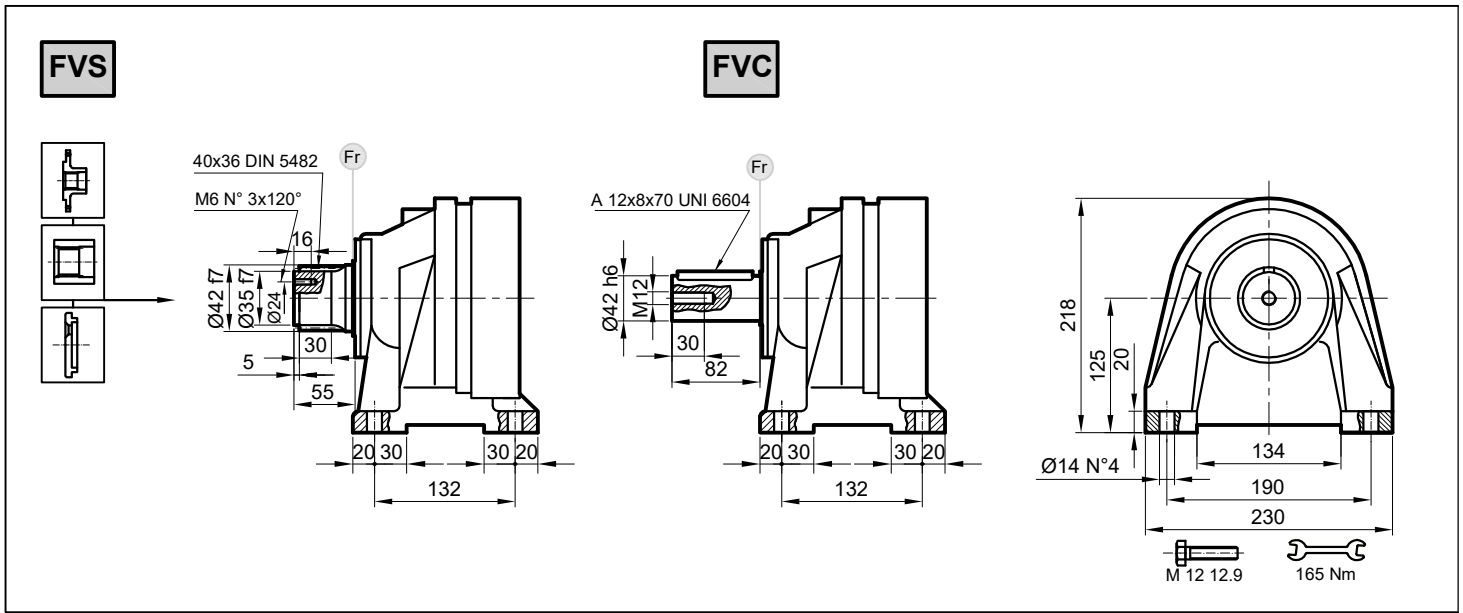


IPRK..



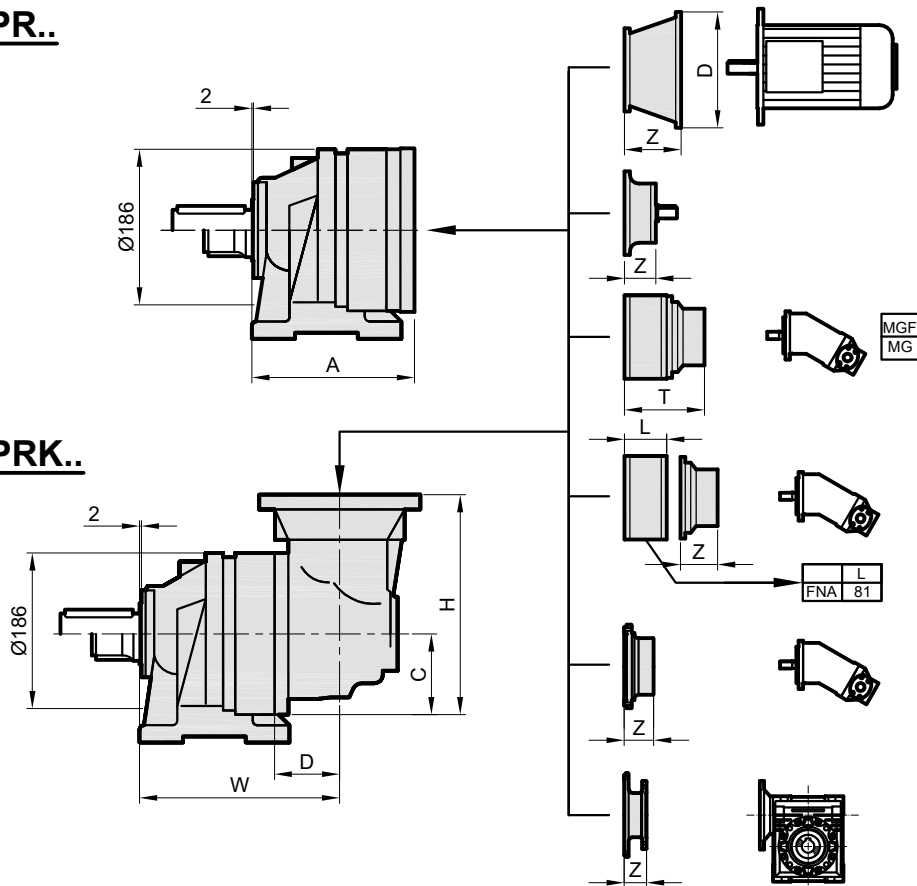
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	150	13	-
S2	215	75	93	252	195	19	28
S3	270	75	93	252	245	25	34
S4	320	75	93	252	295	31	40

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120



IPR..

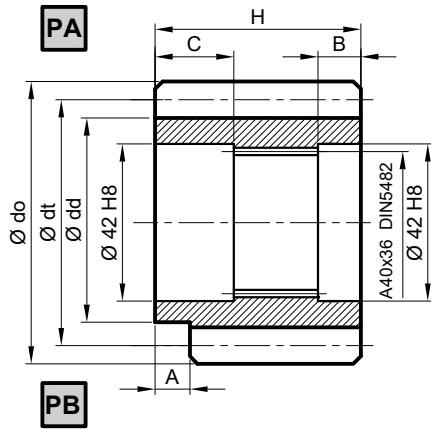
IPRK..



Stage	W	D	C	H	A	IPR		IPRK	
						FVC	FVC	FVC	FVC
S1	-	-	-	-	148	20	-	-	
S2	230	75	93	252	196	26	35		
S3	278	75	93	252	244	32	41		
S4	326	75	93	252	292	38	47		

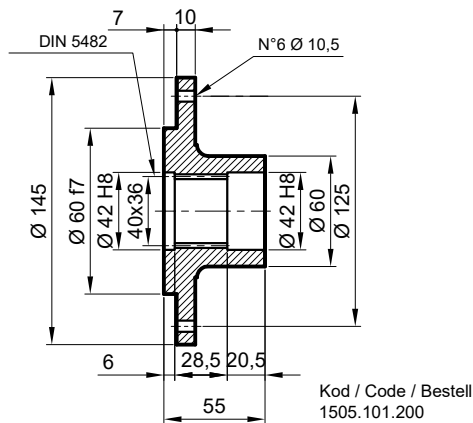
	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

P Pinyon / Pinion / Ritzel

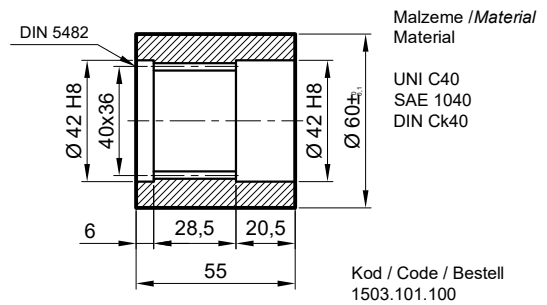
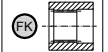


	m	z	x	dt	dd	do	H	A	B	C	Malzeme / Material	Kod / Code / Bestell
PA	5	14	0,500	70	62,5	62,5	65	0	10	53	39NiCrMo3	1501.101.001
PA	6	12	0,250	72	61	62,5	59	14	4	54	39NiCrMo3	1501.101.002
PB	6	14	0,500	84	73	62,5	65	0	10	54	39NiCrMo3	1502.101.001

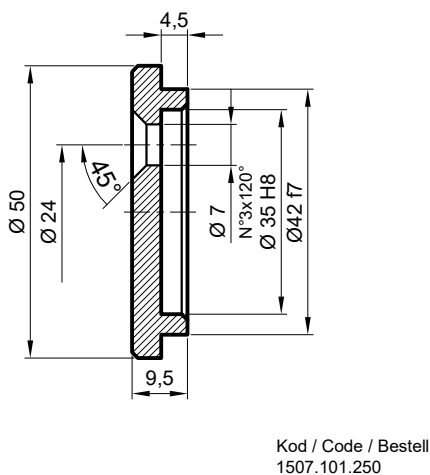
FL Flanş / Flange / Flansch



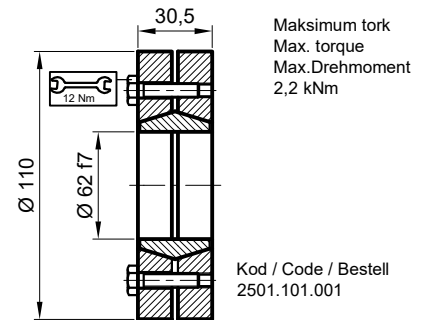
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



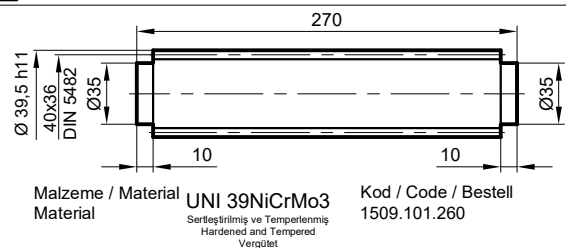
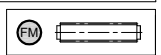
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



SB Sikma Bileziği / Shrink disc
Schrumpfscheibe



FM Frezeli Mil / Splined rod
Außenverzahnte Welle



RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

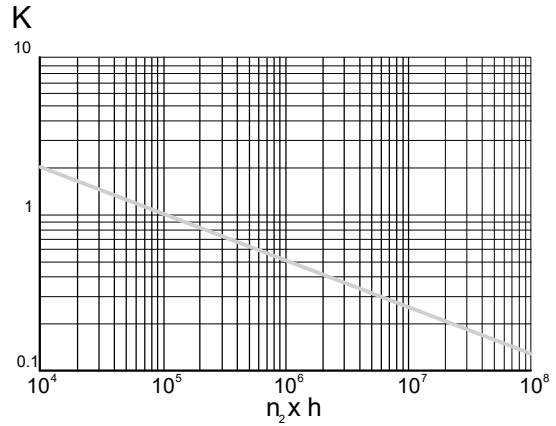
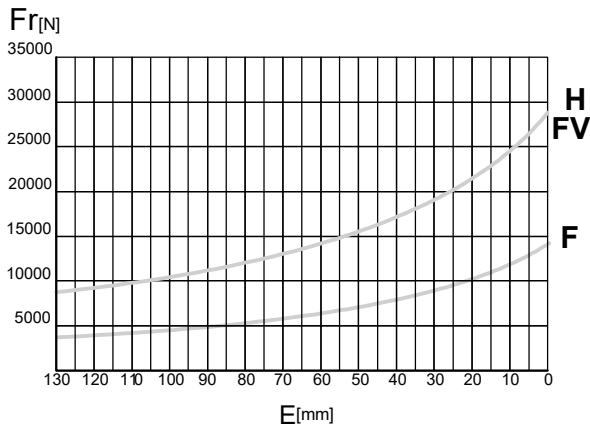
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

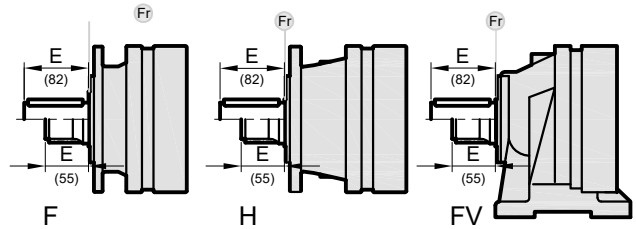
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

F-H-FV



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
F-H	Fr		$Fr \cdot K$		
FV	$Fr \cdot 0,75$		$Fr \cdot K \cdot 0,75$		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

AXIAL LOADS (Fa)

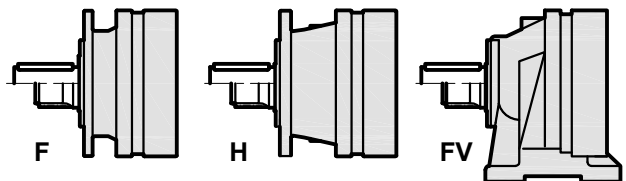
The values of the axial loads in the table refer to the output versions and load directions of application.

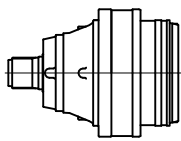
AXIALLAST (Fa)

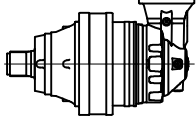
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	F		$H-FV$	
	16000	18000	18000	18000
	16000	18000	18000	18000

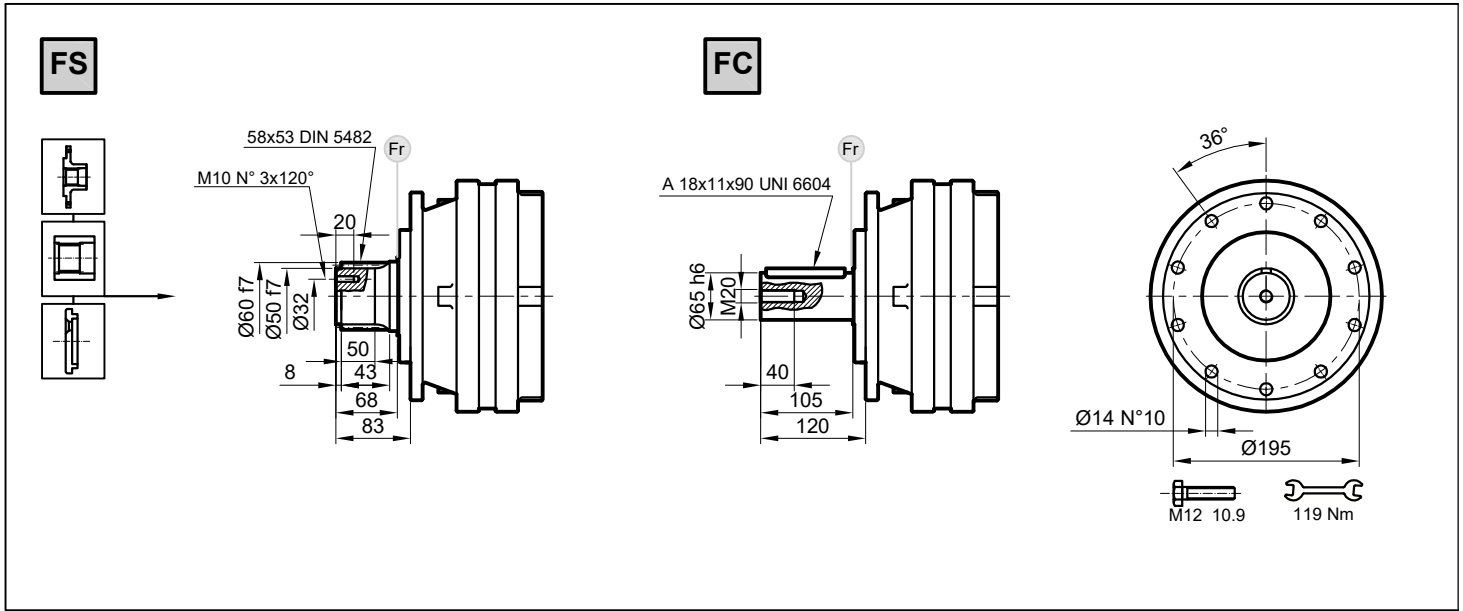
←
→



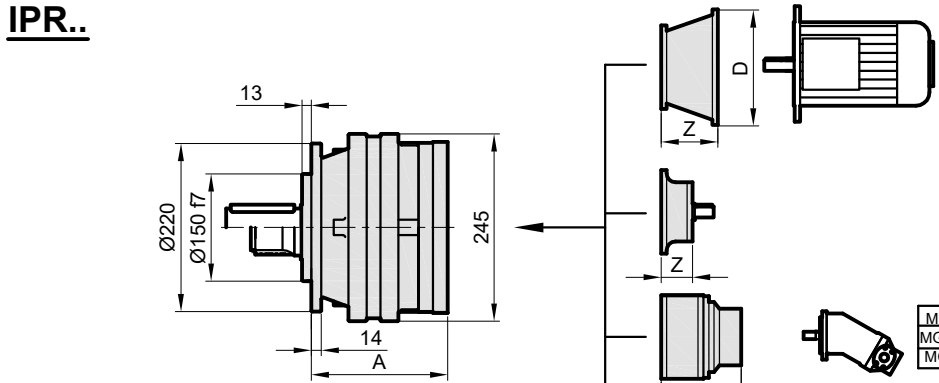
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 105 S1	3.77	3980	3520	3000	2650	2800	7040	20
	4.12	3600	3190	2710	2400	2800	6380	20
	5.16	3010	2660	2260	2000	2800	5320	20
	6.00	2520	2230	1900	1680	2800	4460	20
	7.25	1950	1730	1470	1300	2800	3460	20
IPR 105 S2	13.4	3980	3520	3000	2650	2800	7040	12
	16.1	3980	3520	3000	2650	2800	7040	12
	18.3	3010	2660	2260	2000	2800	5320	12
	23.1	3600	3190	2710	2400	2800	6380	12
	28.9	3010	2660	2260	2000	2800	5320	12
	34.8	3010	2660	2260	2000	2800	5320	12
	40.5	2520	2230	1900	1680	2800	4460	12
	48.9	1950	1730	1470	1300	2800	3460	12
	62.8	1950	1730	1470	1300	2800	3460	12
IPR 105 S3	52.1	3600	3190	2710	2400	2800	6380	8
	57.5	3980	3520	3000	2650	2800	7040	8
	62.8	3600	3190	2710	2400	2800	6380	8
	75.2	3980	3520	3000	2650	2800	7040	8
	82.1	3600	3190	2710	2400	2800	6380	8
	90.6	3980	3520	3000	2650	2800	7040	8
	98.9	3600	3190	2710	2400	2800	6380	8
	119.3	3600	3190	2710	2400	2800	6380	8
	129.3	3600	3190	2710	2400	2800	6380	8
	149.4	3010	2660	2260	2000	2800	5320	8
	155.9	3600	3190	2710	2400	2800	6380	8
	162.0	3010	2660	2260	2000	2800	5320	8
	173.5	2520	2230	1900	1680	2800	4460	8
	195.2	3010	2660	2260	2000	2800	5320	8
	235.4	3010	2660	2260	2000	2800	5320	8
	273.3	2520	2230	1900	1680	2800	4460	8
	302.2	3010	2660	2260	2000	2800	5320	8
330.3	1950	1730	1470	1300	2800	3460	8	
424.1	1950	1730	1470	1300	2800	3460	8	
IPR 105 S4	351.9	3600	3190	2710	2400	2800	6380	4
	365.7	3010	2660	2260	2000	2800	5320	4
	388.5	3980	3520	3000	2650	2800	7040	4
	413.8	3980	3520	3000	2650	2800	7040	4
	424.2	3600	3190	2710	2400	2800	6380	4
	468.3	3980	3520	3000	2650	2800	7040	4
	511.4	3600	3190	2710	2400	2800	6380	4
	554.3	3600	3190	2710	2400	2800	6380	4
	611.9	3980	3520	3000	2650	2800	7040	4
	668.2	3600	3190	2710	2400	2800	6380	4
	737.6	3980	3520	3000	2650	2800	7040	4
	805.4	3600	3190	2710	2400	2800	6380	4
	857.9	3600	3190	2710	2400	2800	6380	4
	907.3	3010	2660	2260	2000	2800	5320	4
	1052.4	3600	3190	2710	2400	2800	6380	4
	1121.1	3600	3190	2710	2400	2800	6380	4
	1318.2	3010	2660	2260	2000	2800	5320	4
	1588.9	3010	2660	2260	2000	2800	5320	4
1845.2	2520	2230	1900	1680	2800	4460	4	
2369.2	2520	2230	1900	1680	2800	4460	4	



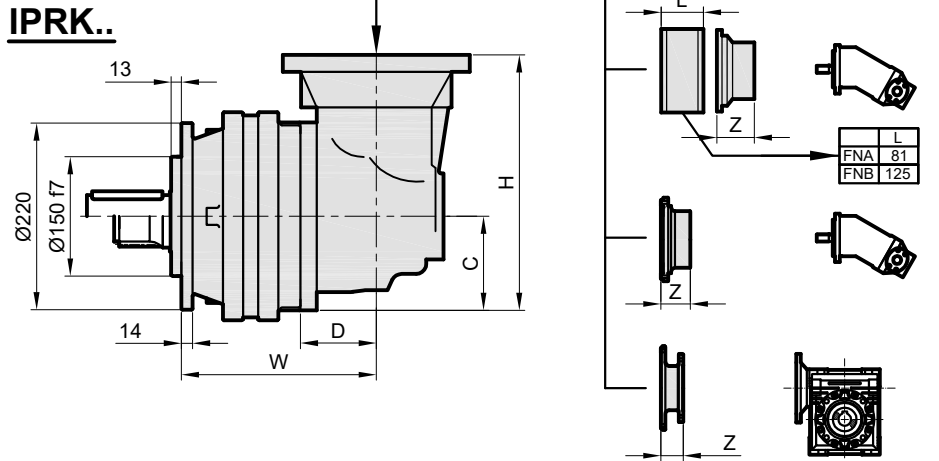
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 105 S2	12.0	3600	3190	2710	2400	2800	6380	12
	15.1	3010	2660	2260	2000	2800	5320	12
	17.5	2520	2230	1900	1680	2800	4460	12
	21.2	1950	1730	1470	1300	2800	3460	12
IPRK 105 S3	39.3	3980	3520	3000	2650	2800	7040	8
	47.4	3980	3520	3000	2650	2800	7040	8
	53.8	3010	2660	2260	2000	2800	5320	8
	67.7	3600	3190	2710	2400	2800	6380	8
	75.4	2520	2230	1900	1680	2800	4460	8
	84.8	3010	2660	2260	2000	2800	5320	8
	91.1	1950	1730	1470	1300	2800	3460	8
	102.2	3010	2660	2260	2000	2800	5320	8
	118.7	2520	2230	1900	1680	2800	4460	8
	143.5	1950	1730	1470	1300	2800	3460	8
	140.0	3980	3520	3000	2650	2800	7040	4
IPRK 105 S4	168.8	3980	3520	3000	2650	2800	7040	4
	184.3	3600	3190	2710	2400	2800	6380	4
	220.6	3980	3520	3000	2650	2800	7040	4
	240.9	3600	3190	2710	2400	2800	6380	4
	265.9	3980	3520	3000	2650	2800	7040	4
	290.3	3600	3190	2710	2400	2800	6380	4
	320.5	3980	3520	3000	2650	2800	7040	4
	350.0	3600	3190	2710	2400	2800	6380	4
	422.3	2520	2230	1900	1680	2800	4460	4
	449.4	3600	3190	2710	2400	2800	6380	4
	475.2	3010	2660	2260	2000	2800	5320	4
	509.1	2520	2230	1900	1680	2800	4460	4
	551.9	2520	2230	1900	1680	2800	4460	4
	615.2	1950	1730	1470	1300	2800	3460	4
	665.2	2520	2230	1900	1680	2800	4460	4
	735.5	3010	2660	2260	2000	2800	5320	4
	801.8	2520	2230	1900	1680	2800	4460	4
1244.0	1950	1730	1470	1300	2800	3460	4	



IPR..



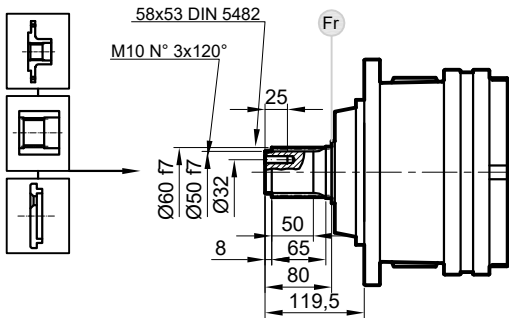
IPRK..



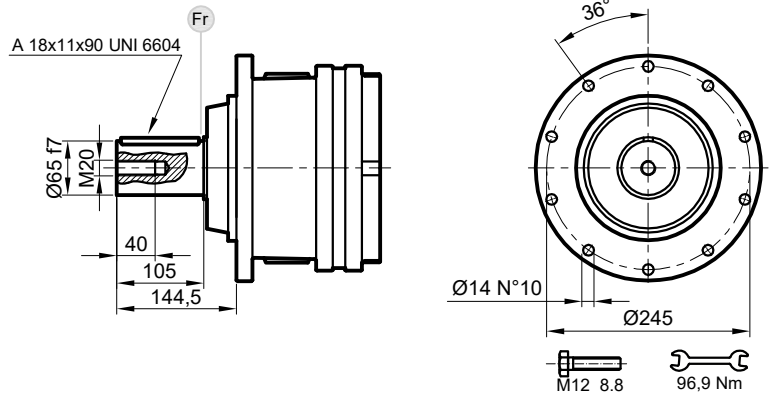
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	166	29	-
S2	241	75	93	252	214	35	47
S3	289	75	93	252	262	41	53
S4	337	75	93	252	310	47	59

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

HS

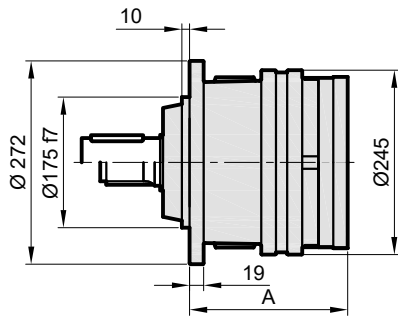


HC

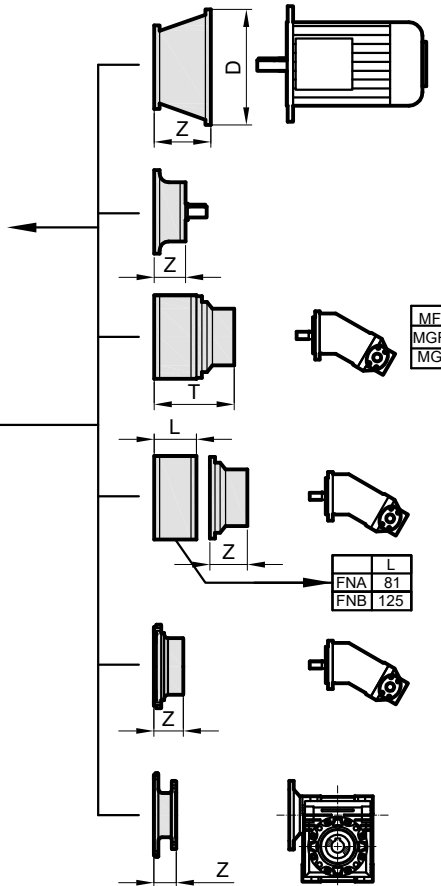
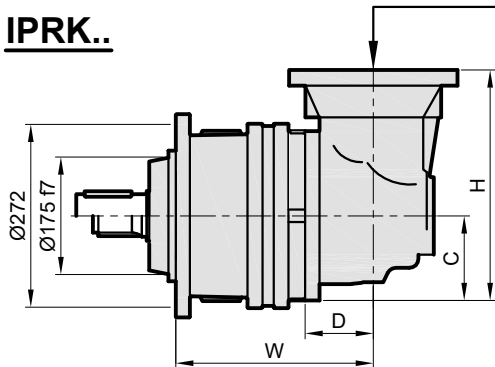


M12 8.8 96,9 Nm

IPR..



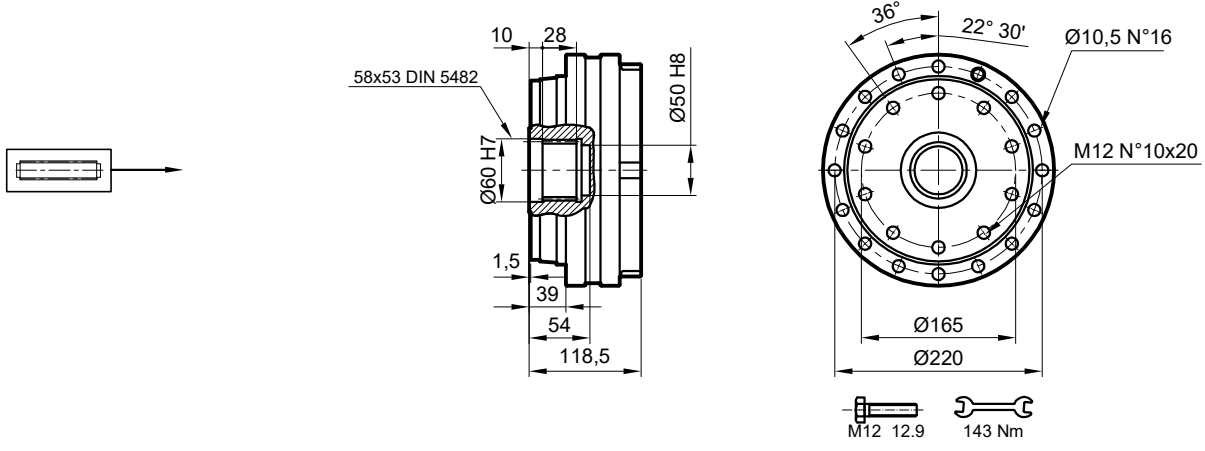
IPRK..



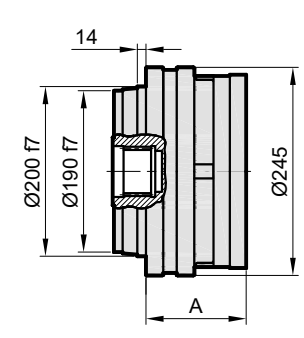
Stage	W	D	C	H	A	IPR		IPRK	
						H	H	H	H
S1	-	-	-	-	173	38	-	-	-
S2	248	75	93	252	221	44	56	-	-
S3	296	75	93	252	269	50	62	-	-
S4	344	75	93	252	317	56	68	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

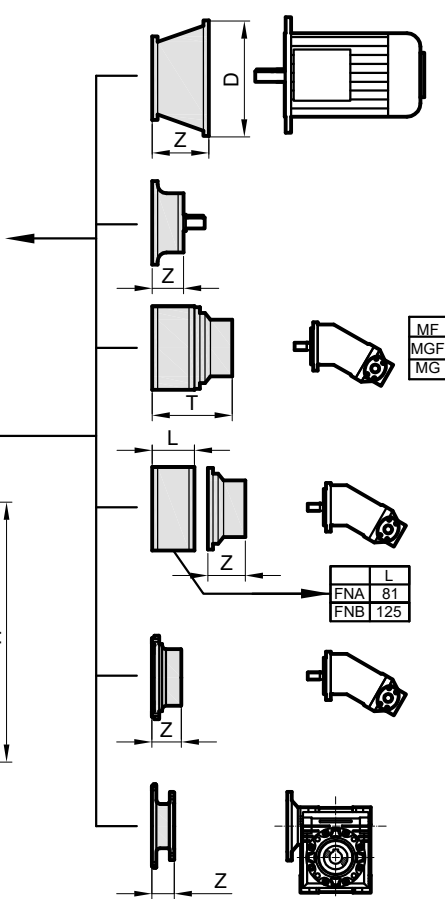
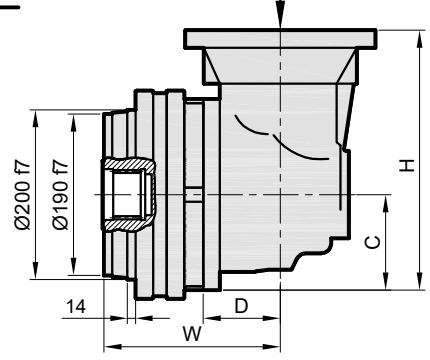
S



IPR..



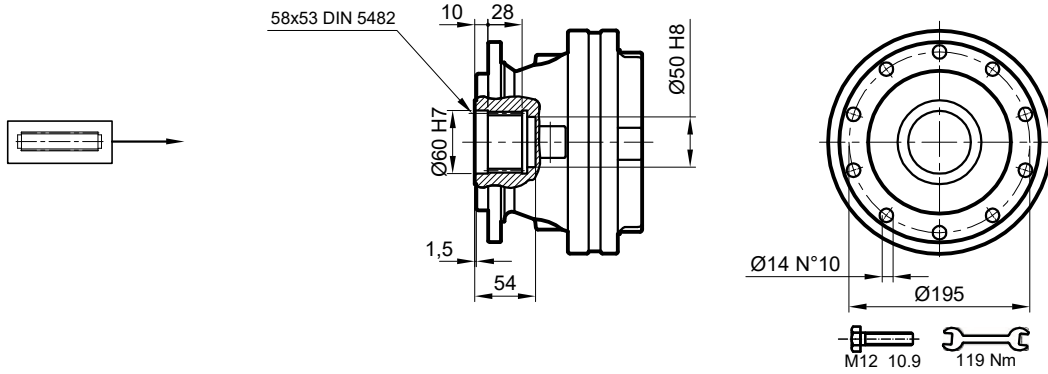
IPRK..



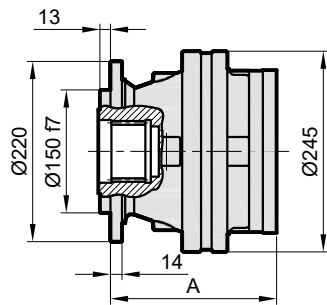
Stage	W	D	C	H	A	IPR		IPRK	
						S	⊠	S	⊠
S1	-	-	-	-	79.5	20	-	-	-
S2	192	75	93	252	127.5	27	35	-	-
S3	240	75	93	252	175.5	32	41	-	-
S4	288	75	93	252	223.5	38	47	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

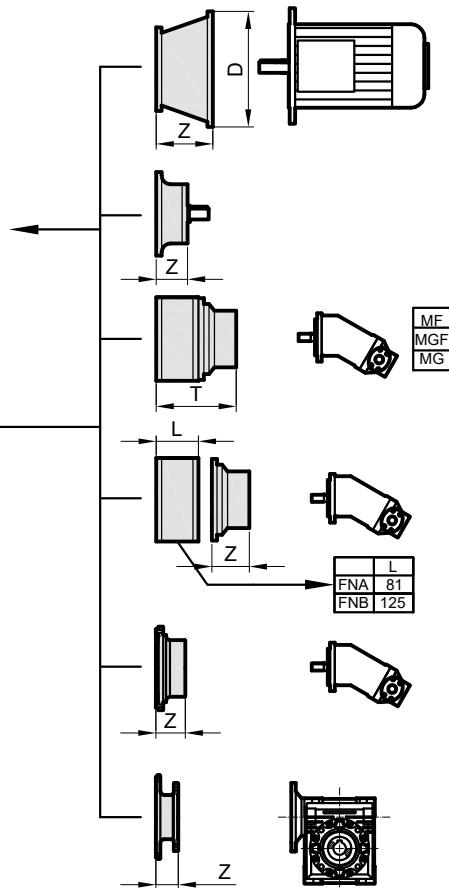
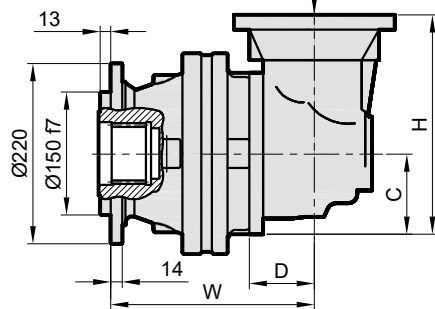
SF



IPR..



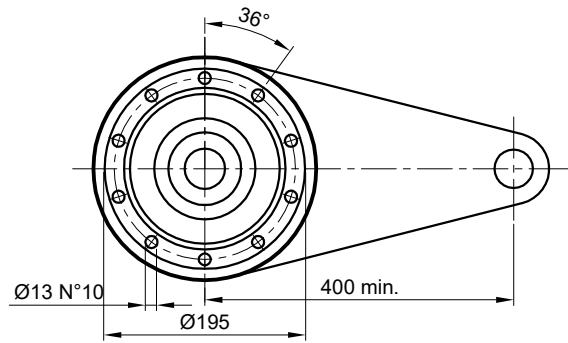
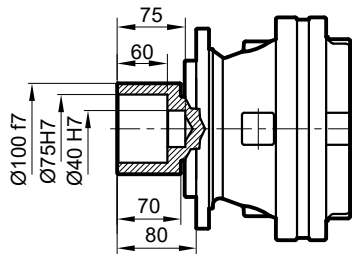
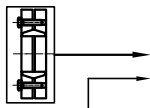
IPRK..



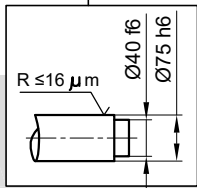
Stage	W	D	C	H	A	IPR SF	IPRK SF
S1	-	-	-	-	166	31	-
S2	241	75	93	252	214	37	49
S3	289	75	93	252	262	43	55
S4	337	75	93	252	310	49	61

	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

SDF



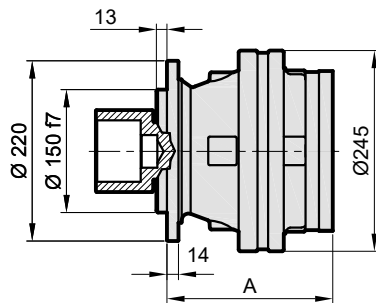
M12 10.9 119 Nm



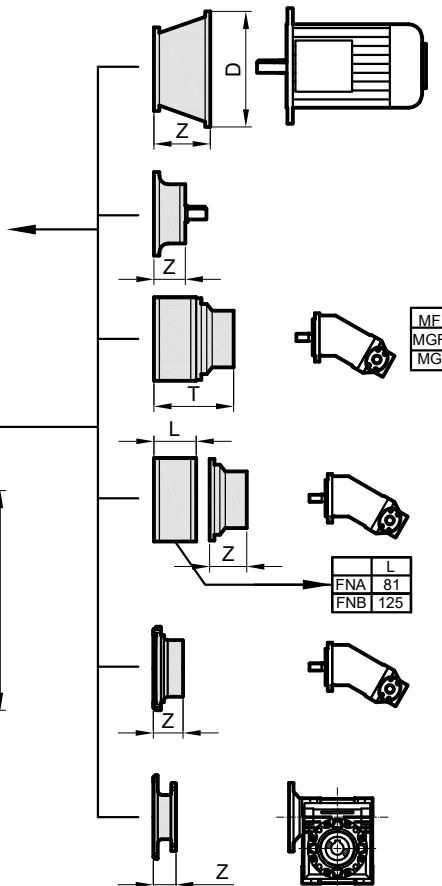
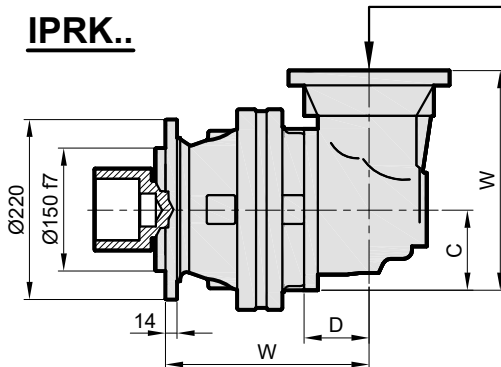
$M_{max} = 7.5 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



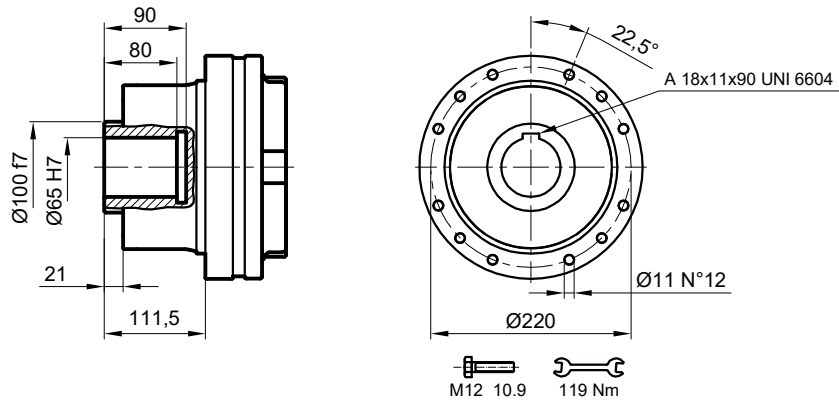
IPRK..



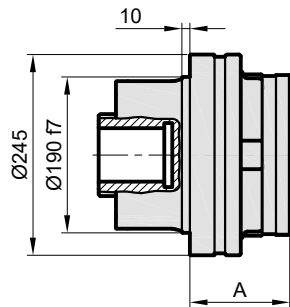
Stage	W	D	C	H	A	IPR		IPRK	
						SDF	SDF	SDF	SDF
S1	-	-	-	-	166	31	-	-	-
S2	241	75	93	252	214	37	49	-	-
S3	289	75	93	252	262	43	55	-	-
S4	337	75	93	252	310	46	61	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

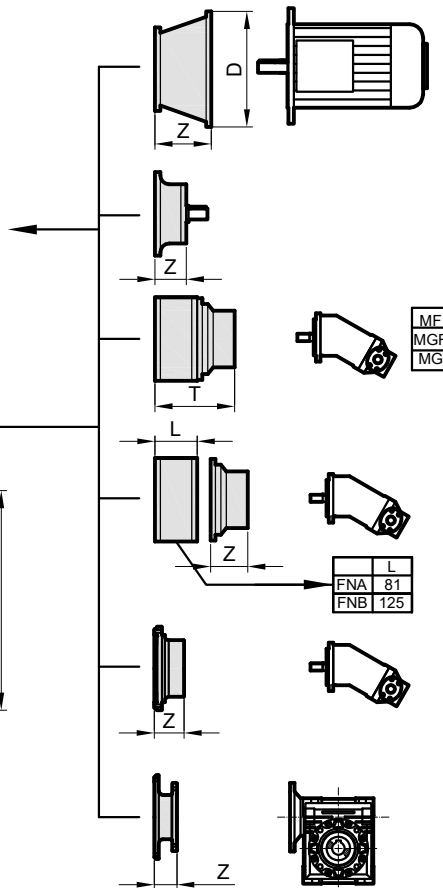
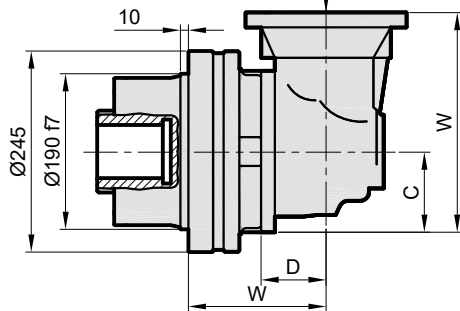
DKM



IPR..



IPRK..

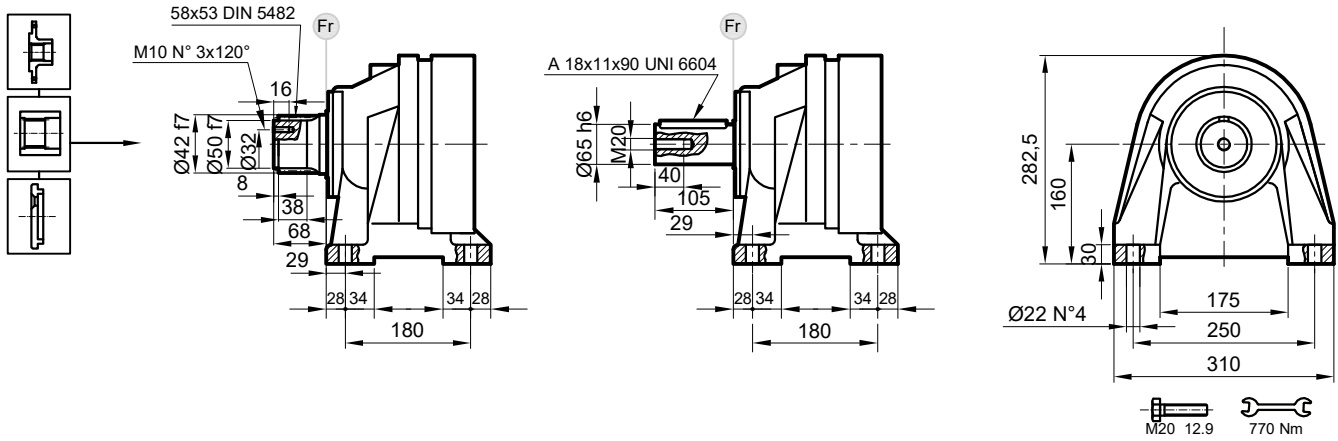


Stage	W	D	C	H	A	IPR		IPRK	
						S	U	S	U
S1	-	-	-	-	85.5	20	-	-	-
S2	198	75	93	252	133.5	27	35	-	-
S3	246	75	93	252	181.5	32	41	-	-
S4	294	75	93	252	229.5	38	47	-	-

Stage	IEC71		IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180	
	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

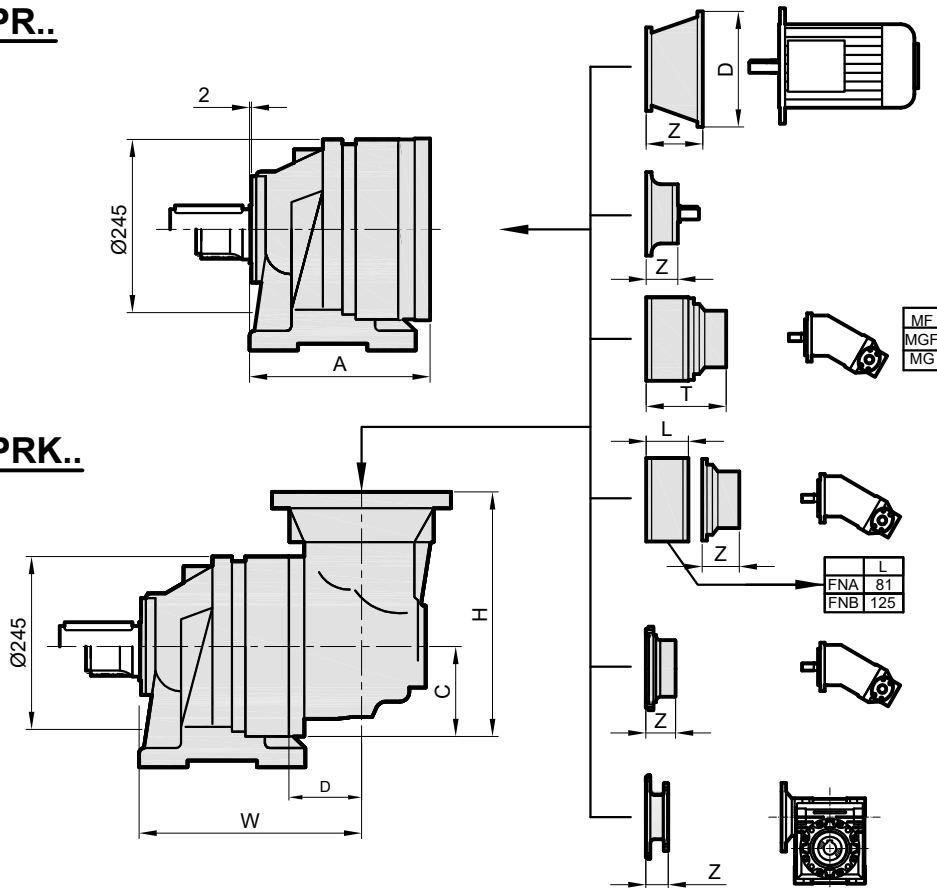
FVS

FVC



IPR..

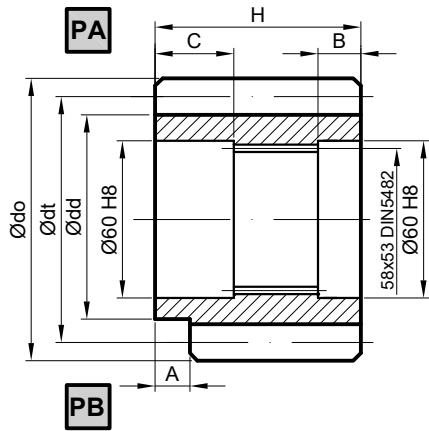
IPRK..



Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	212,5	42	-
S2	287,5	75	93	252	260,5	48	60
S3	335,5	75	93	252	308,5	54	66
S4	383,5	75	93	252	356,5	60	72

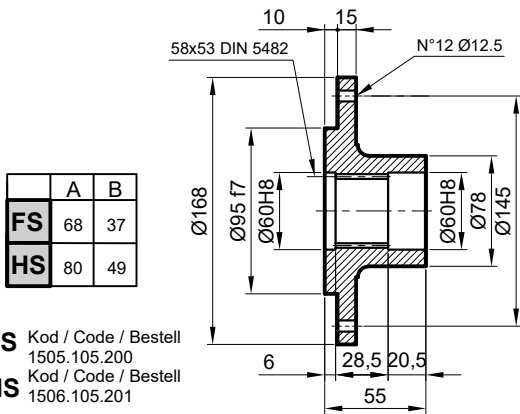
	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

P Pinyon / Pinion / Ritzel

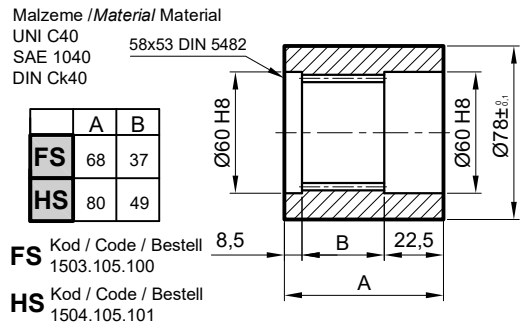
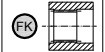


	m	z	x	dd	dt	do	H	A	B	C	Malzeme / Material	Kod / Code / Bestell
PA	8	13	0	88	104	120	68	0	8.5	22.5	18NiCrMo5	1501.105.001
PA	8	11	0.85	74.8	88	110.8	68	0	8.5	22.5	38NiCrMo4	1501.105.002
PA	8	12	0.1	88	96	112.8	68	0	8	21	38NiCrMo4	1501.105.003
PB	10	14	0.24	117.4	140	162.4	116	13	9.5	22.5	18NiCrMo4	1502.105.001
PA	8	15	0	100	120	136	68	0	8.5	22.5	38NiCrMo4	1501.105.004
PA	6	14	0.6	72.6	84	99.6	95	0	23	21	38NiCrMo4	1501.105.005
PA	10	11	1.21	97.1	110	142.1	90	0	8	22.5	38NiCrMo5	1501.105.006

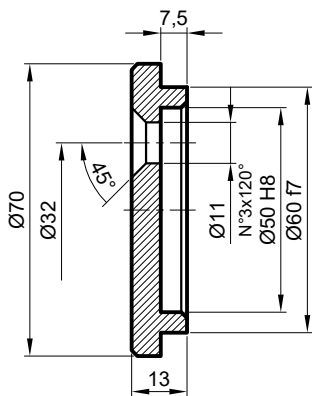
FL Flanş / Flange / Flansch



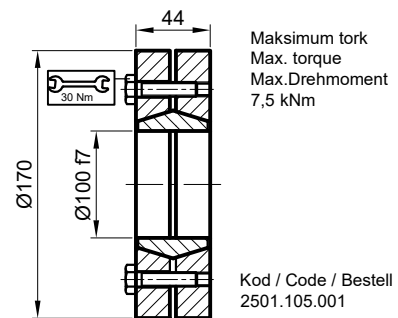
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



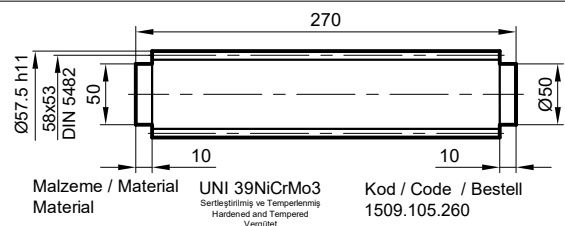
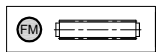
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



FM Frezeli Mil / Splined rod
Außenverzahnte Welle



RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

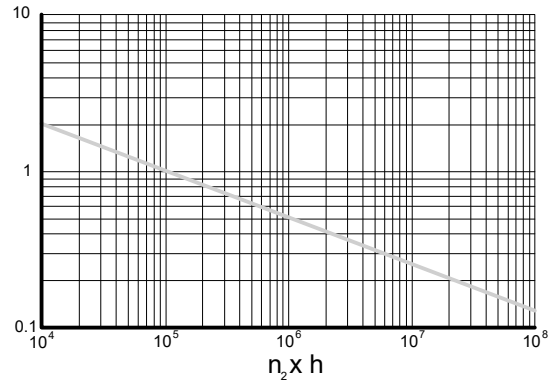
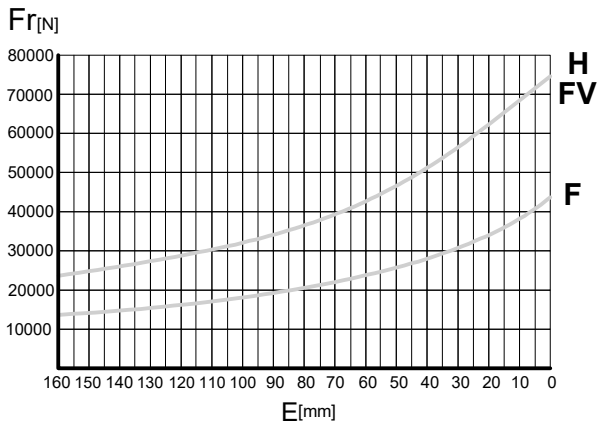
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

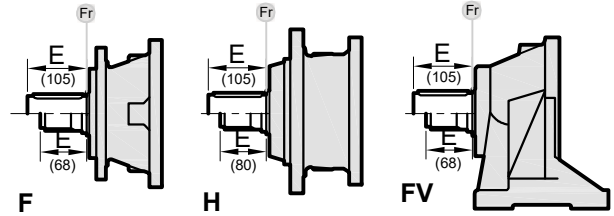
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

F-H-FV



	n x h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
F-H	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

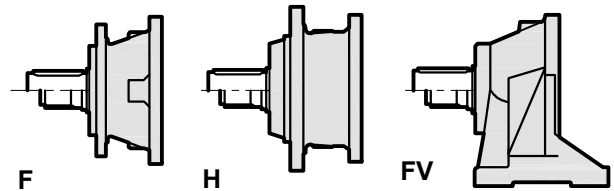
AXIAL LOADS (Fa)

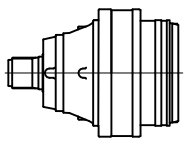
The values of the axial loads in the table refer to the output versions and load directions of application.

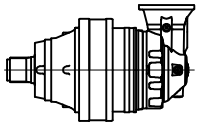
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

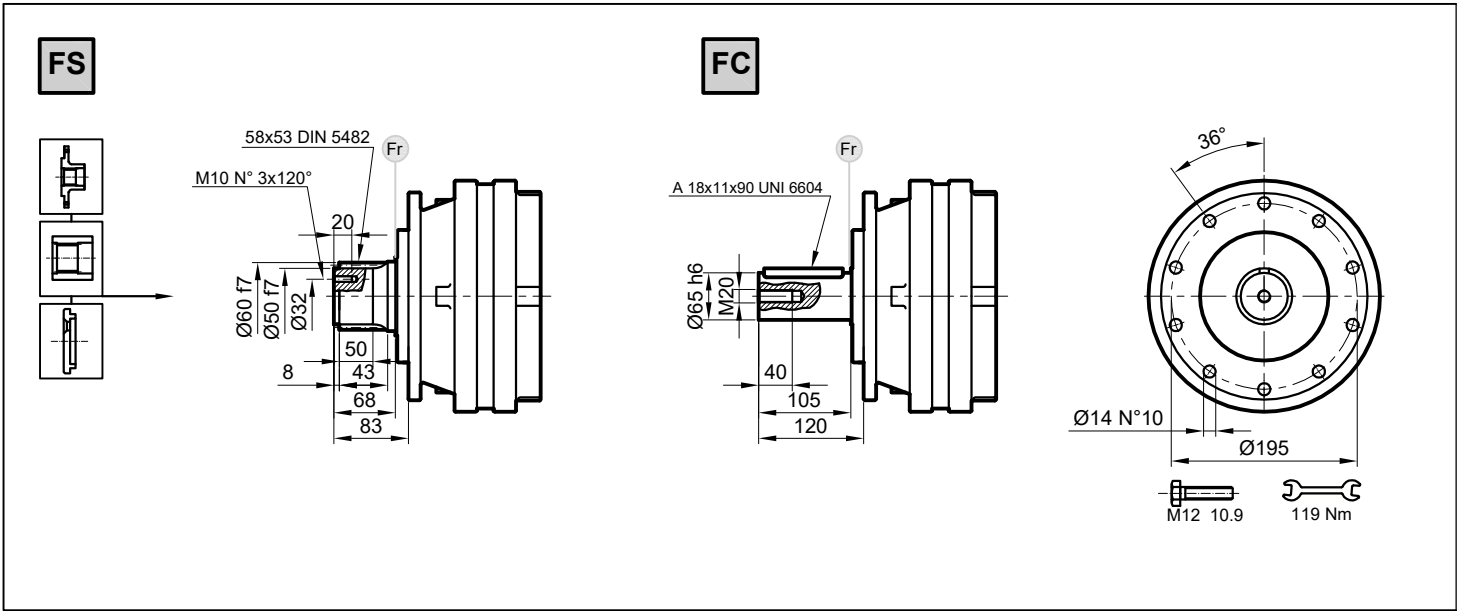
Fa [N]	F		H-FV	
		32000		32000
		32000		48000



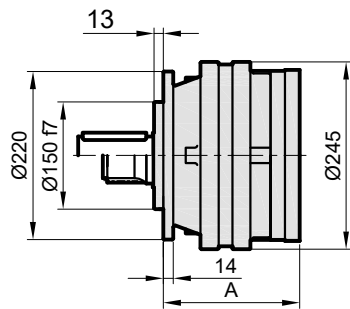
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPR 107 S1	3.77	5770	5110	4350	3850	2800	10220	20
	4.12	5260	4660	3970	3510	2800	9320	20
	5.16	4300	3810	3240	2870	2800	7620	20
	6.00	3770	3340	2840	2520	2800	6680	20
	7.25	2950	2610	2220	1970	2800	5220	20
IPR 107 S2	13.4	5770	5110	4350	3850	2800	10220	15
	16.1	5770	5110	4350	3850	2800	10220	15
	18.3	4300	3810	3240	2870	2800	7620	15
	23.1	5260	4660	3970	3510	2800	9320	15
	28.9	4300	3810	3240	2870	2800	7620	15
	34.8	4300	3810	3240	2870	2800	7620	15
	40.5	3770	3340	2840	2520	2800	6680	15
	48.9	2950	2610	2220	1970	2800	5220	15
IPR 107 S3	52.1	5260	4660	3970	3510	2800	9320	10
	57.5	5770	5110	4350	3850	2800	10220	10
	62.8	5260	4660	3970	3510	2800	9320	10
	75.2	5770	5110	4350	3850	2800	10220	10
	82.1	5260	4660	3970	3510	2800	9320	10
	90.6	5770	5110	4350	3850	2800	10220	10
	98.9	5260	4660	3970	3510	2800	9320	10
	119.3	5260	4660	3970	3510	2800	9320	10
	129.3	5260	4660	3970	3510	2800	9320	10
	149.4	4300	3810	3240	2870	2800	7620	10
	155.9	5260	4660	3970	3510	2800	9320	10
	162.0	4300	3810	3240	2870	2800	7620	10
	173.5	3770	3340	2840	2520	2800	6680	10
	195.2	4300	3810	3240	2870	2800	7620	10
	235.4	4300	3810	3240	2870	2800	7620	10
	273.3	3770	3340	2840	2520	2800	6680	10
302.2	4300	3810	3240	2870	2800	7620	10	
330.3	2950	2610	2220	1970	2800	5220	10	
IPR 107 S4	351.9	5260	4660	3970	3510	2800	9320	6
	365.7	4300	3810	3240	2870	2800	7620	6
	388.5	5770	5110	4350	3850	2800	10220	6
	413.8	5770	5110	4350	3850	2800	10220	6
	424.2	5260	4660	3970	3510	2800	9320	6
	468.3	5770	5110	4350	3850	2800	10220	6
	511.4	5260	4660	3970	3510	2800	9320	6
	554.3	5260	4660	3970	3510	2800	9320	6
	611.9	5770	5110	4350	3850	2800	10220	6
	668.2	5260	4660	3970	3510	2800	9320	6
	737.6	5770	5110	4350	3850	2800	10220	6
	805.4	5260	4660	3970	3510	2800	9320	6
	857.9	5260	4660	3970	3510	2800	9320	6
	907.3	4300	3810	3240	2870	2800	7620	6
	1052.4	5260	4660	3970	3510	2800	9320	6
	1121.1	5260	4660	3970	3510	2800	9320	6
	1318.2	4300	3810	3240	2870	2800	7620	6
	1588.9	4300	3810	3240	2870	2800	7620	6
1845.2	3770	3340	2840	2520	2800	6680	6	



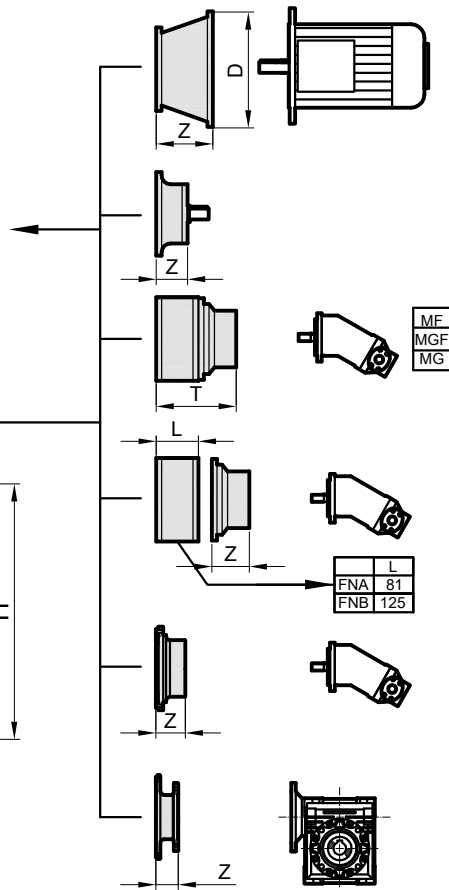
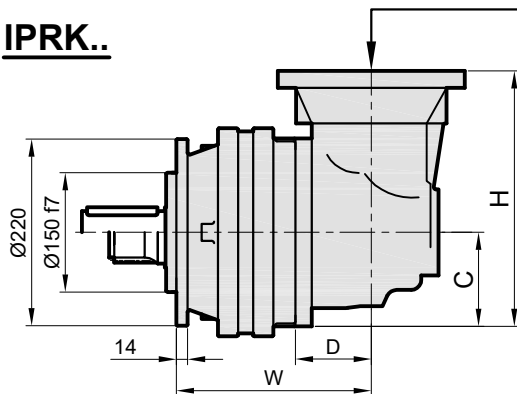
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPRK 107 S2	13.0	5770	5110	4350	3850	2800	10220	15
	14.2	5260	4660	3970	3510	2800	9320	15
	17.8	4300	3810	3240	2870	2800	7620	15
	20.5	5770	5110	4350	3850	2800	10220	15
	22.4	5260	4660	3970	3510	2800	9320	15
	28.1	4300	3810	3240	2870	2800	7620	15
	32.6	3770	3340	2840	2520	2800	6680	15
	39.7	2950	2610	2220	1970	2800	5220	15
IPRK 107 S3	39.3	5770	5110	4350	3850	2800	10220	10
	47.4	5770	5110	4350	3850	2800	10220	10
	53.8	4300	3810	3240	2870	2800	7620	10
	67.7	5260	4660	3970	3510	2800	9320	10
	75.4	3770	3340	2840	2520	2800	6680	10
	84.8	4300	3810	3240	2870	2800	7320	10
	91.1	2950	2610	2220	1970	2800	5220	10
	102.2	4300	3810	3240	2870	2800	7620	10
	118.7	3770	3340	2840	2520	2800	6680	10
	143.5	2950	2610	2220	1970	2800	5220	10
IPRK 107 S4	140.0	5770	5110	4350	3850	2800	10220	6
	168.8	5770	5110	4350	3850	2800	10220	6
	184.3	5260	4660	3970	3510	2800	9320	6
	220.6	5770	5110	4350	3850	2800	10220	6
	240.9	5260	4660	3970	3510	2800	9320	6
	265.9	5770	5110	4350	3850	2800	10220	6
	290.3	5260	4660	3970	3510	2800	9320	6
	320.5	5770	5110	4350	3850	2800	10220	6
	350.0	5260	4660	3970	3510	2800	9320	6
	422.3	3770	3340	2840	2520	2800	6680	6
	449.4	5260	4660	3970	3510	2800	9320	6
	475.2	4300	3810	3240	2870	2800	7620	6
	509.1	3770	3340	2840	2520	2800	6680	6
	551.9	3770	3340	2840	2520	2800	6680	6
	615.2	2950	2610	2220	1970	2800	5220	6
	665.2	3770	3340	2840	2520	2800	6680	6
	735.5	4300	3810	3240	2870	2800	7620	6
	801.8	3770	3340	2840	2520	2800	6680	6
1244.0	2950	2610	2220	1970	2800	5220	6	



IPR..



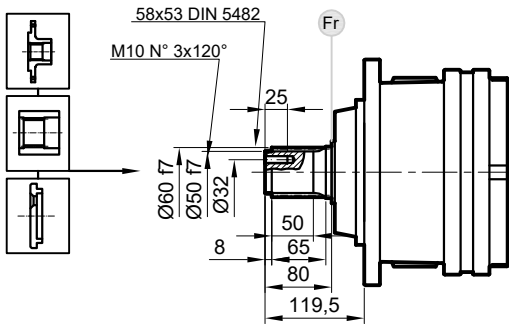
IPRK..



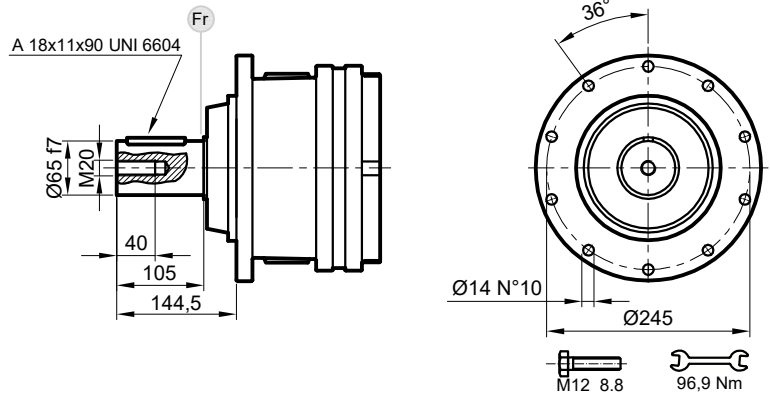
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	178	33	-
S2	279,5	88	140	380	239	41	51
S3	314	75	93	252	287	47	59
S4	362	75	93	252	335	53	65

	IEC71	IEC80 / 90	IEC100 / 112	IEC132	IEC160 / 180					
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

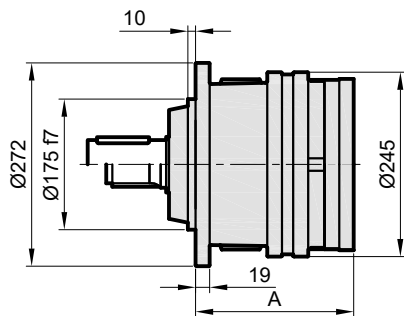
HS



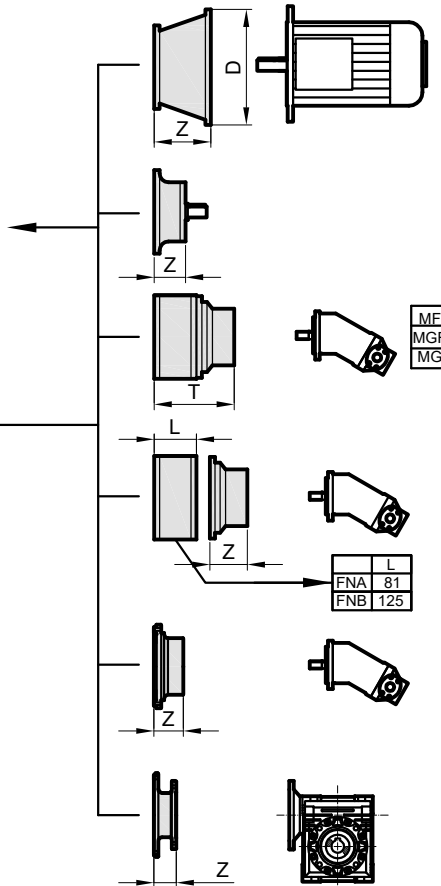
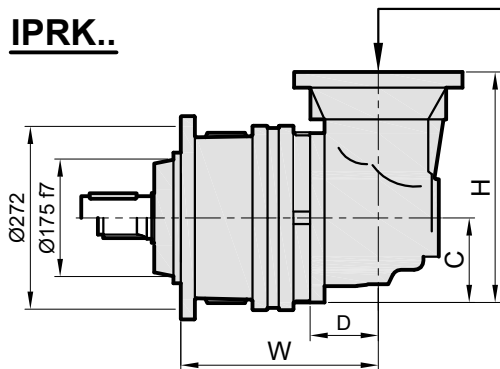
HC



IPR..



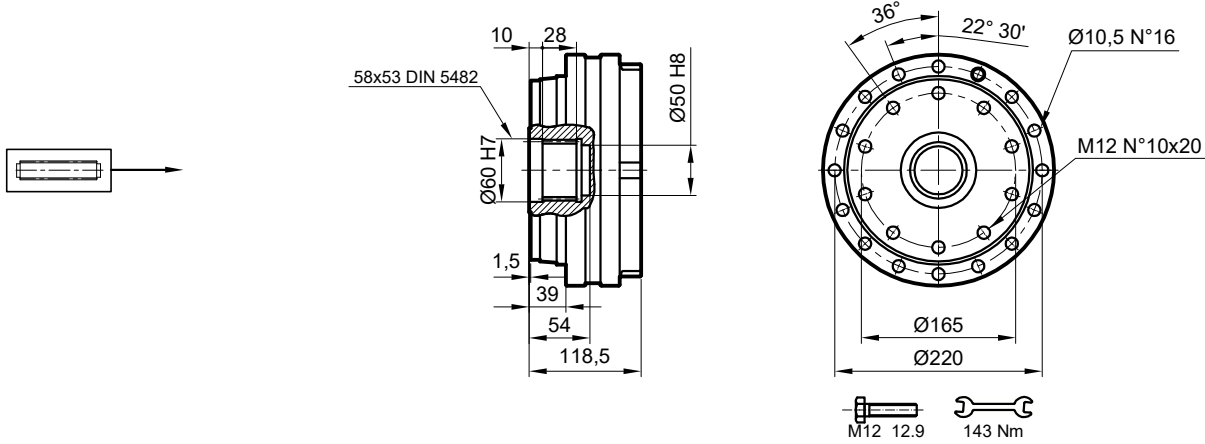
IPRK..



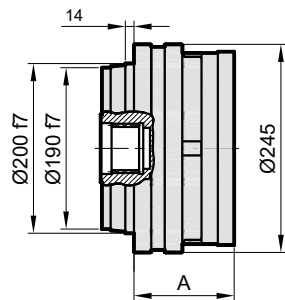
Stage	W	D	C	H	A	IPR H	IPRK H
S1	-	-	-	-	185	42	-
S2	286,5	88	140	380	246	50	60
S3	321	75	93	252	294	56	68
S4	369	75	93	252	342	62	74

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

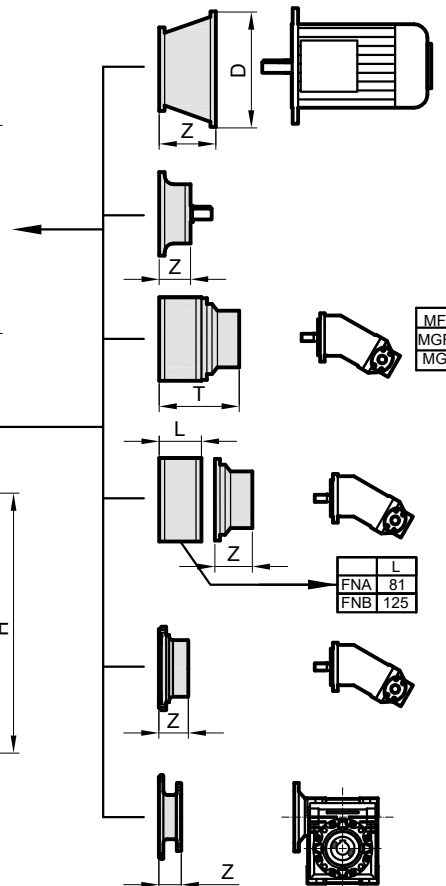
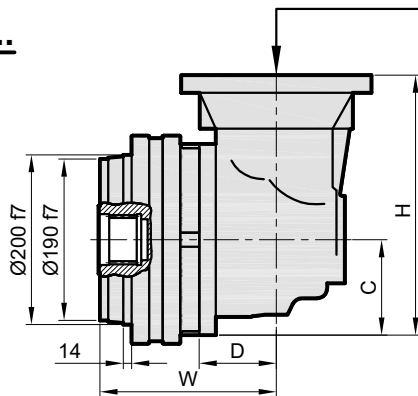
S



IPR..



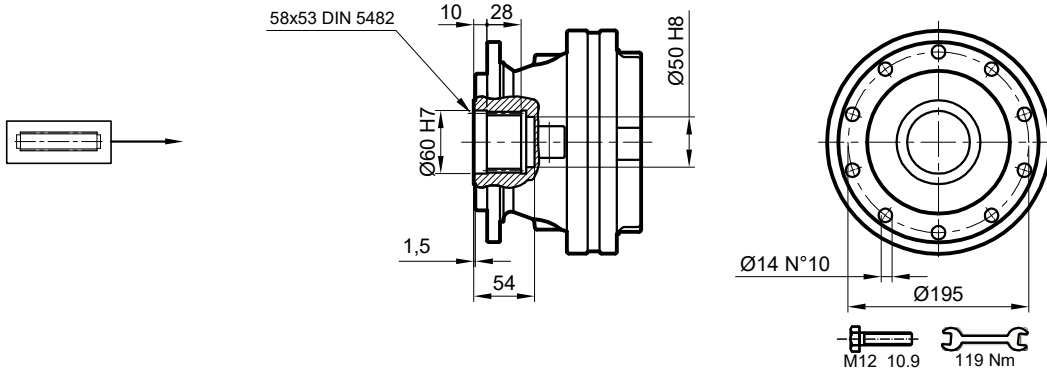
IPRK..



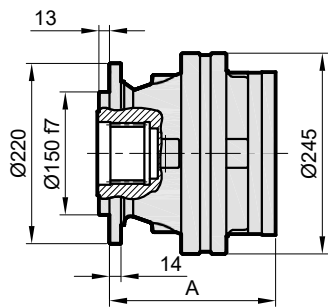
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	91.5	25	-
S2	193	88	140	380	152.5	32	43
S3	227,5	75	93	252	200.5	38	50
S4	275,5	75	93	252	248.5	44	56

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

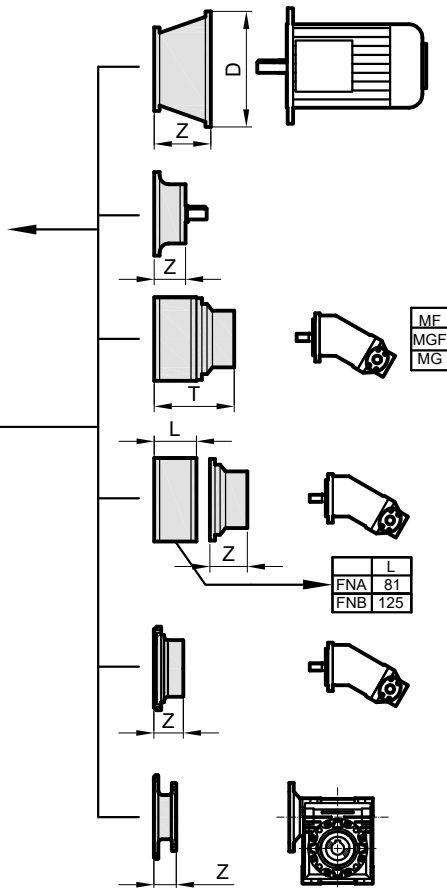
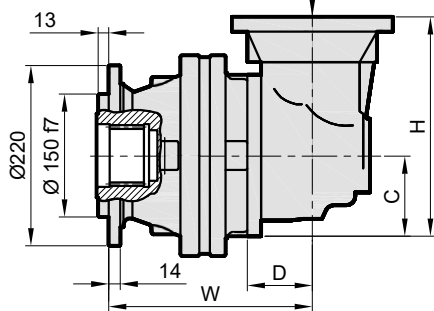
SF



IPR..



IPRK..



Stage	W	D	C	H	A	IPR SF	IPRK SF
S1	-	-	-	-	178	35	-
S2	279,5	88	140	380	239,5	43	53
S3	314	75	93	252	287	49	61
S4	362	75	93	252	335	55	67

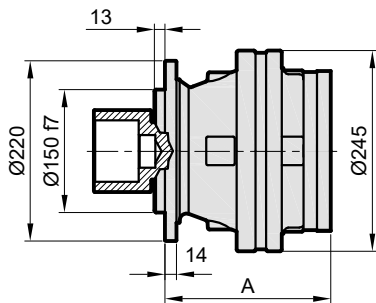
	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

SDF

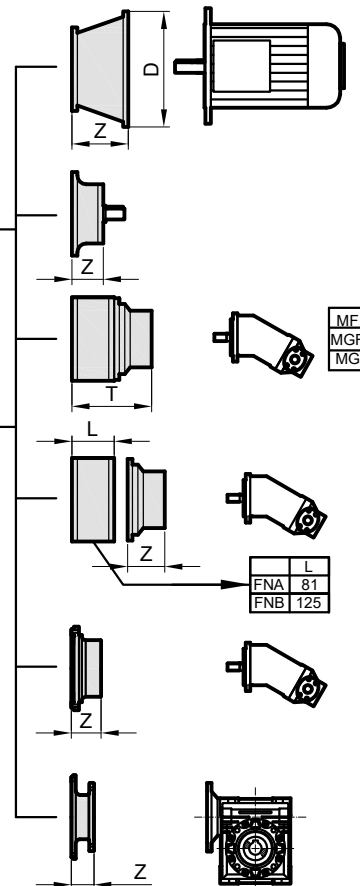
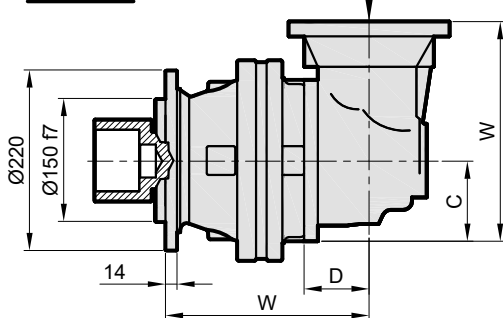
M_{max} = 7.5 kNm

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



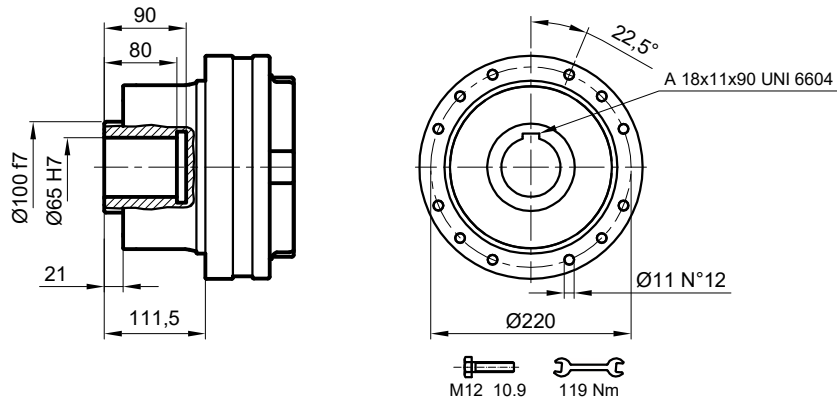
IPRK..



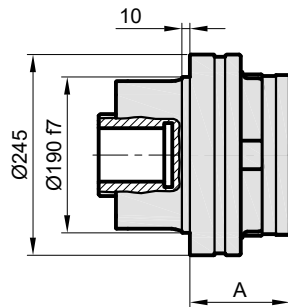
Stage	W	D	C	H	A	IPR SDF	IPRK SDF
S1	-	-	-	-	178	35	-
S2	279,5	88	140	380	239,5	45	53
S3	314	75	93	252	287	49	61
S4	362	75	93	252	335	55	67

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

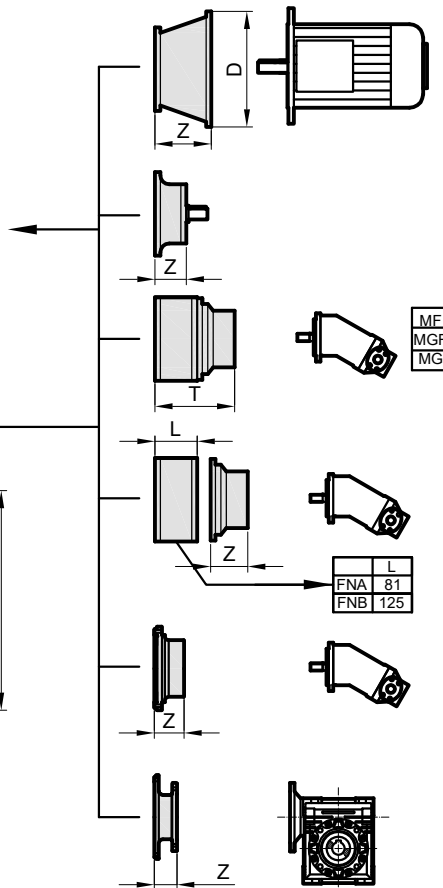
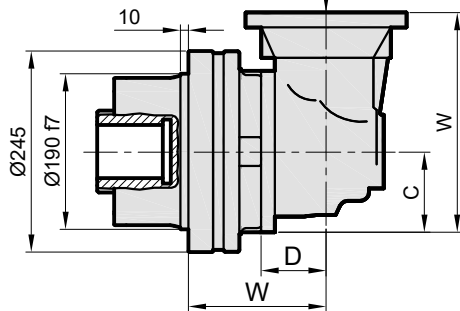
DKM



IPR..



IPRK..

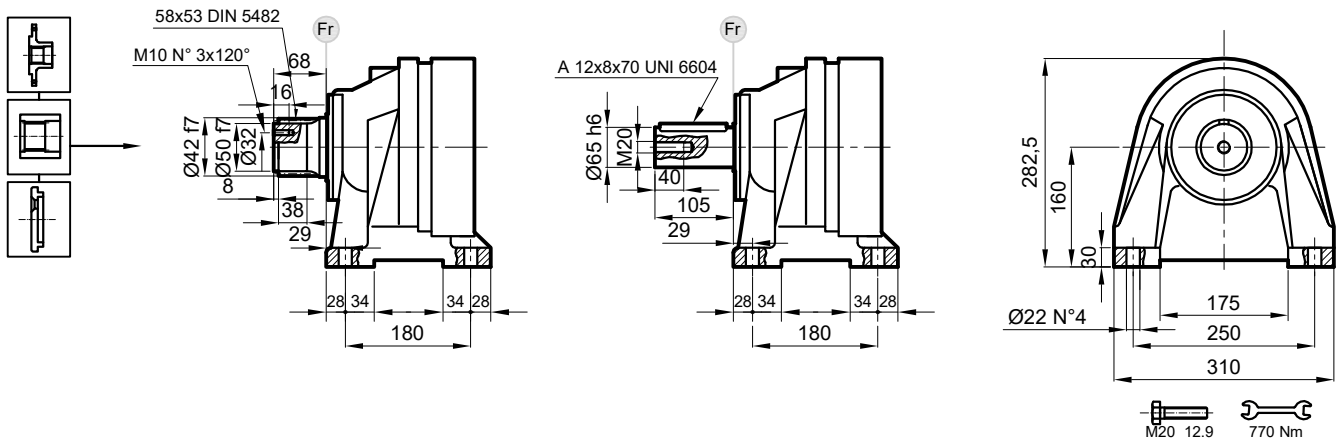


Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	96.5	25	-
S2	199	88	140	380	158.5	32	43
S3	233.5	75	93	252	206.5	38	50
S4	281.5	75	93	252	254.5	44	56

	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

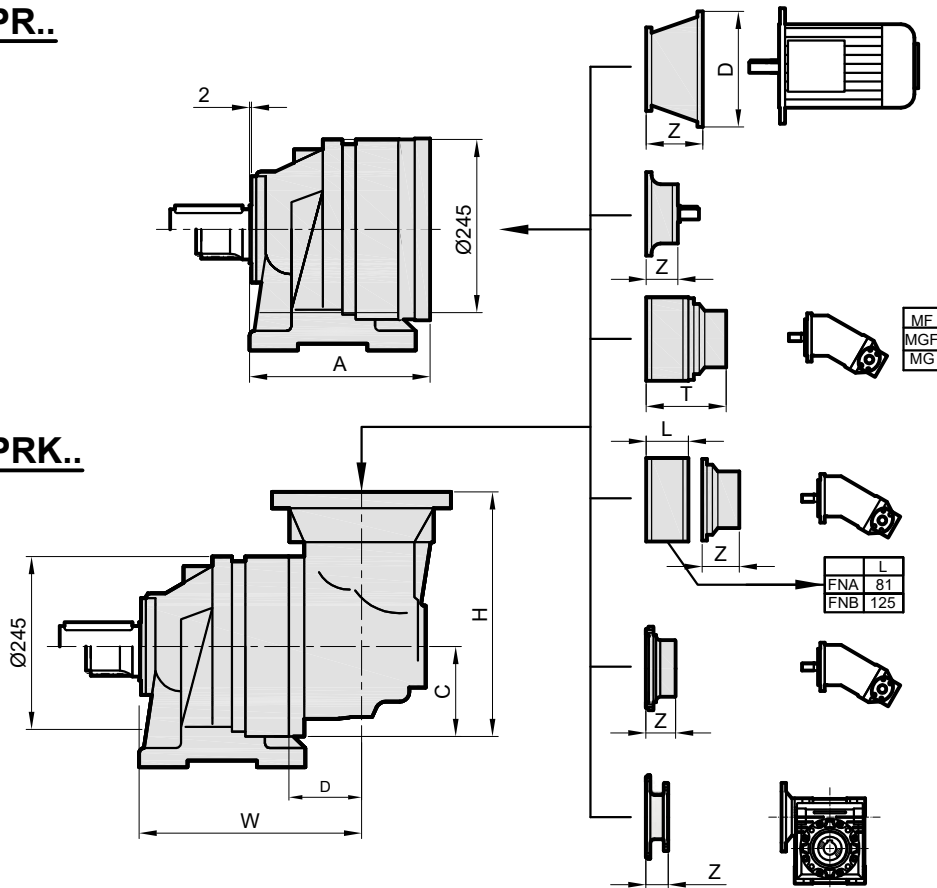
FVS

FVC



IPR..

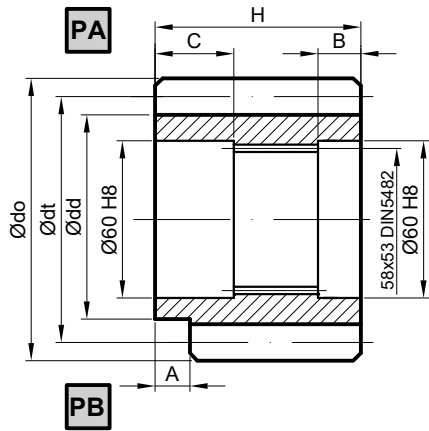
IPRK..



Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	224,5	46	-
S2	326	88	140	380	285,5	54	64
S3	360,5	75	93	252	333,5	60	72
S4	408,5	75	93	252	381,5	66	78

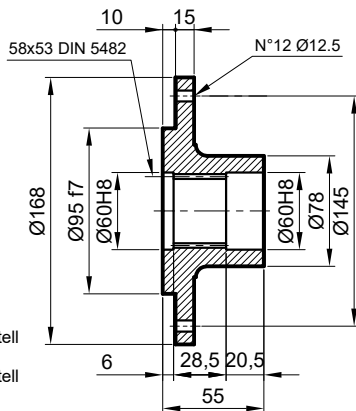
	IEC71	IEC80 / 90		IEC100 / 112		IEC132		IEC160 / 180		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z
S1	185	32	200	60	250	71	300	104	350	120
S2	185	32	200	60	250	71	300	104	350	120
S3	185	32	200	60	-	-	300	104	350	120
S4	185	32	200	60	-	-	300	104	350	120

P Pinyon / Pinion / Ritzel



	m	z	x	dd	dt	do	H	A	B	C	Malzeme / Material	Kod / Code / Bestell
PA	8	13	0	88	104	120	68	0	8.5	22.5	18NiCrMo5	1501.105.001
PA	8	11	0.85	74.8	88	110.8	68	0	8.5	22.5	38NiCrMo4	1501.105.002
PA	8	12	0.1	88	96	112.8	68	0	8	21	38NiCrMo4	1501.105.003
PB	10	14	0.24	117.4	140	162.4	116	13	9.5	22.5	18NiCrMo4	1502.105.001
PA	8	15	0	100	120	136	68	0	8.5	22.5	38NiCrMo4	1501.105.004
PA	6	14	0.6	72.6	84	99.6	95	0	23	21	38NiCrMo4	1501.105.005
PA	10	11	1.21	97.1	110	142.1	90	0	8	22.5	38NiCrMo5	1501.105.006

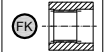
FL Flanş / Flange / Flansch



	A	B
FS	68	37
HS	80	49

FS Kod / Code / Bestell
1505.105.200
HS Kod / Code / Bestell
1506.105.201

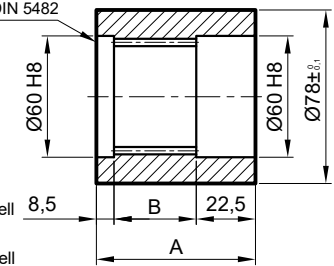
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



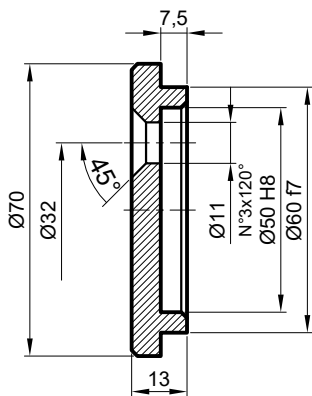
Malzeme / Material Material
UNI C40
SAE 1040
DIN Ck40

	A	B
FS	68	37
HS	80	49

FS Kod / Code / Bestell
1503.105.100
HS Kod / Code / Bestell
1504.105.101

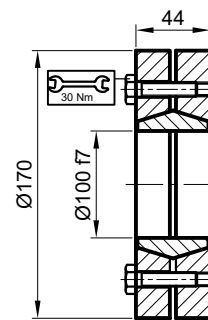


SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.105.250

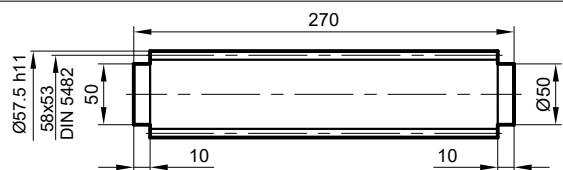
SB Sikma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
7,5 kNm

Kod / Code / Bestell
2501.105.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material Material
UNI 39NiCrMo3
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.105.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

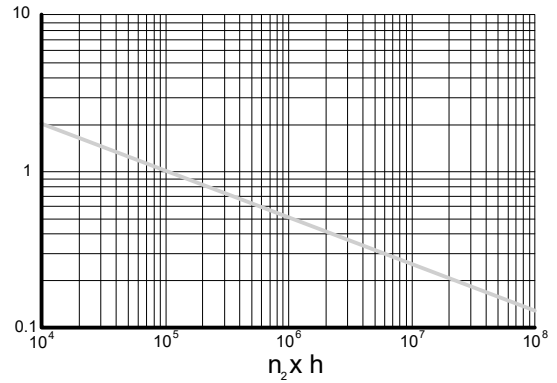
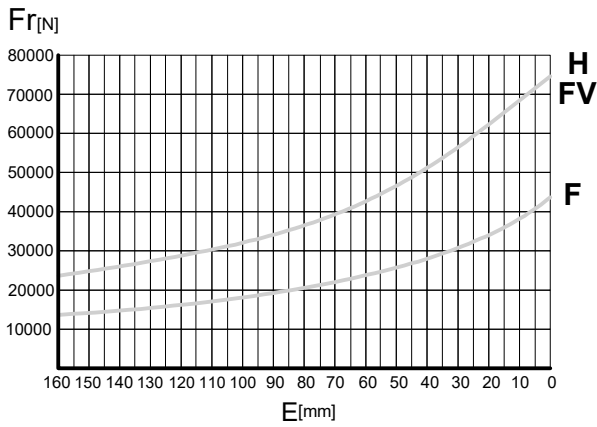
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

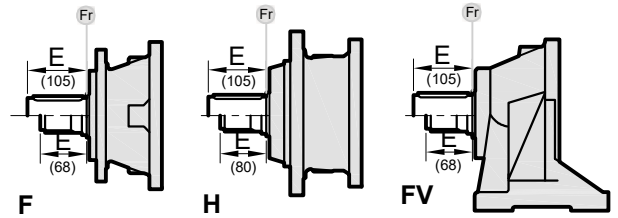
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

F-H-FV



	n x h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
F-H	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

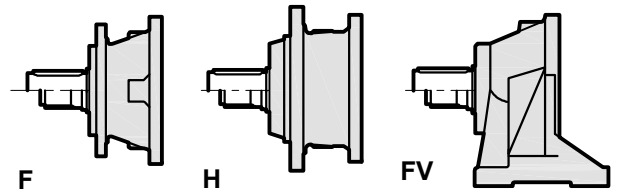
AXIAL LOADS (Fa)

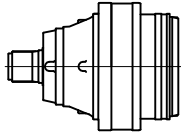
The values of the axial loads in the table refer to the output versions and load directions of application.

AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

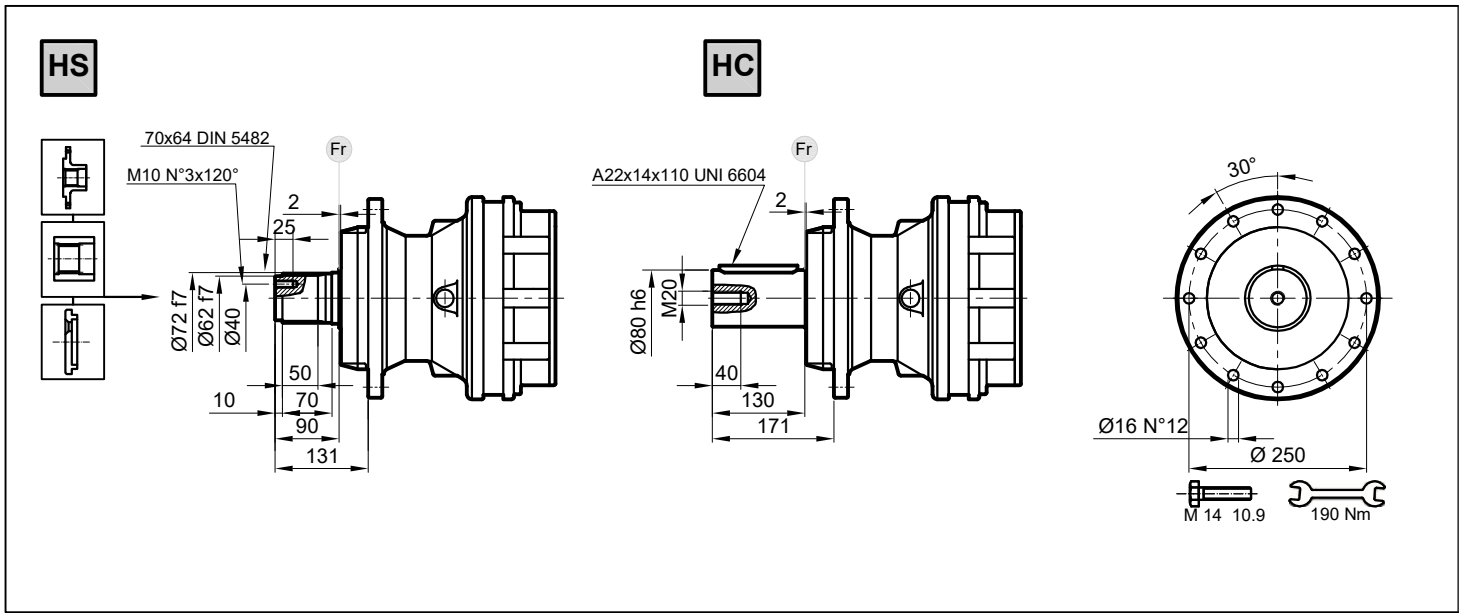
Fa [N]	F		H-FV	
		32000		32000
	←	32000	→	48000



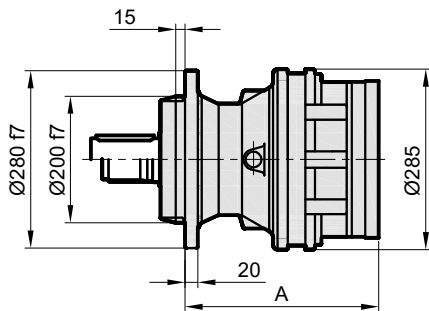
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 109 S1	3.66	7930	7020	5970	5290	2800	14040	30
	4.42	7240	6410	5450	4830	2800	12820	30
	5.00	6360	5630	4790	4240	2800	11260	30
	5.80	5380	4760	4050	3590	2800	9520	30
	7.00	4350	3850	3280	2900	2800	7700	30
IPR 109 S2	13.8	7930	7020	5970	5290	2800	14020	18
	18.2	7240	6410	5450	4830	2800	12820	18
	20.6	6360	5630	4790	4240	2800	11260	18
	22.8	7240	6410	5450	4830	2800	12820	18
	26.5	7240	6410	5450	4830	2800	12820	18
	30.0	6360	5630	4790	4240	2800	11260	18
	36.2	6360	5630	4790	4240	2800	11260	18
	42.0	5380	4760	4050	3590	2800	9520	18
IPR 109 S3	50.7	4350	3850	3280	2900	2800	7700	18
	53.7	7930	7020	5970	5290	2800	14040	14
	64.8	7930	7020	5970	5290	2800	14040	14
	71.6	7240	6410	5450	4830	2800	12820	14
	78.2	7240	6410	5450	4830	2800	12820	14
	88.3	6360	5630	4790	4240	2800	11260	14
	93.6	7240	6410	5450	4830	2800	12820	14
	102.1	7930	7020	5970	5290	2800	14040	14
	112.9	7240	6410	5450	4830	2800	12820	14
	127.8	7930	7020	5970	5290	2800	14040	14
	139.2	6360	5630	4790	4240	2800	11260	14
	148.7	7240	6410	5450	4830	2800	12820	14
	155.3	6360	5630	4790	4240	2800	11260	14
	174.3	6360	5630	4790	4240	2800	11260	14
	194.8	5380	4760	4050	3590	2800	9520	14
	216.7	7240	6410	5450	4830	2800	12820	14
244.6	6360	5630	4790	4240	2800	11260	14	
283.8	5380	4760	4050	3590	2800	9520	14	
342.5	4350	3850	3280	2900	2800	7700	14	
IPR 109 S4	301.1	7930	7020	5970	5290	2800	14040	8
	332.4	7930	7020	5970	5290	2800	14040	8
	347.9	7930	7020	5970	5290	2800	14040	8
	400.6	7930	7020	5970	5290	2800	14400	8
	434.3	7930	7020	5970	5290	2800	14400	8
	474.3	7930	7020	5970	5290	2800	14400	8
	523.5	7930	7020	5970	5290	2800	14400	8
	571.7	7930	7020	5970	5290	2800	14400	8
	632.7	7240	6410	5450	4830	2800	12820	8
	661.8	7240	6410	5450	4830	2800	12820	8
	747.3	6360	5630	4790	4240	2800	11260	8
	768.6	7240	6410	5450	4830	2800	12820	8
	832.3	7240	6410	5450	4830	2800	12820	8
	869.9	6360	5630	4790	4240	2800	11260	8
	976.4	6360	5630	4790	4240	2800	11260	8
	1048.6	6360	5630	4790	4240	2800	11260	8
	1177.0	6360	5630	4790	4240	2800	11260	8
	1366.8	6360	5630	4790	4240	2800	11260	8
1651.4	6360	5630	4790	4240	2800	11260	8	
2968.8	4350	3850	3280	2900	2800	7700	8	



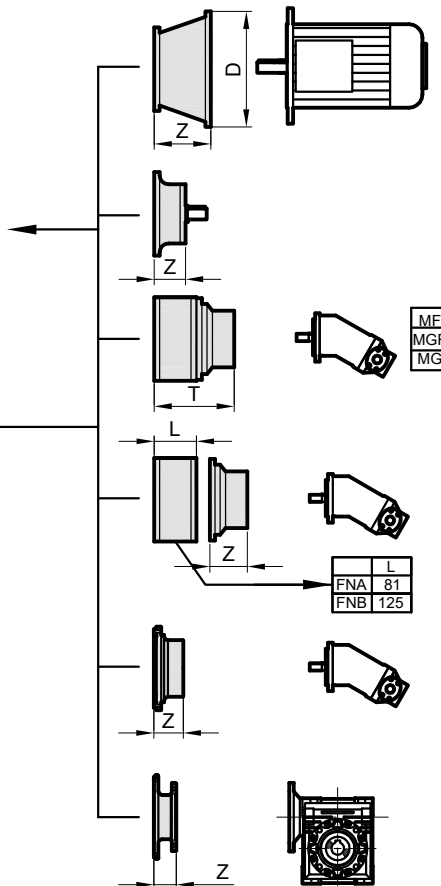
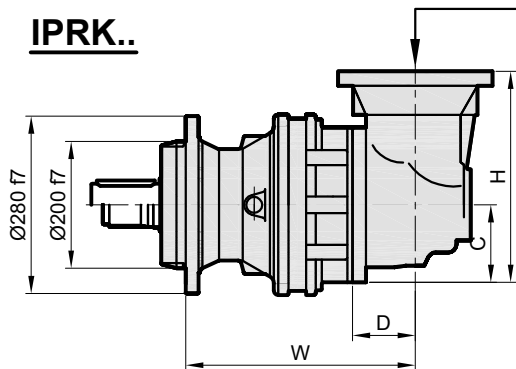
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 109 S2	12.6	7930	7020	5970	5290	2800	14040	18
	15.2	7240	6410	5450	4830	2800	12820	18
	17.2	6360	5630	4790	4240	2800	11260	18
	20.0	5380	4760	4050	3590	2800	9520	18
	24.1	7240	6410	5450	4830	2800	12820	18
	27.2	6360	5630	4790	4240	2800	11260	18
	31.5	5380	4760	4050	3590	2800	9520	18
	38.1	4350	3850	3280	2900	2800	7700	18
IPRK 109 S3	53.8	7240	6410	5450	4830	2800	12820	14
	55.5	7240	6410	5450	4830	2800	12820	14
	60.4	6360	5630	4790	4240	2800	11260	14
	67.1	7240	6410	5450	4830	2800	12820	14
	77.9	7240	6410	5450	4830	2800	12820	14
	87.9	6360	5630	4790	4240	2800	11260	14
	94.1	7240	6410	5450	4830	2800	12820	14
	106.3	6360	5630	4790	4240	2800	11260	14
	123.3	5380	4760	4050	3590	2800	9520	14
148.8	4350	3850	3280	2900	2800	7700	14	
IPRK 109 S4	157.7	7930	7020	5970	5290	2800	14040	8
	174.1	7930	7020	5970	5290	2800	14040	8
	190.1	7930	7020	5970	5290	2800	14040	8
	210.3	7240	6410	5450	4830	2800	12820	8
	229.6	7240	6410	5450	4830	2800	12820	8
	248.4	7930	7020	5970	5290	2800	14040	8
	274.8	7240	6410	5450	4830	2800	12820	8
	300.7	7240	6410	5450	4830	2800	12820	8
	331.2	7240	6410	5450	4830	2800	12820	8
	361.6	7240	6410	5450	4830	2800	12820	8
	393.0	5380	4760	4050	3590	2800	9520	8
	453.0	7240	6410	5450	4830	2800	12820	8
	511.4	6360	5630	4790	4240	2800	11260	8
	557.0	5380	4760	4050	3590	2800	9520	8
	593.9	6360	5630	4790	4240	2800	11260	8
	656.7	6360	5630	4790	4240	2800	11260	8
	717.7	6360	5630	4790	4240	2800	11260	8
	832.5	5380	4760	4050	3590	2800	9520	8
	921.5	6360	5630	4790	4240	2800	11260	8
1068.9	5380	4760	4050	3590	2800	11260	8	



IPR..



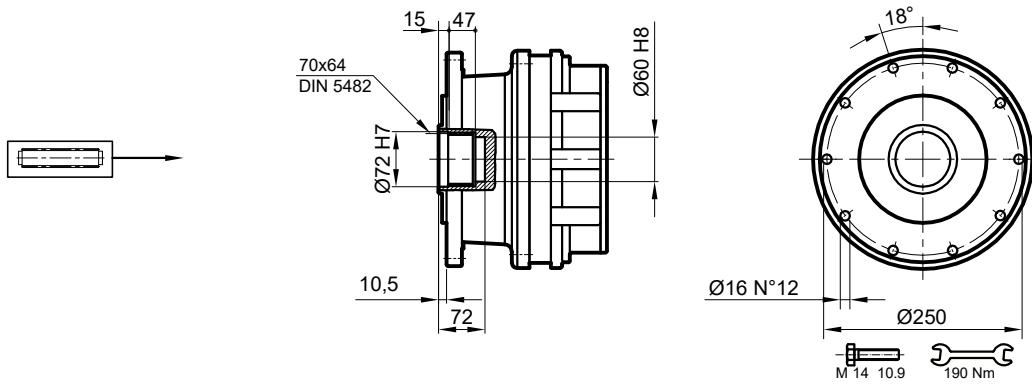
IPRK..



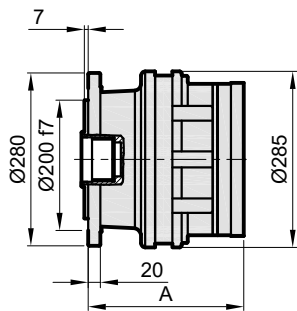
Stage	W	D	C	H	A	IPR H	IPRK H
S1	-	-	-	-	251	67	-
S2	339	88	140	380	310	79	104
S3	385	75	93	252	358	85	94
S4	433	75	93	252	406	91	100

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

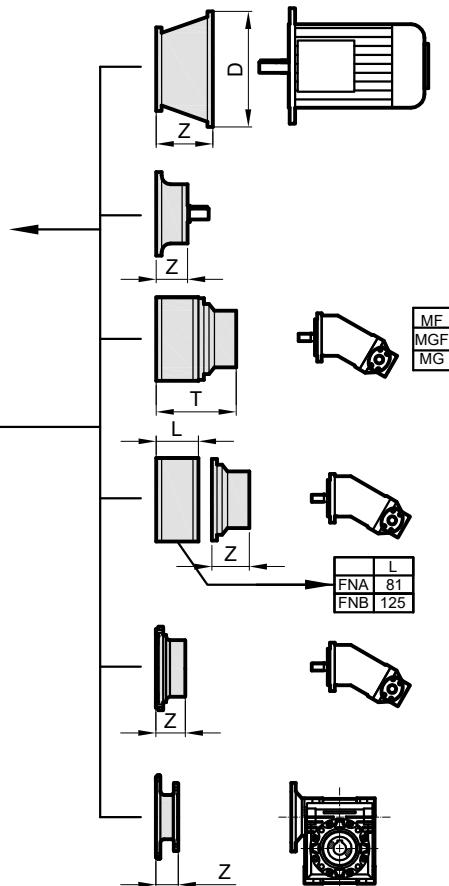
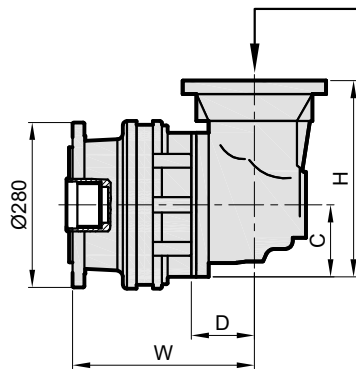
SF



IPR..



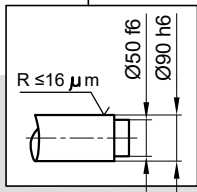
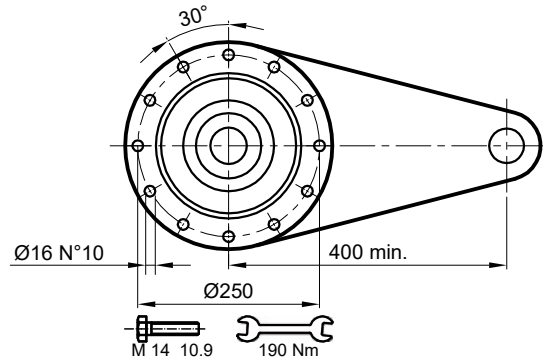
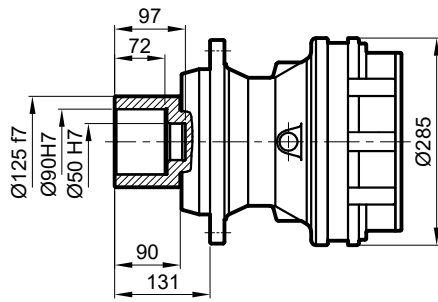
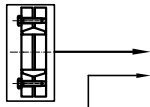
IPRK..



Stage	A	D	C	H	W	IPR SF	IPRK SF
S1	197	-	-	-	-	49	-
S2	257	88	140	380	285	61	86
S3	305	75	93	252	332	67	76
S4	353	75	93	252	380	73	82

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

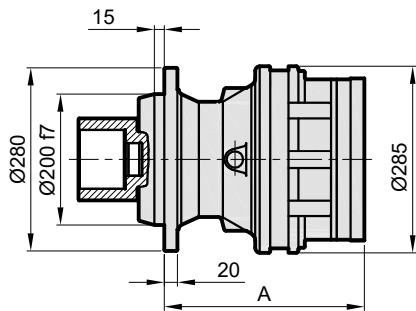
SDF



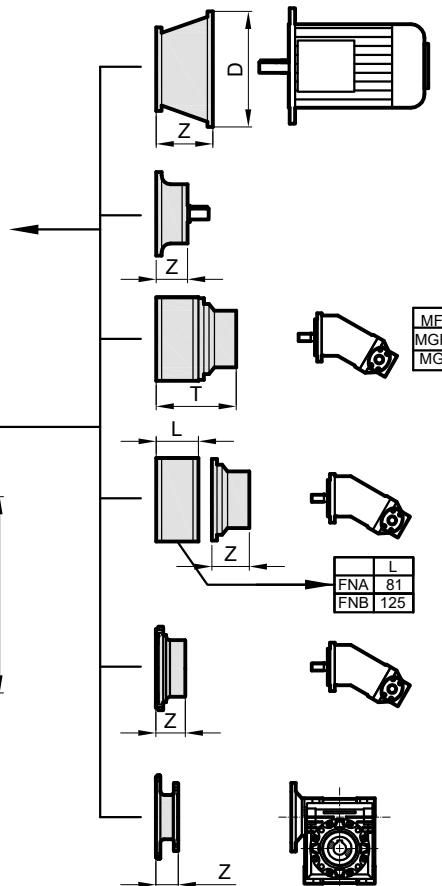
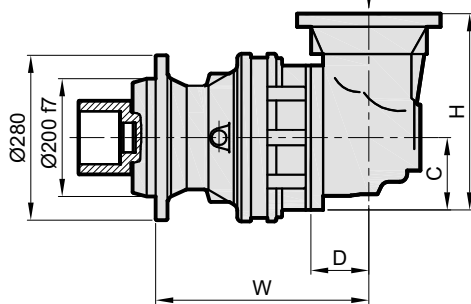
$M_{max} = 13 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



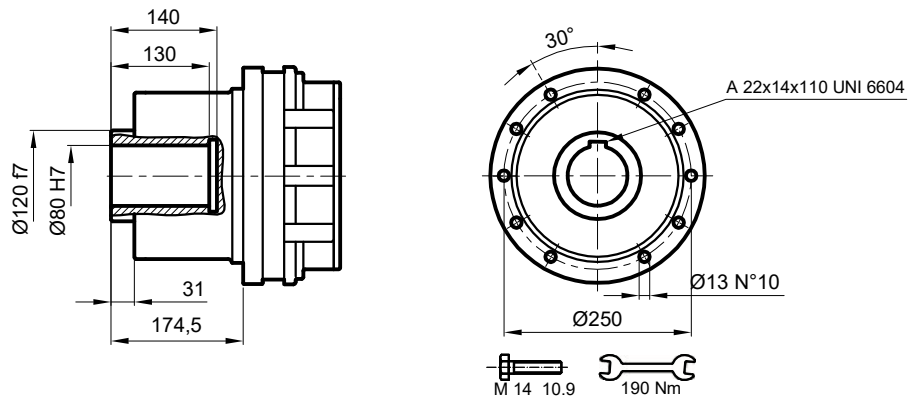
IPRK..



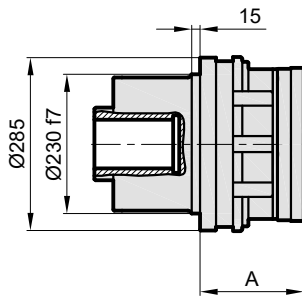
Stage	W	D	C	H	A	IPR SDF	IPRK SDF
S1	-	-	-	-	251	70	-
S2	339	88	140	380	310	82	107
S3	385	75	93	252	358	88	97
S4	433	75	93	252	406	94	103

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

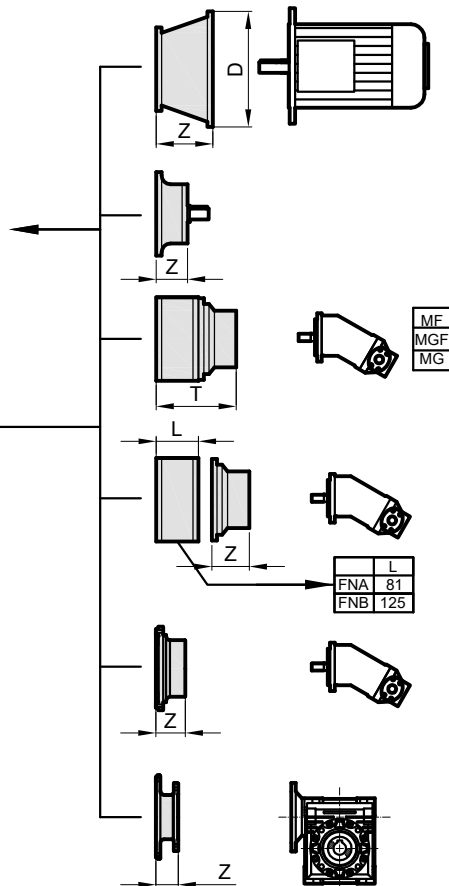
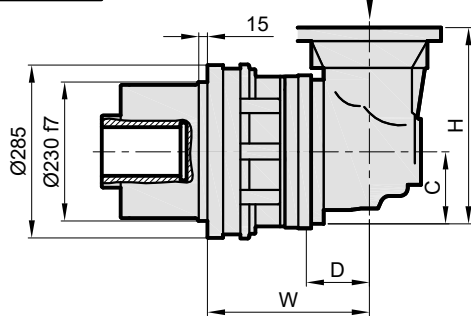
DKM



IPR..

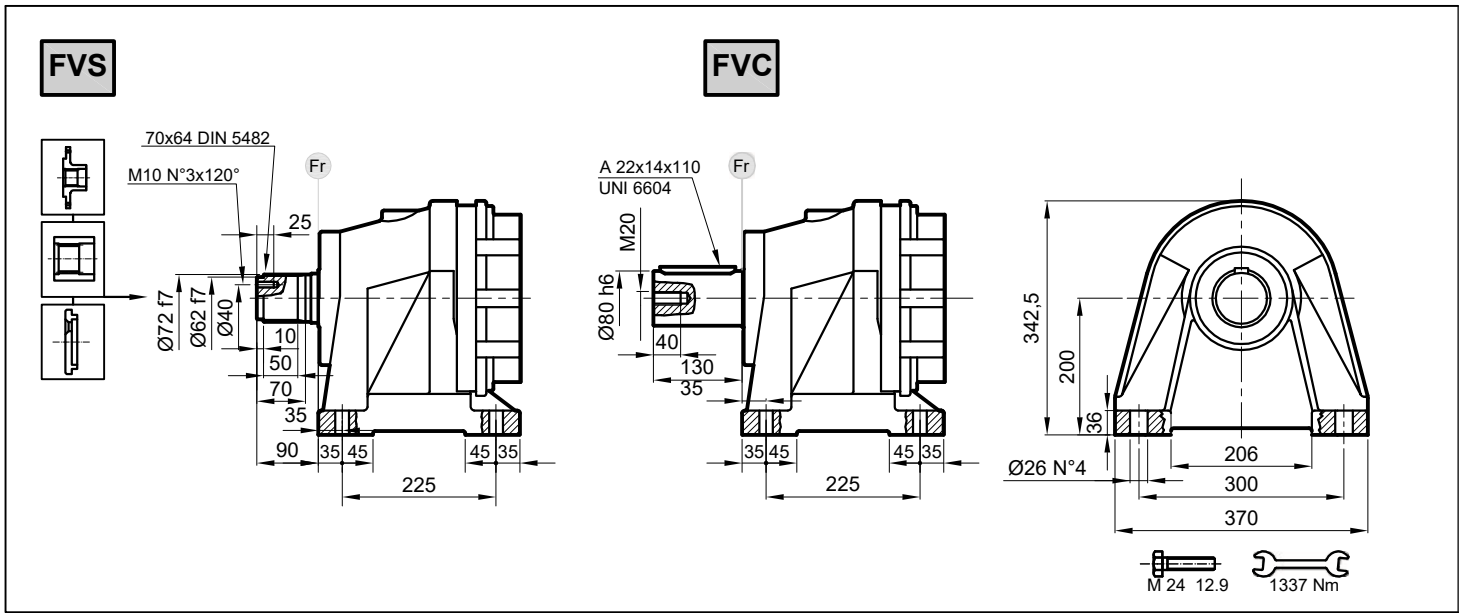


IPRK..



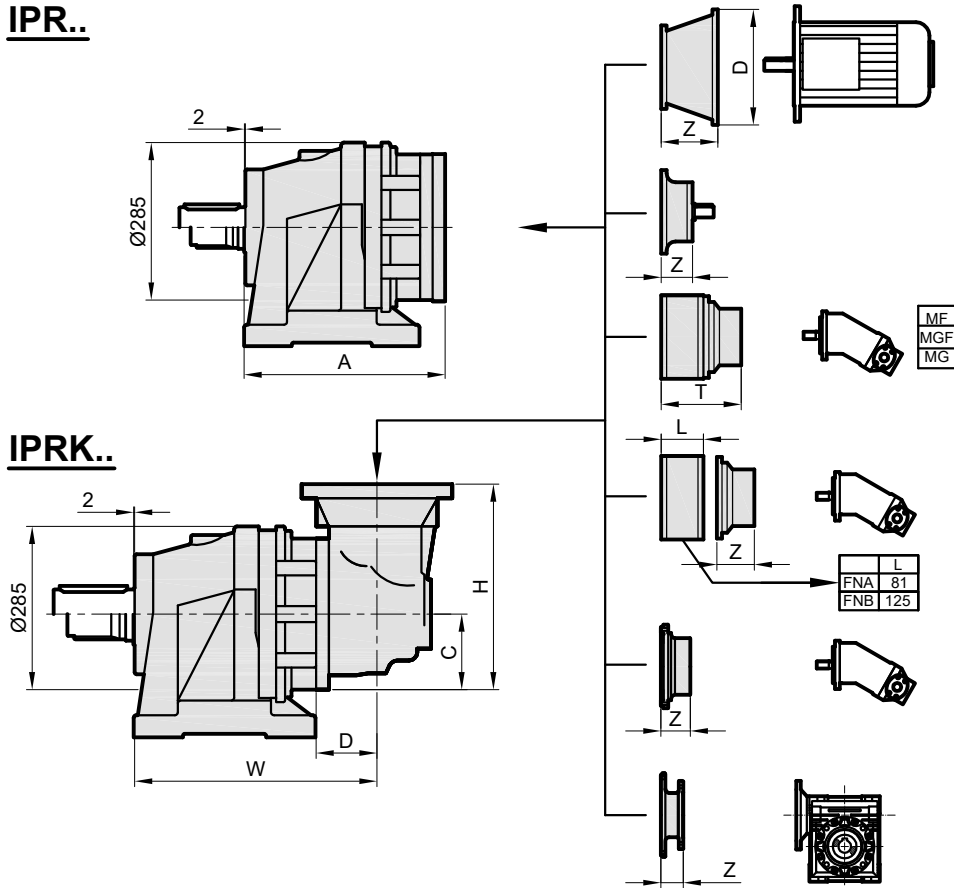
Stage	W	D	C	H	A	IPR		IPRK	
						SDF	DF	SDF	DF
S1	-	-	-	-	218	70	-	-	
S2	307	88	140	380	277	82	107	-	
S3	352	75	93	252	325	88	97	-	
S4	400	75	93	252	373	94	103	-	

Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..

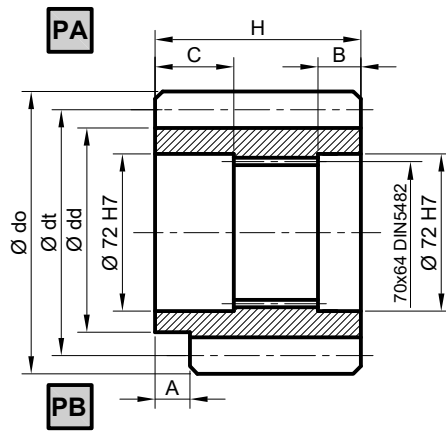
IPRK..



Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	292	83	-
S2	380	88	140	380	351	95	120
S3	426	75	93	252	400	101	110
S4	475	75	93	252	447	107	116

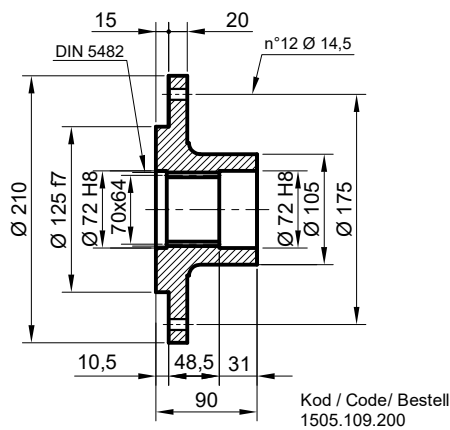
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

P Pinyon / Pinion / Ritzel



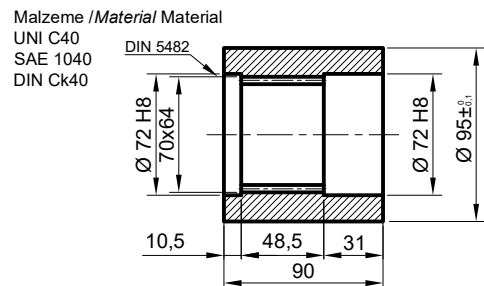
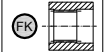
	m	z	x	dd	dt	do	H	A	B	C	Malzeme / Material	Kod / Code / Bestell
PA	10	11	1,21	72,9	110	142,1	90	0	10	31	18NiCrMo5	1501.109.001
PB	10	11	1,21	72,9	110	142,1	90	9	18,5	31	18NiCrMo5	1502.109.001
PA	10	12	0	95	120	140	90	0	10	31	38NiCrMo4	1501.109.002
PA	10	13	0	95	120	155	90	0	10	30	38NiCrMo4	1501.109.003

FL Flanş / Flange / Flansch



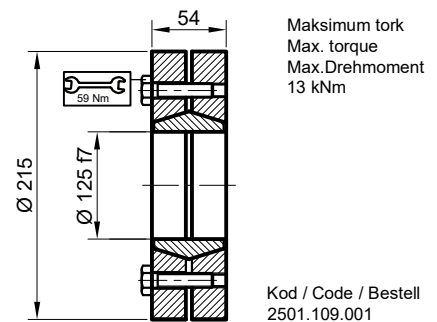
Kod / Code / Bestell
1505.109.200

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



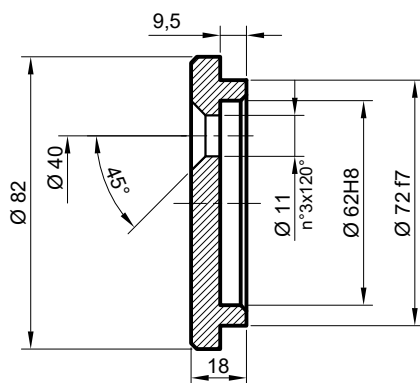
Kod / Code / Bestell
1503.109.100

SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



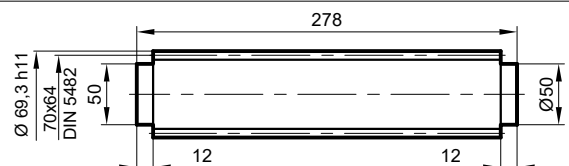
Kod / Code / Bestell
2501.109.001

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.109.250

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material
UNI 39NiCrMo3
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet
Kod / Code / Bestell
1509.109.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

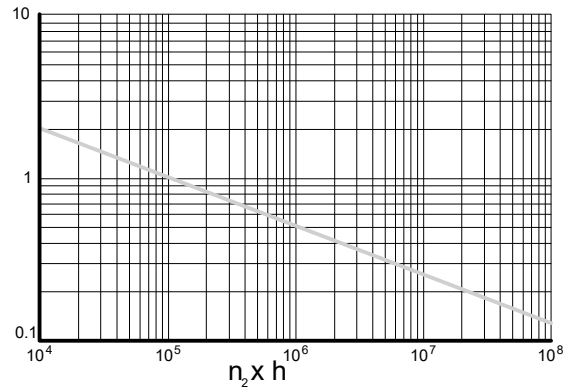
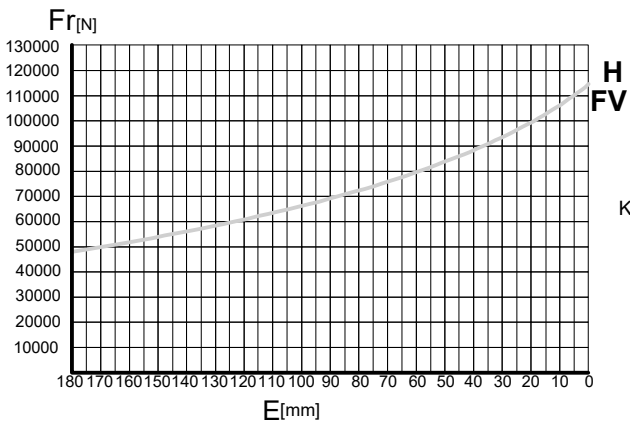
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

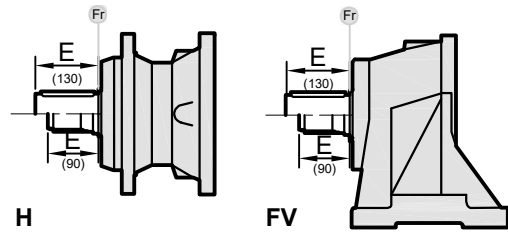
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

H-FV



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
F	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

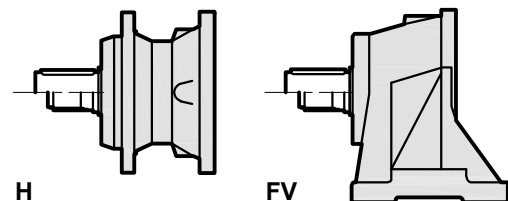
AXIAL LOADS (Fa)

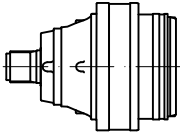
The values of the axial loads in the table refer to the output versions and load directions of application.

AXIALLAST (Fa)

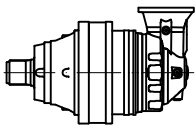
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

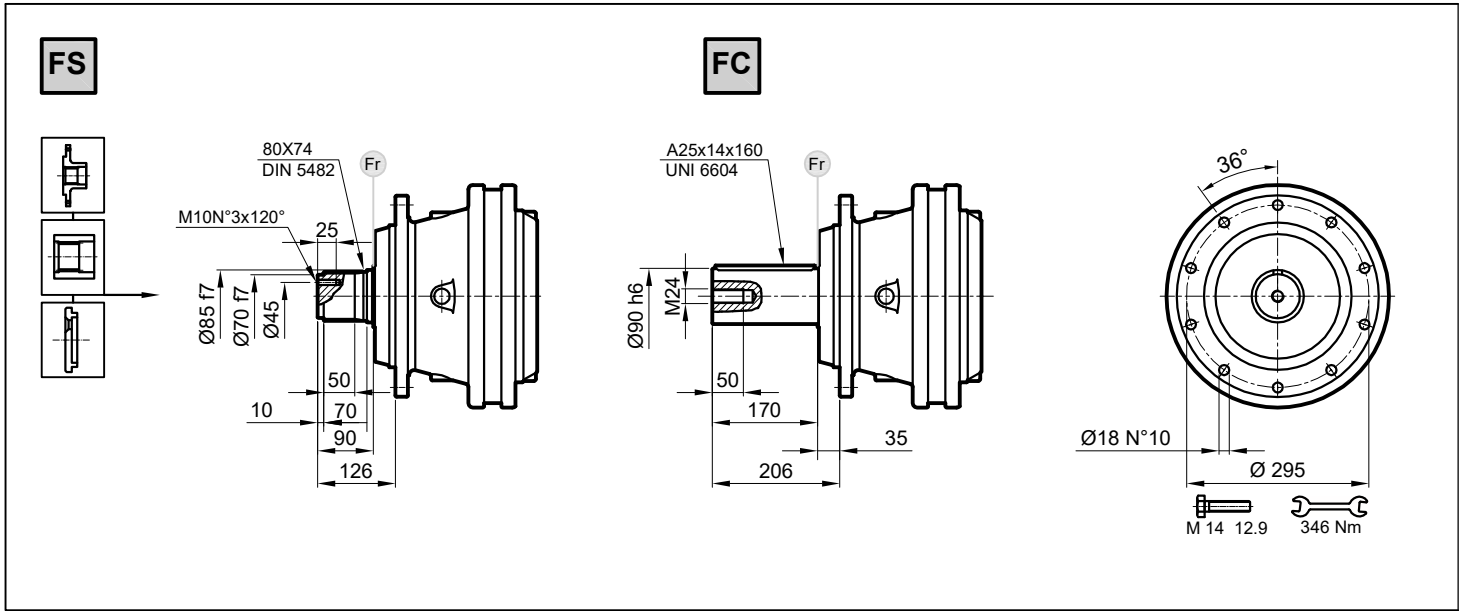
Fa [N]	H	FV	← →
		40000	
	60000	60000	



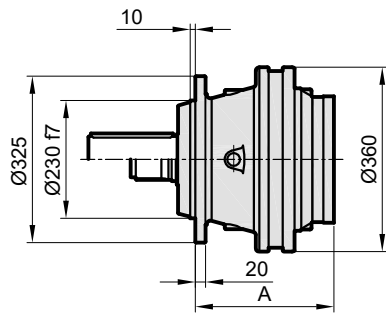


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 111 S1	3.55	13800	12210	10390	9200	2000	24420	40
	4.28	11860	10500	8940	7910	2000	21000	40
	5.60	9220	8160	6940	6150	2000	16320	40
	6.75	7040	6230	5300	4690	2000	12460	40
	8.66	4980	4410	3750	3320	2000	8820	40
IPR 111 S2	13.4	13800	12210	10390	9200	2800	24420	23
	16.1	11860	10500	8940	7910	2800	21000	23
	18.3	13800	12210	10390	9200	2800	24420	23
	22.1	11860	10500	8940	7910	2800	21000	23
	25.7	11860	10500	8940	7910	2800	21000	23
	28.9	9220	8160	6940	6150	2800	16320	23
	33.6	9220	8160	6940	6150	2800	16320	23
	40.5	7040	6230	5300	4690	2800	12460	23
IPR 111 S3	48.9	7040	6230	5300	4690	2800	12460	23
	57.5	13800	12210	10390	9200	2800	24420	23
	62.8	13800	12210	10390	9200	2800	24420	15
	75.2	13800	12210	10390	9200	2800	24420	15
	82.1	1380	12210	10390	9200	2800	24420	15
	94.8	11860	10500	8940	7910	2800	21000	15
	109.2	11860	10500	8940	7910	2800	21000	15
	118.4	9220	8160	6940	6150	2800	16320	15
	123.9	11860	10500	8940	7910	2800	21000	15
	129.3	9220	8160	6940	6150	2800	16320	15
	143.9	11860	10500	8940	7910	2800	21000	15
	155.9	9220	8160	6940	6150	2800	16320	15
	173.5	11860	10500	8940	7910	2800	21000	15
	188.1	9220	8160	6940	6150	2800	16320	15
	195.2	9220	8160	6940	6150	2800	16320	15
	209.7	7040	6230	5300	4690	2800	12460	15
IPR 111 S4	226.8	9220	8160	6940	6150	2800	16320	15
	235.4	7040	6230	5300	4690	2800	12460	15
	274.0	9220	8160	6940	6150	2800	16320	15
	330.3	7040	6230	5300	4690	2800	12460	11
	351.9	13800	12210	10390	9200	2800	24420	11
	388.5	13800	12210	10390	9200	2800	24420	11
	421.2	13800	12210	10390	9200	2800	24420	11
	440.8	11860	10500	8940	7910	2800	21000	11
	459.9	13800	12210	10390	9200	2800	24420	11
	507.7	13800	12210	10390	9200	2800	24420	11
	531.4	11860	10500	8940	7910	2800	21000	11
	554.3	13800	12210	10390	9200	2800	24420	11
	576.0	9220	8160	6940	6150	2800	16320	11
	611.9	11860	10500	8940	7910	2800	21000	11
	640.5	11860	10500	8940	7910	2800	21000	11
	724.4	9220	8160	6940	6150	2800	16320	11
806.4	9220	8160	6940	6150	2800	16320	11	
907.3	9220	8160	6940	6150	2800	16320	11	
1008.8	11860	10500	8940	7910	2800	21000	11	
1093.6	9220	8160	6940	6150	2800	16320	11	
1270.0	9220	8160	6940	6150	2800	16320	11	
1530.9	9220	8160	6940	6150	2800	16320	11	
1849.8	9220	8160	6940	6150	2800	16320	11	
2229.7	7040	6230	5300	4690	2800	12460	11	

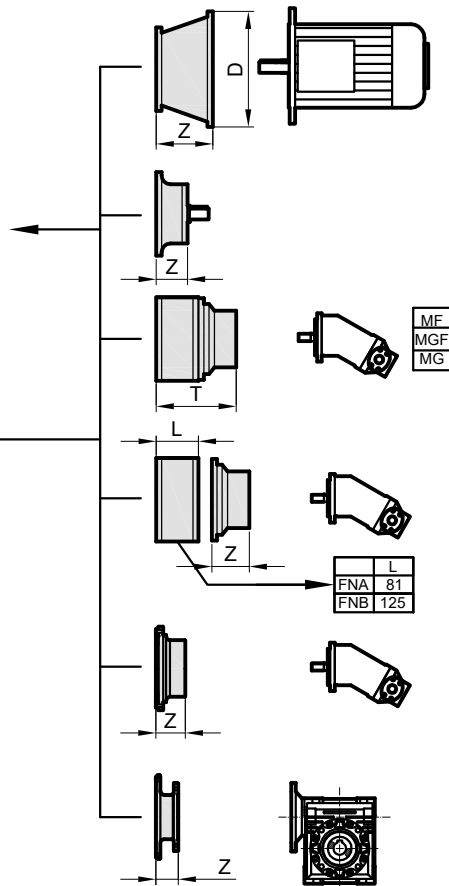
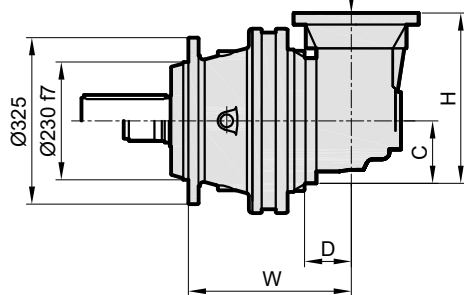
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 111 S2	12.2	13800	12210	10390	9200	2800	24420	23
	14.8	11860	10500	8940	7910	2800	21000	23
	19.3	9220	8160	6940	6150	2800	16320	23
	23.3	7040	6230	5300	4690	2800	12460	23
	30.4	9220	8160	6940	6150	2800	16320	23
	36.7	7040	6230	5300	4690	2800	12460	23
IPRK 111 S3	46.4	13800	12210	10390	9200	2800	24420	15
	50.6	13800	12210	10390	9200	2800	24420	15
	61.0	11860	10500	8940	7910	2800	21000	15
	73.1	13800	12210	10390	9200	2800	24420	15
	88.8	11860	10500	8940	7910	2800	21000	15
	96.2	11860	10500	8940	7910	2800	21000	15
	116.0	9220	8160	6940	6150	2800	16320	15
	120.5	11860	10500	8940	7910	2800	21000	15
	125.7	9220	8160	6940	6150	2800	16320	15
	139.9	11860	10500	8940	7910	2800	21000	15
	157.5	9220	8160	6940	6150	2800	16320	15
	182.9	9220	8160	6940	6150	2800	16320	15
	221.0	9220	8160	6940	6150	2800	16320	15
	266.4	7040	6230	5300	4690	2800	12640	15
IPRK 111 S4	140.0	13800	12210	10390	9200	2800	24420	11
	168.8	13800	12210	10390	9200	2800	24420	11
	184.3	11860	10500	8940	7910	2800	21000	11
	203.5	11860	10500	8940	7910	2800	21000	11
	230.9	13800	12210	10390	9200	2800	24420	11
	265.9	11860	10500	8940	7910	2800	21000	11
	278.3	11860	10500	8940	7910	2800	21000	11
	301.7	13800	12210	10390	9200	2800	24420	11
	320.5	11860	10500	8940	7910	2800	21000	11
	350.0	11860	10500	8940	7910	2800	21000	11
	379.4	9220	8160	6940	6150	2800	16320	11
	418.8	9220	8160	6940	6150	2800	16320	11
	457.3	9220	8160	6940	6150	2800	16320	11
	510.3	9220	8160	6940	6150	2800	16320	11
	551.9	9220	8160	6940	6150	2800	16320	11
	665.2	9220	8160	6940	6150	2800	16320	11
	803.8	9220	8160	6940	6150	2800	16320	11
	968.9	7040	6230	5300	4690	2800	12460	11



IPR..



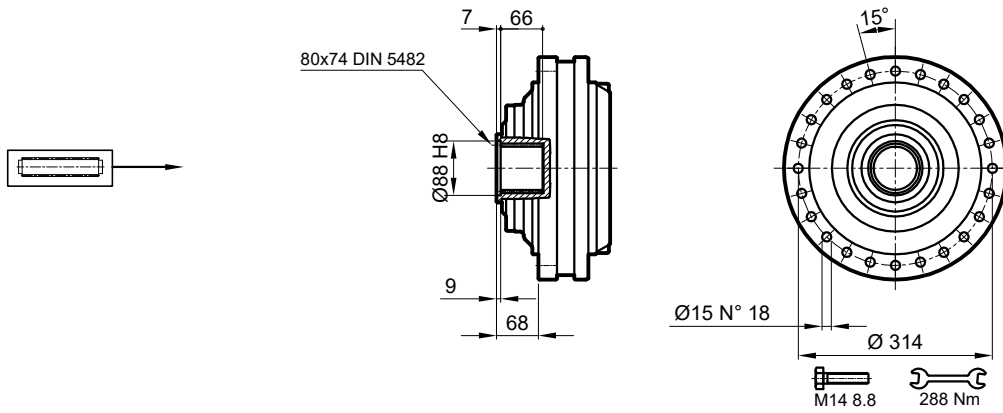
IPRK..



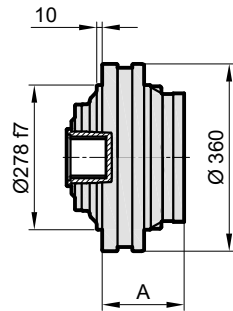
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	225	97	-
S2	313	88	140	380	296,5	113	134
S3	398	88	140	380	357,5	121	153
S4	432,5	75	93	252	405,5	127	136

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

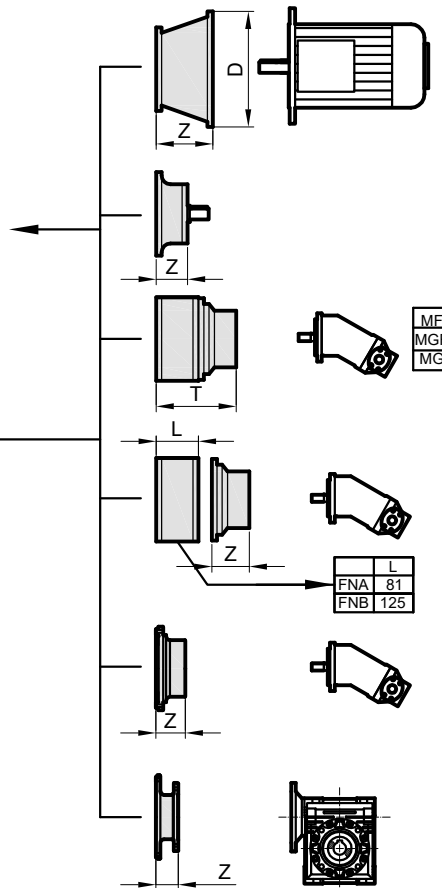
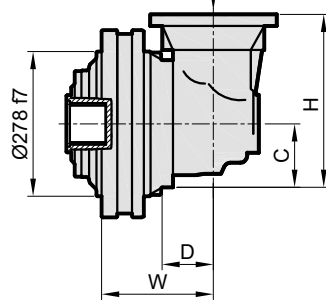
S



IPR..



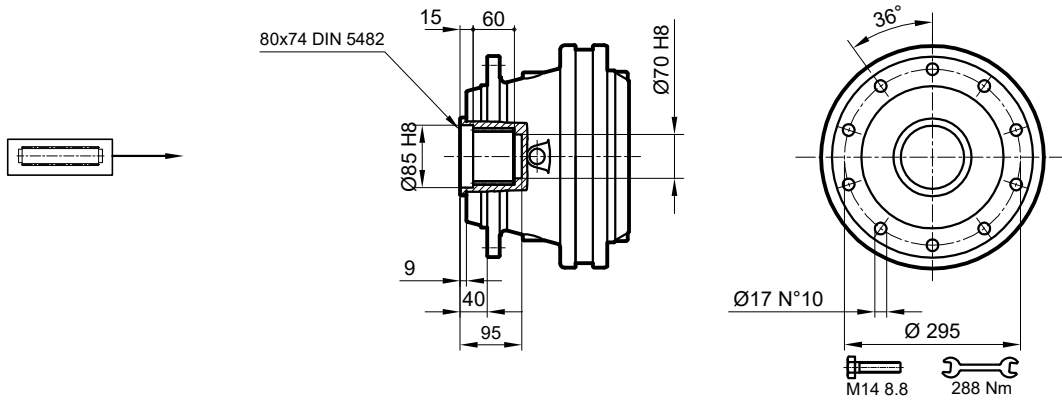
IPRK..



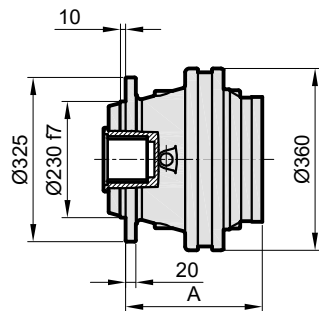
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	112	65	-
S2	200	88	140	380	183,5	81	102
S3	285	88	140	380	244,5	89	121
S4	319,5	75	93	252	292,5	95	104

	IEC71	IEC80-90	IEC100	IEC132	IEC160-180	IEC200	IEC225	IEC250-280
Stage	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	350	120
S2	185	32	200	60	250	71	300	104
S3	185	32	200	60	250	71	300	104
S4	185	32	200	60	250	71	300	104

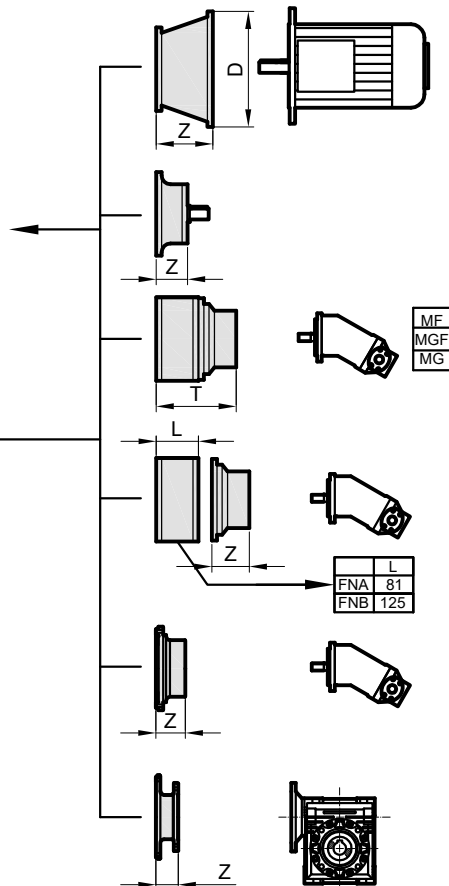
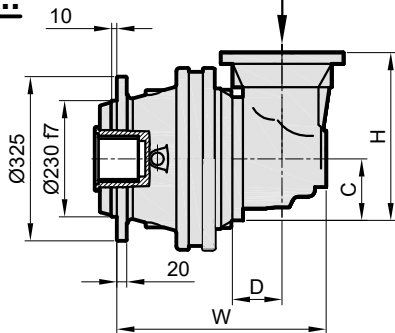
SF



IPR..



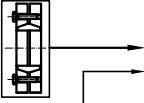
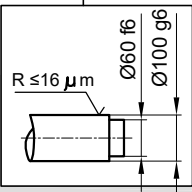
IPRK..



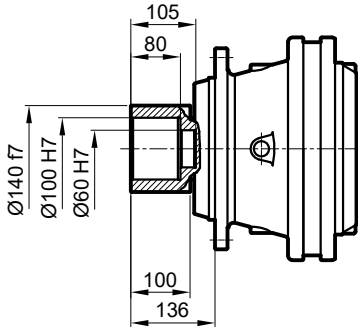
Stage	W	D	C	H	A	IPR SF	IPRK SF
S1	-	-	-	-	225	102	-
S2	313	88	140	380	296,5	118	139
S3	398	88	140	380	357,5	126	158
S4	432,5	75	93	252	405,5	132	141

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

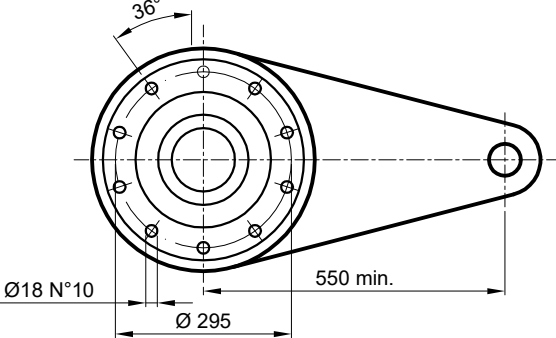
SDF

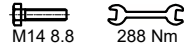
$R \leq 16 \mu\text{m}$
 $\varnothing 60 \text{ f6}$
 $\varnothing 100 \text{ g6}$



105
80
 $\varnothing 140 \text{ f7}$
 $\varnothing 100 \text{ H7}$
 $\varnothing 60 \text{ H7}$
100
136



36°
 $\varnothing 18 \text{ N}^\circ 10$
 $\varnothing 295$
 550 min.

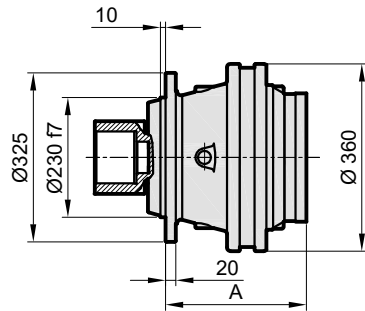


M14 8.8 288 Nm

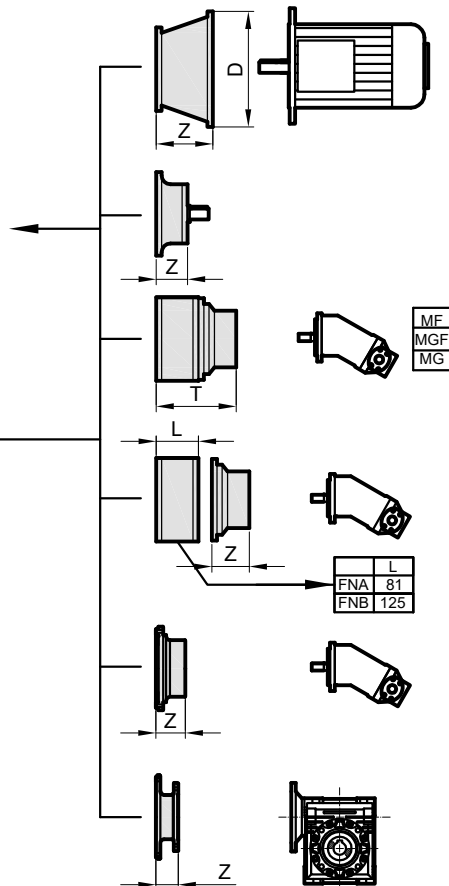
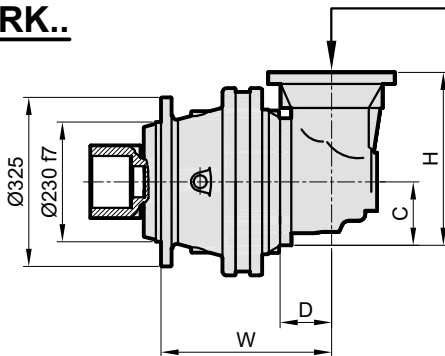
$M_{\text{max}} = 17.6 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



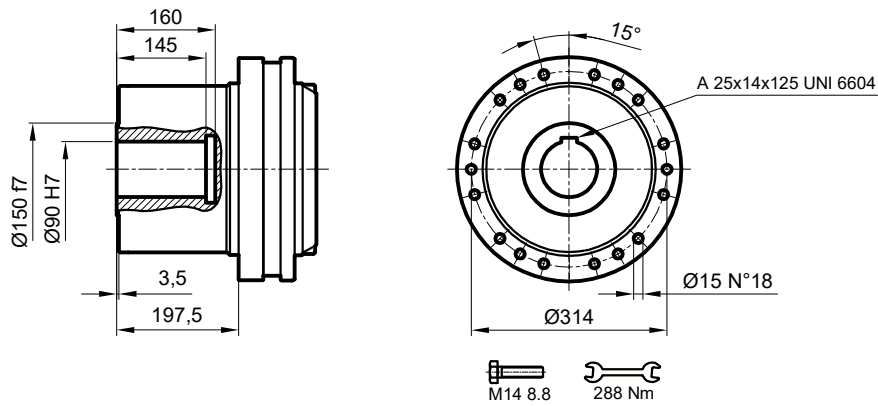
IPRK..



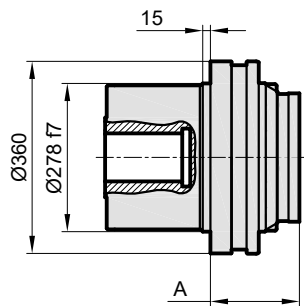
Stage	W	D	C	H	A	IPR		IPRK	
						SDF	SDFL	SDF	SDFL
S1	-	-	-	-	225	102	-	-	
S2	313	88	140	380	296,5	118	139		
S3	398	88	140	380	357,5	126	158		
S4	432,5	75	93	252	405,5	132	141		

Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

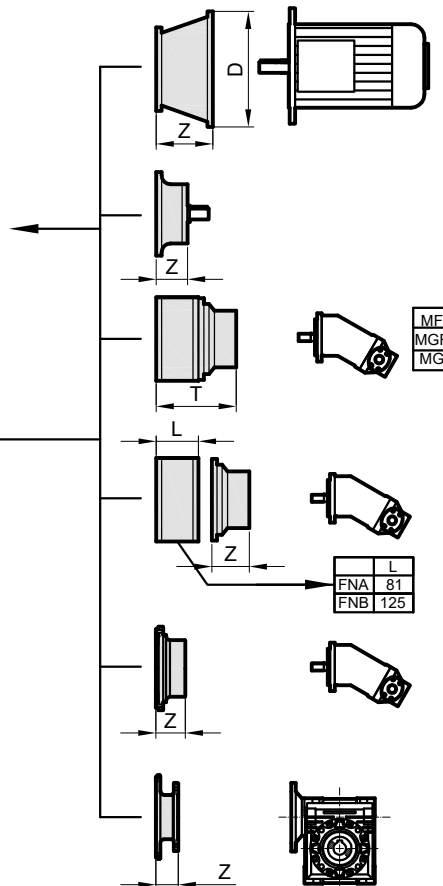
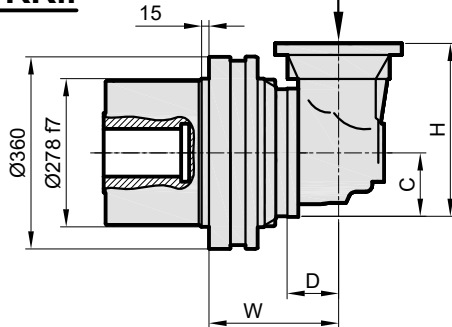
DKM



IPR..

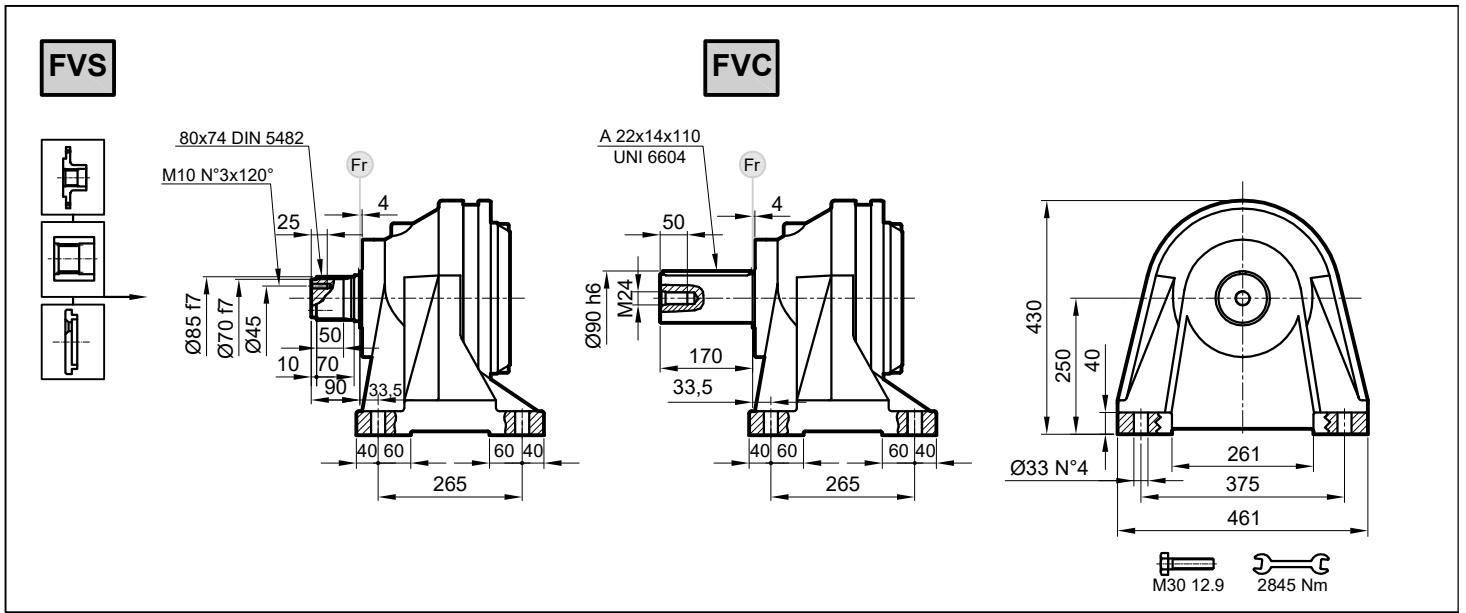


IPRK..

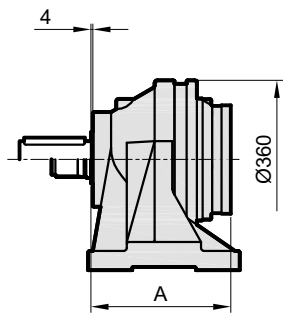


Stage	W	D	C	H	A	IPR		IPRK	
						S	⊠	S	⊠
S1	-	-	-	-	122	65	⊠	-	-
S2	210	88	140	380	193	81	⊠	102	-
S3	295	88	140	380	255	89	⊠	121	-
S4	330	75	93	252	302	95	⊠	104	-

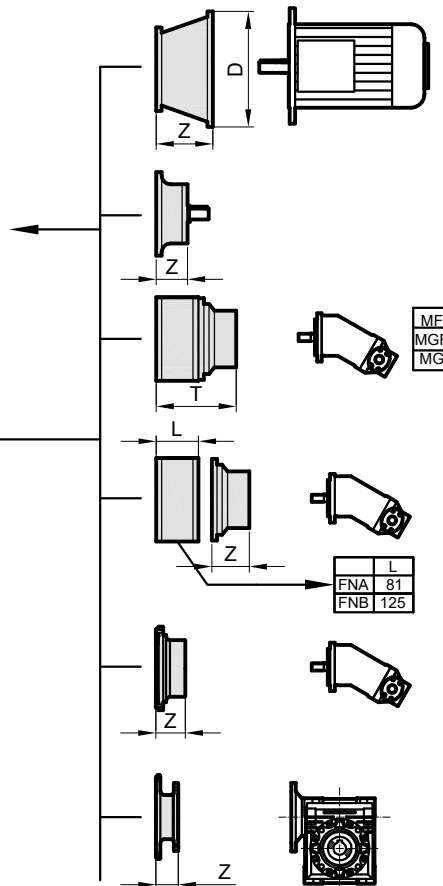
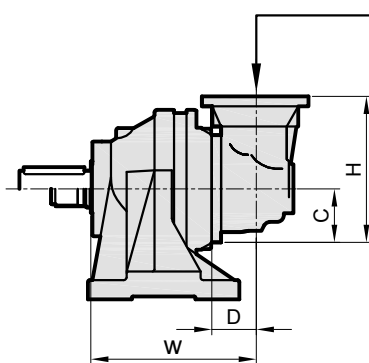
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



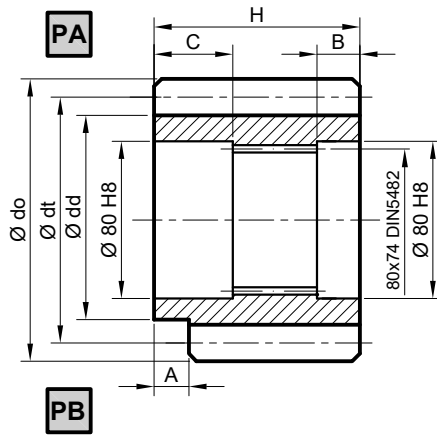
IPRK..



Stage	W	D	C	H	A	IPR		IPRK	
						FVC	FVC	FVC	FVC
S1	-	-	-	-	272	147	-	-	-
S2	360	88	140	380	343.5	163	184	-	-
S3	445	88	140	380	404.5	171	203	-	-
S4	479.5	75	93	252	452.5	177	186	-	-

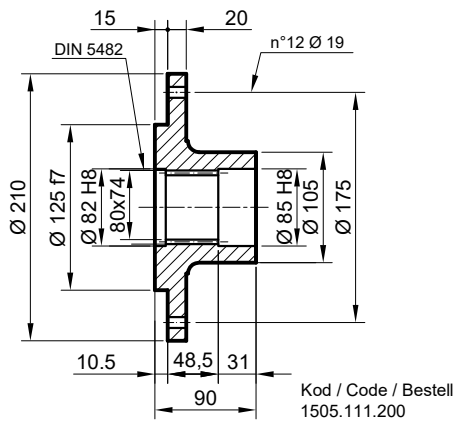
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

P Pinyon / Pinion / Ritzel



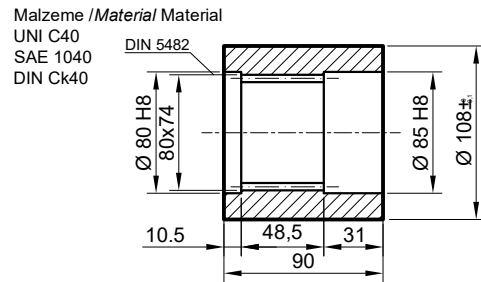
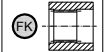
	m	z	x	dt	dd	do	H	A	B	C	Malzeme / Material	Kod Code / Bestell
PA	10	12	0	120	95	140	90	0	10	31	38NiCrMo4	1501.111.001
PA	10	14	0	140	95	160	90	0	10	31	38NiCrMo4	1501.111.002
PB	12	14	2.5	168	135.5	194.5	90	25	25	31	39NiCrMo3	1502.111.001

FL Flanş / Flange / Flansch



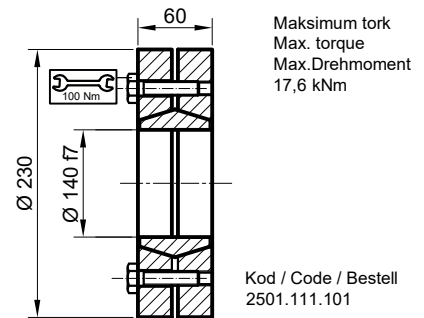
Kod / Code / Bestell
1505.111.200

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



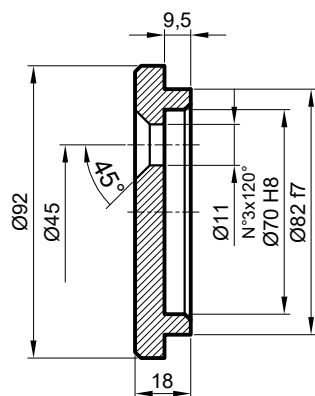
Kod / Code / Bestell
1503.111.100

SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



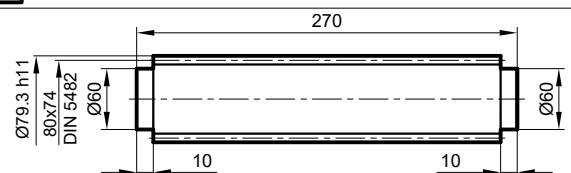
Kod / Code / Bestell
2501.111.101

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.111.250

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material
UNI 39NiCrMo3
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet
Kod / Code / Bestell
1509.111.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

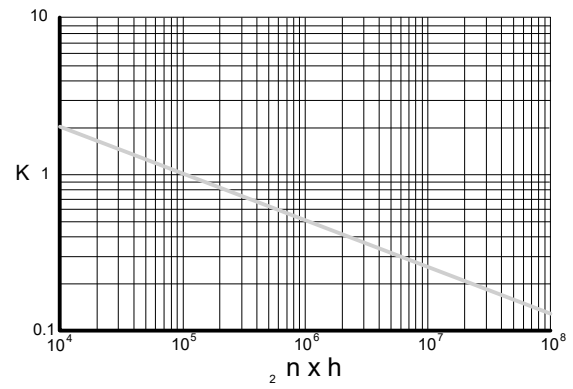
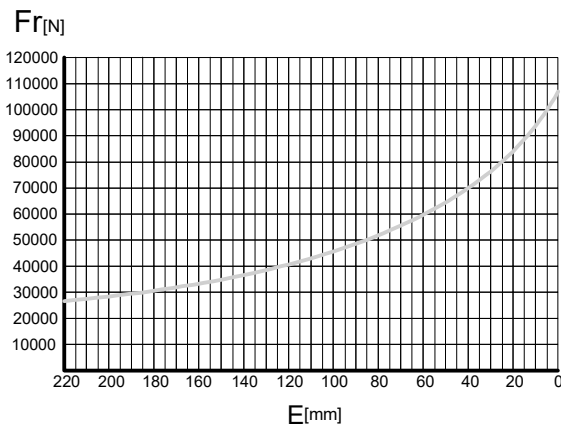
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

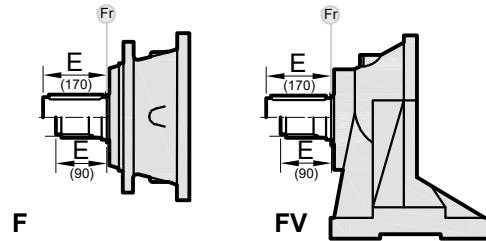
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

F-FV



	n x h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
F	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

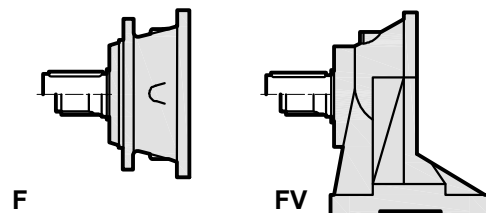
AXIAL LOADS (Fa)

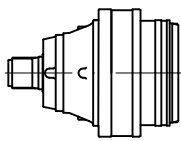
The values of the axial loads in the table refer to the output versions and load directions of application.

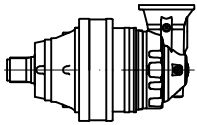
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

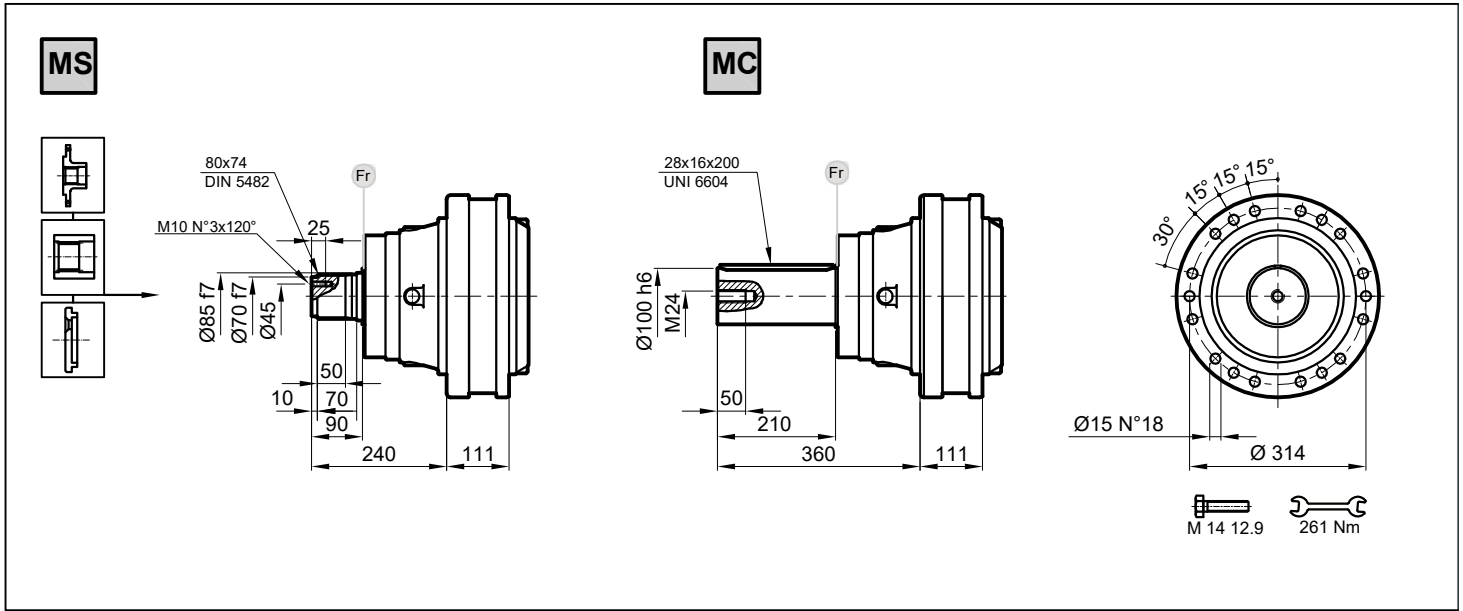
Fa [N]	F	FV	←
		40000	
	65000	65000	→



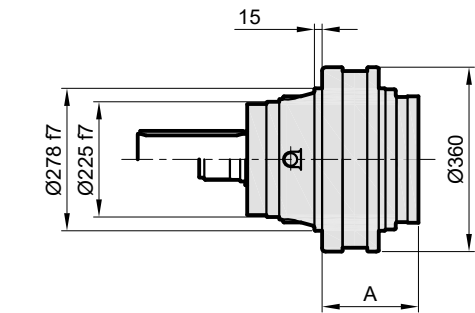
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 113 S1	3.55	20360	18020	15330	13570	2000	36040	40
	4.28	17740	15700	13360	11830	2000	31400	40
	5.60	13570	12010	10220	9050	2000	24020	40
	6.75	10320	9130	7770	6880	2000	18260	40
IPR 113 S2	13.4	20360	18020	15330	13570	2000	36040	40
	16.1	17740	15700	13360	11830	2800	31400	23
	22.1	17740	15700	13360	11830	2800	31400	23
	28.9	13570	12010	10220	9050	2800	24020	23
	33.6	13570	12010	10220	9050	2800	24020	23
	40.5	10320	9130	7770	6880	2800	18260	23
	48.9	10320	9130	7770	6880	2800	18260	23
IPR 113 S3	57.5	20360	18020	15330	13570	2800	36040	23
	62.8	20360	18020	15330	13570	2800	36040	23
	75.2	20360	18020	15330	13570	2800	36040	23
	82.1	20360	18020	15330	13570	2800	36040	23
	94.8	17740	15700	13360	11830	2800	31400	15
	109.2	17740	15700	13360	11830	2800	31400	15
	118.4	13570	12010	10220	9050	2800	24020	15
	123.9	17740	15700	13360	11830	2800	31400	15
	129.3	13570	12010	10220	9050	2800	24020	15
	143.9	13570	12010	10220	9050	2800	24020	15
	155.9	13570	12010	10220	9050	2800	24020	15
	188.1	13570	12010	10220	9050	2800	24020	15
	195.2	13570	12010	10220	9050	2800	24020	15
	209.7	10320	9130	7770	6880	2800	18260	15
	226.8	13570	12010	10220	9050	2800	24020	15
	235.4	10320	9130	7770	6880	2800	18260	15
	274.0	13570	12010	10220	9050	2800	24020	15
	330.3	10320	9130	7770	6880	2800	18260	15
IPR 113 S4	351.9	20360	18020	15330	13570	2800	36040	15
	388.5	20360	18020	15330	13570	2800	36040	15
	421.2	20360	18020	15330	13570	2800	36040	15
	440.8	17740	15700	13360	11830	2800	31400	11
	459.9	20360	18020	15330	13570	2800	36040	11
	507.7	20360	18020	15330	13570	2800	36040	11
	531.4	17740	15700	13360	11830	2800	31400	11
	554.3	20360	18020	15330	13570	2800	36040	11
	576.0	13570	12010	10220	9050	2800	24020	11
	611.9	17740	15700	13360	11830	2800	31400	11
	640.5	17740	15700	13360	11830	2800	31400	11
	724.4	13570	12010	10220	9050	2800	24020	11
	806.4	13570	12010	10220	9050	2800	24020	11
	907.3	13570	12010	10220	9050	2800	24020	11
	1008.8	17740	15700	13360	11830	2800	31400	11
	1093.6	13570	12010	10220	9050	2800	24020	11
	1270.0	13570	12010	10220	9050	2800	24020	11
	1530.9	13570	12010	10220	9050	2800	24020	11
	1849.8	13570	12010	10220	9050	2800	24020	11
2229.7	10320	9130	7770	6880	2800	18260	11	



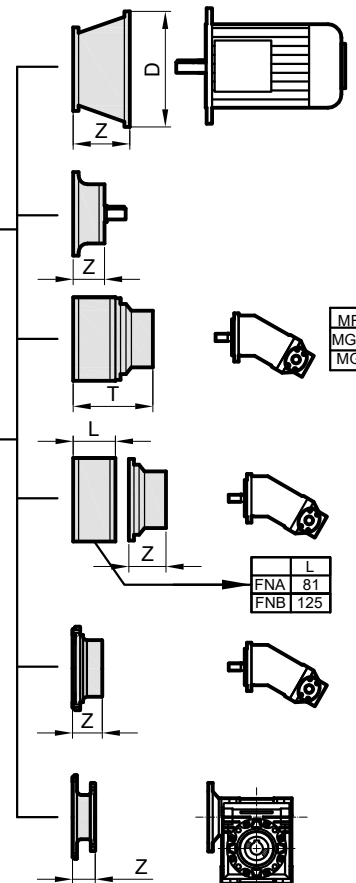
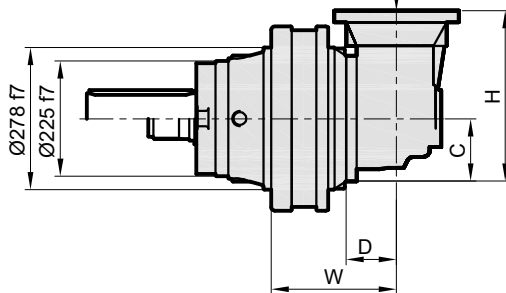
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 113 S2	12.2	20360	18020	15330	13570	2800	36040	23
	14.8	17740	15700	13360	11830	2800	31400	23
	19.3	13570	12010	10220	9050	2800	24020	23
	23.3	10320	9130	7770	6880	2800	18260	23
	30.4	13570	12010	10220	9050	2800	24020	23
	36.7	10320	9130	7770	6880	2800	18260	23
IPRK 113 S3	46.4	20360	18020	15330	13570	2800	36040	15
	50.6	20360	18020	15330	13570	2800	36040	15
	61.0	17740	15700	13360	11830	2800	31400	15
	76.5	17740	15700	13360	11830	2800	31400	15
	88.8	17740	15700	13360	11830	2800	31400	15
	96.2	17740	15700	13360	11830	2800	31400	15
	116.0	13570	12010	10220	9050	2800	24020	15
	120.5	17740	15700	13360	11830	2800	31400	15
	125.7	13570	12010	10220	9050	2800	24020	15
	139.9	17740	15700	13360	11830	2800	31400	15
	157.5	13570	12010	10220	9050	2800	24020	15
	182.9	13570	12010	10220	9050	2800	24020	15
	221.0	13570	12010	10220	9050	2800	24020	15
	226.4	10320	9130	7770	6880	2800	18260	15
IPRK 113 S4	140.0	20360	18020	15330	13570	2800	36040	11
	168.8	20360	18020	15330	13570	2800	36040	11
	184.3	17740	15700	13360	11830	2800	31400	11
	203.5	17740	15700	13360	11830	2800	31400	11
	230.9	17740	15700	13360	11830	2800	31400	11
	240.9	13570	12010	10220	9050	2800	24020	11
	290.4	17740	15700	13360	11830	2800	31400	11
	301.7	13570	12010	10220	9050	2800	24020	11
	320.6	17740	15700	13360	11830	2800	31400	11
	347.5	13570	12010	10220	9050	2800	24020	11
	379.4	13570	12010	10220	9050	2800	24020	11
	418.8	13570	12010	10220	9050	2800	24020	11
	457.3	13570	12010	10220	9050	2800	24020	11
	510.3	13570	12010	10220	9050	2800	24020	11
	551.9	13570	12010	10220	9050	2800	24020	11
	665.2	13570	12010	10220	9050	2800	24020	11
803.8	13570	12010	10220	9050	2800	24020	11	
968.9	10320	9130	7770	6880	2800	18260	11	



IPR..

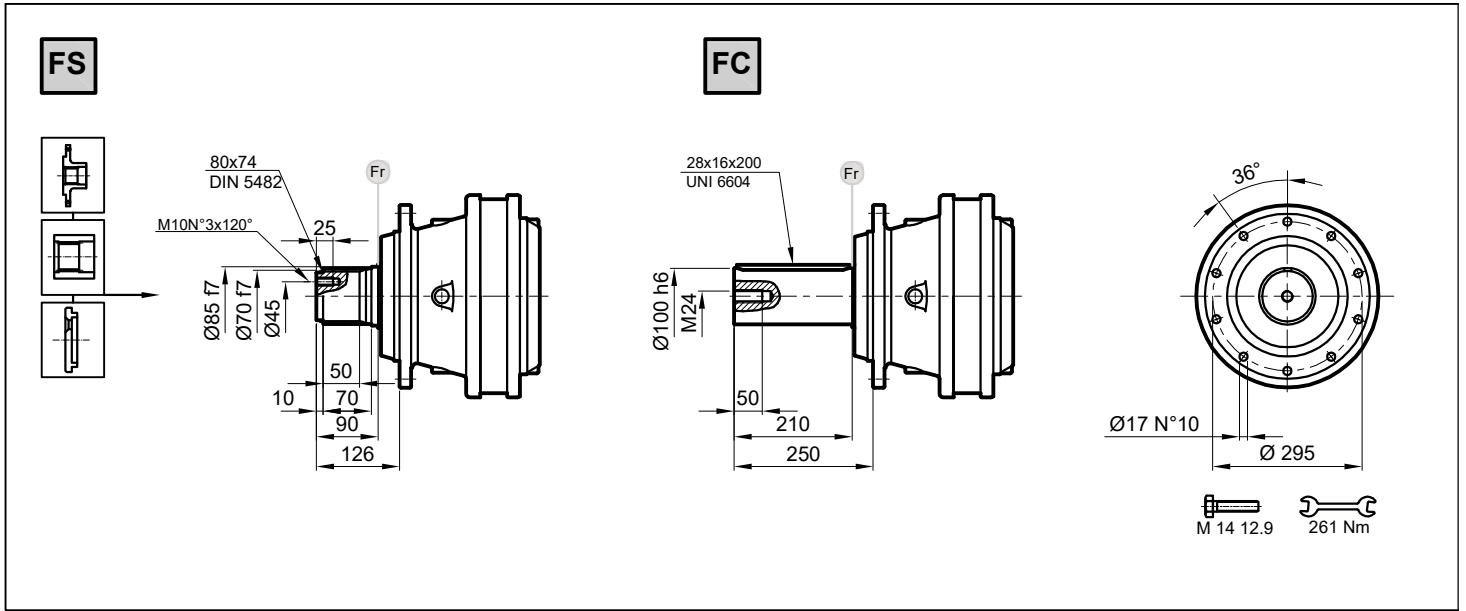


IPRK..

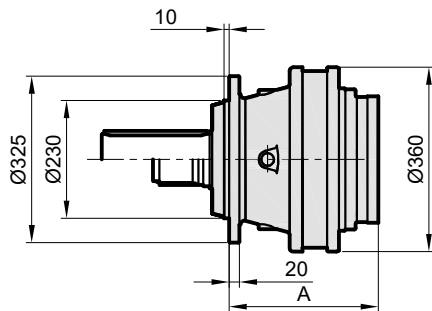


Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	142	105	-
S2	230	88	140	380	213,5	121	142
S3	315	88	140	380	274,5	129	161
S4	349,5	75	93	252	322,5	135	144

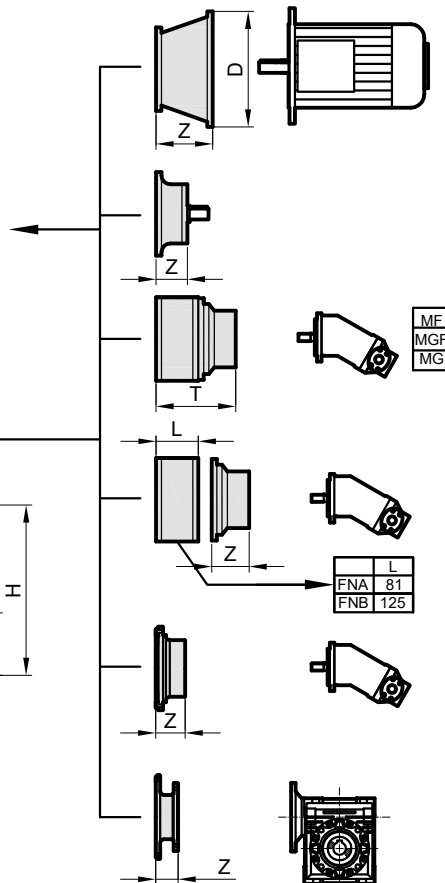
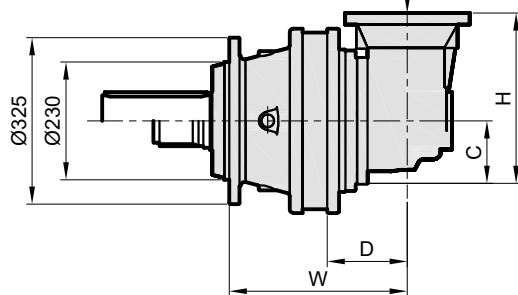
	IEC71	IEC80-90	IEC100	IEC132	IEC160-180	IEC200	IEC225	IEC250-280								
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z		
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..

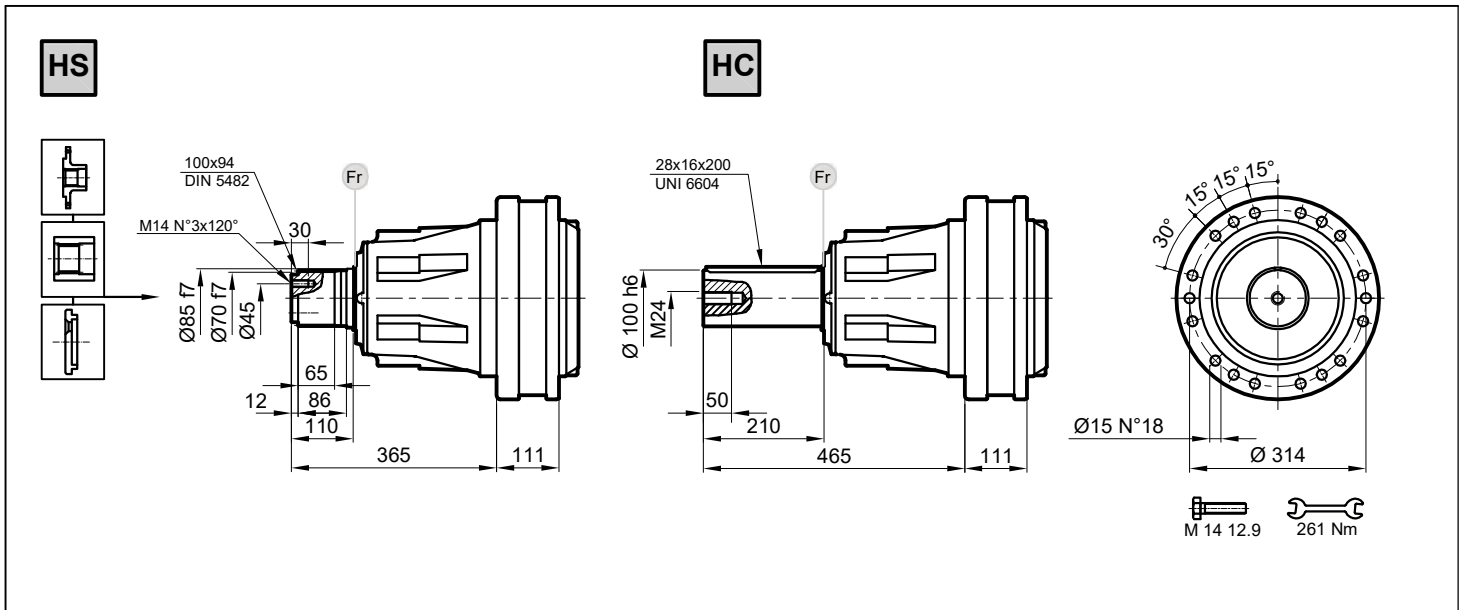


IPRK..

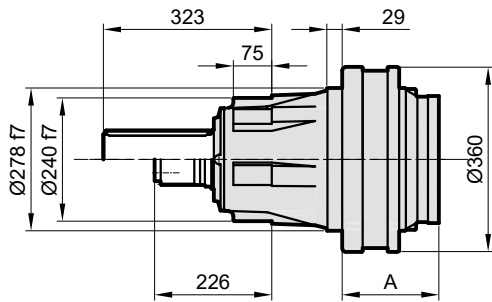


Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	260	120	-
S2	348	88	140	380	331,5	136	157
S3	433	88	140	380	392,5	144	176
S4	467,5	75	93	252	440,5	150	159

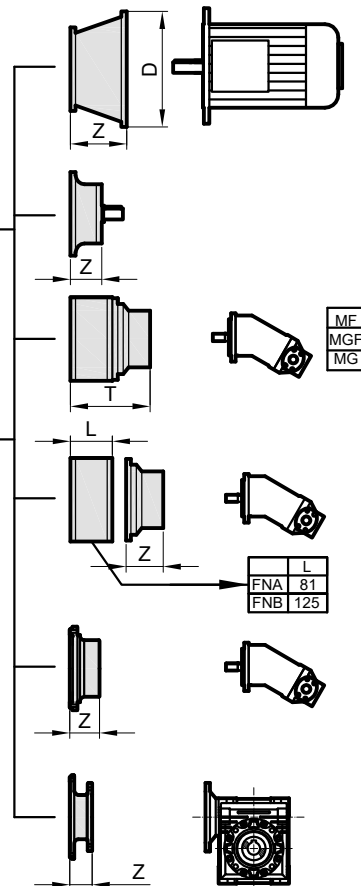
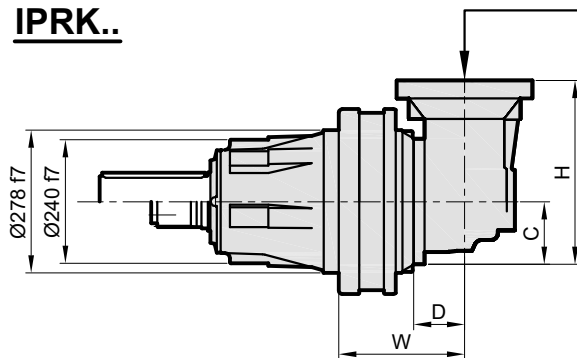
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



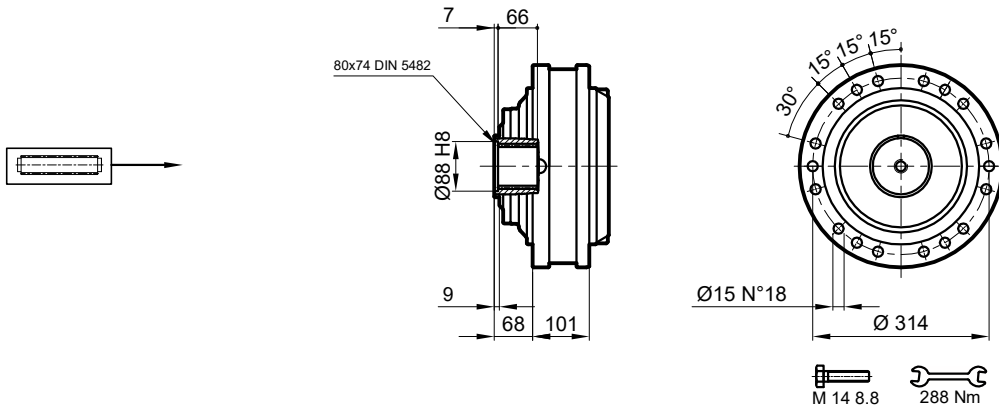
IPRK..



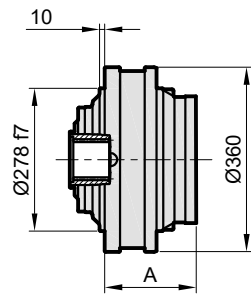
Stage	W	D	C	H	A	IPR		IPRK	
						H	h	H	h
S1	-	-	-	-	142	132	-	-	
S2	230	88	140	380	213,5	148	169		
S3	315	88	140	380	274,5	156	188		
S4	349,5	75	93	252	322,5	162	171		

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

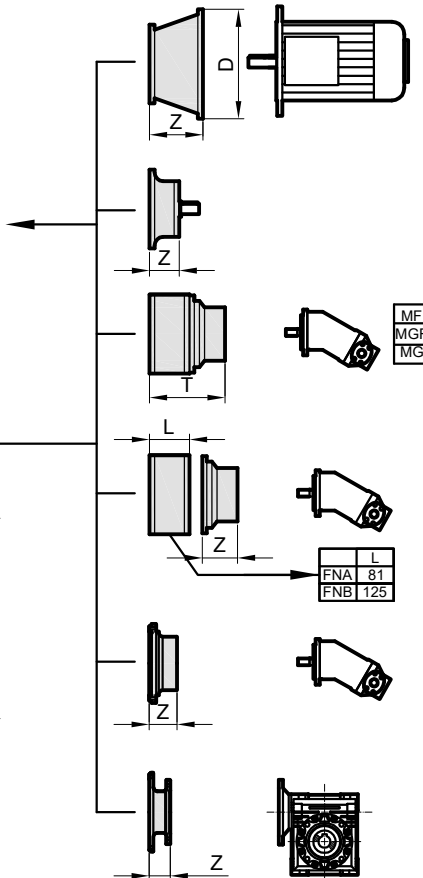
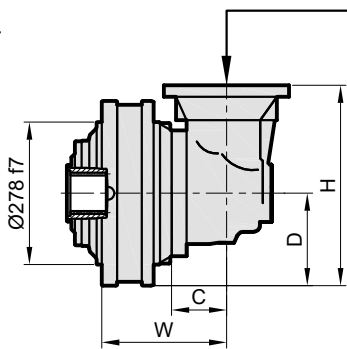
S



IPR..



IPRK..



Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	132	74	-
S2	220	88	140	380	203.5	90	111
S3	305	88	140	380	264.5	98	130
S4	339,5	75	93	252	312.5	104	113

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

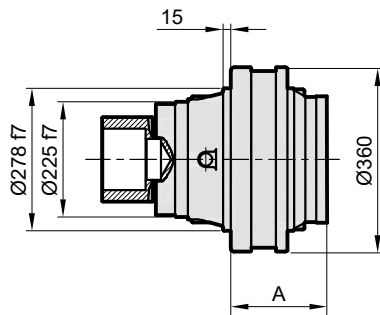
SD

M 14 12.9 261 Nm

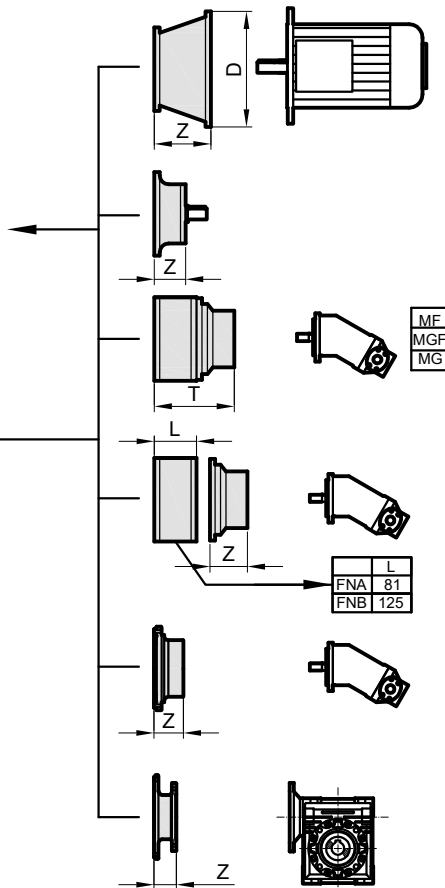
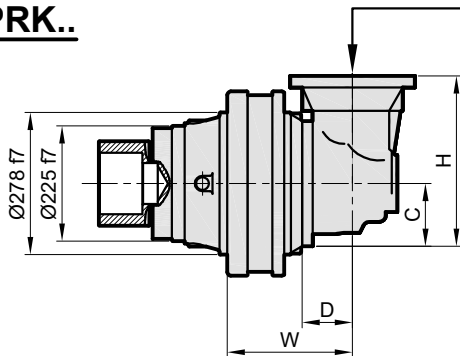
M_{max} = 35 kNm

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



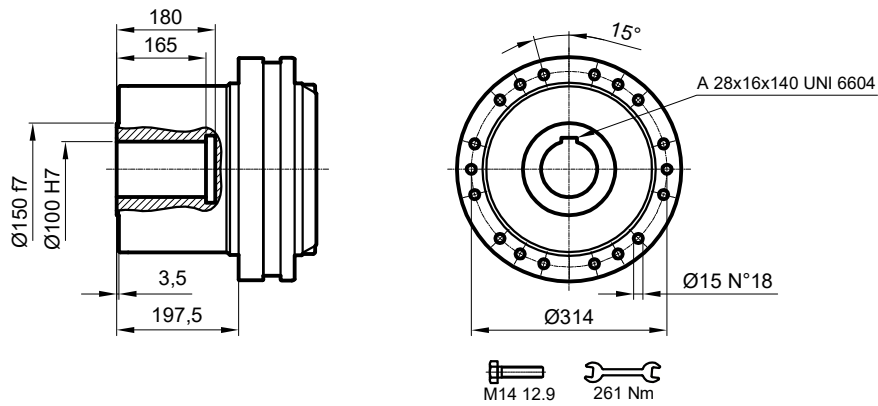
IPRK..



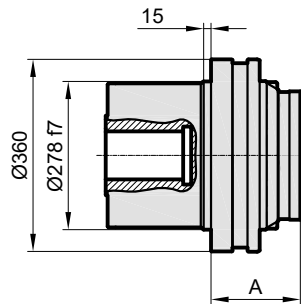
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	142	110	-
S2	230	88	140	380	213,5	126	147
S3	315	88	140	380	274,5	134	166
S4	349,5	75	93	252	322,5	140	149

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

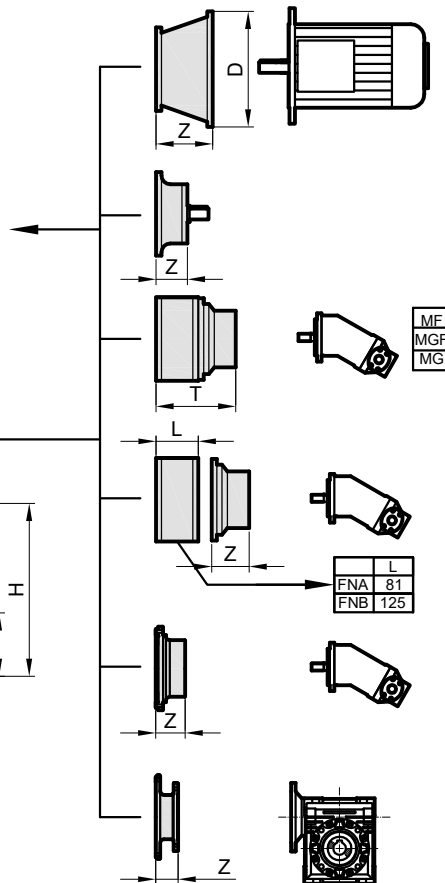
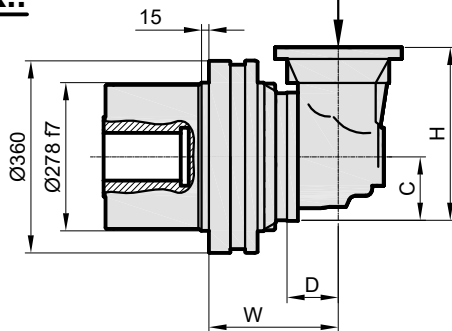
DKM



IPR..

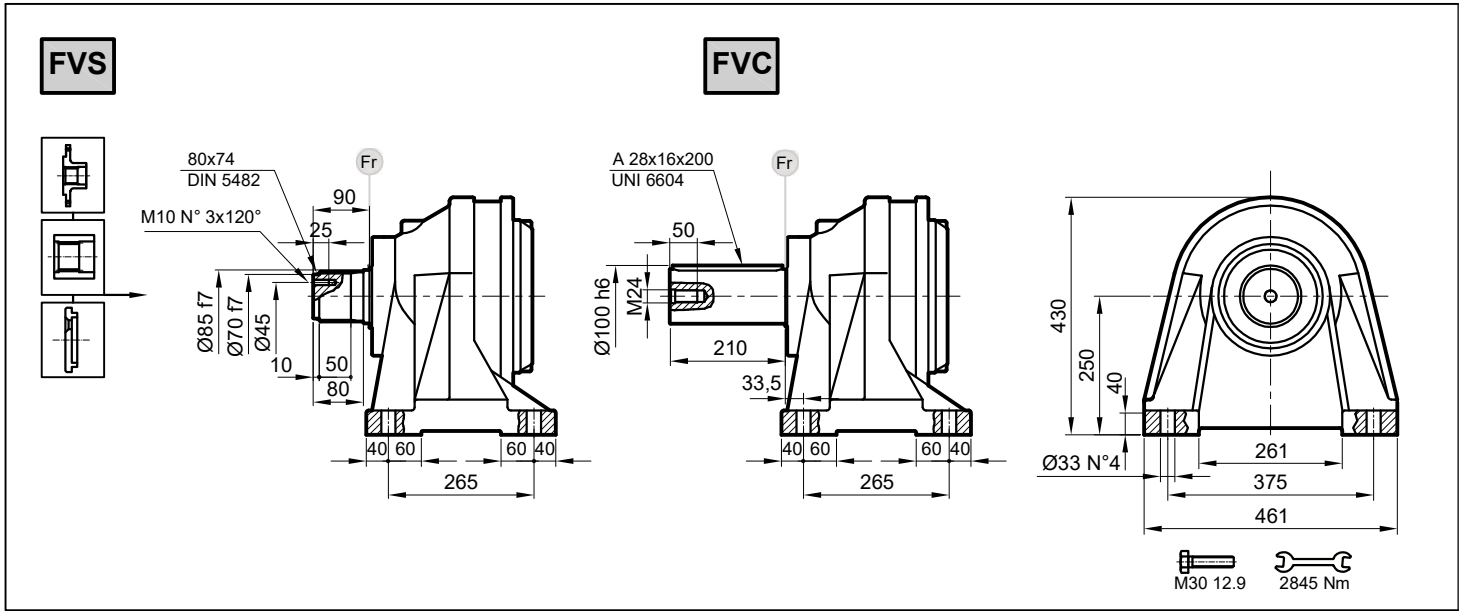


IPRK..

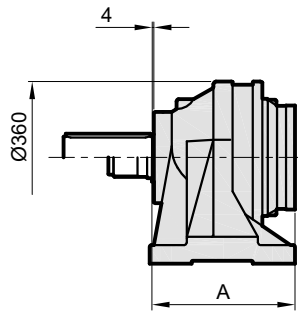


Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	142	74	-
S2	230	88	140	380	213	90	111
S3	315	88	140	380	275	98	130
S4	350	75	93	252	322	104	113

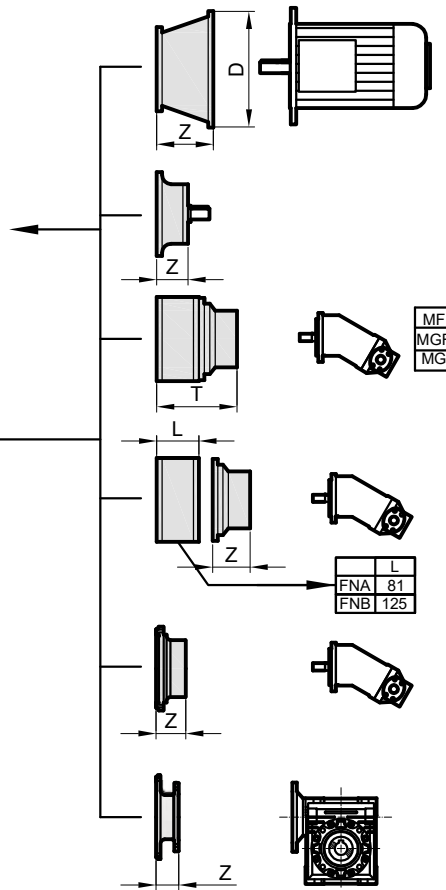
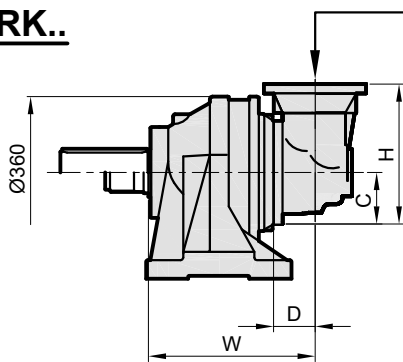
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



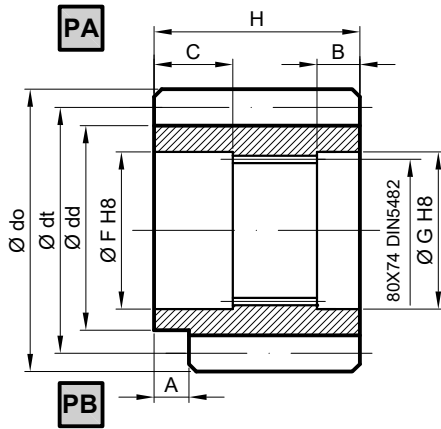
IPRK..



Stage	W	D	C	H	A	IPR FV	IPRK FV
S1	-	-	-	-	296	105	-
S2	384	88	140	380	317,5	121	142
S3	469	88	140	380	428,5	129	161
S4	503,5	75	93	252	476,5	135	144

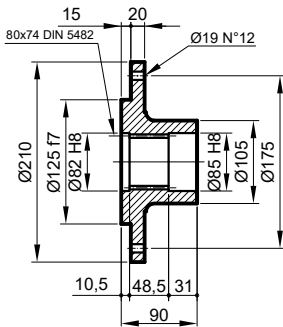
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

P Pinyon / Pinion / Ritzel

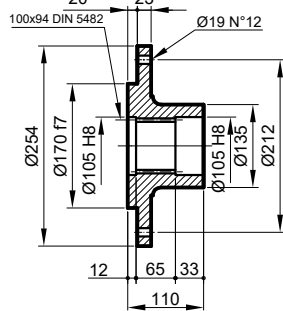


	m	z	x	dd	dt	do	H	A	B	C	F	G	Malzeme / Material	Kod / Code / Bestell	
PA	M	10	12	0	95	120	140	90	0	10	31	85	80	38NiCrMo4	1501.113.001
PA	M	10	14	0	115	140	160	90	0	10	31	85	80	38NiCrMo4	1501.113.002
PA	P	14	13	1	161	182	224	122	0	24	33	105	105	18NiCrMo5	1501.113.003
PB	M	12	14	0,5	144	168	198	90	13	25	31	85	80	39NiCrMo3	1502.113.001

FL Flanş / Flange / Flansch

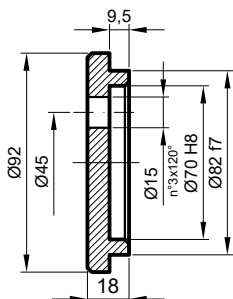


MS Kod / Code / Bestell
1505.111.200

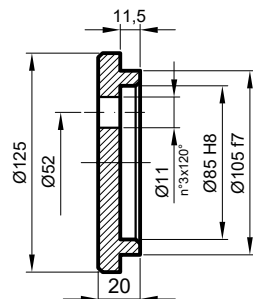


HS Kod / Code / Bestell
1506.113.201

SP Sabitleme Pulu / Stop bottom plate / Endscheibe

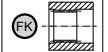


MS
Kod / Code / Bestell
1507.111.250

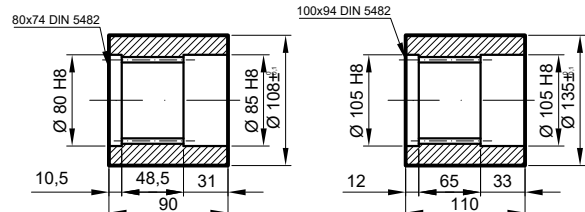


HS
Kod / Code / Bestell
1508.113.251

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



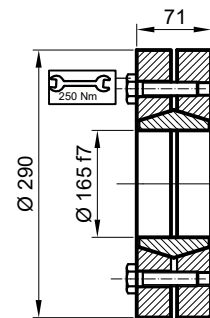
Malzeme / Material / Material
UNI C40 / SAE 1040 / DIN Ck40



FS Kod / Code / Bestell
1503.111.100

HS Kod / Code / Bestell
1504.113.101

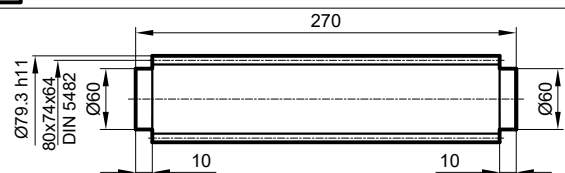
SB Sikma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
35 kNm

Kod / Code / Bestell
2501.113.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material
UNI 39NiCrMo3
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.113.001

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

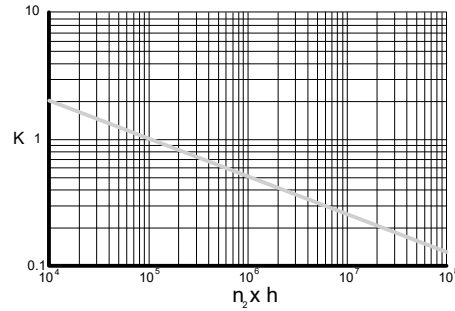
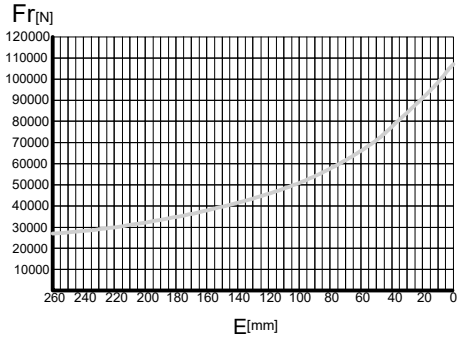
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

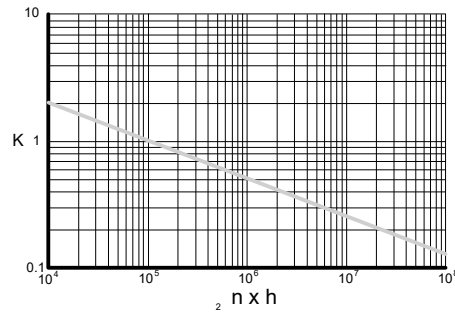
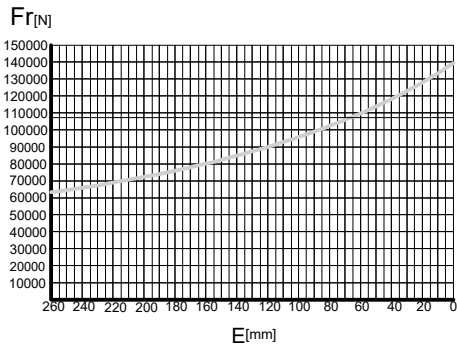
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

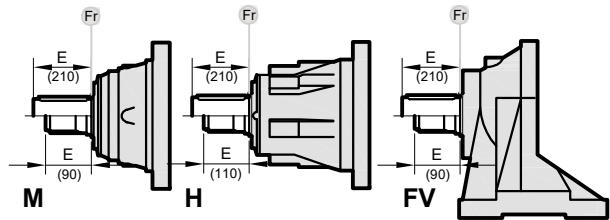
M-FV



H



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
M-H	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

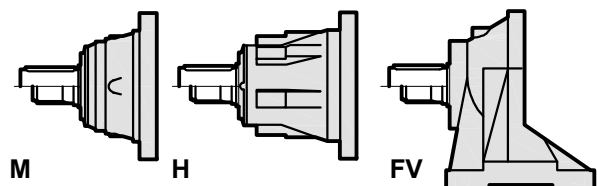
AXIAL LOADS (Fa)

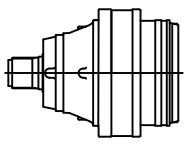
The values of the axial loads in the table refer to the output versions and load directions of application.

AXIALLAST (Fa)

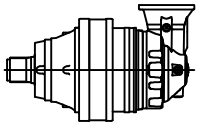
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	M-CPC	H	← →
		45000	
	65000	85000	

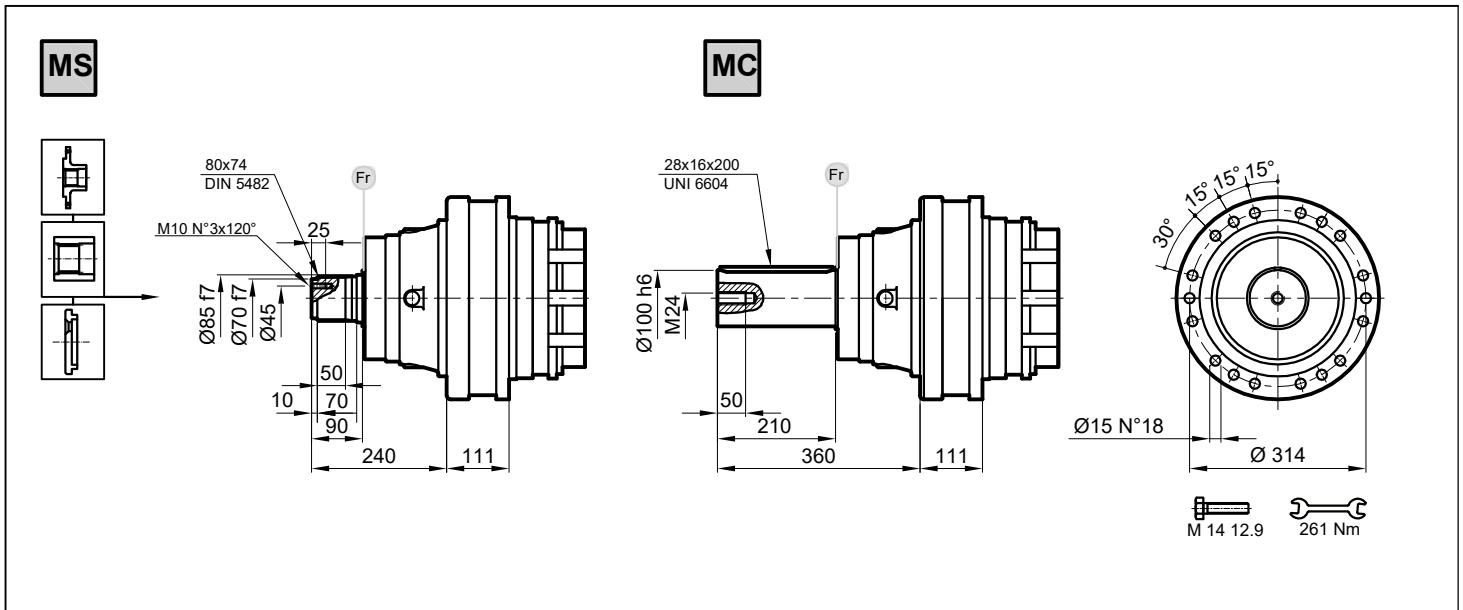




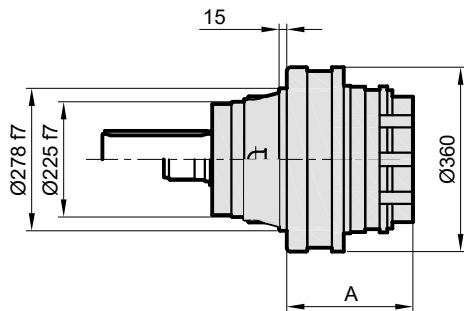
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _i [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPR 115 S2	13.0	20360	18020	15330	13570	2800	36040	25
	15.7	20360	18020	15330	13570	2800	36040	25
	19.0	17740	15700	13360	11830	2800	31400	25
	21.4	17740	15700	13360	11830	2800	31400	25
	24.9	17740	15700	13360	11830	2800	31400	25
	30.0	17740	15700	13360	11830	2800	31400	25
IPR 115 S3	53.8	20360	18020	15330	13570	2800	36040	17
	65.0	20360	18020	15330	13570	2800	36040	17
	73.3	20360	18020	15330	13570	2800	36040	17
	81.3	20360	18020	15330	13570	2800	36040	17
	94.5	20360	18020	15330	13570	2800	36040	17
	106.6	20360	18020	15330	13570	2800	36040	17
	128.4	17740	15700	13360	11830	2800	31400	17
	149.1	17740	15700	13360	11830	2800	31400	17
IPR 115 S4	180.2	17740	15700	13360	11830	2800	31400	17
	348.6	20360	18020	15330	13570	2800	36040	13
	377.2	20360	18020	15330	13570	2800	36040	13
	438.4	20360	18020	15330	13570	2800	36040	13
	489.2	20360	18020	15330	13570	2800	36040	13
	549.1	20360	18020	15330	13570	2800	36040	13
	620.0	20360	18020	15330	13570	2800	36040	13
	677.9	20360	18020	15330	13570	2800	36040	13
	720.0	20360	18020	15330	13570	2800	36040	13
	770.5	20360	18020	15330	13570	2800	36040	13
	818.8	20360	18020	15330	13570	2800	36040	13
	849.8	17740	15700	13360	11830	2800	31400	13
	928.8	17740	15700	13360	11830	2800	31400	13
	987.4	17740	15700	13360	11830	2800	31400	13
1113.0	17740	15700	13360	11830	2800	31400	13	
1216.4	17740	15700	13360	11830	2800	31400	13	



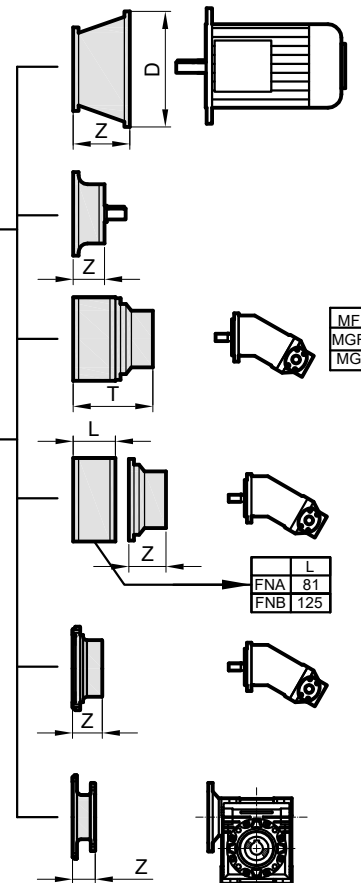
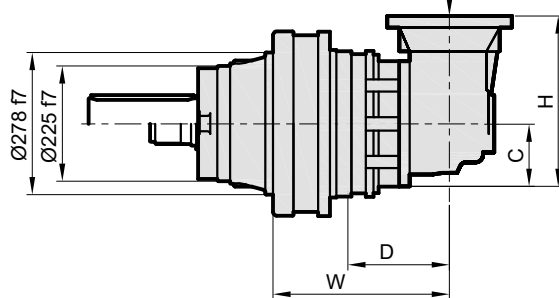
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPRK 115 S2	10.9	20360	18020	15330	13570	2000	36040	25
	13.2	17740	15700	13360	11830	2000	31400	25
	16.6	20360	18020	15330	13570	2000	36040	25
	20.0	17740	15700	13360	11830	2000	31400	25
IPRK 115 S3	54.4	20360	18020	15330	13570	2800	36040	17
	71.2	20360	18020	15330	13570	2800	36040	17
	85.7	20360	18020	15330	13570	2800	36040	17
	103.3	17740	15700	13360	11830	2800	31400	17
	116.7	17740	15700	13360	1183	2800	31400	17
	135.5	20360	18020	15330	13570	2800	36040	17
	163.3	17740	15700	13360	11830	2800	31400	17
	185.8	20360	18020	15330	13570	2800	36040	13
IPRK 115 S4	224.4	20360	18020	15330	13570	2800	36040	13
	281.0	20360	18020	15330	13570	2800	36040	13
	323.8	20360	18020	15330	13570	2800	36040	13
	353.6	20360	18020	15330	13570	2800	36040	13
	394.3	20360	18020	15330	13570	2800	36040	13
	442.9	20360	18020	15330	13570	2800	36040	13
	500.0	20360	18020	15330	13570	2800	36040	13
	558.2	17740	15700	13360	11830	2800	31400	13
	580.7	20360	18020	15330	13570	2800	36040	13
	622.5	17740	15700	13360	11830	2800	31400	13
	699.2	17740	15700	13360	11830	2800	31400	13
	749.1	17740	15700	13360	11830	2800	31400	13
	812.0	17740	15700	13360	11830	2800	31400	13
	981.1	17740	15700	13360	11830	2800	31400	13



IPR..

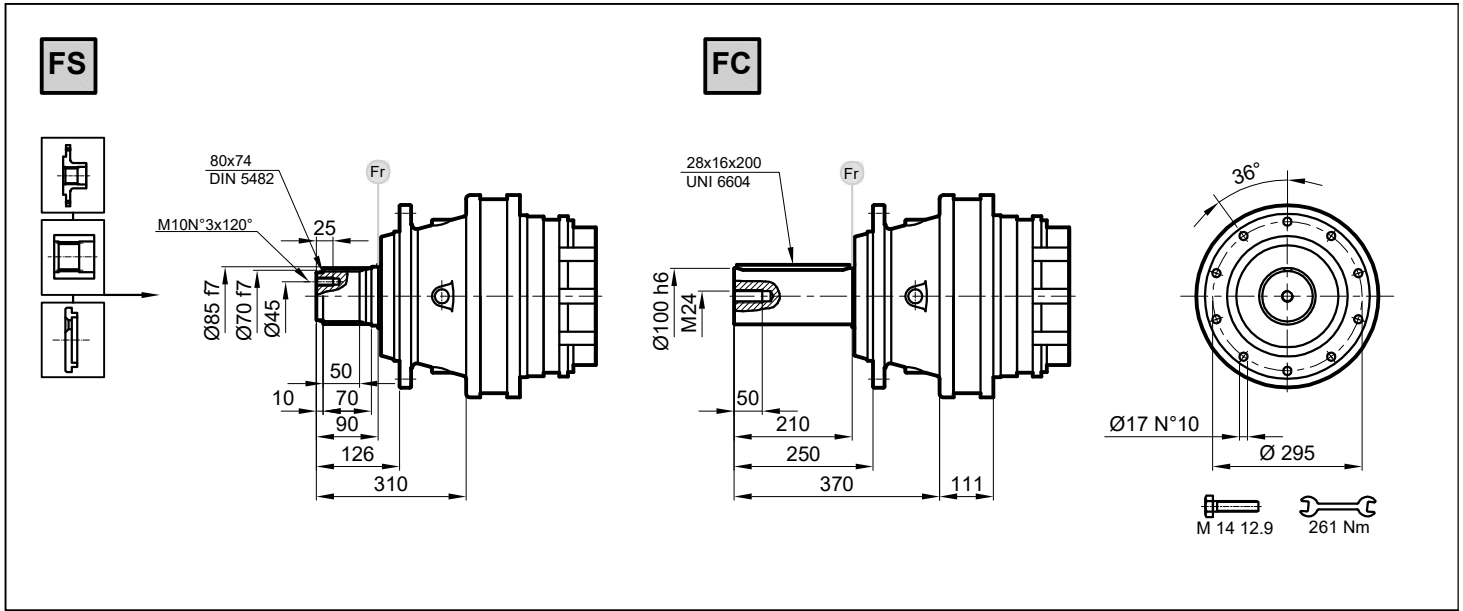


IPRK..

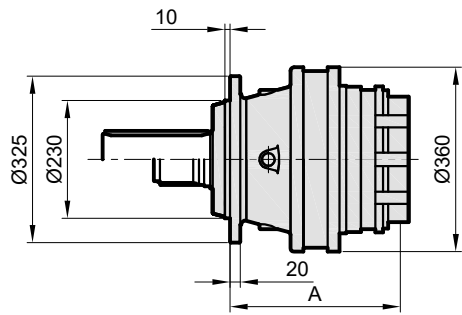


Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	142	105	-
S2	230	88	140	380	213,5	121	142
S3	315	88	140	380	274,5	129	161
S4	349,5	75	93	252	322,5	135	144

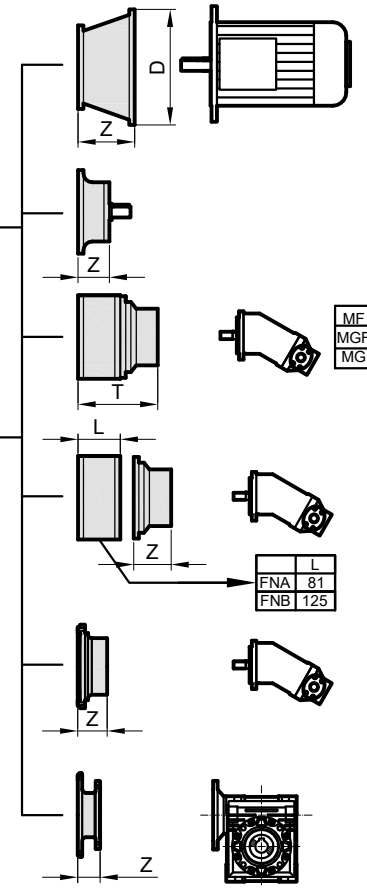
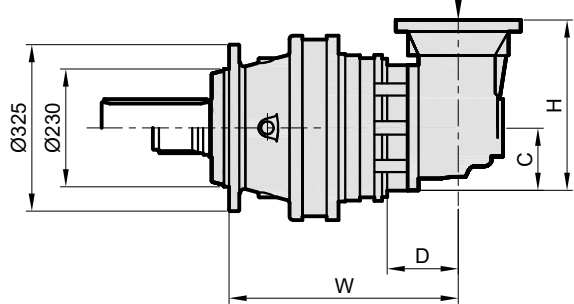
	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..

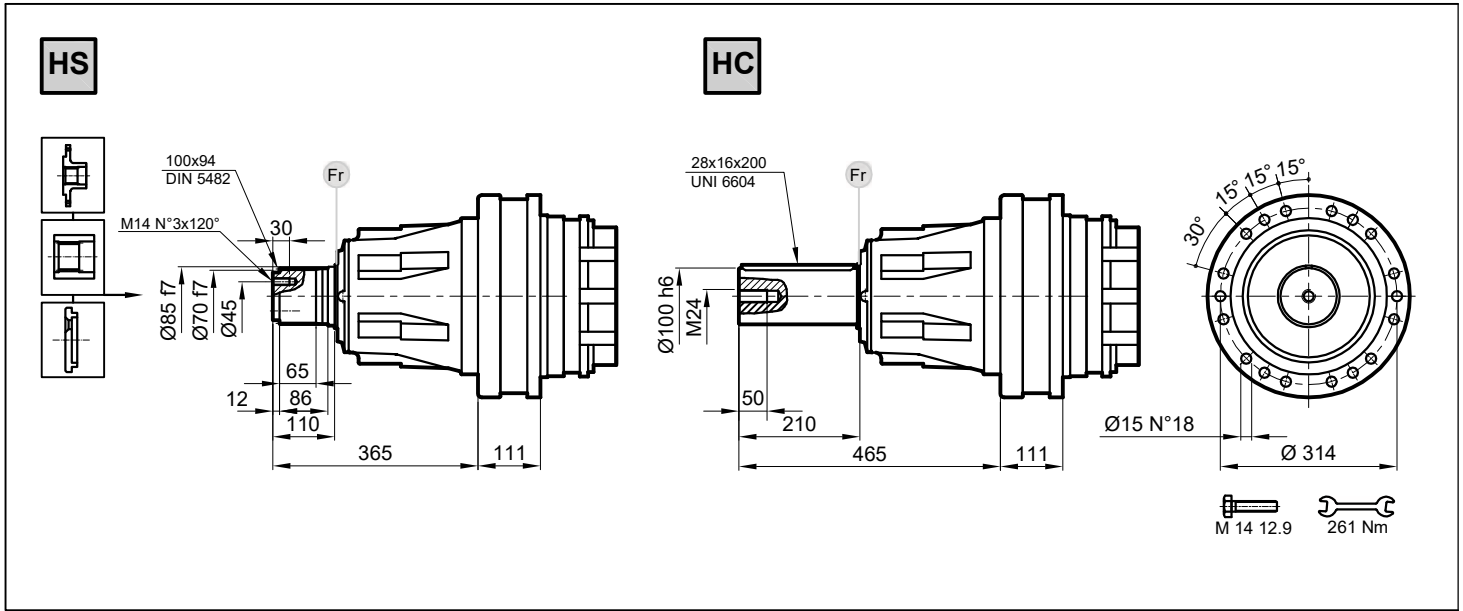


IPRK..

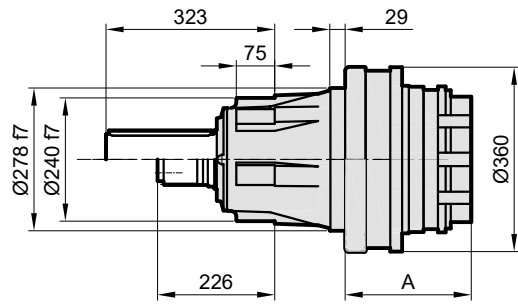


Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	260	120	-
S2	348	88	140	380	331,5	136	157
S3	433	88	140	380	392,5	144	176
S4	467,5	75	93	252	440,5	150	159

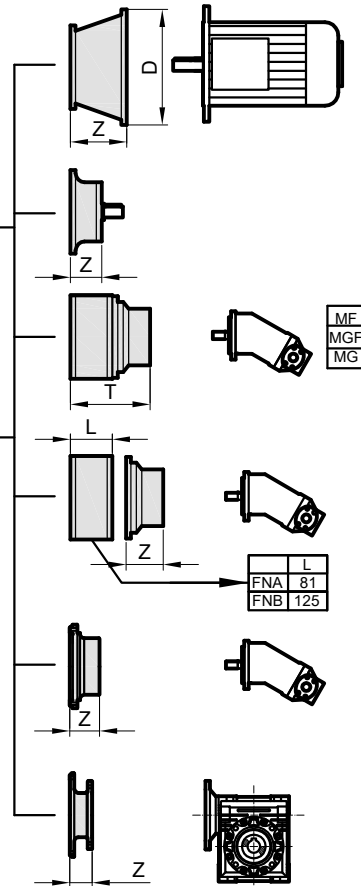
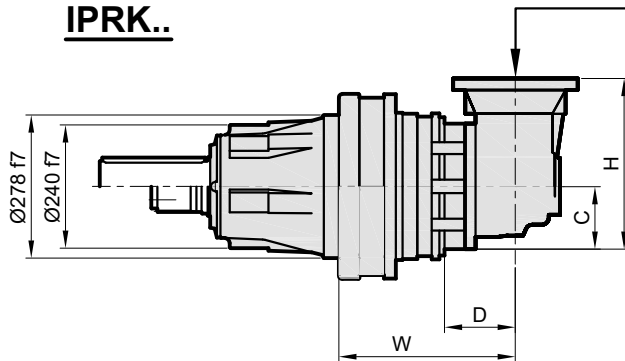
	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



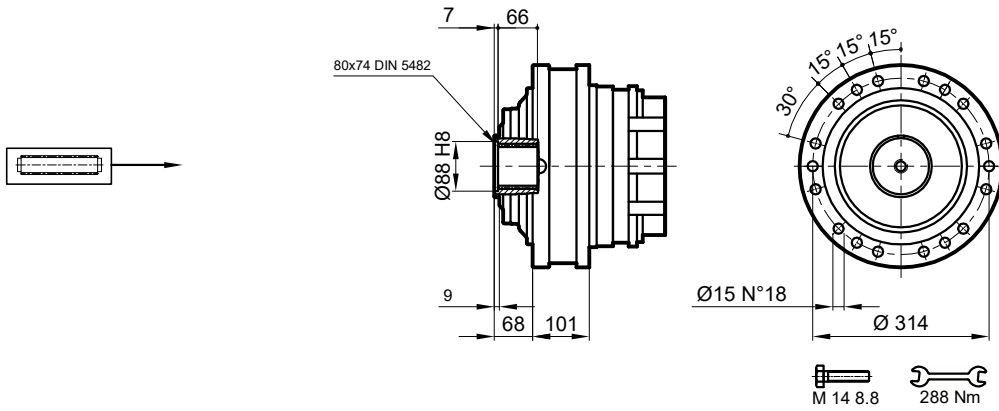
IPRK..



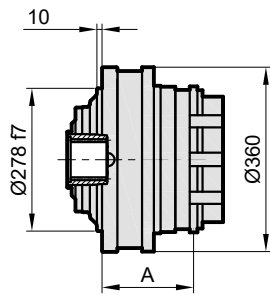
Stage	W	D	C	H	A	IPR H	IPRK H
S1	-	-	-	-	142	132	-
S2	230	88	140	380	213,5	148	169
S3	315	88	140	380	274,5	156	188
S4	349,5	75	93	252	322,5	162	171

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

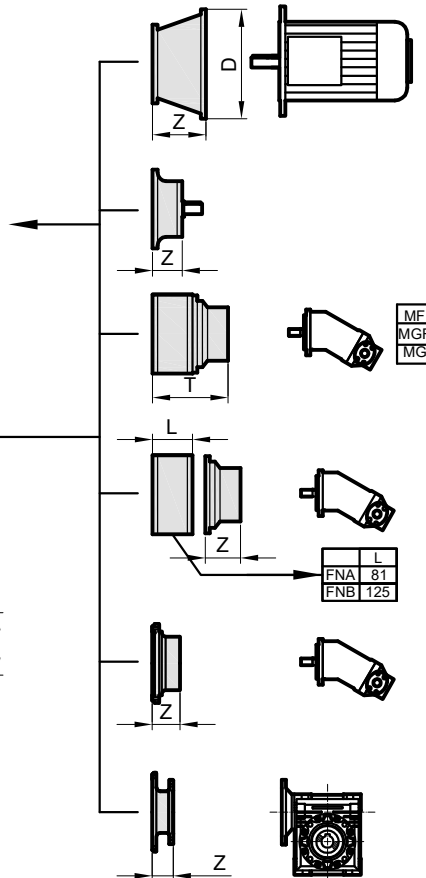
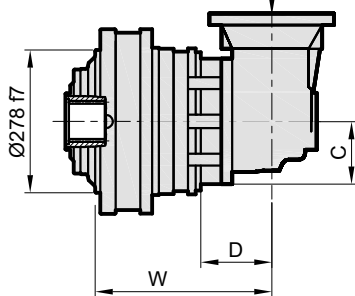
S



IPR..



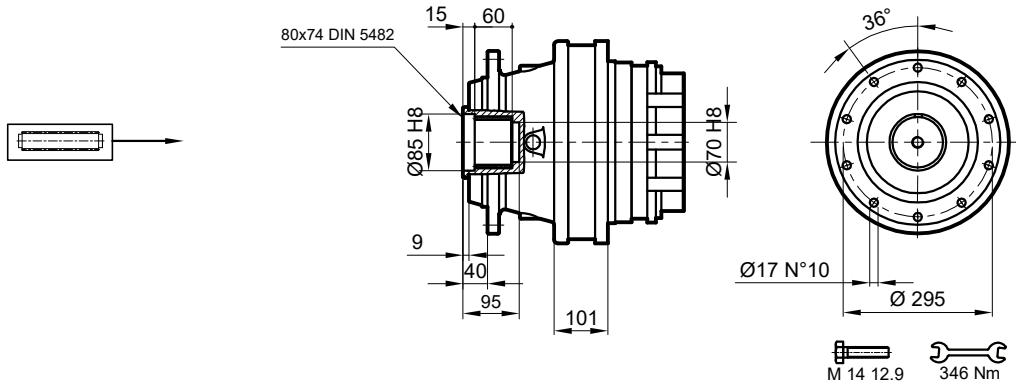
IPRK..



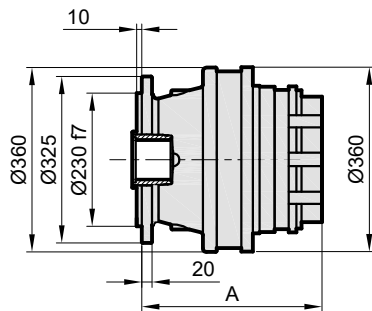
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	132	74	-
S2	220	88	140	380	203,5	90	111
S3	305	88	140	380	264,5	98	130
S4	339,5	75	93	252	312,5	104	113

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

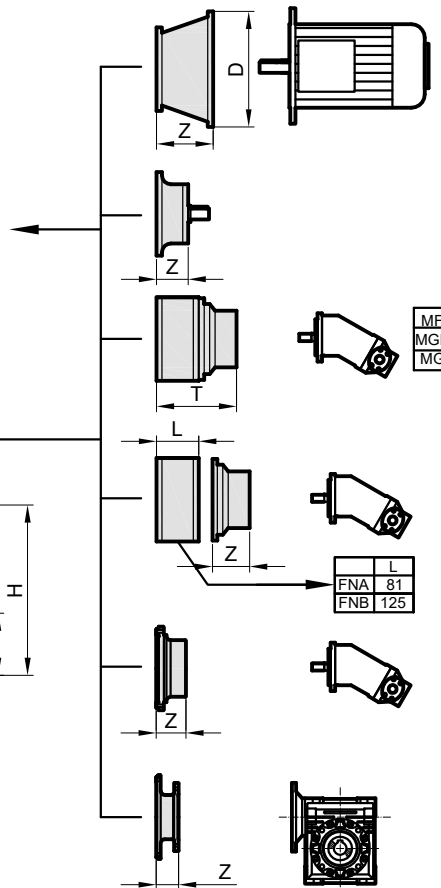
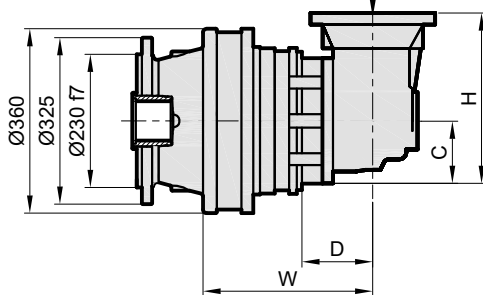
SF



IPR..



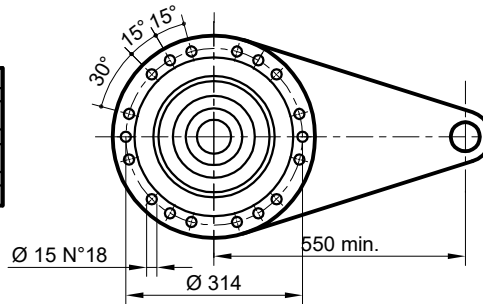
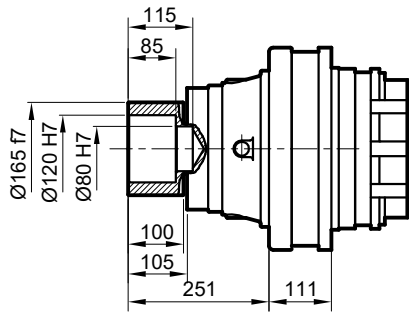
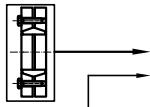
IPRK..



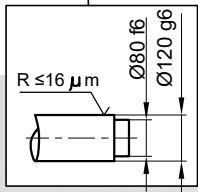
Stage	W	D	C	H	A	IPR SF	IPRK SF
S1	-	-	-	-	142	110	-
S2	230	88	140	380	213,5	126	147
S3	315	88	140	380	274,5	134	166
S4	349,5	75	93	252	322,5	140	149

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

SD



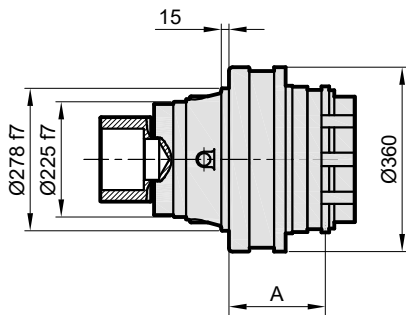
M 14 12.9 261 Nm



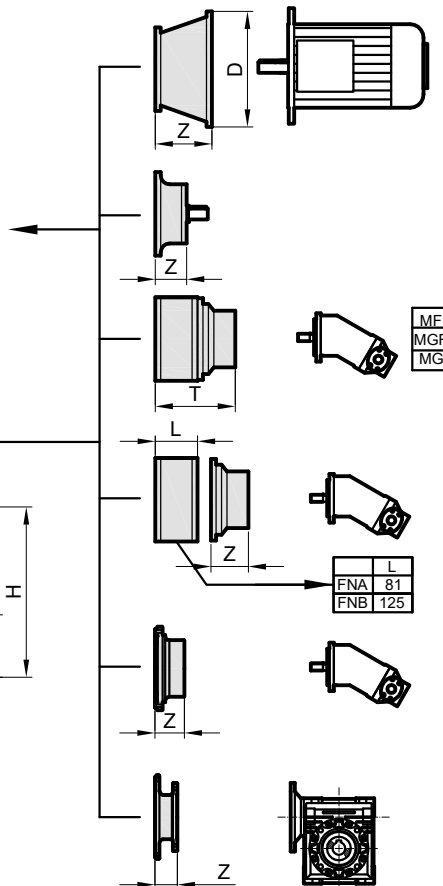
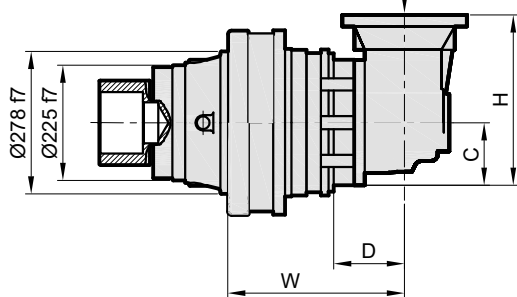
$M_{max} = 35 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



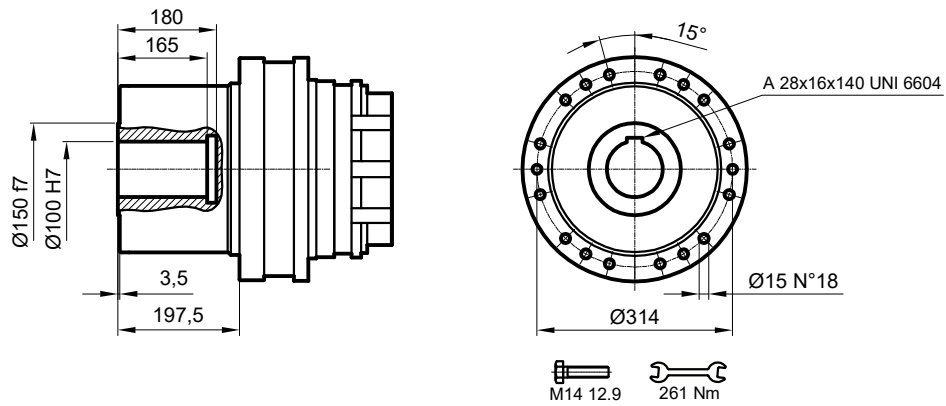
IPRK..



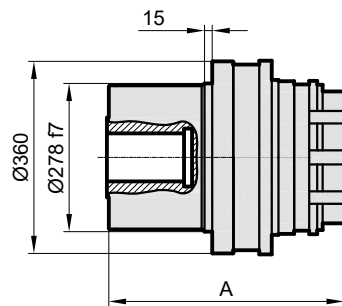
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	142	110	-
S2	230	88	140	380	213,5	126	147
S3	315	88	140	380	274,5	134	166
S4	349,5	75	93	252	322,5	140	149

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

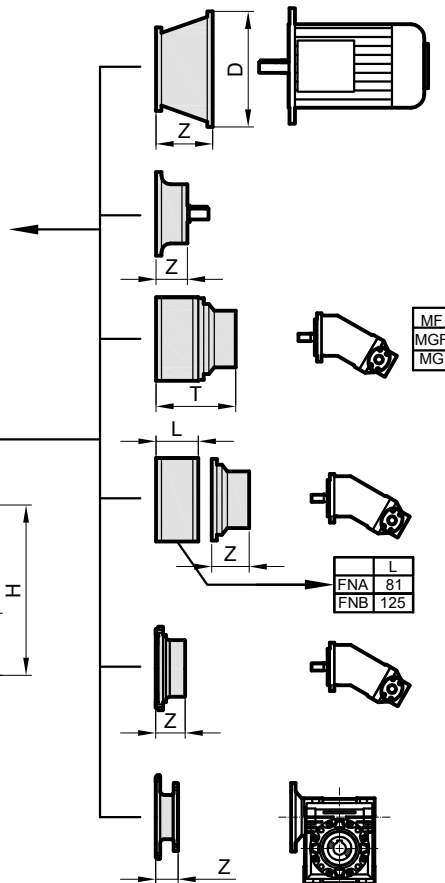
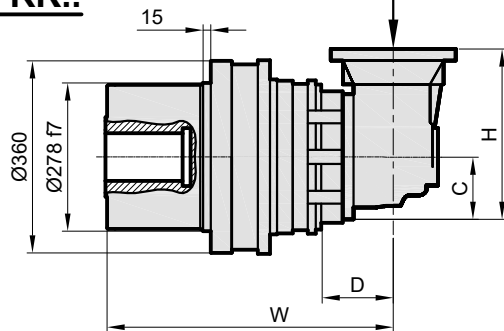
DKM



IPR..



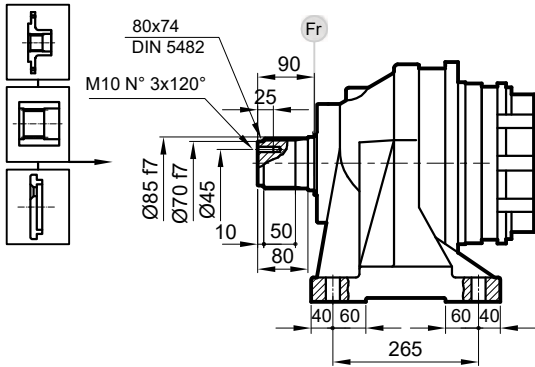
IPRK..



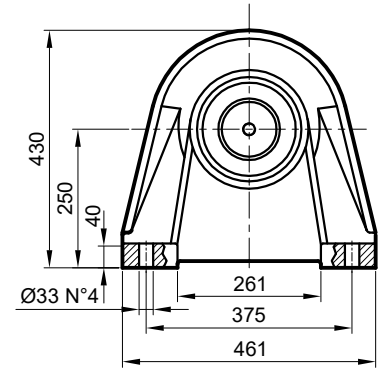
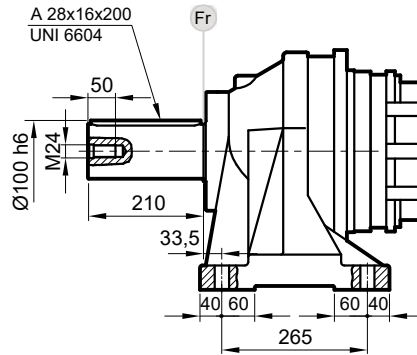
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	142	74	-
S2	230	88	140	380	213	90	111
S3	315	88	140	380	275	98	130
S4	350	75	93	252	322	104	113

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

FVS

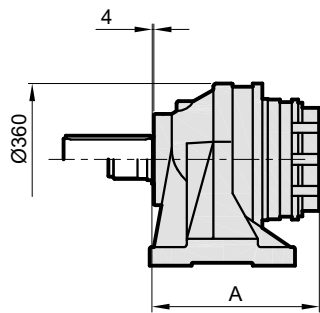


FVC

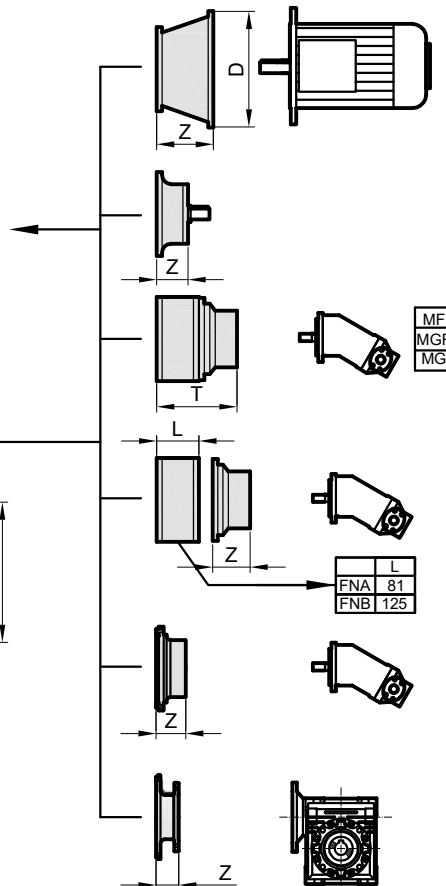
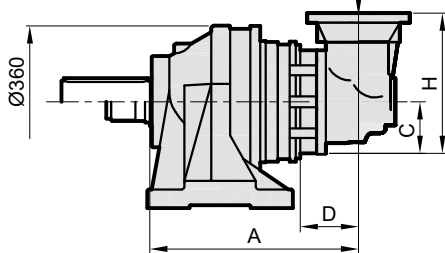


M30 12.9 2845 Nm

IPR..



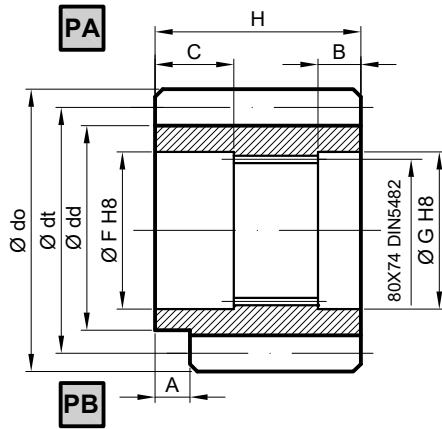
IPRK..



Stage	W	D	C	H	A	IPR FV	IPRK FV
S1	-	-	-	-	296	105	-
S2	384	88	140	380	317,5	121	142
S3	469	88	140	380	428,5	129	161
S4	503,5	75	93	252	476,5	135	144

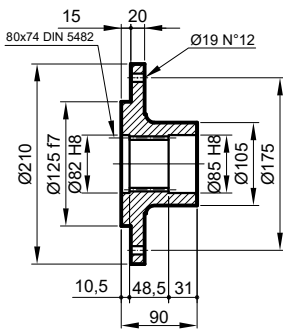
	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

P Pinyon / Pinion / Ritzel

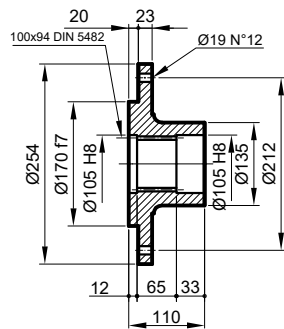


	m	z	x	dd	dt	do	H	A	B	C	F	G	Malzeme / Material	Kod / Code / Bestell	
PA	M	10	12	0	95	120	140	90	0	10	31	85	80	38NiCrMo4	1501.113.001
PA	M	10	14	0	115	140	160	90	0	10	31	85	80	38NiCrMo4	1501.113.002
PA	P	14	13	1	161	182	224	122	0	24	33	105	105	18NiCrMo5	1501.113.003
PB	M	12	14	0,5	144	168	198	90	13	25	31	85	80	39NiCrMo3	1502.113.001

FL Flanş / Flange / Flansch

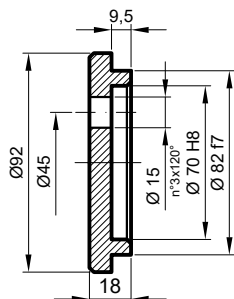


MS Kod / Code / Bestell
1505.111.200



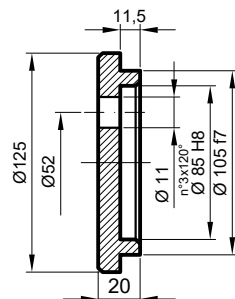
HS Kod / Code / Bestell
1506.113.201

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



MS

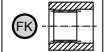
Kod / Code / Bestell
1507.111.250



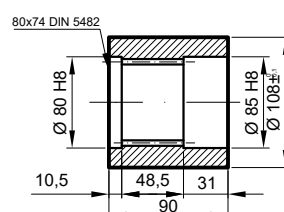
HS

Kod / Code / Bestell
1508.113.251

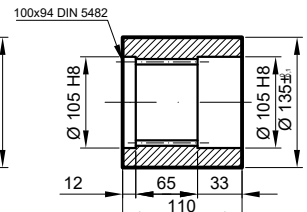
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



Malzeme / Material / Material
UNI C40 / SAE 1040 / DIN Ck40

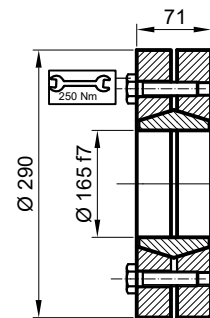


FS Kod / Code / Bestell
1503.111.100



HS Kod / Code / Bestell
1504.113.101

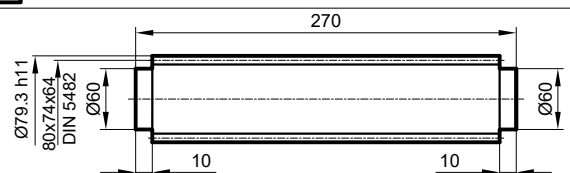
SB Sikma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
35 kNm

Kod / Code / Bestell
2501.113.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material
UNI 39NiCrMo3
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.113.001

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

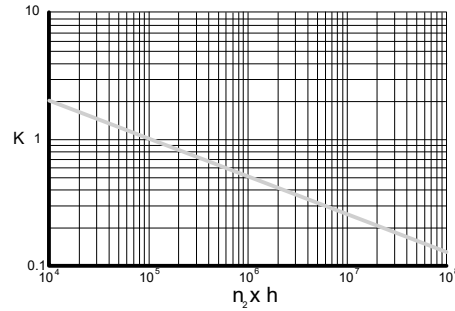
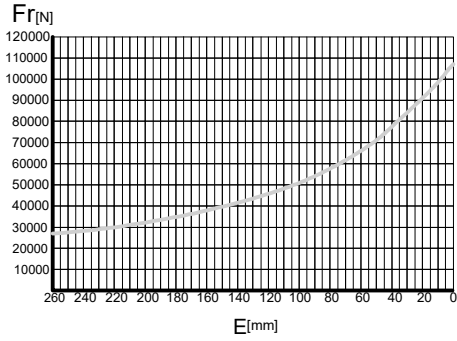
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

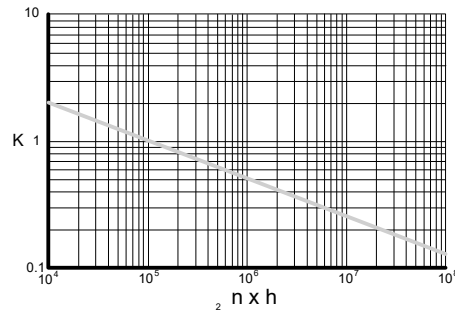
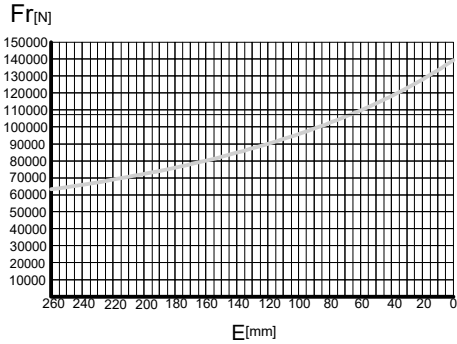
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

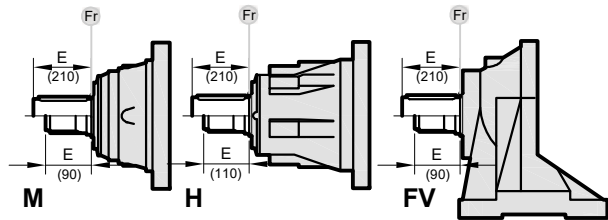
M-FV



H



	n x h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
M-H	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

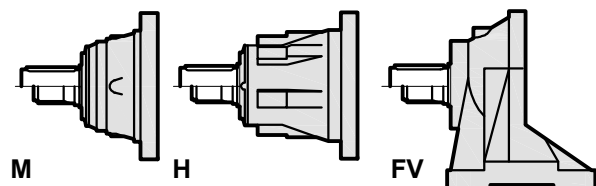
AXIAL LOADS (Fa)

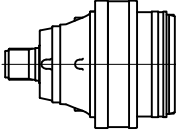
The values of the axial loads in the table refer to the output versions and load directions of application.

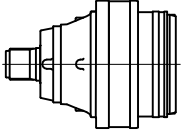
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

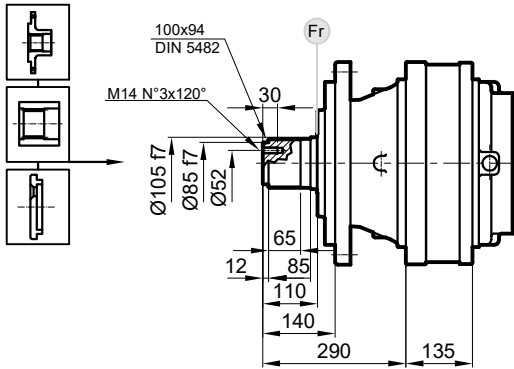
Fa [N]	M-CPC		H	← →
	45000	85000	85000	
	65000	85000	85000	



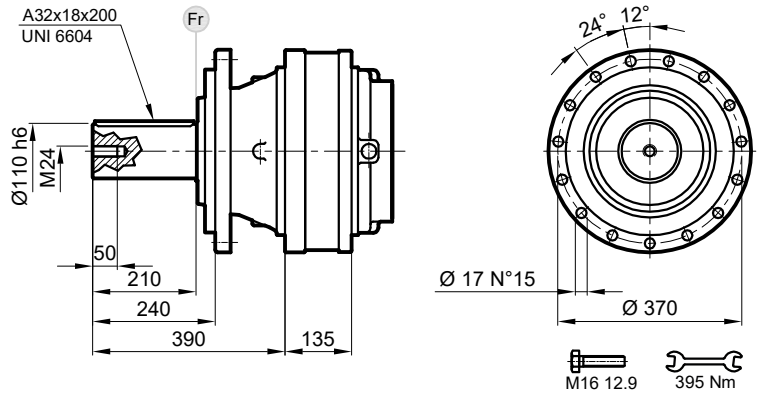
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPR 117 S1	4.00	34750	30760	26180	23170	1500	61520	50
	5.20	26870	23780	20240	17910	1500	47560	50
	6.25	20730	18350	15620	13820	1500	36700	50
IPR 117 S2	14.6	34750	30760	26180	23170	2800	61520	30
	17.7	34750	30760	26180	23170	2800	61520	30
	20.0	34750	30760	26180	23170	2800	61520	30
	23.0	26870	23780	20240	17910	2800	47560	30
	26.0	26870	23780	20240	17910	2800	47560	30
	30.1	26870	23780	20240	17910	2800	47560	30
	36.2	20730	18350	15620	13820	2800	36700	30
	43.7	20730	18350	15620	13820	2800	36700	30
	IPR 117 S3	55.4	34750	30760	26180	23170	2800	61520
60.5		34750	30760	26180	23170	2800	61520	20
73.0		34750	30760	26180	23170	2800	61520	20
88.0		34750	30760	26180	23170	2800	61520	20
95.0		26870	23780	20240	17910	2800	47560	20
106.3		34750	30760	26180	23170	2800	61520	20
114.4		26870	23780	20240	17910	2800	47560	20
128.4		34750	30760	26180	23170	2800	61520	20
134.3		26870	23780	20240	17910	2800	47560	20
156.0		26870	23780	20240	17910	2800	47560	20
167.0		26870	23780	20240	17910	2800	47560	20
188.5		26870	23780	20240	17910	2800	47560	20
218.6		26870	23780	20240	17910	2800	47560	20
226.5		20730	18350	15620	13820	2800	36700	20
262.8		20730	18350	15620	13820	2800	36700	20
317.1	20730	18350	15620	13820	2800	36700	20	
IPR 117 S4	338.7	34750	30760	26180	23170	2800	61520	15
	373.9	34750	30760	26180	23170	2800	61520	15
	408.3	34750	30760	26180	23170	2800	61520	15
	424.3	34750	30760	26180	23170	2800	61520	15
	455.5	34750	30760	26180	23170	2800	61520	15
	493.2	34750	30760	26180	23170	2800	61520	15
	556.8	34750	30760	26180	23170	2800	61520	15
	617.7	34750	30760	26180	23170	2800	61520	15
	697.4	34750	30760	26180	23170	2800	61520	15
	752.2	26840	23760	20220	17900	2800	47560	15
	803.0	26840	23760	20220	17900	2800	47560	15
	873.6	26840	23760	20220	17900	2800	47560	15
	934.9	26840	23760	20220	17900	2800	47560	15
	1013.3	26840	23760	20220	17900	2800	47560	15
	1126.9	26840	23760	20220	17900	2800	47560	15
	1272.3	26840	23760	20220	17900	2800	47560	15
	1354.4	20730	18350	15620	13820	2800	36700	15
	1475.9	26840	23760	20220	17900	2800	47560	15
1529.3	20730	18350	15620	13820	2800	36700	15	
1773.9	20730	18350	15620	13820	2800	36700	15	
IPR 117 S5	840	34750	30760	26180	23170	1500	61520	11
	1012	34750	30760	26180	23170	1500	61520	11
	1220	34750	30760	26180	23170	1500	61520	11
	1316	26870	23780	20240	17910	2800	47560	11
	1438	26870	23780	20240	17910	2800	47560	11
	1627	26870	23780	20240	17910	2800	47560	11
2457	26870	23780	20240	17910	2800	47560	11	

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n ₂ xh						
		10 000	20 000	50 000	100 000			
IPRK 117 S2	12.2	34750	30760	26180	23170	2000	61520	30
	15.9	26870	23780	20240	17910	2000	47560	30
	19.1	20730	18350	15620	13820	2000	36700	30
	24.2	26870	23780	20240	17910	2000	47560	30
	29.1	20730	18350	15620	13820	2000	36700	30
IPRK 117 S3	50.6	34750	30760	26180	23170	2800	61520	20
	61.2	34750	30760	26180	23170	2800	61520	20
	69.0	34750	30760	26180	23170	2800	61520	20
	79.5	26870	23780	20240	17910	2800	47560	20
	89.8	26870	23780	20240	17910	2800	47560	20
	96.4	34750	30760	26180	23170	2800	61520	20
	104.1	26870	23780	20240	17910	2800	47560	20
	125.3	26870	23780	20240	17910	2800	47560	20
	141.5	26870	23780	20240	17910	2800	47560	20
	164.2	26870	23780	20240	17910	2800	47560	20
	197.3	20730	18350	15620	13820	2800	36700	20
	238.1	20730	18350	15620	13820	2800	36700	20
IPRK 117 S4	252.4	34750	30760	26180	23170	2800	61520	15
	284.9	34750	30760	26180	23170	2800	61520	15
	303.9	34750	30760	26180	23170	2800	61520	15
	364.3	34750	30760	26180	23170	2800	61520	15
	397.8	34750	30760	26180	23170	2800	61520	15
	449.1	34750	30760	26180	23170	2800	61520	15
	498.2	34750	30760	26180	23170	2800	61520	15
	562.5	34750	30760	26180	23170	2800	61520	15
	651.1	26870	23780	20240	17910	2800	47560	15
	731.3	26870	23780	20240	17910	2800	47560	15
	789.4	34750	30760	26180	23170	2800	61520	15
	985.2	26870	23780	20240	17910	2800	47560	15
	1190.4	26870	23780	20240	17910	2800	47560	15
	1430.8	20730	18350	15620	13820	2800	36700	15
1726.8	20730	18350	15620	13820	2800	36700	15	

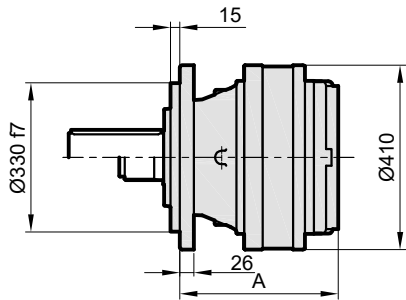
FS



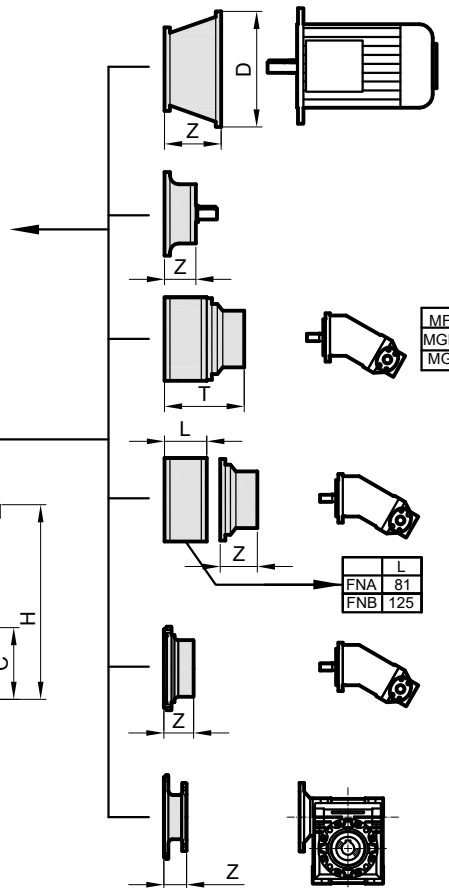
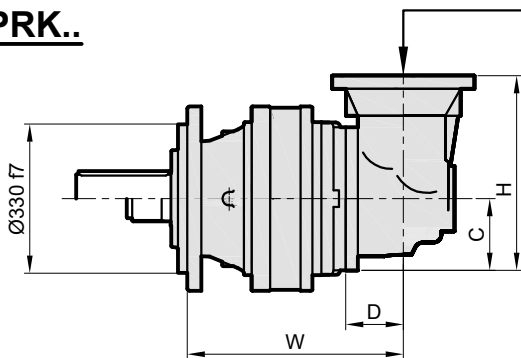
FC



IPR..



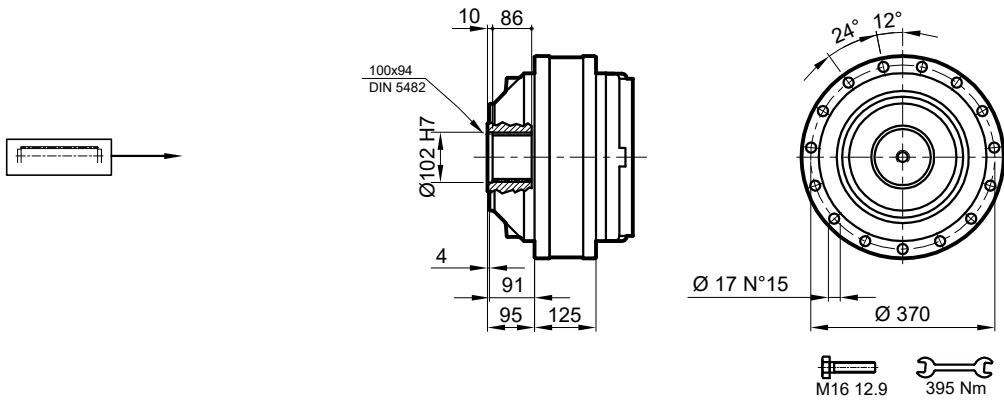
IPRK..



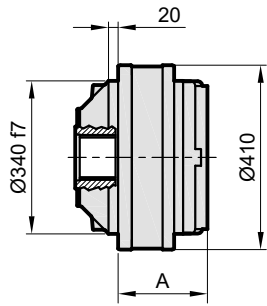
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	371	206	-
S2	451	88	235	550	465	233	302
S3	553	88	140	380	524,5	245	270
S4	626	88	140	380	572,5	251	285

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

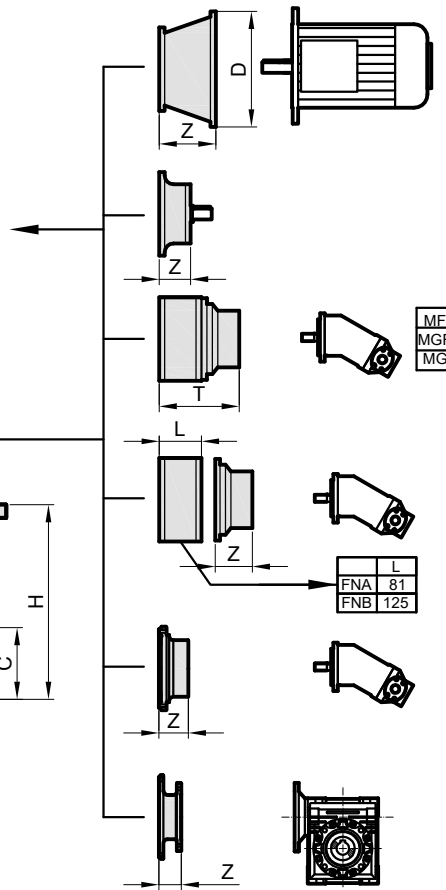
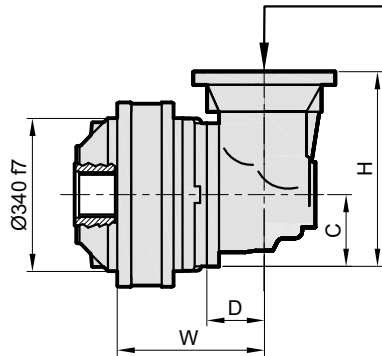
S



IPR..



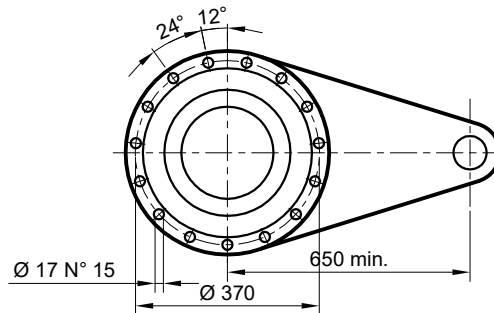
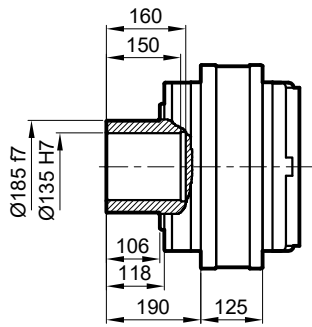
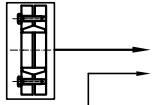
IPRK..



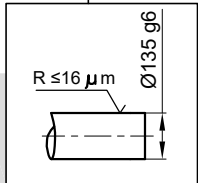
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	207	147	-
S2	287	88	235	550	301	174	242
S3	389	88	140	380	360,5	186	211
S4	462	88	140	380	408,5	192	226

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

SD



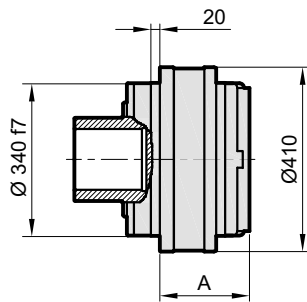
M16 12.9 395 Nm



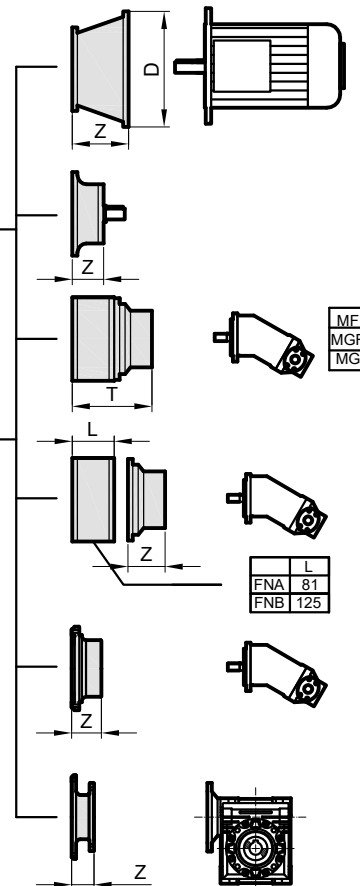
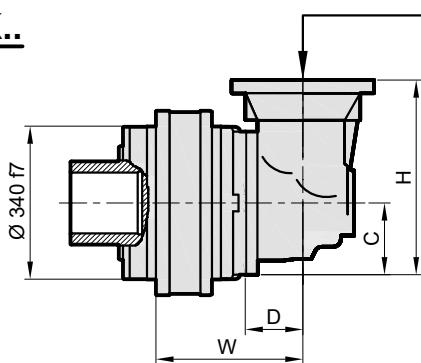
$M_{max} = 52 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



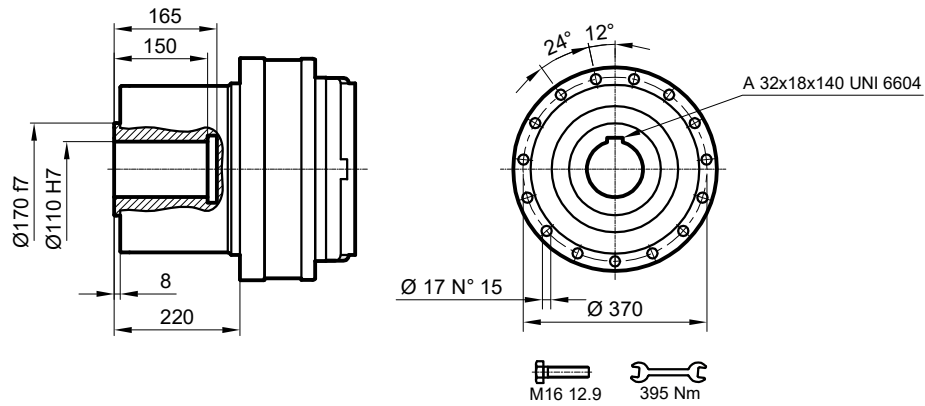
IPRK..



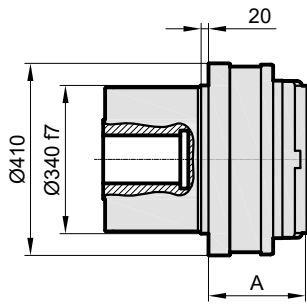
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	207	155	-
S2	287	88	235	550	301	182	250
S3	389	88	140	380	360,5	194	219
S4	462	88	140	380	408,5	200	234

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

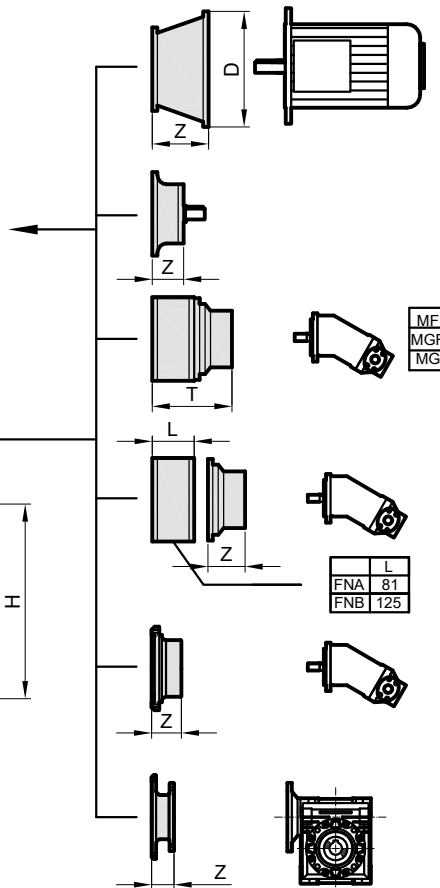
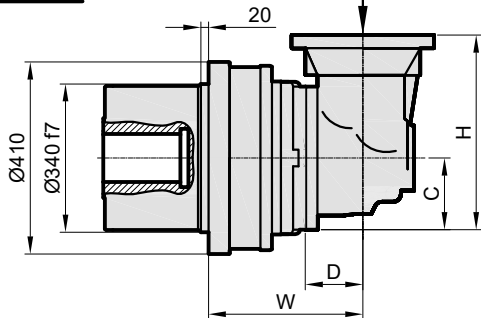
DKM



IPR..

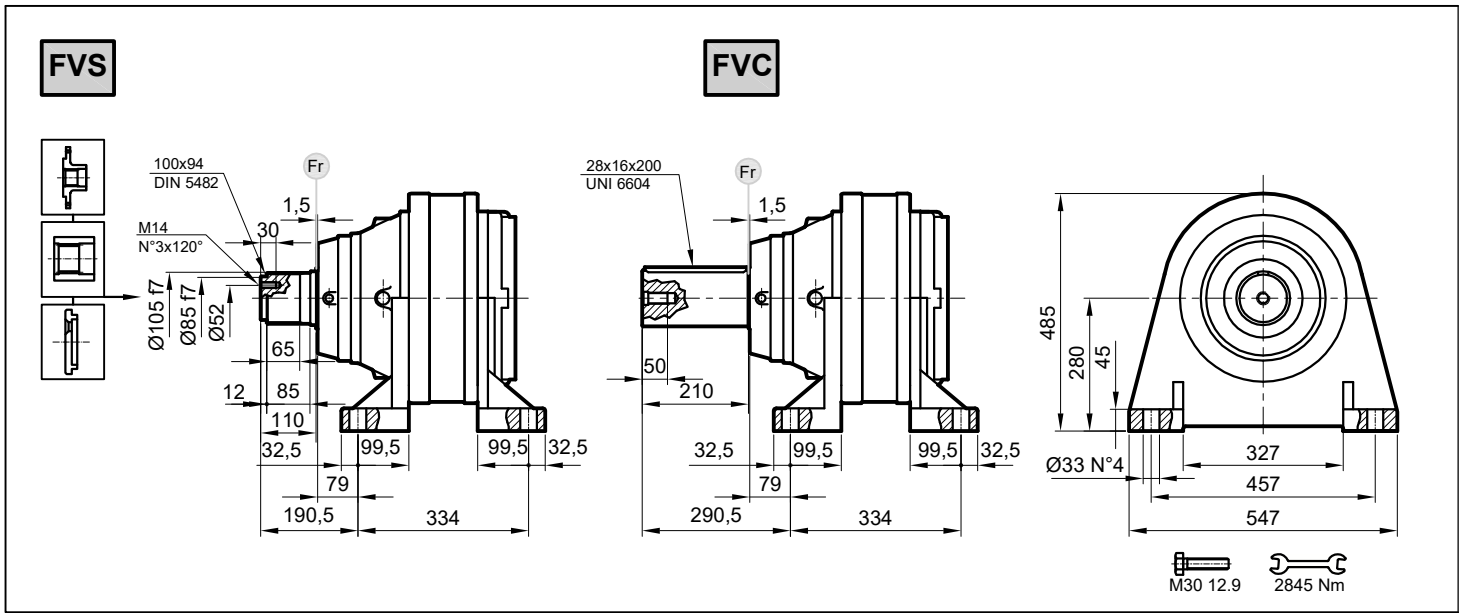


IPRK..

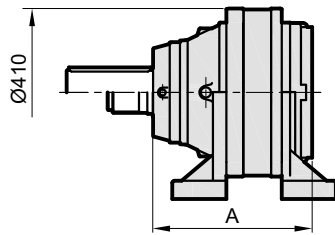


Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	221	147	-
S2	301	88	235	550	315	174	242
S3	403	88	140	380	375	186	211
S4	476	88	140	380	422	192	226

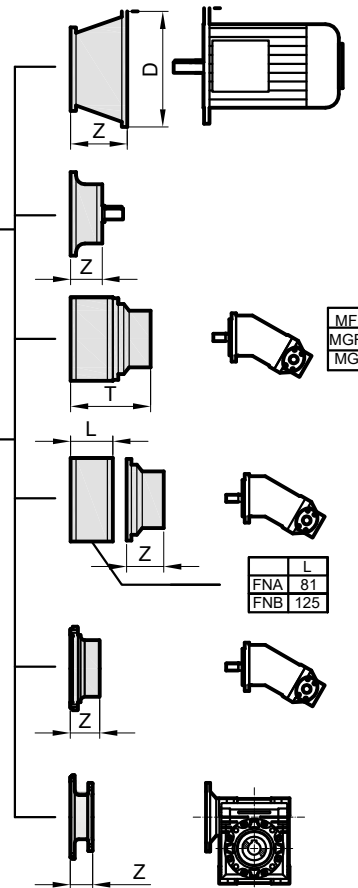
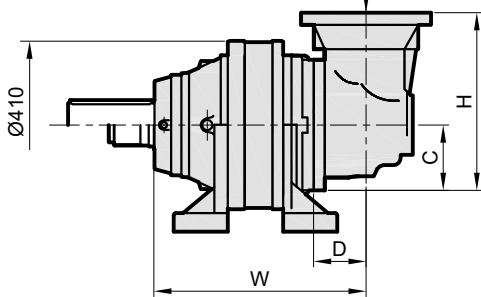
	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



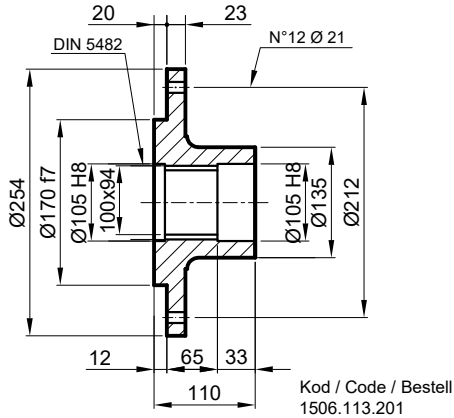
IPRK..



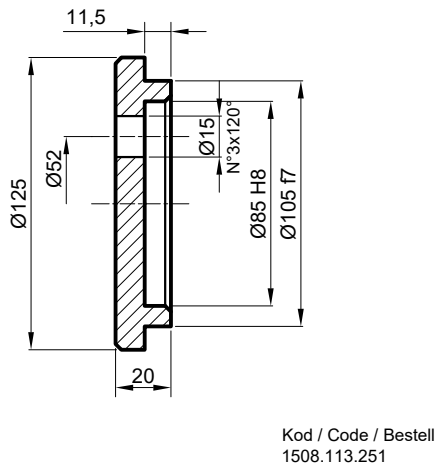
Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	397	244	-
S2	477	88	235	550	491	271	340
S3	579	88	140	380	550,5	283	308
S4	638,5	88	140	380	598,5	289	323

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

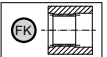
FL Flanş / Flange / Flansch



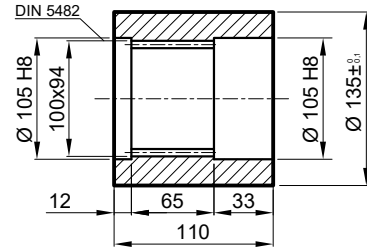
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

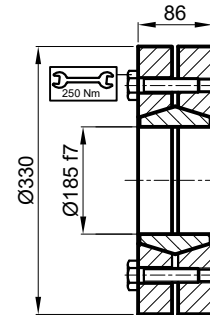


Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1504.113.101

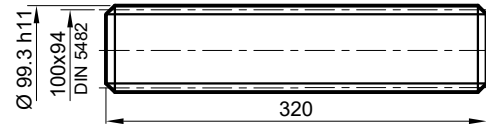
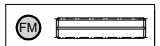
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
52 kNm

Kod / Code / Bestell
2501.117.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material

UNI 39NiCrMo5
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.117.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

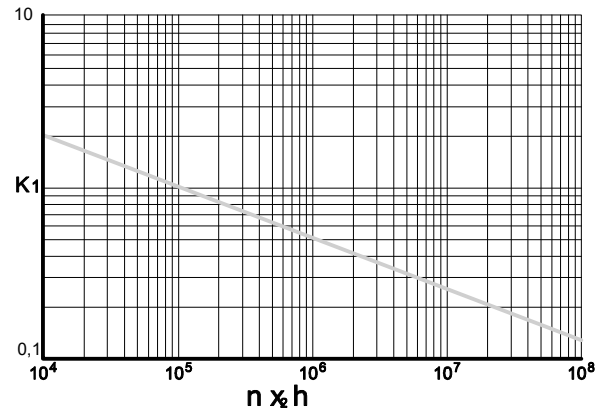
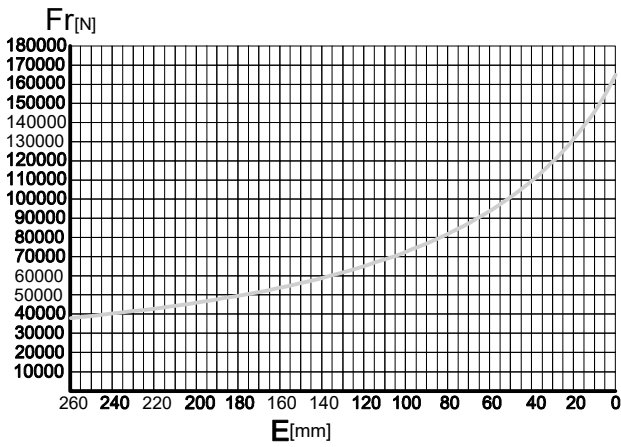
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

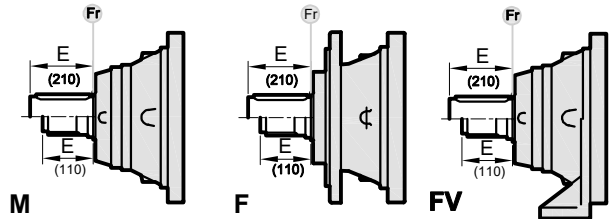
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-F-FV



	n x h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
M-F	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

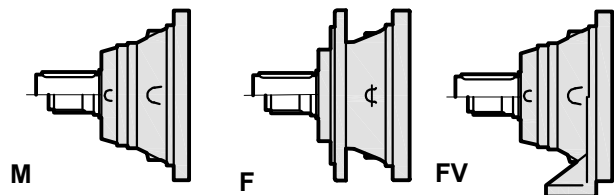
AXIAL LOADS (Fa)

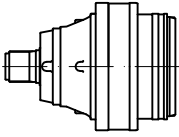
The values of the axial loads in the table refer to the output versions and load directions of application.

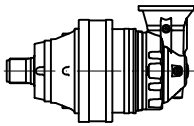
AXIALLAST (Fa)

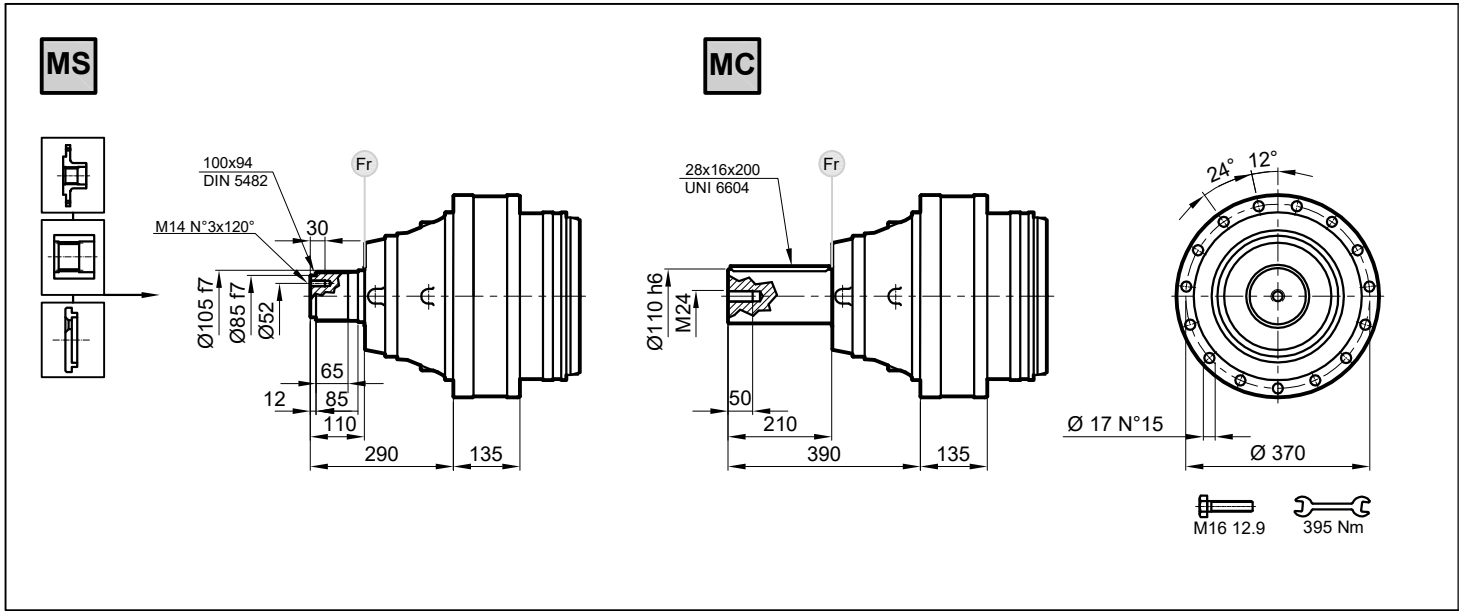
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	M-F	FV	←
	75000	75000	→
	95000	95000	→

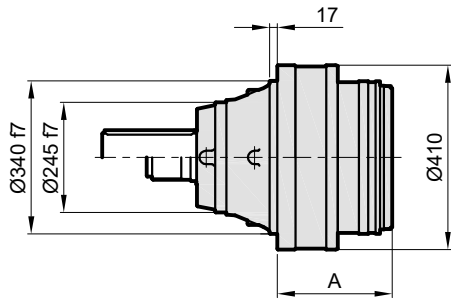


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 119 S2	14.2	34750	30760	26180	23170	2000	61520	34
	17.1	34750	30760	26180	23170	2000	61520	34
	22.4	34750	30760	26180	23170	2000	61520	34
	29.1	26870	23780	20240	17910	2000	47560	34
	35.1	26870	23780	20240	17910	2000	47560	34
IPR 119 S3	64.6	34750	30760	26180	23170	2800	61520	23
	73.5	34750	30760	26180	23170	2800	61520	23
	88.6	34750	30760	26180	23170	2800	61520	23
	102.9	34750	30760	26180	23170	2800	61520	23
	124.3	34750	30760	26180	23170	2800	61520	23
	134.4	34750	30760	26180	23170	2800	61520	23
IPR 119 S4	251.4	34750	30760	26180	23170	2800	61520	17
	300.9	34750	30760	26180	23170	2800	61520	17
	314.9	34750	30760	26180	23170	2800	61520	17
	328.5	34750	30760	26180	23170	2800	61520	17
	362.6	34750	30760	26180	23170	2800	61520	17
	379.6	34750	30760	26180	23170	2800	61520	17
	396.0	34750	30760	26180	23170	2800	61520	17
	427.0	34750	30760	26180	23170	2800	61520	17
	477.3	34750	30760	26180	23170	2800	61520	17
	517.4	34750	30760	26180	23170	2800	61520	17
	576.0	34750	30760	26180	23170	2800	61520	17
	623.7	34750	30760	26180	23170	2800	61520	17
	694.3	34750	30760	26180	23170	2800	61520	17
	752.6	34750	30760	26180	23170	2800	61520	17
	838.9	34750	30760	26180	23170	2800	61520	17
1015.5	26870	23780	20240	17910	2800	47560	17	
1425.0	26870	23780	20240	17910	2800	47560	17	

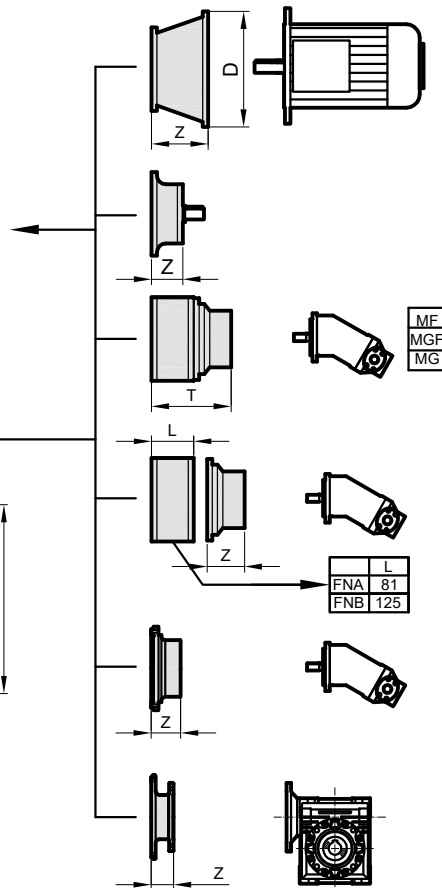
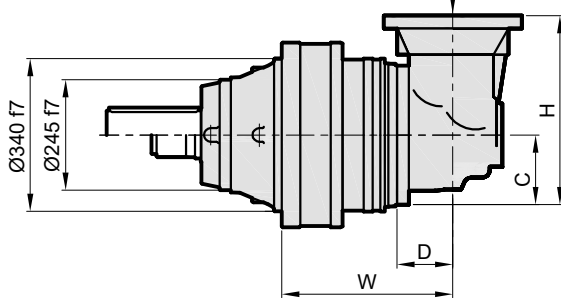
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 119 S3	59.2	34750	30760	26180	23170	2800	61520	23
	77.4	34750	30760	26180	23170	2800	61520	23
	93.3	34750	30760	26180	23170	2800	61520	23
	121.0	34750	30760	26180	23170	2800	61520	23
	158.6	26870	23780	20240	17910	2800	47560	23
	191.1	26870	23780	20240	17910	2800	47560	23
IPRK 119 S4	306.0	34750	30760	26180	23170	2800	61520	17
	352.6	34750	30760	26180	23170	2800	61520	17
	385.0	34750	30760	26180	23170	2800	61520	17
	460.7	34750	30760	26180	23170	2800	61520	17
	519.8	26870	23780	20240	17910	2800	47560	17
	598.9	26870	23780	20240	17910	2800	47560	17
	676.7	34750	30760	26180	23170	2800	61520	17
	729.3	26870	23780	20240	17910	2800	47560	17
	819.1	26870	23780	20240	17910	2800	47560	17
	951.2	26870	23780	20240	17910	2800	47560	17
	1385.5	26870	23780	20240	17910	2800	47560	17



IPR..

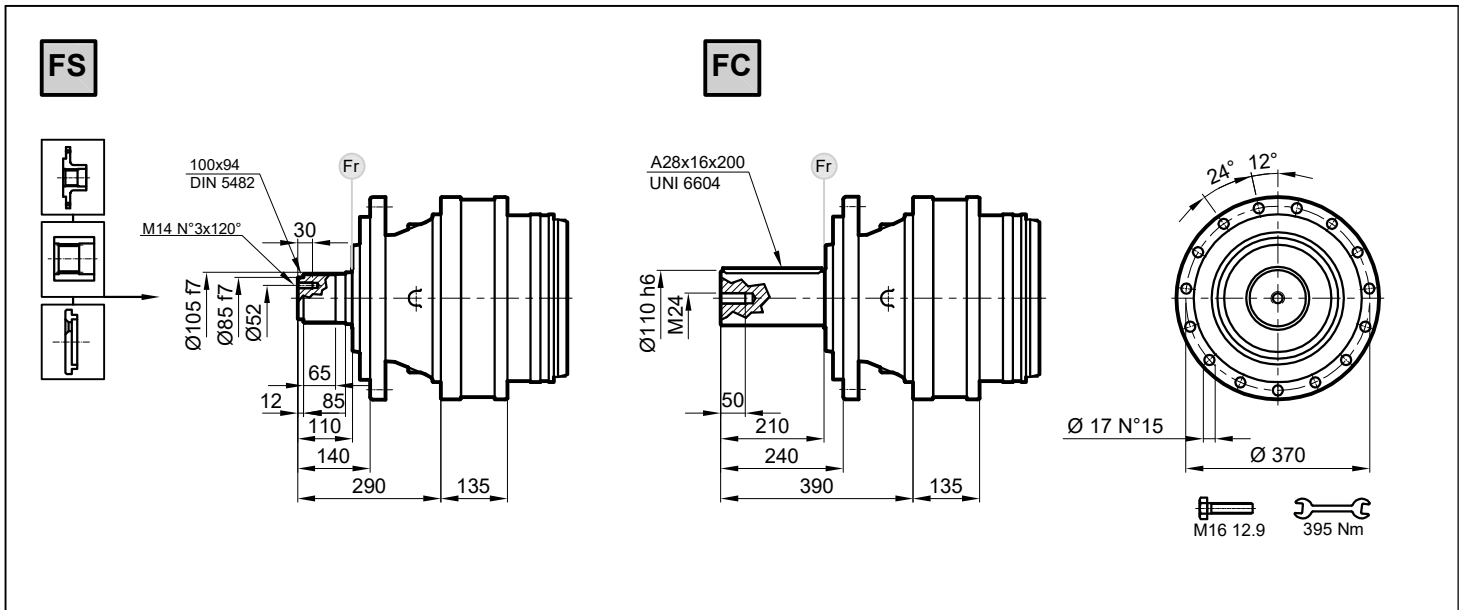


IPRK..

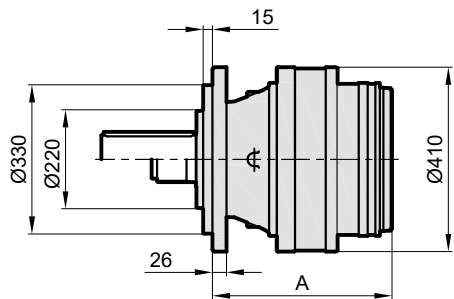


Stage	W	D	C	H	A	IPR		IPRK	
						M	M	M	M
S2	-	-	-	-	319	237	-	-	-
S3	407	88	140	380	390,5	253	336	-	-
S4	478,5	88	140	380	451,5	261	293	-	-

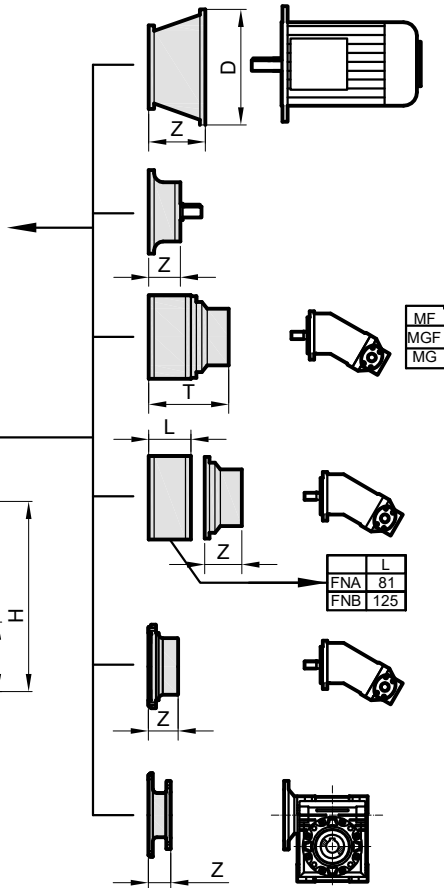
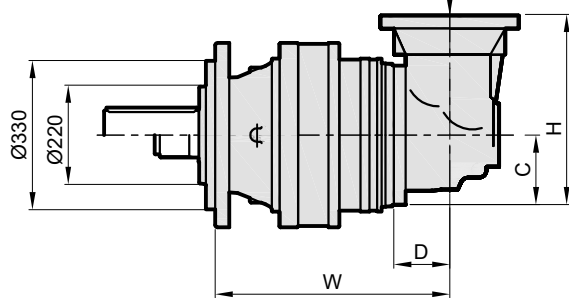
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



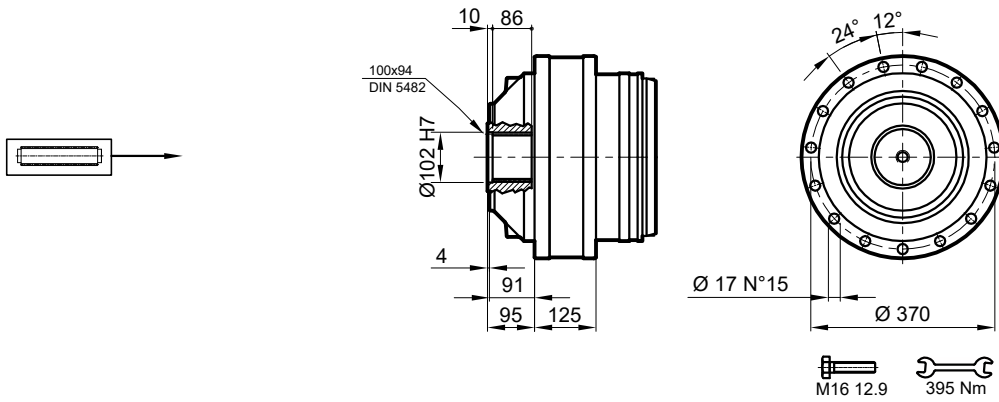
IPRK..



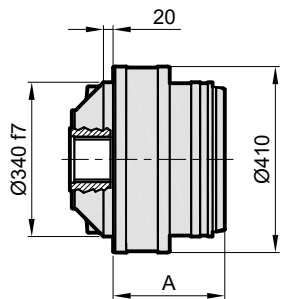
Stage	W	D	C	H	A	IPR		IPRK	
						F	⊠	F	⊠
S2	-	-	-	-	473	260	-	-	-
S3	561	88	140	380	544,5	276	359	-	-
S4	632,5	88	140	380	605,5	284	316	-	-

Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

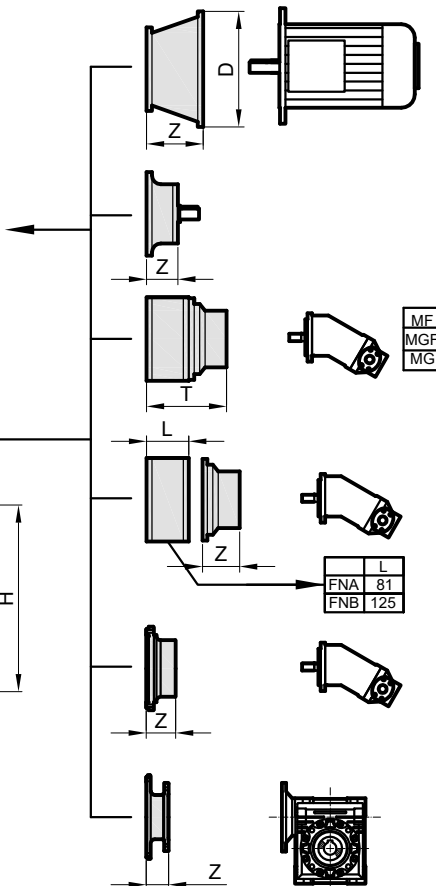
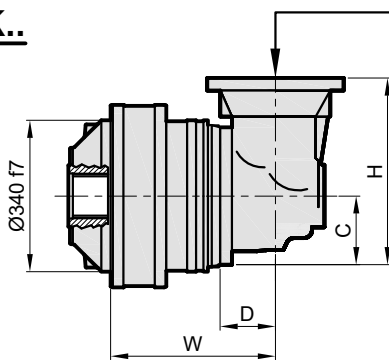
S



IPR..

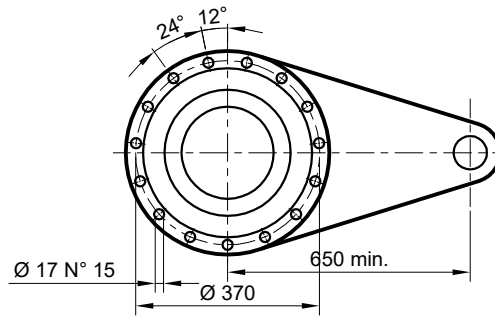
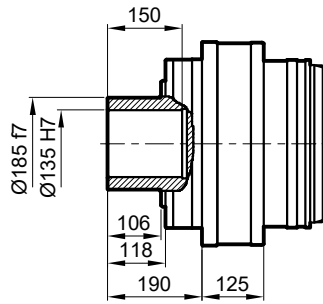
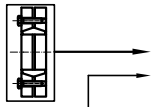


IPRK..

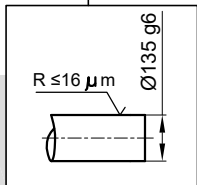


	IEC71		IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

SD



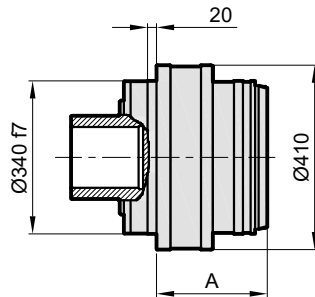
M16 12.9 395 Nm



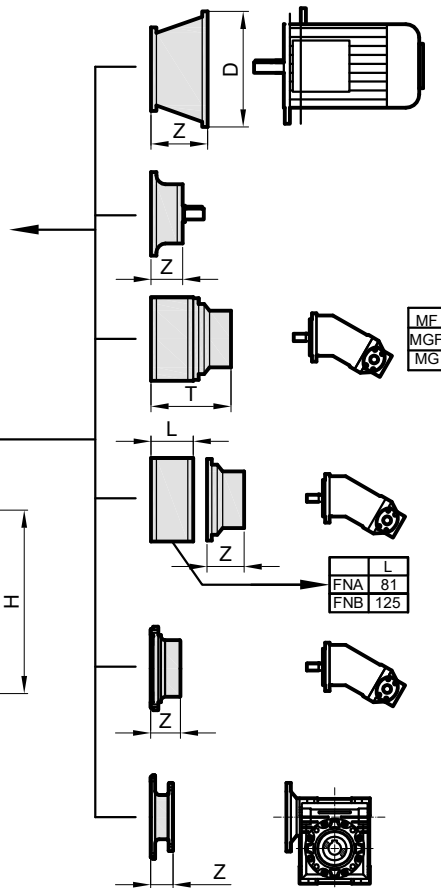
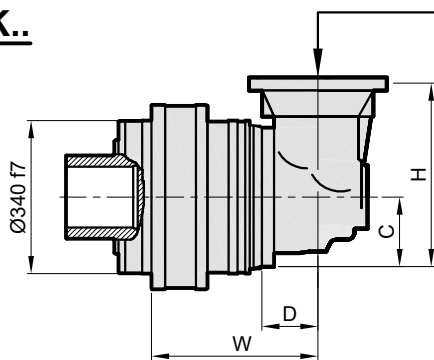
$M_{max} = 52 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



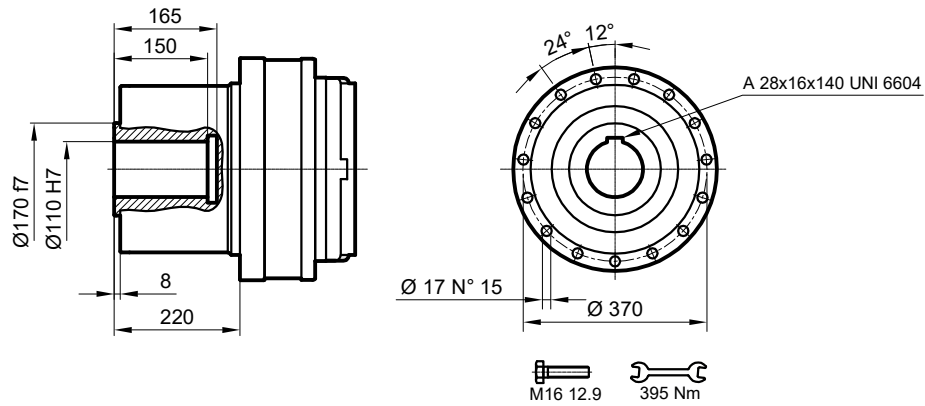
IPRK..



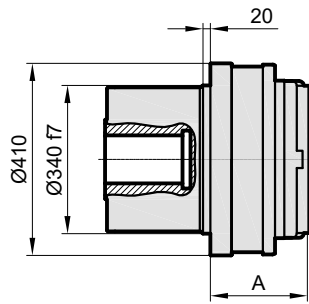
Stage	W	D	C	H	A	IPR SD	IPRK SD
S2	-	-	-	-	309	204	-
S3	397	88	140	380	380,5	220	307
S4	468,5	88	140	380	441,5	228	260

	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

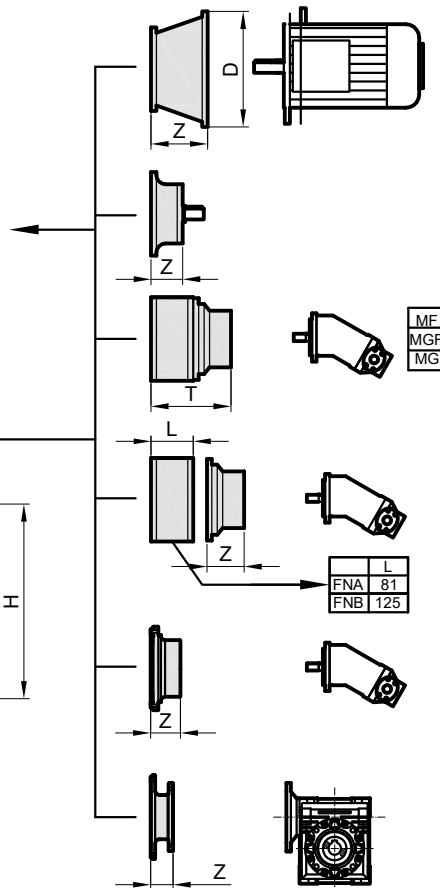
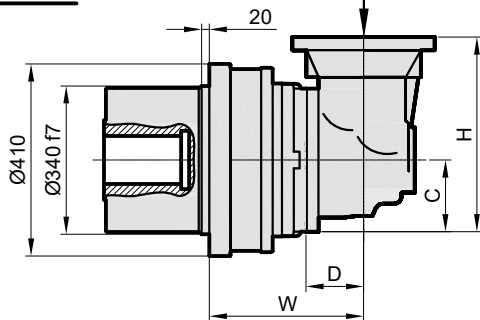
DKM



IPR..

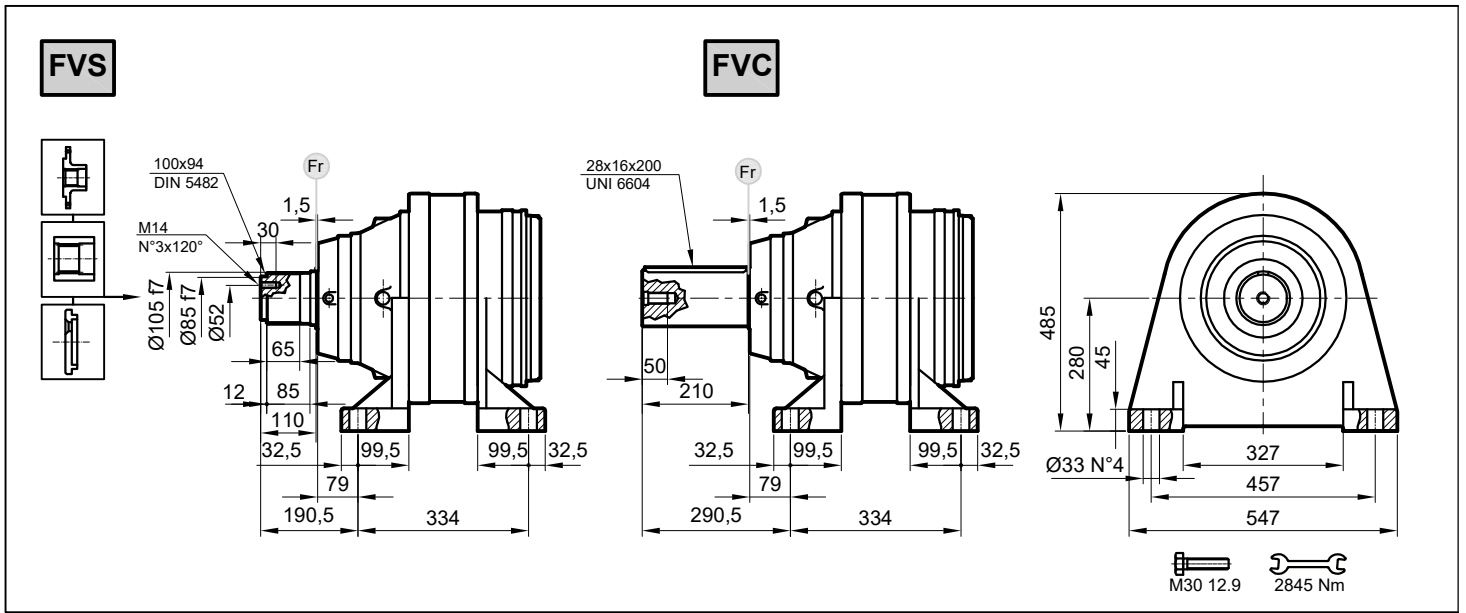


IPRK..

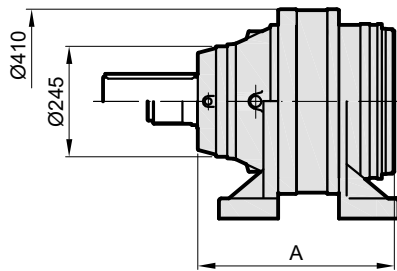


Stage	W	D	C	H	A	IPR		IPRK	
						S	Ⓐ	S	Ⓐ
S2	-	-	-	-	323	196	-	-	
S3	411	88	140	380	395	212	299		
S4	482	88	140	380	455	220	252		

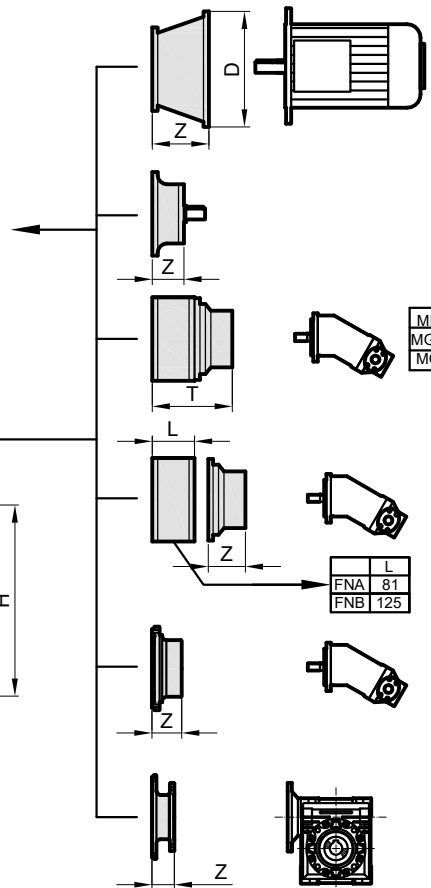
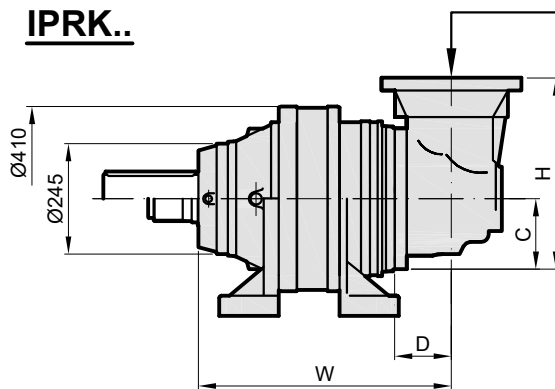
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



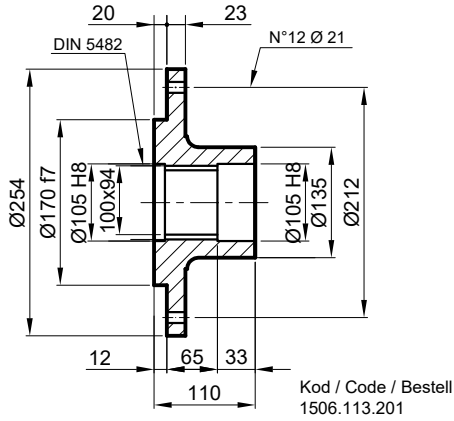
IPRK..



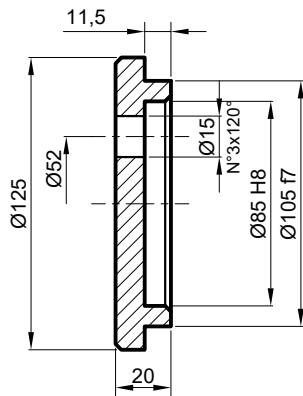
Stage	W	D	C	H	A	IPR		IPRK	
						FVC	FVC	FVC	FVC
S2	-	-	-	-	499	298	-	-	-
S3	585,5	88	140	380	570,5	314	397	-	-
S4	657	88	140	380	631,5	322	354	-	-

Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

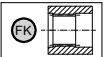
FL Flanş / Flange / Flansch



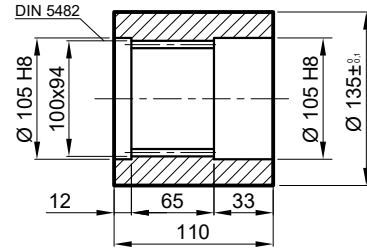
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

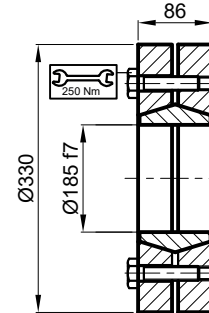


Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1504.113.101

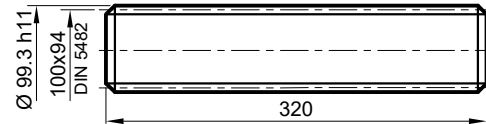
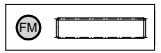
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
52 kNm

Kod / Code / Bestell
2501.117.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material

UNI 39NiCrMo5
Sertleştirilmiş ve Temperlmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.117.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

RADIAL LOADS(Fr)

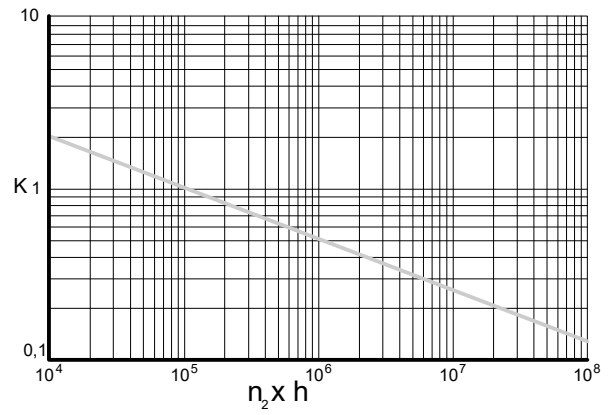
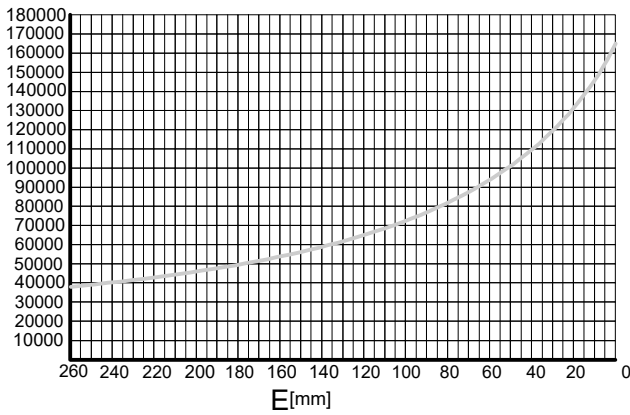
The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

RADIALLAST (Fr)

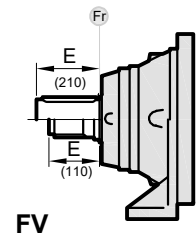
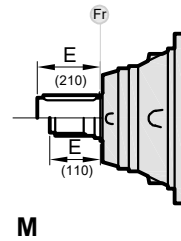
In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV

$Fr_{[N]}$



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		$Fr \cdot K$		
FV	$Fr \cdot 0,75$		$Fr \cdot K \cdot 0,75$		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

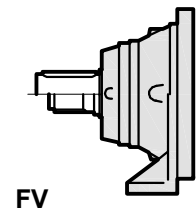
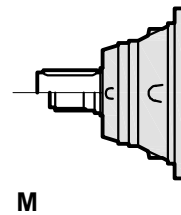
AXIAL LOADS (Fa)

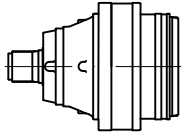
The values of the axial loads in the table refer to the output versions and load directions of application.

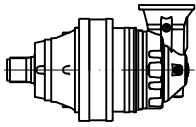
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

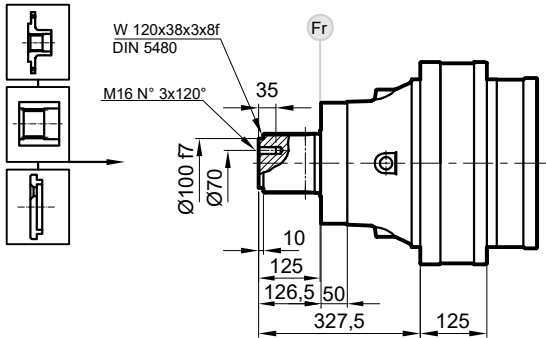
Fa [N]	M	FV	← →
	75000	75000	
95000		95000	



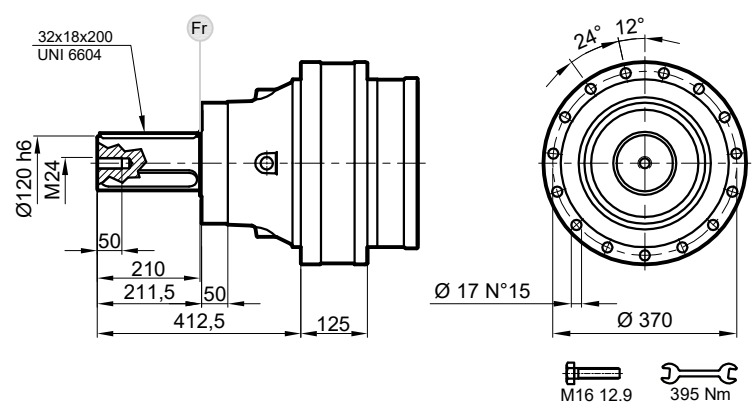
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 121 S1	4.00	42370	37500	31910	28250	1500	61875	54
	4.71	36110	31960	27200	24070	1500	52764	54
	5.85	26710	23640	20120	17800	1500	47280	54
IPR 121 S2	14.2	42370	37500	31910	28250	2000	61875	34
	17.1	42370	37500	31910	28250	2000	61875	34
	20.2	36110	31960	27200	24070	2000	52764	34
	22.4	42370	37500	31910	28250	2000	61875	34
	26.4	36110	31960	27200	24070	2000	52764	34
	31.8	36110	31960	27200	24070	2000	52764	34
	40.8	36110	31960	27200	24070	2000	52764	34
	50.7	26710	23640	20120	17800	2000	47820	34
	53.7	42370	37500	31910	28250	2800	61875	23
IPR 121 S3	58.7	42370	37500	31910	28250	2800	61875	23
	64.8	42370	37500	31910	28250	2800	61875	23
	70.7	42370	37500	31910	28250	2800	61875	23
	83.2	36110	31960	27200	24070	2800	52764	23
	88.6	42370	37500	31910	28250	2800	61875	23
	99.6	36110	31960	27200	24070	2800	52764	23
	108.7	36110	31960	27200	24070	2800	52764	23
	121.0	36110	31960	27200	24070	2800	52764	23
	136.2	36110	31960	27200	24070	2800	52764	23
	158.1	36110	31960	27200	24070	2800	52764	23
	164.1	36110	31960	27200	24070	2800	52764	23
	191.1	36110	31960	27200	24070	2800	52764	23
	230.3	36110	31960	27200	24070	2800	52764	23
	191.0	42370	37500	31910	28250	2800	61875	23
	208.6	42370	37500	31910	28250	2800	61875	23
	230.3	42370	37500	31910	28250	2800	61875	23
286.3	26710	23640	20120	17800	2800	47820	23	
IPR 121 S4	251.4	42370	37500	31910	28250	2800	61875	17
	277.6	42370	37500	31910	28250	2800	61875	17
	303.1	42370	37500	31910	28250	2800	61875	17
	328.5	42370	37500	31910	28250	2800	61875	17
	362.7	42370	37500	31910	28250	2800	61875	17
	379.6	42370	37500	31910	28250	2800	61875	17
	437.1	42370	37500	31910	28250	2800	61875	17
	496.0	42370	37500	31910	28250	2800	61875	17
	583.5	36110	31960	27200	24070	2800	52764	17
	677.7	36110	31960	27200	24070	2800	52764	17
	703.4	36110	31960	27200	24070	2800	52764	17
	762.5	36110	31960	27200	24070	2800	52764	17
	816.8	36110	31960	27200	24070	2800	52764	17
	987.0	36110	31960	27200	24070	2800	52764	17
	1067.3	36110	31960	27200	24070	2800	52764	17
	1289.7	36110	31960	27200	24070	2800	52764	17
	1555.8	36110	31960	27200	24070	2800	52764	17
	2482.1	26710	23640	20120	17800	2800	47820	17

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 121 S2	12.3	42370	37500	31910	28250	2000	61875	34
	14.5	36110	31960	27200	24070	2000	52734	34
	18.7	42370	37500	31910	28250	2000	64875	34
	22.0	36110	31960	27200	24070	2000	52734	34
IPRK 121 S3	43.7	42370	37500	31910	28250	2800	61875	34
	52.7	42370	37500	31910	28250	2800	61875	23
	66.4	42370	37500	31910	28250	2800	61875	23
	80.0	42370	37500	31910	28250	2800	61875	23
	94.1	36110	31960	27200	24070	2800	52734	23
	123.0	36110	31960	27200	24070	2800	52734	23
	185.6	42370	37500	31910	28250	2800	61875	17
IPRK 121 S4	202.7	42370	37500	31910	28250	2800	61875	17
	223.7	42370	37500	31910	28250	2800	61875	17
	244.3	42370	37500	31910	28250	2800	61875	17
	292.5	42370	37500	31910	28250	2800	61875	17
	319.4	42370	37500	31910	28250	2800	61875	17
	352.6	42370	37500	31910	28250	2800	61875	17
	385.0	42370	37500	31910	28250	2800	61875	17
	414.8	36110	31960	27200	24070	2800	52724	17
	452.9	36110	31960	27200	24070	2800	52724	17
	542.0	36110	31960	27200	24070	2800	52724	17
	591.8	36110	31960	27200	24070	2800	52724	17
	658.8	36110	31960	27200	24070	2800	52724	17
	741.3	36110	31960	27200	24070	2800	52724	17
	860.9	36110	31960	27200	24070	2800	52724	17
	1037.7	36110	31960	27200	24070	2800	52724	17
	1253.8	36110	31960	27200	24070	2800	52724	17

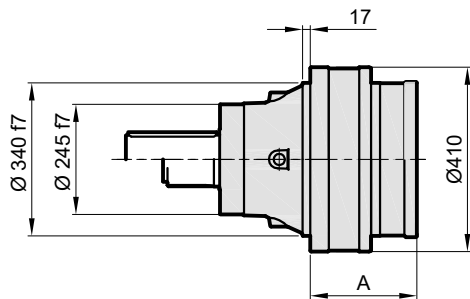
MS



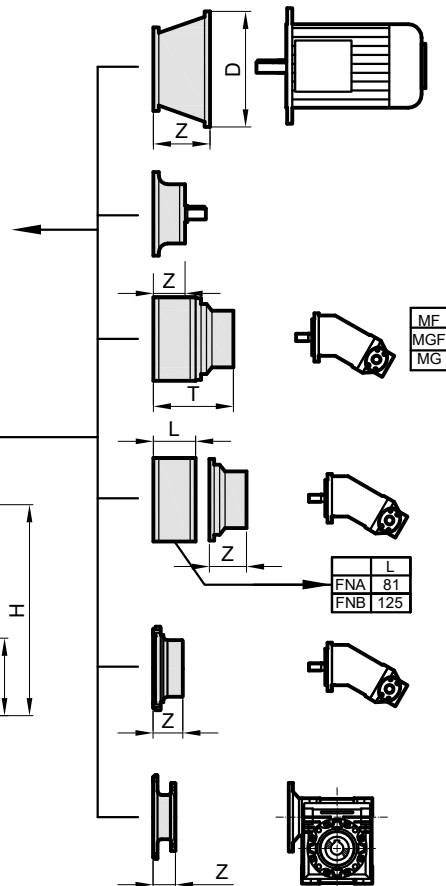
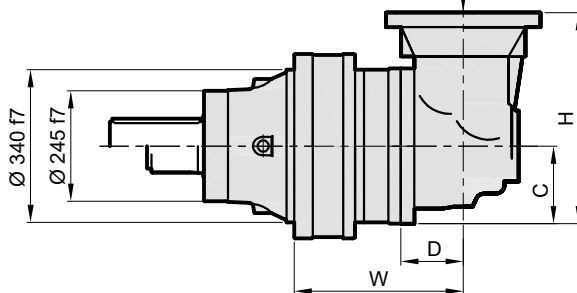
MC



IPR..

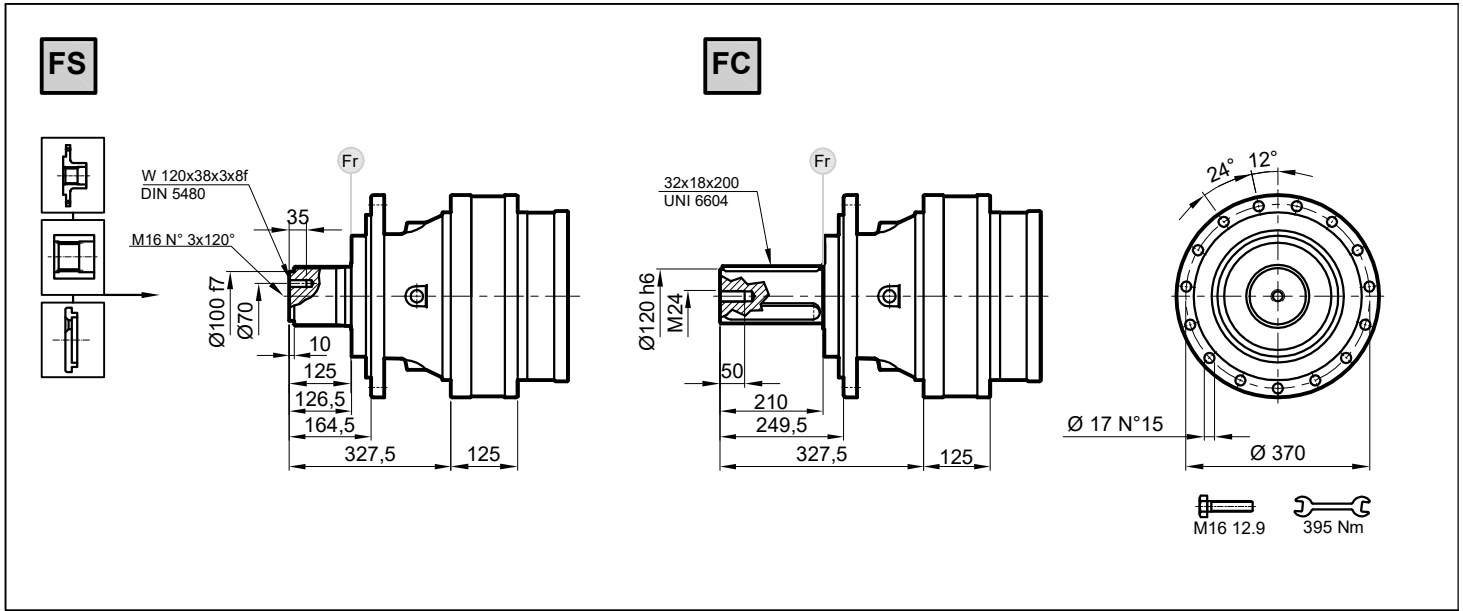


IPRK..

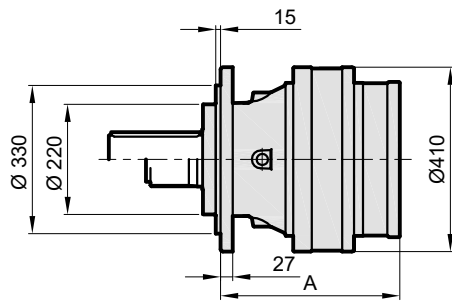


Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	232	193	-
S2	297	88	235	550	319	243	285
S3	454	88	235	550	390,5	259	342
S4	492	88	140	380	451,5	267	299

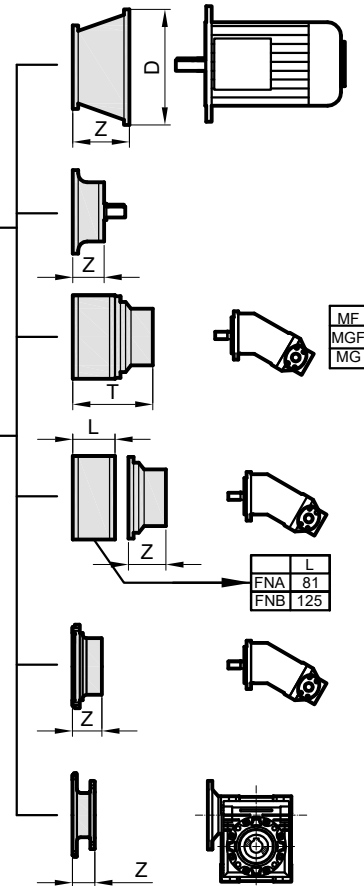
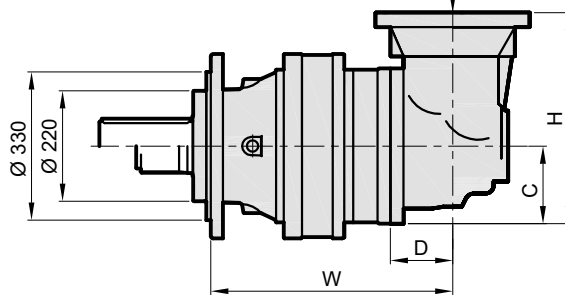
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



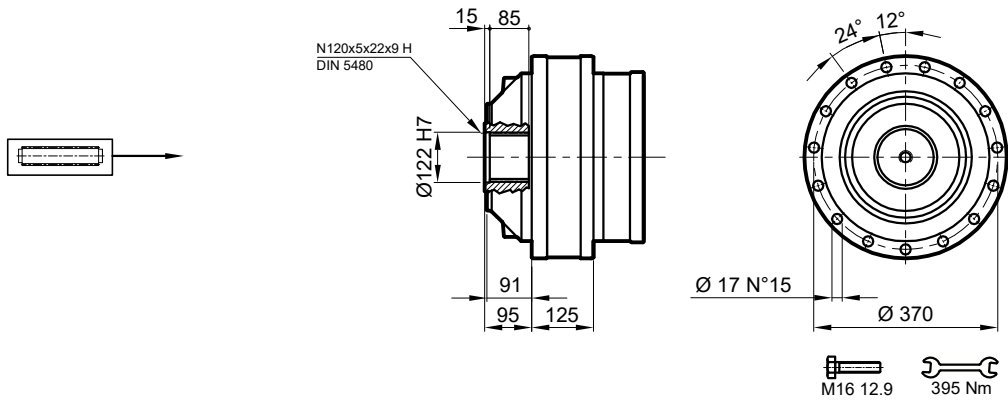
IPRK..



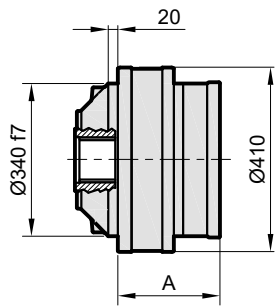
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	408	216	-
S2	473	88	235	550	495	266	308
S3	630	88	235	550	566,5	282	365
S4	668	88	140	380	627,5	290	322

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

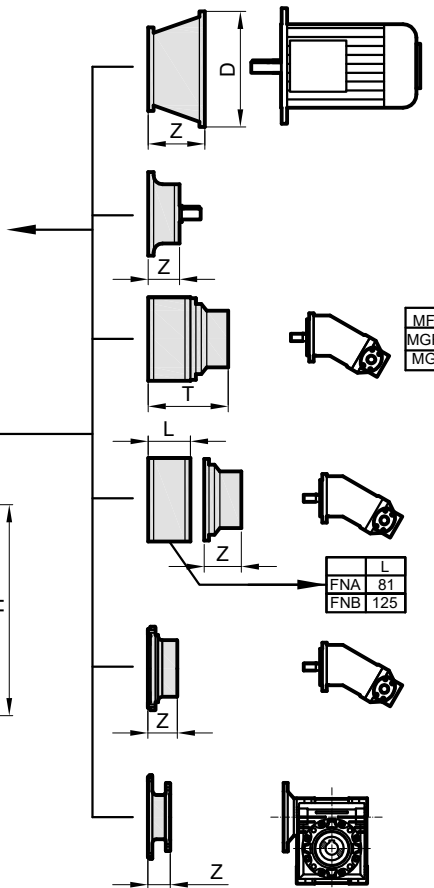
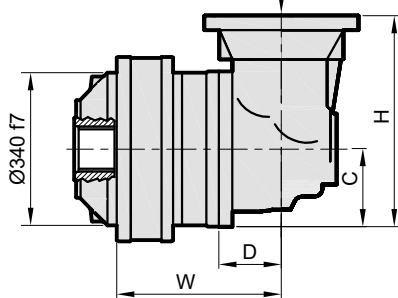
S



IPR..



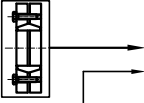
IPRK..

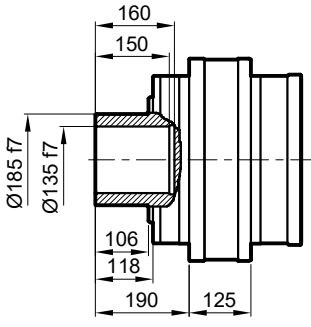


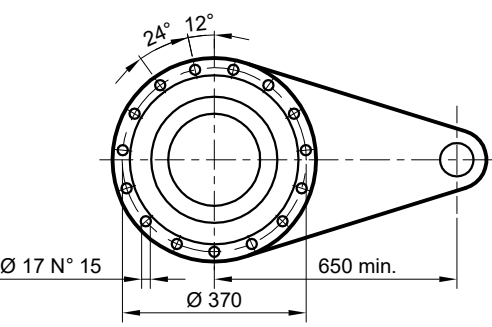
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	222	157	-
S2	287	88	235	550	309	207	248
S3	444	88	235	550	380,5	223	305
S4	482	88	140	380	441,5	231	263



	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

SD







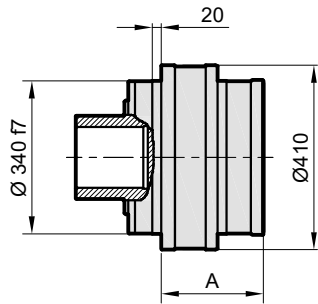



$M_{max} = 52 \text{ kNm}$

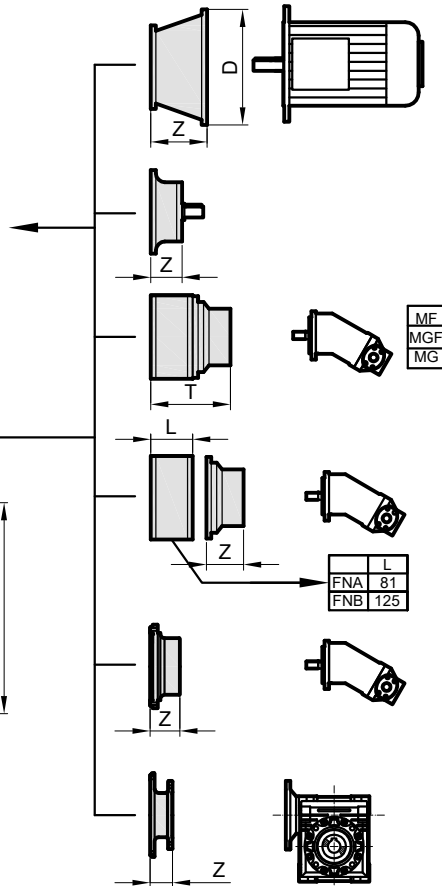
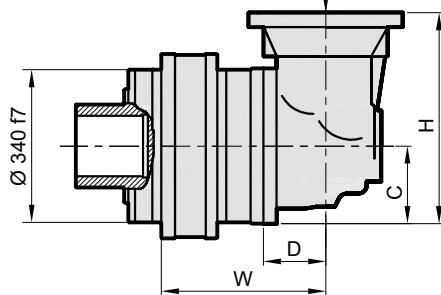
$R \leq 16 \mu\text{m}$ $\text{Ø}135 \text{ g6}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



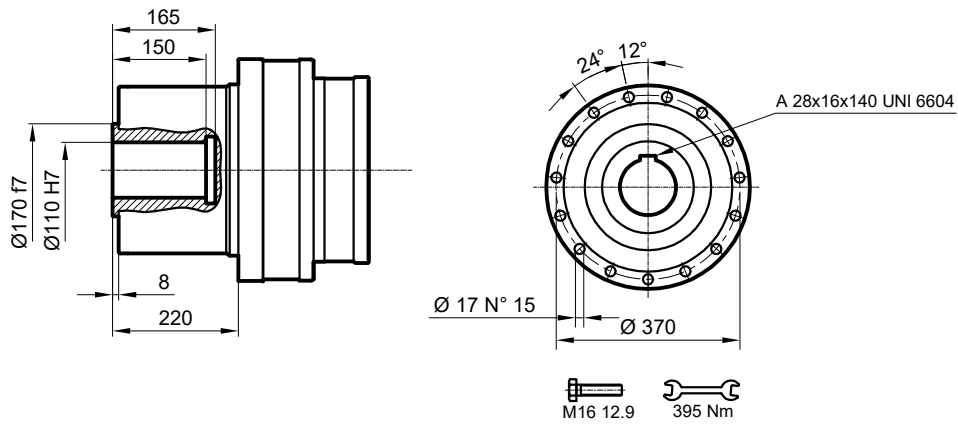
IPRK..



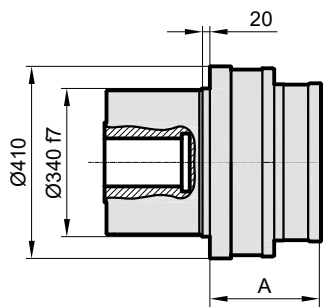
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	222	165	-
S2	287	88	235	550	309	215	256
S3	444	88	235	550	380,5	231	313
S4	482	88	140	380	441,5	239	271

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

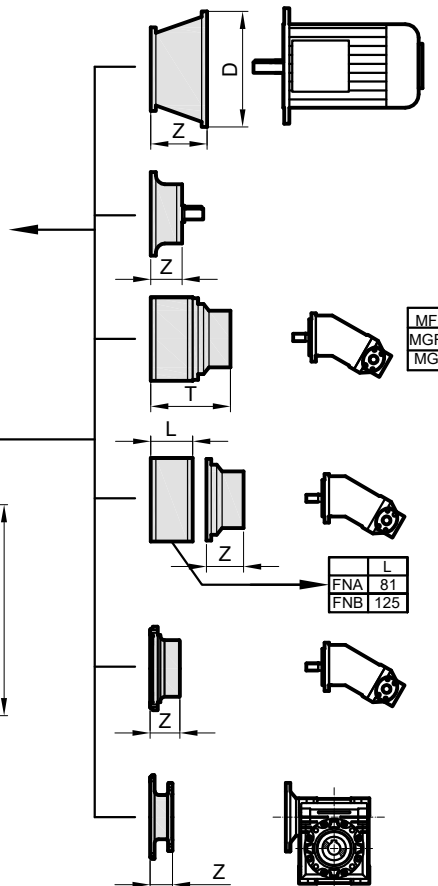
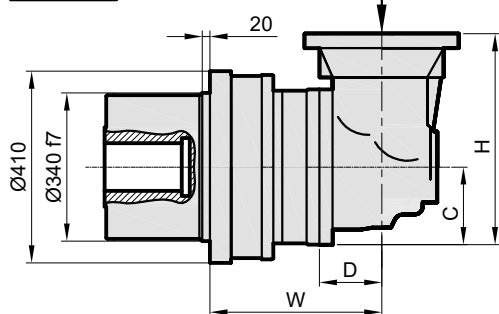
DKM



IPR

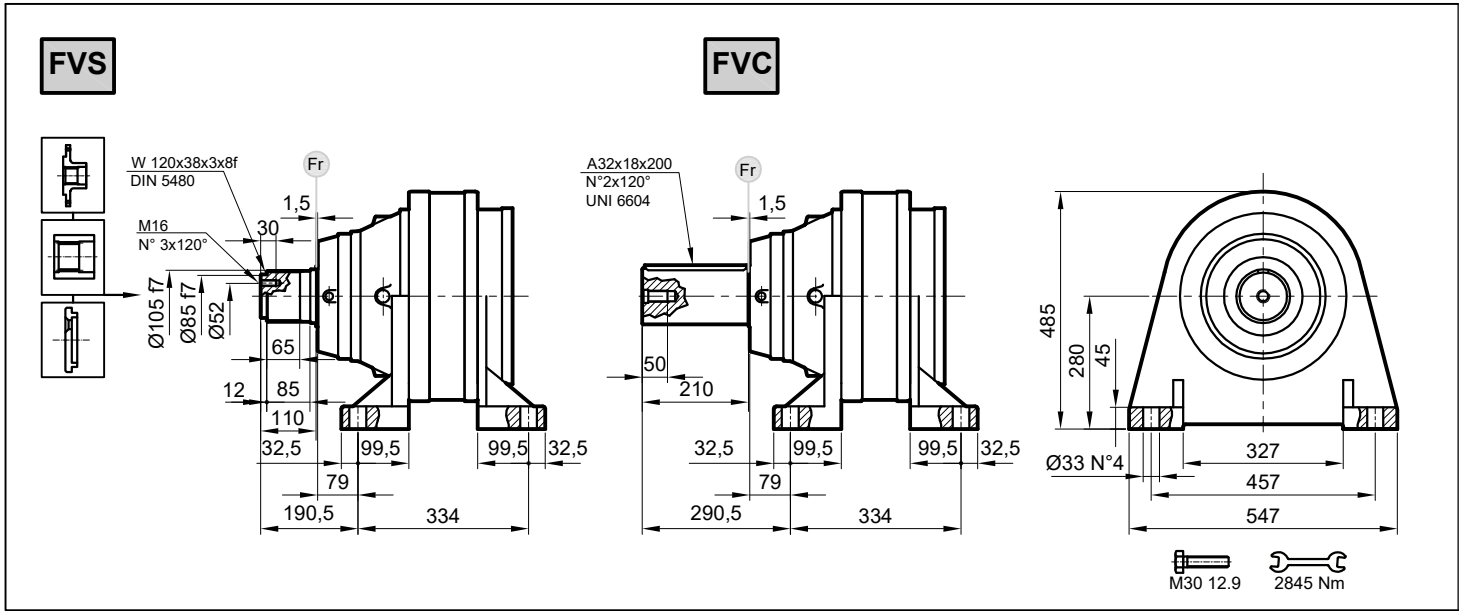


IPRK..

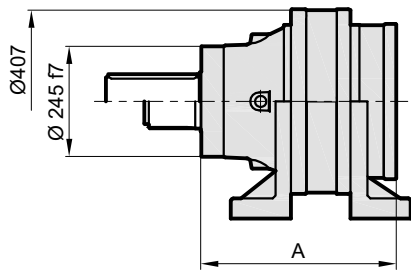


Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	236	157	-
S2	291	88	235	550	323	207	248
S3	458	88	235	550	395	223	305
S4	496	88	140	380	455	231	263

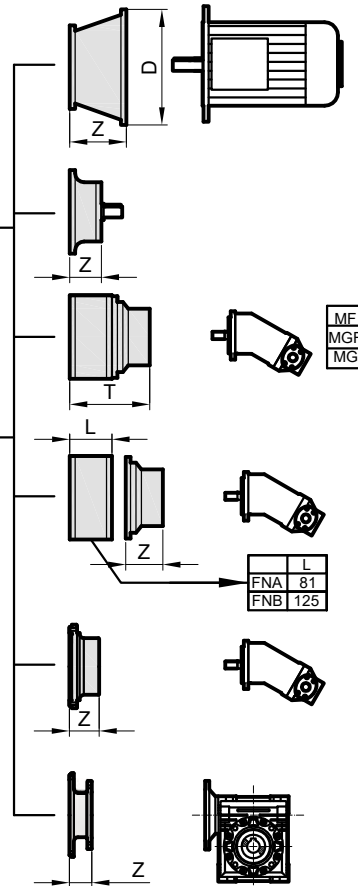
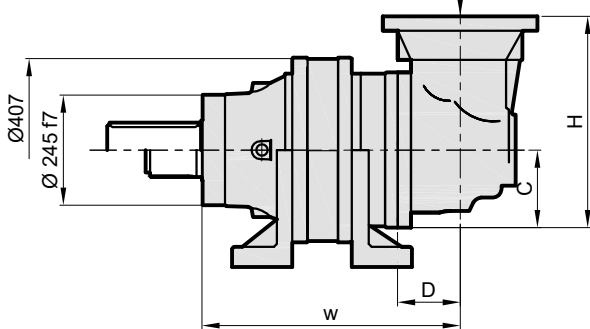
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-



IPR..



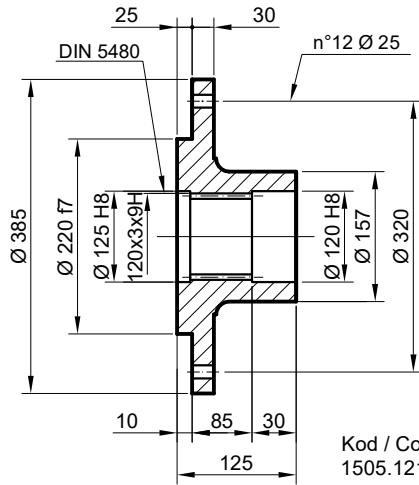
IPRK..



Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	434,5	254	-
S2	499,5	88	235	550	521,5	304	346
S3	656,5	88	235	550	593	320	403
S4	694,5	88	140	380	654	328	360

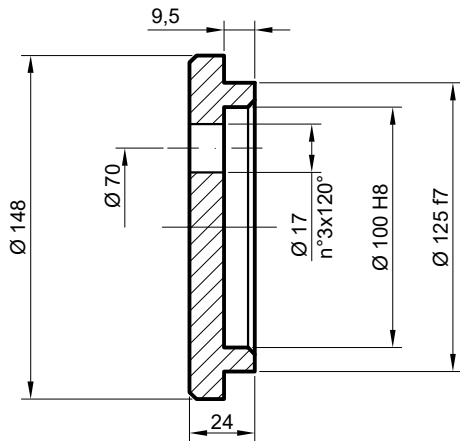
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	-	-
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	350	120	-	-	-	-	-	-

FL Flanş / Flange / Flansch



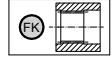
Kod / Code / Bestell
1505.121.200

SP Sabitleme Pulu / Stop bottom plate / Endscheibe

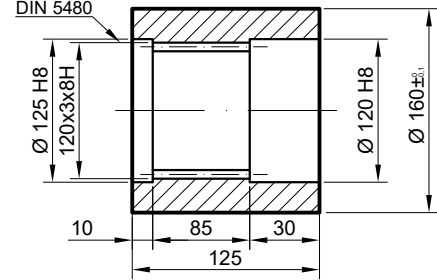


Kod / Code / Bestell
1507.121.250

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

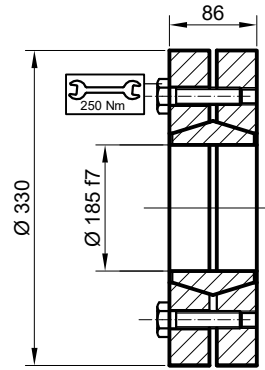


Malzeme /Material Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.121.100

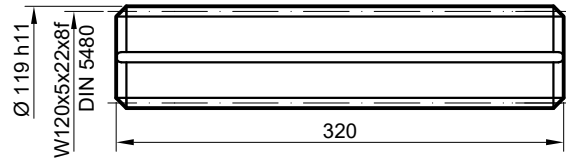
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
52 kNm

Kod / Code / Bestell
2501.119.001

FM Frezeli Mil / Splined rod
Außenverzahnte Welle



Malzeme / Material
Material

UNI 39NiCrMo5
Sertleştirilmiş ve Temperlenmiş
Hardened and Tempered
Vergütet

Kod / Code / Bestell
1509.121.260

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

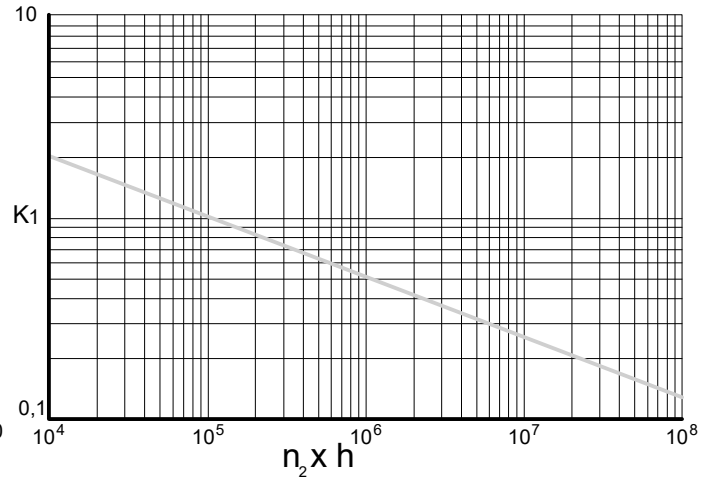
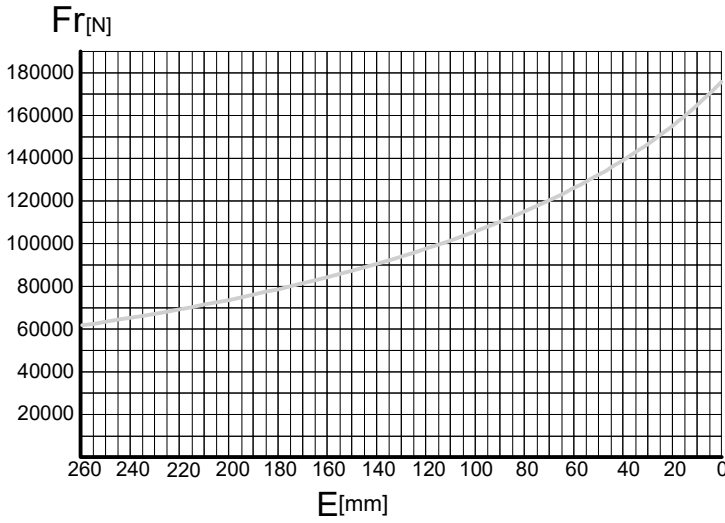
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

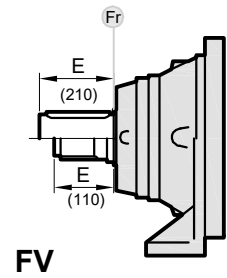
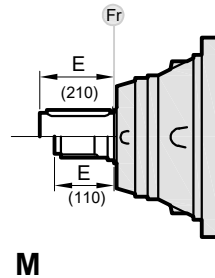
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr	Fr . K			
FV	Fr . 0,75	Fr . K . 0,75			



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

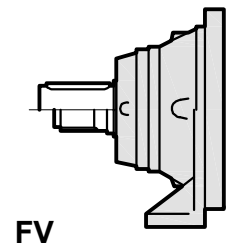
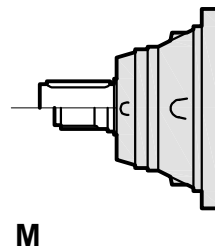
AXIAL LOADS (Fa)

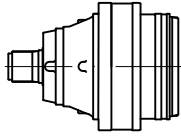
The values of the axial loads in the table refer to the output versions and load directions of application.

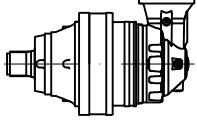
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	M	FV	← →
		80000	
	100000	100000	

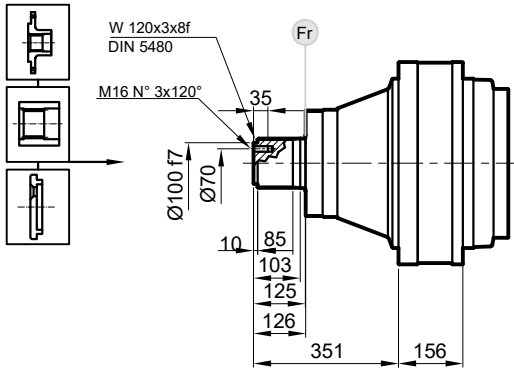


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 123 S1	4.00	68690	60800	51740	45800	1200	121600	60
	5.10	50280	44500	37870	33520	1200	89000	60
	6.00	40110	35500	30210	26740	1200	71000	60
IPR 123 S2	14.0	68690	60800	51740	45800	2000	121600	38
	16.9	68690	60800	51740	45800	2000	121600	38
	21.6	50280	44500	37870	33520	2000	89000	38
	26.9	68690	60800	51740	45800	2000	121600	38
	28.3	50280	44500	37870	33520	2000	121600	38
	33.6	40110	35500	30210	26740	2000	71000	38
	40.5	40110	35500	30210	26740	2000	71000	38
	53.1	68690	60800	51740	45800	2800	121600	25
IPR 123 S3	64.0	68690	60800	51740	45800	2800	121600	25
	74.2	50280	44500	37870	33520	2800	89000	25
	84.3	68690	60800	51740	45800	2800	121600	25
	92.9	50280	44500	37870	33520	2800	89000	25
	107.9	50280	44500	37870	33520	2800	89000	25
	116.9	50280	44500	37870	33520	2800	89000	25
	130.1	50280	44500	37870	33520	2800	89000	25
	138.6	40110	35500	30210	26740	2800	71000	25
	157.2	50280	44500	37870	33520	2800	89000	25
	170.1	50280	44500	37870	33520	2800	89000	25
	205.5	50280	44500	37870	33520	2800	89000	25
	247.7	50280	44500	37870	33520	2800	89000	25
	293.6	40110	35500	30210	26740	2800	71000	25
	IPR 123 S4	324.7	68690	60800	51740	45800	2800	121600
358.5		68690	60800	51740	45800	2800	121600	20
391.4		68690	60800	51740	45800	2800	121600	20
432.1		68690	60800	51740	45800	2800	121600	20
471.8		68690	60800	51740	45800	2800	121600	20
511.5		68690	60800	51740	45800	2800	121600	20
564.6		68690	60800	51740	45800	2800	121600	20
591.0		68690	60800	51740	45800	2800	121600	20
616.6		68690	60800	51740	45800	2800	121600	20
686.3		68690	60800	51740	45800	2800	121600	20
789.3		50280	44500	37870	33520	2800	89000	20
878.7		50280	44500	37870	33520	2800	89000	20
952.5		50280	44500	37870	33520	2800	89000	20
1061.7		50280	44500	37870	33520	2800	89000	20
1151.0		50280	44500	37870	33520	2800	89000	20
1258.3		40110	35500	30210	26740	2800	71000	20
1387.3		50280	44500	37870	33520	2800	89000	20
1672.2		50280	44500	37870	33520	2800	89000	20
1981.9	40110	35500	30210	26740	2800	71000	20	

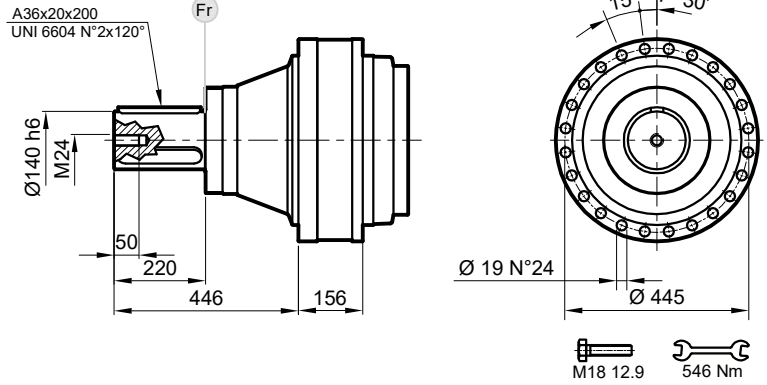


	i	T ₂ [Nm]				n _{1max} [min]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 123 S2	12.1	68690	60800	51740	45800	2000	121600	38
	15.5	50280	44500	37870	33520	2000	89000	38
	18.4	40110	35500	30210	26740	2000	71000	38
	23.6	50280	44500	37870	33520	2000	89000	38
	27.9	40110	35500	30210	26740	2000	71000	38
IPRK 123 S3	58.5	68690	60800	51740	45800	2800	121600	25
	76.5	68690	60800	51740	45800	2800	121600	25
	97.9	50280	44500	37870	33520	2800	89000	25
	118.1	50280	44500	37870	33520	2800	89000	25
	139.9	40110	35500	30210	26740	2800	71000	25
	154.3	50280	44500	37870	33520	2800	89000	25
	220.4	40110	35500	30210	26740	2800	71000	25
IPRK 123 S4	241.5	68690	60800	51740	45800	2800	121600	20
	288.9	68690	60800	51740	45800	2800	121600	20
	315.7	68690	60800	51740	45800	2800	121600	20
	351.2	68690	60800	51740	45800	2800	121600	20
	395.2	68690	60800	51740	45800	2800	121600	20
	455.4	68690	60800	51740	45800	2800	121600	20
	506.3	50280	44500	37870	33520	2800	89000	20
	543.3	50280	44500	37870	33520	2800	89000	20
	587.6	50280	44500	37870	33520	2800	89000	20
	668.9	50280	44500	37870	33520	2800	89000	20
	708.7	50280	44500	37870	33520	2800	89000	20
	797.4	50280	44500	37870	33520	2800	89000	20
	856.3	50280	44500	37870	33520	2800	89000	20
	926.0	50280	44500	37870	33520	2800	89000	20
	961.2	50280	44500	37870	33520	2800	89000	20
	1119.0	50280	44500	37870	33520	2800	89000	20
1348.8	50280	44500	37870	33520	2800	89000	20	
1598.6	40110	35500	30210	26740	2800	71000	20	

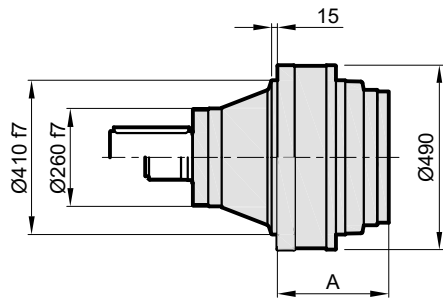
MS



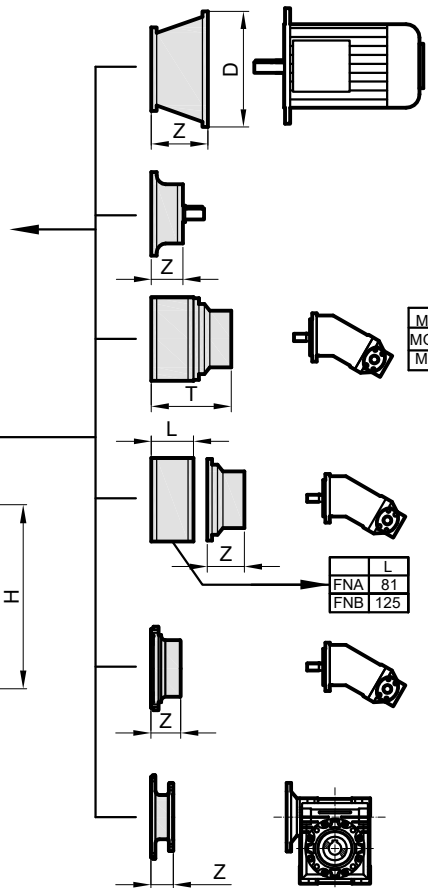
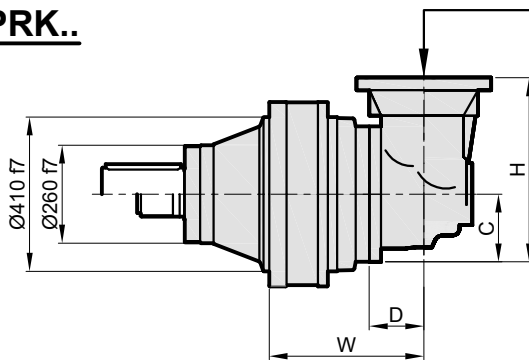
MC



IPR..

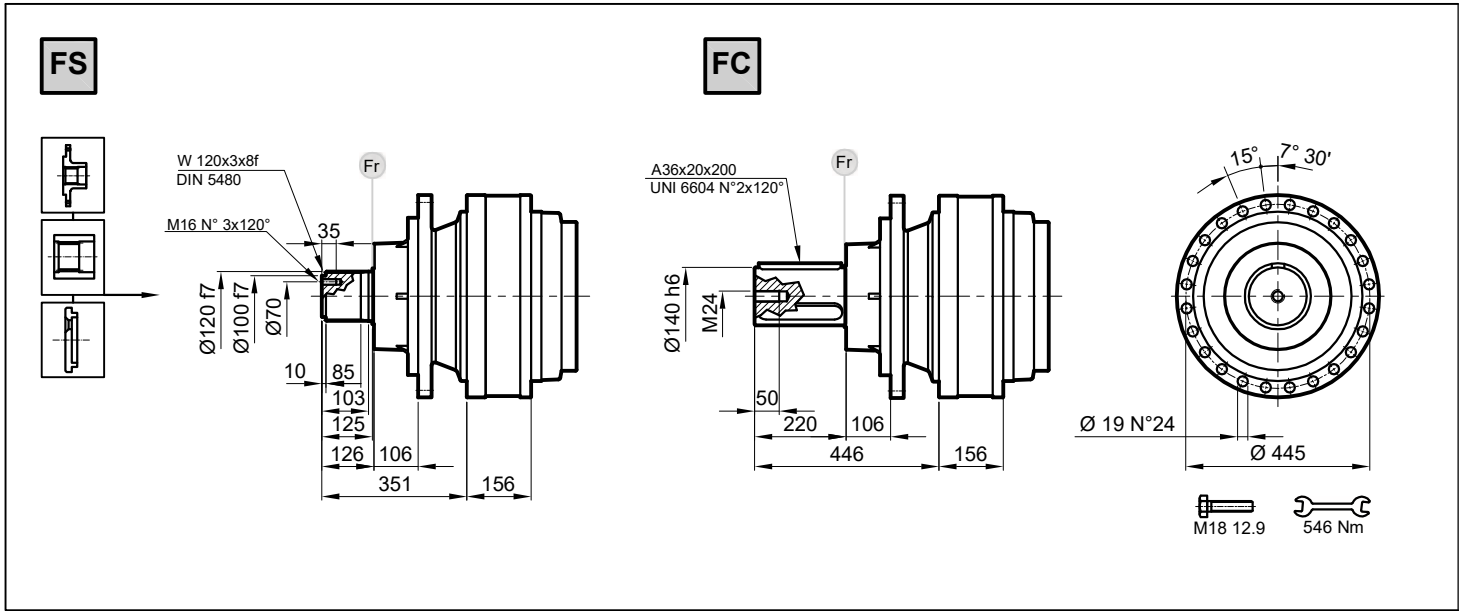


IPRK..

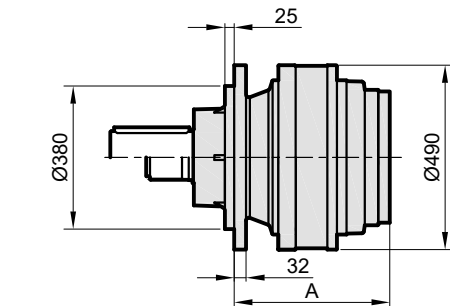


Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	261	314	-
S2	442	88	235	550	368	373	364
S3	456	88	140	380	439,5	389	410
S4	541	88	140	380	500,5	397	429

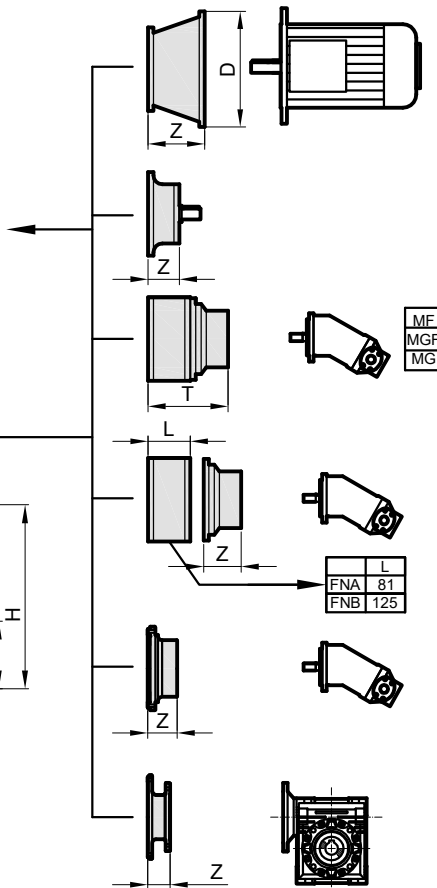
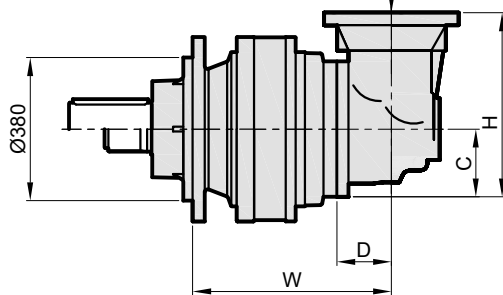
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	-	-	-	-	-	-	-	-



IPR..



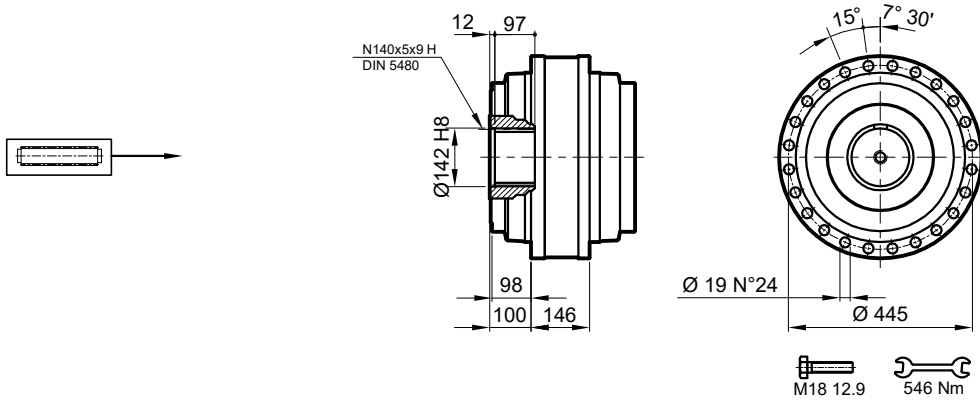
IPRK..



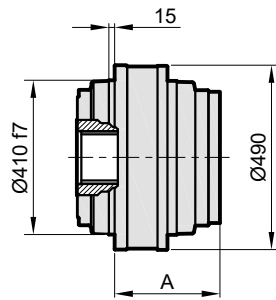
Stage	W	D	C	H	A	IPR		IPRK	
						F	⊠	F	⊠
S1	-	-	-	-	379,5	360	-	-	
S2	560,5	88	235	550	486,5	419	410	-	
S3	574,5	88	140	380	558	435	456	-	
S4	659,5	88	140	380	619	443	475	-	

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	-	-	-	-	-	-	-	-

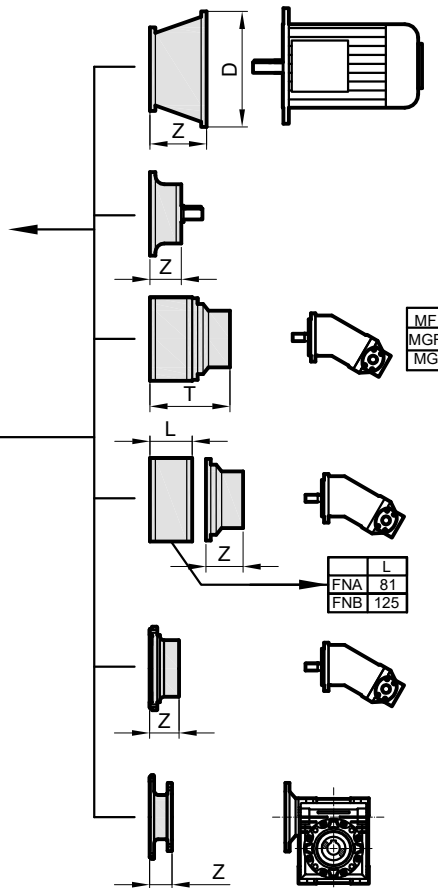
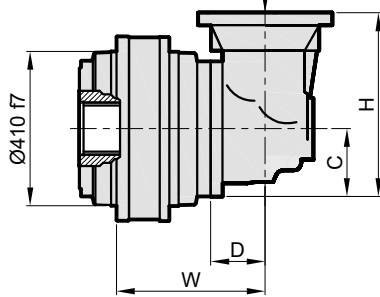
S



IPR..



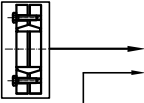
IPRK..

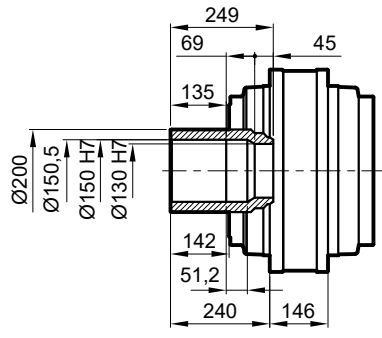


Stage	W	D	C	H	A	IPR		IPRK	
						S	⊔	S	⊔
S1	-	-	-	-	251	256	-	-	
S2	432	88	235	550	358	315	306		
S3	446	88	140	380	429,5	331	293		
S4	531	88	140	380	490,5	339	371		

Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	-	-	-	-	-	-	-	-

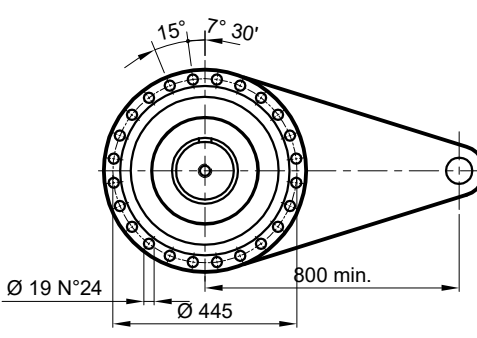
SD






$\varnothing 200$
 $\varnothing 150,5$
 $\varnothing 150\ H7$
 $\varnothing 130\ H7$


249, 69, 45, 135, 142, 51,2, 240, 146



15° , $7^\circ 30'$
 $\varnothing 19\ N^\circ 24$, $\varnothing 445$, 800 min.

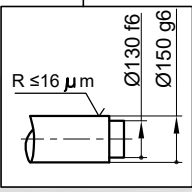


M18 12.9



546 Nm

$R \leq 16\ \mu m$

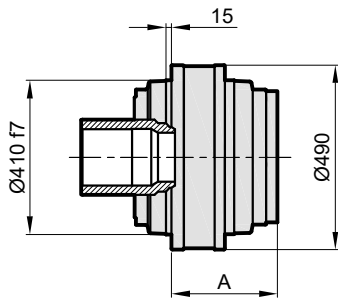


$\varnothing 130\ f6$
 $\varnothing 150\ g6$

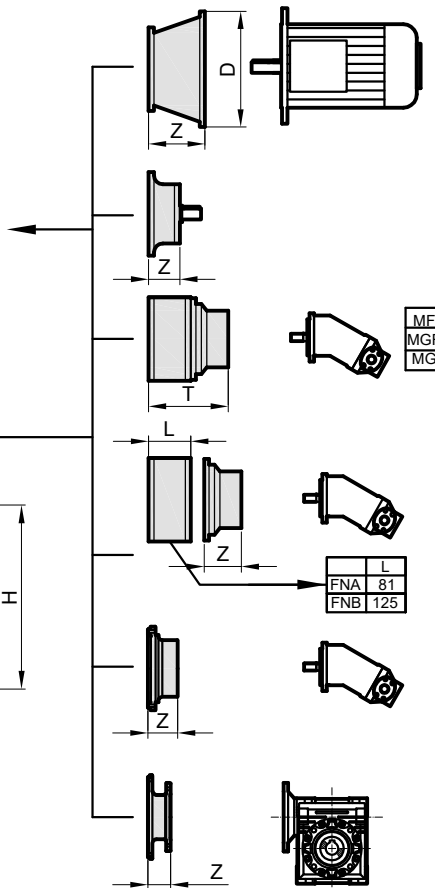
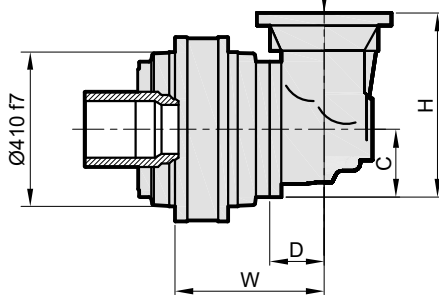
$M_{max} = 92,5\ kNm$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

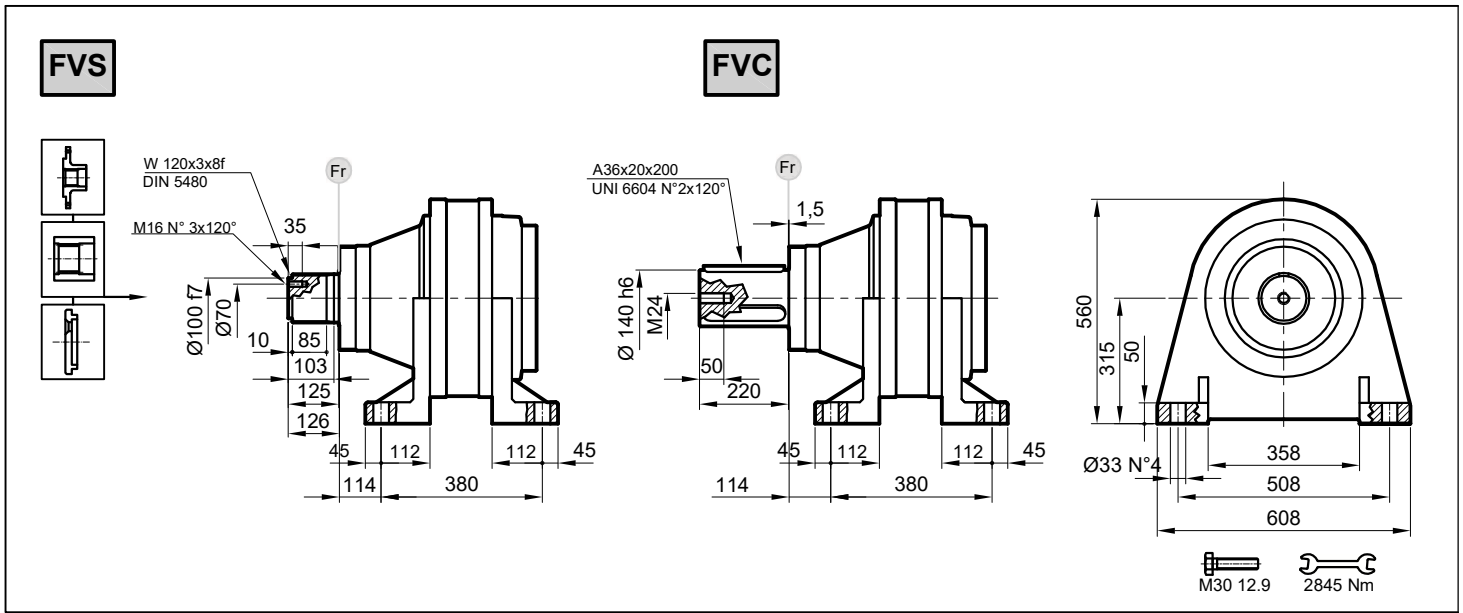


IPRK..

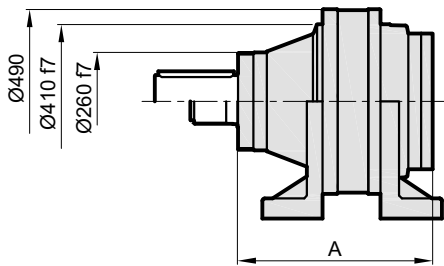


Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	251	269	319
S2	432	88	235	550	358	328	319
S3	446	88	140	380	429,5	344	306
S4	531	88	140	380	490,5	352	384

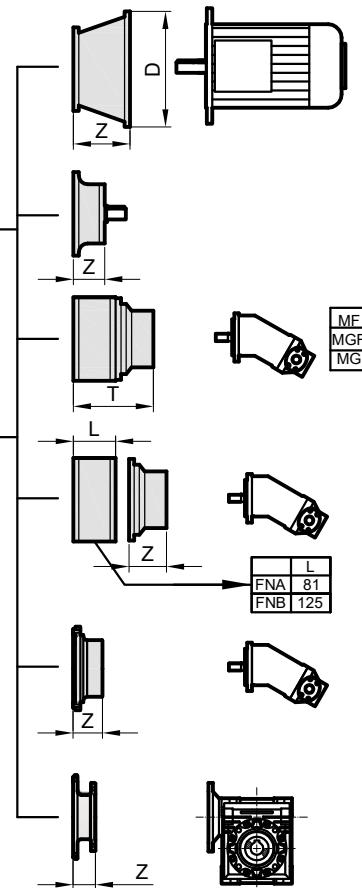
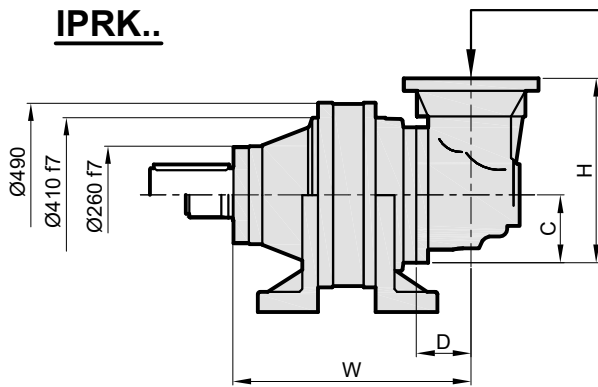
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	-	-	-	-	-	-	-	-



IPR..



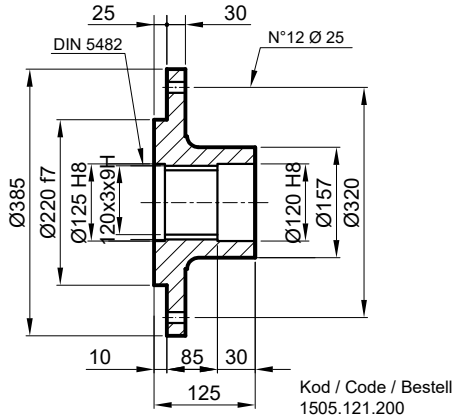
IPRK..



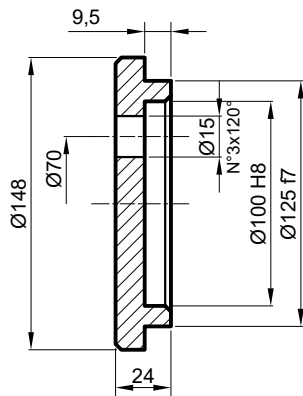
Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	486	418	-
S2	667	88	235	550	593	477	468
S3	681	88	140	380	664,5	493	514
S4	766	88	140	380	725	501	533

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	185	32	200	60	250	71	300	104	350	120	400	148	450	148	-	-
S4	185	32	200	60	250	71	300	104	-	-	-	-	-	-	-	-

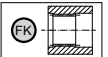
FL Flanş / Flange / Flansch



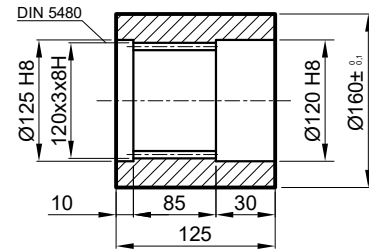
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



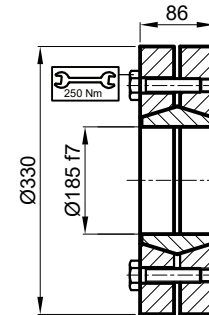
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



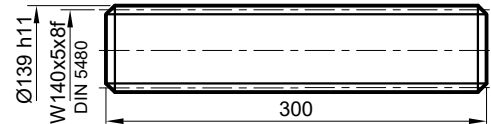
Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



FM Frezeli Mil / Splined rod
Außenverzahnte Welle



RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

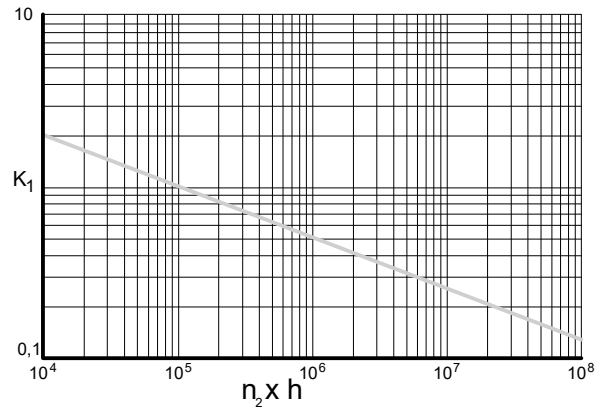
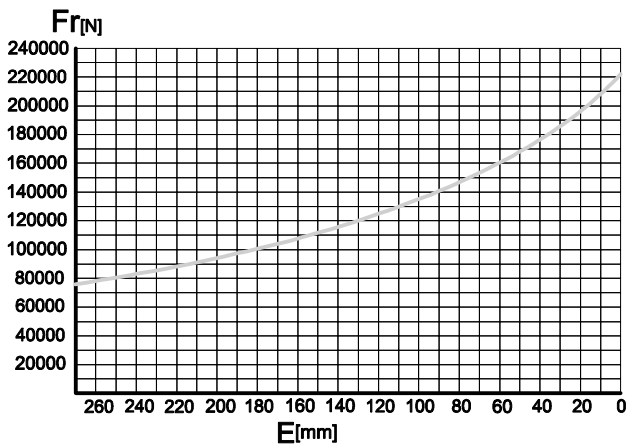
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

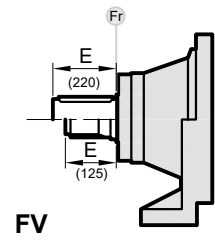
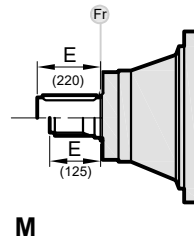
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	n ₂ h				
	10 ⁵	10 ⁴	10 ⁶	10 ⁷	10 ⁸
M	Fr		Fr · K		
FV	Fr · 0,75		Fr · K · 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

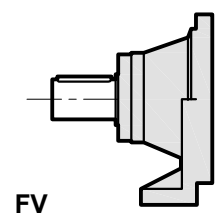
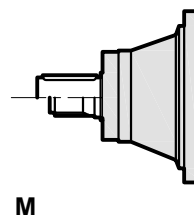
AXIAL LOADS (Fa)

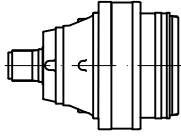
The values of the axial loads in the table refer to the output versions and load directions of application.

AXIALLAST (Fa)

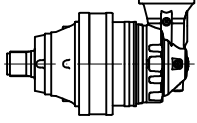
Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastichtung.

Fa [N]	M	FV	← →
	80000	80000	
120000		120000	

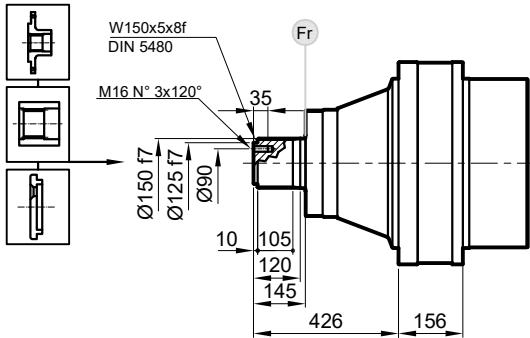




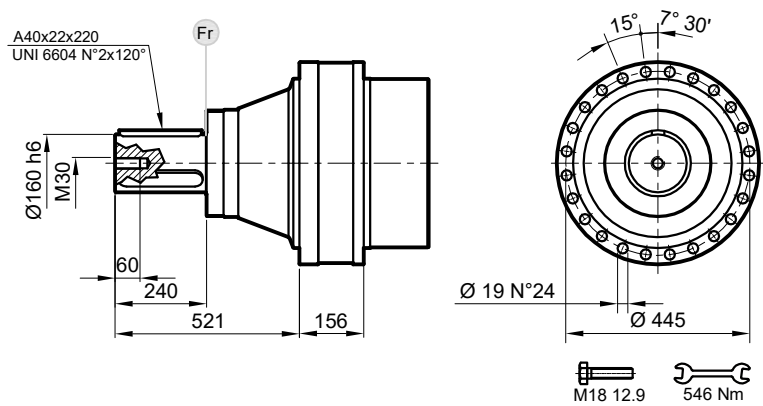
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 125 S1	3.83	78310	69310	58980	52210	1000	138620	60
IPR 125 S2	15.3	78310	69310	58980	52210	1500	138620	50
	19.9	78310	69310	58980	52210	1500	138620	50
	23.9	78310	69310	58980	52210	1500	138620	50
IPR 125 S3	56.2	78310	69310	58980	52210	2500	138620	35
	67.9	78310	69310	58980	52210	2500	138620	35
	73.1	78310	69310	58980	52210	2500	138620	35
	88.3	78310	69310	58980	52210	2500	138620	35
	99.7	78310	69310	58980	52210	2500	138620	35
	115.6	78310	69310	58980	52210	2500	138620	35
	139.0	78310	69310	58980	52210	2500	138620	35
	167.8	78310	69310	58980	52210	2500	138620	35
IPR 125 S4	212.5	78310	69310	58980	52210	2800	138620	25
	256.6	78310	69310	58980	52210	2800	138620	25
	280.2	78310	69310	58980	52210	2800	138620	25
	301.6	78310	69310	58980	52210	2800	138620	25
	333.7	78310	69310	58980	52210	2800	138620	25
	364.3	78310	69310	58980	52210	2800	138620	25
	407.7	78310	69310	58980	52210	2800	138620	25
	456.3	78310	69310	58980	52210	2800	138620	25
	515.2	78310	69310	58980	52210	2800	138620	25
	556.2	78310	69310	58980	52210	2800	138620	25
	640.4	78310	69310	58980	52210	2800	138620	25
	694.1	78310	69310	58980	52210	2800	138620	25
	838.7	78310	69310	58980	52210	2800	138620	25
	1008.1	78310	69310	58980	52210	2800	138620	25

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 125 S3	47.1	78310	69310	58980	52210	2500	138620	35
	61.2	78310	69310	58980	52210	2500	138620	35
	71.6	78310	69310	58980	52210	2500	138620	35
	93.0	78310	69310	58980	52210	2500	138620	35
	111.8	78310	69310	58980	52210	2500	138620	35
IPRK 125 S4	194.3	78310	69310	58980	52210	2800	138620	25
	234.7	78310	69310	58980	52210	2800	138620	25
	252.6	78310	69310	58980	52210	2800	138620	25
	265.0	78310	69310	58980	52210	2800	138620	25
	305.1	78310	69310	58980	52210	2800	138620	25
	344.5	78310	69310	58980	52210	2800	138620	25
	399.6	78310	69310	58980	52210	2800	138620	25
	417.6	78310	69310	58980	52210	2800	138620	25
	484.5	78310	69310	58980	52210	2800	138620	25
	578.0	78310	69310	58980	52210	2800	138620	25
	629.8	78310	69310	58980	52210	2800	138620	25
	757.0	78310	69310	58980	52210	2800	138620	25
	913.7	78310	69310	58980	52210	2800	138620	25

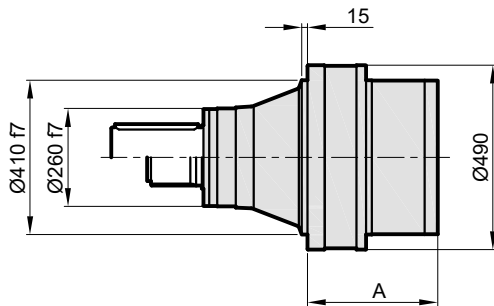
MS



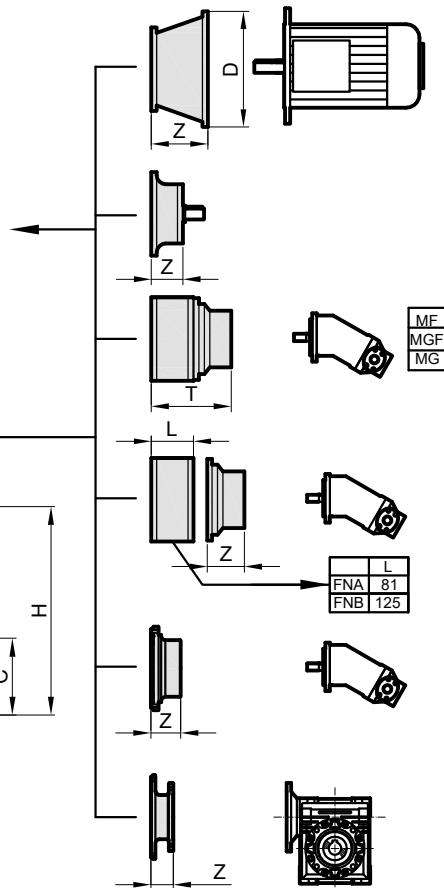
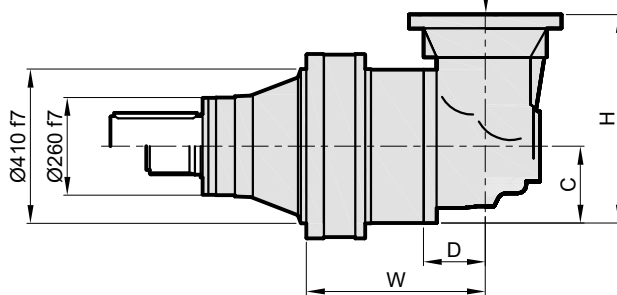
MC



IPR..

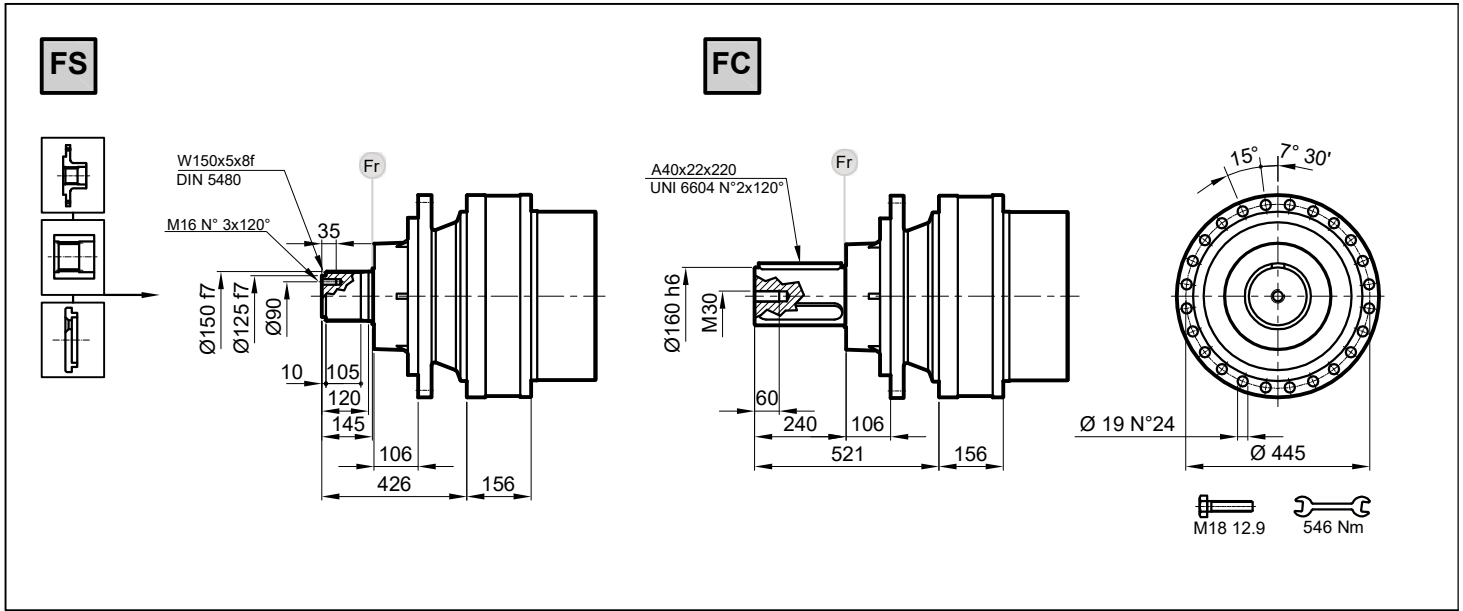


IPRK..

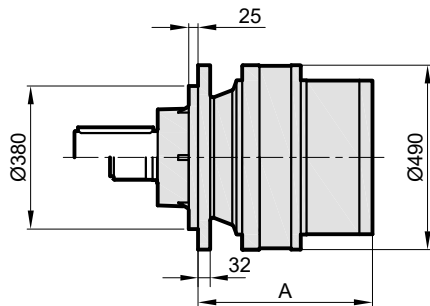


Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	572	334	-
S2	-	-	-	-	754	450	-
S3	568	88	235	550	848	477	539
S4	670	88	140	380	907,5	489	514

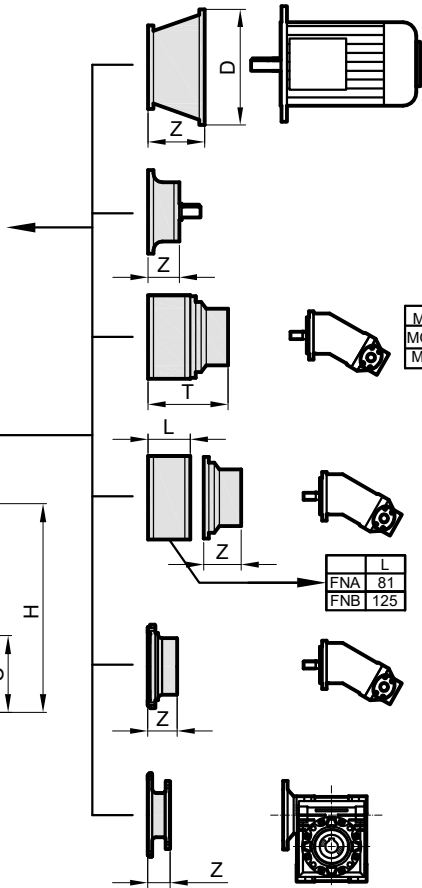
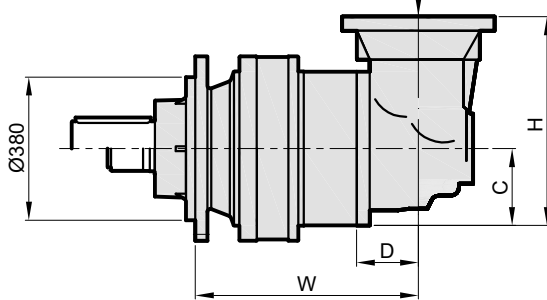
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-



IPR..



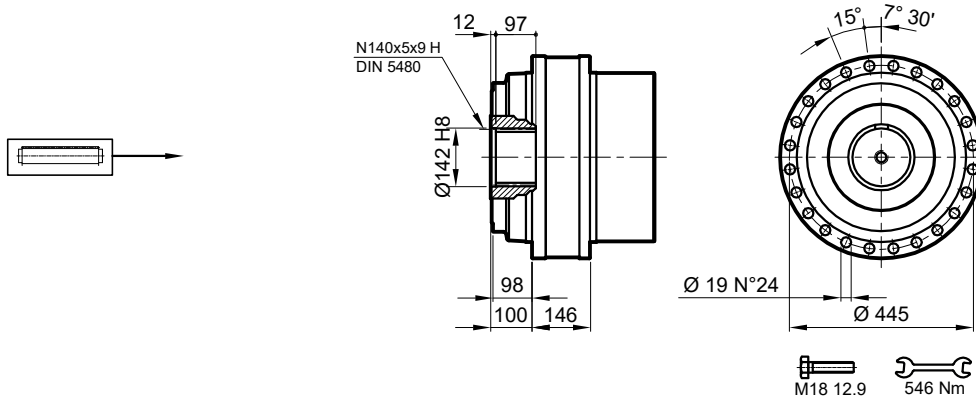
IPRK..



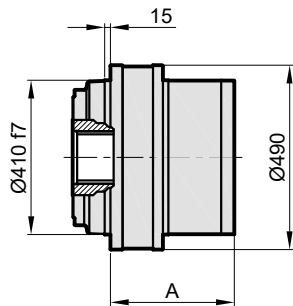
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	424,5	380	-
S2	-	-	-	-	531,5	439	-
S3	619,5	88	235	550	603	455	476
S4	704,5	88	140	380	664	463	495

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

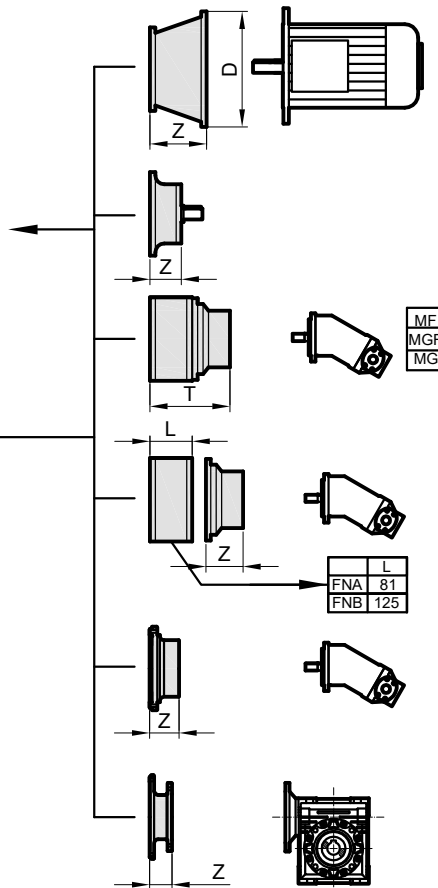
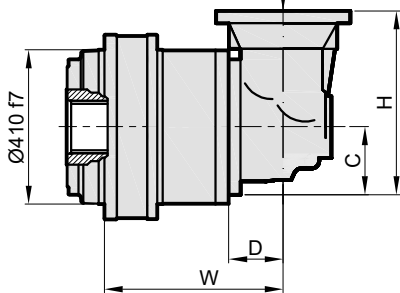
S



IPR..



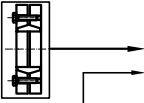
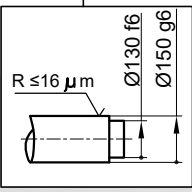
IPRK..



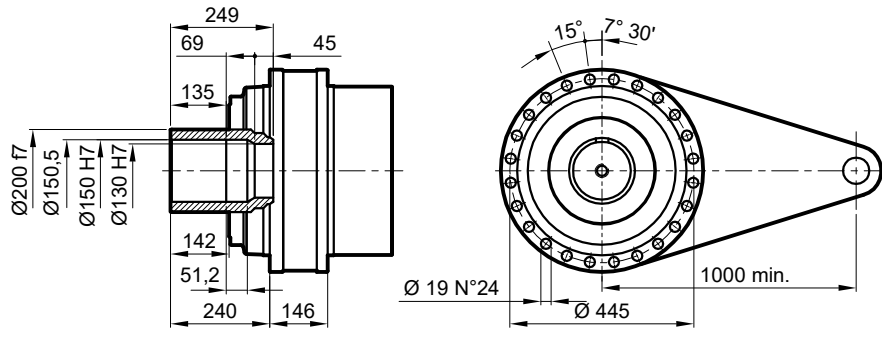
Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	296	276	-
S2	-	-	-	-	478	392	-
S3	558	88	235	550	572	419	481
S4	660	88	140	380	631,5	431	456

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

SD

$R \leq 16 \mu\text{m}$
 $\varnothing 130 \text{ f6}$
 $\varnothing 150 \text{ g6}$



$\varnothing 200 \text{ f7}$
 $\varnothing 150,5$
 $\varnothing 150 \text{ H7}$
 $\varnothing 130 \text{ H7}$

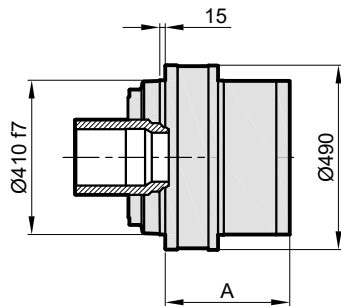
$\varnothing 19 \text{ N}^\circ 24$
 $\varnothing 445$
 1000 min.

M18 12.9 546 Nm

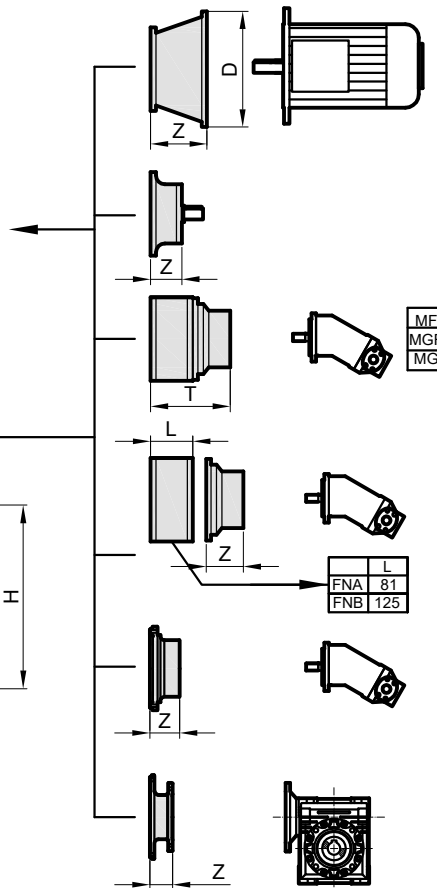
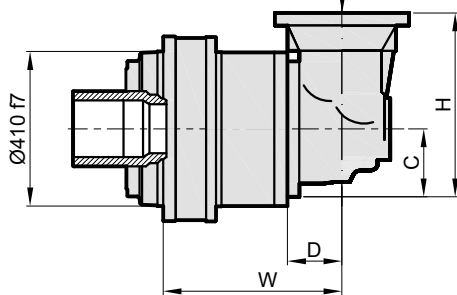
Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

M_{max} = 92,5 kNm

IPR..



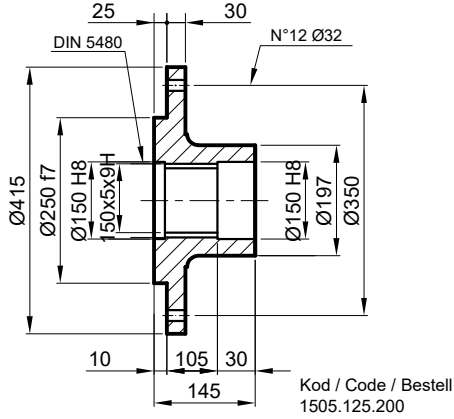
IPRK..



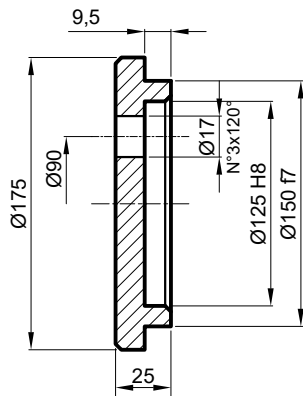
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	296	290	-
S2	-	-	-	-	478	406	-
S3	558	88	235	550	572	433	495
S4	660	88	140	380	631,5	445	470

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	300	104	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

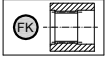
FL Flanş / Flange / Flansch



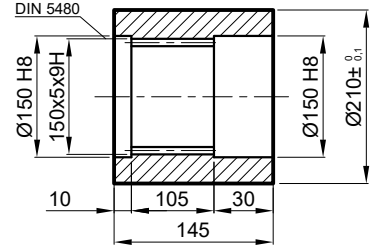
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



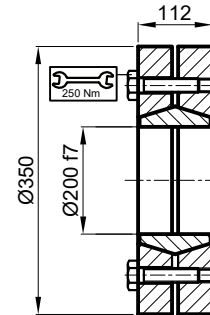
FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse



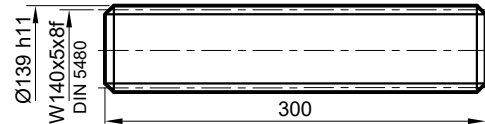
Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



FM Frezeli Mil / Splined rod
Außenverzahnte Welle



RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

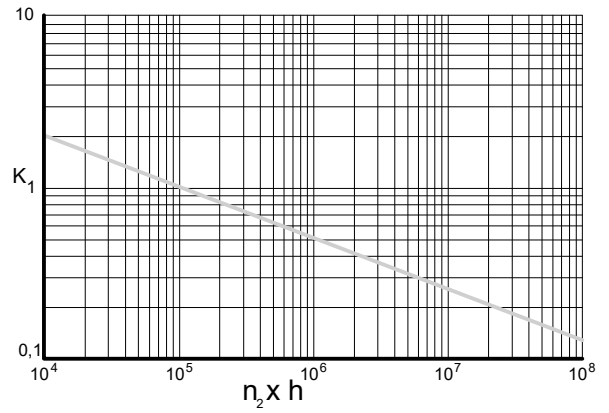
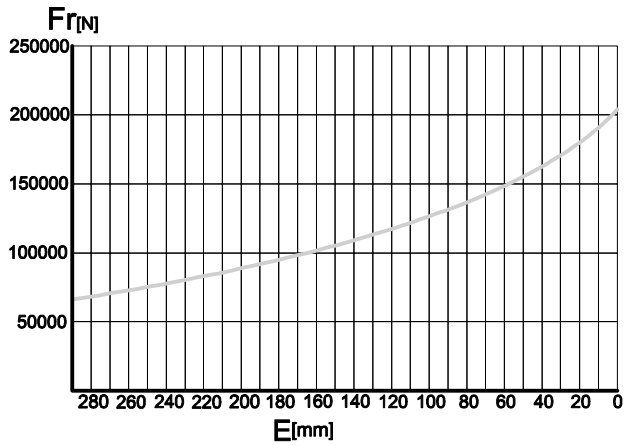
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

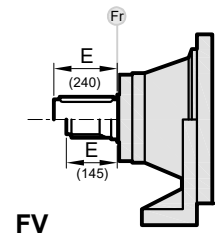
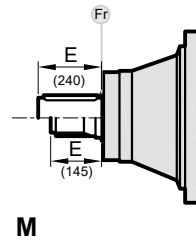
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

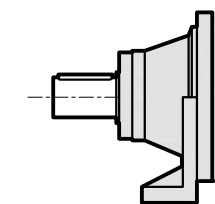
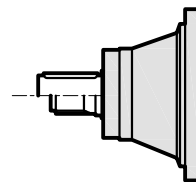
AXIAL LOADS (Fa)

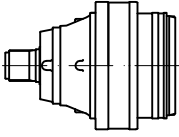
The values of the axial loads in the table refer to the output versions and load directions of application.

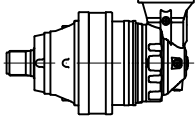
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

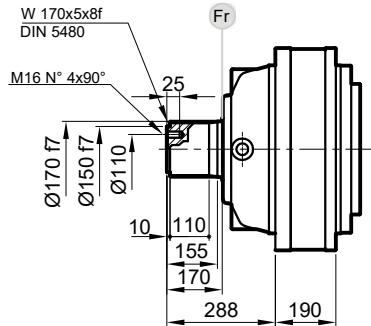
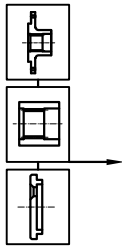
F_a [N]	M		FV	
	50000	50000	←	→
	100000	100000	←	→



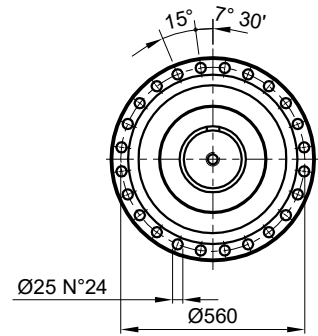
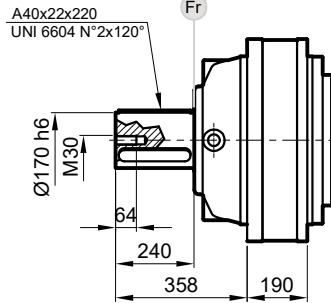
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 127 S1	4.00	111850	99000	84250	74570	750	198000	80
	5.10	89260	79000	67230	59500	750	158000	80
IPR 127 S2	16.1	111850	99000	84250	74570	1500	198000	65
	20.4	89260	79000	67230	59500	1500	158000	65
	21.0	111850	99000	84250	74570	1500	198000	65
	26.6	89260	79000	67230	59500	1500	158000	65
	31.9	89260	79000	67230	59500	1500	158000	65
IPR 127 S3	59.3	111850	99000	84250	74570	1500	198000	45
	71.6	111850	99000	84250	74570	1500	198000	45
	80.8	111850	99000	84250	74570	1500	198000	45
	93.1	111850	99000	84250	74570	2500	198000	45
	105.1	111850	99000	84250	74570	2500	198000	45
	117.8	89260	79000	67230	59500	2500	158000	45
	121.9	111850	99000	84250	74570	2500	198000	45
	133.0	89260	79000	67230	59500	2500	158000	45
	154.3	89260	79000	67230	59500	2500	158000	45
	185.5	89260	79000	67230	59500	2500	158000	45
IPR 127 S4	224.0	111850	99000	84250	74570	2500	198000	30
	244.6	111850	99000	84250	74570	2500	198000	30
	270.5	111850	99000	84250	74570	2500	198000	30
	306.3	111850	99000	84250	74570	2500	198000	30
	355.8	111850	99000	84250	74570	2500	198000	30
	398.3	111850	99000	84250	74570	2500	198000	30
	429.7	111850	99000	84250	74570	2500	198000	30
	462.5	111850	99000	84250	74570	2500	198000	30
	504.1	89260	79000	67230	59500	2800	158000	30
	543.9	89260	79000	67230	59500	2800	158000	30
	585.4	89260	79000	67230	59500	2800	158000	30
	630.7	111850	99000	84250	74570	2800	198000	30
	687.4	89260	79000	67230	59500	2800	158000	30
	742.0	89260	79000	67230	59500	2800	158000	30
	798.3	89260	79000	67230	59500	2800	158000	30
	854.4	89260	79000	67230	59500	2800	158000	30
	926.0	89260	79000	67230	59500	2800	158000	30
	1119.0	89260	79000	67230	59500	2800	158000	30
1344.9	89260	79000	67230	59500	2800	158000	30	
1623.2	89260	79000	67230	59500	2800	158000	30	
IPR 127 S5	1431.1	89260	79000	67230	59500	2800	158000	26
	1579.8	89260	79000	67230	59500	2800	158000	26
	1662	89260	79000	67230	59500	2800	158000	26
	1787.2	89260	79000	67230	59500	2800	158000	26
	1908.1	89260	79000	67230	59500	2800	158000	26
	2064.3	89260	79000	67230	59500	2800	158000	26
	2154.3	89260	79000	67230	59500	2800	158000	26
	2493.2	89260	79000	67230	59500	2800	158000	26
	3430	89260	79000	67230	59500	2800	158000	26
	4470.8	89260	79000	67230	59500	2800	158000	26
	5402.2	89260	79000	67230	59500	2800	158000	26
	6511.5	89260	79000	67230	59500	2800	158000	26
	7405	89260	79000	67230	59500	2800	158000	26
	8360.5	89260	79000	67230	59500	2800	158000	26

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 127 S3	49.6	111850	99000	84250	74570	2500	198000	45
	64.5	111850	99000	84250	74570	2500	198000	45
	81.7	89260	79000	67230	59500	2500	158000	45
	95.5	89260	79000	67230	59500	2500	158000	45
	124.1	89260	79000	67230	59500	2500	158000	45
	149.2	89260	79000	67230	59500	2500	158000	45
IPRK 127 S4	247.4	111850	99000	84250	74570	2800	198000	30
	266.3	111850	99000	84250	74570	2800	198000	30
	322.8	111850	99000	84250	74570	2800	198000	30
	389.9	111850	99000	84250	74570	2800	198000	30
	419.7	111850	99000	84250	74570	2800	198000	30
	459.6	89260	79000	67230	59500	2800	158000	30
	506.9	111850	99000	84250	74570	2800	198000	30
	572.3	111850	99000	84250	74570	2800	198000	30
	638.4	89260	79000	67230	59500	2800	158000	30
	663.9	111850	99000	84250	74570	2800	198000	30
	724.4	89260	79000	67230	59500	2800	158000	30
	771.1	89260	79000	67230	59500	2800	158000	30
	840.3	89260	79000	67230	59500	2800	158000	30
	1010.0	89260	79000	67230	59500	2800	158000	30

MS

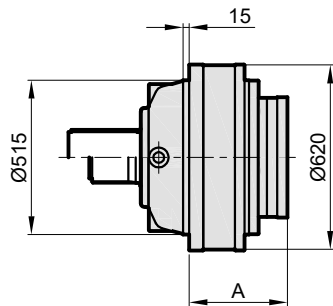


MC

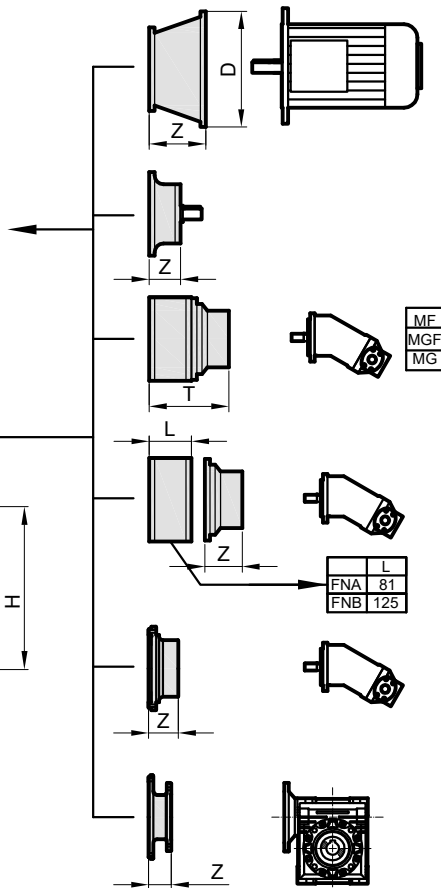
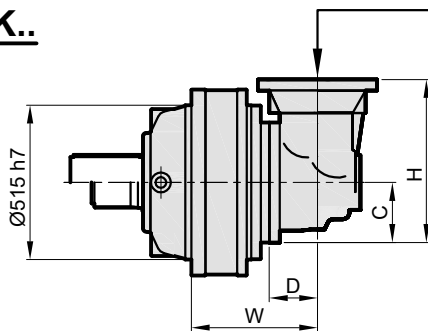


M24 10.9 971 Nm

IPR..



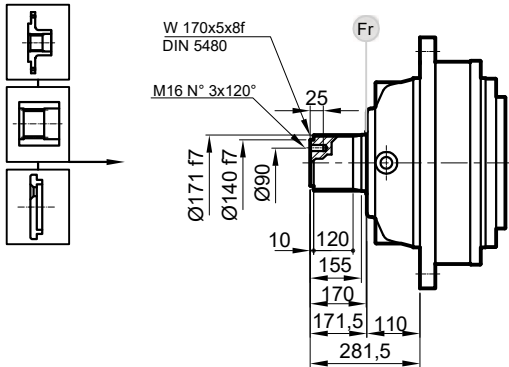
IPRK..



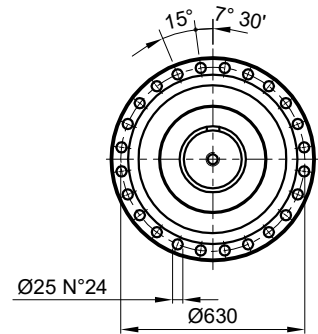
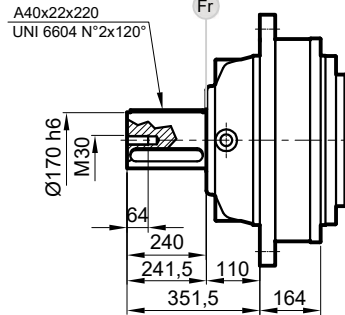
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	293	519	-
S2	-	-	-	-	475	635	-
S3	610	225	200	450	385	662	699
S4	650	122	140	310	528	673	720

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

FS

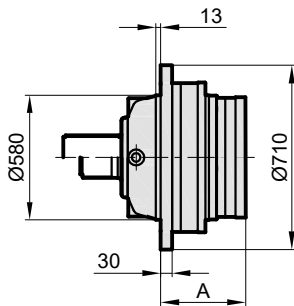


FC

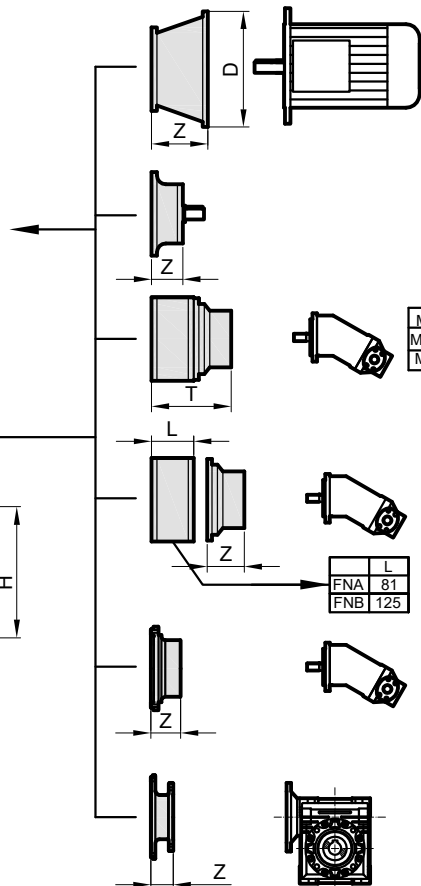
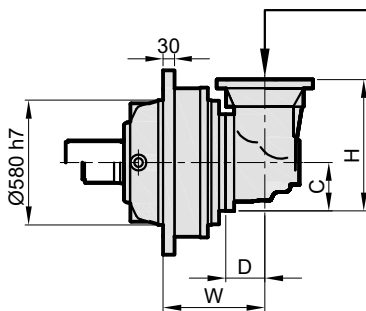


M24 10.9 971 Nm

IPR..



IPRK..



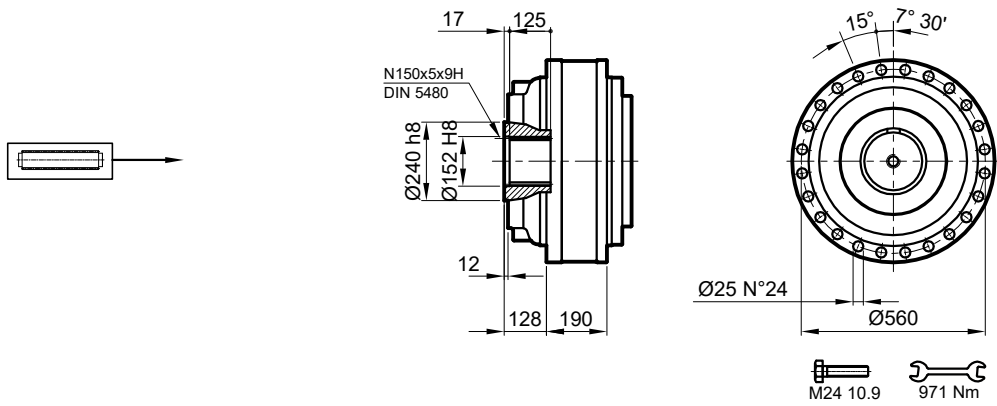
ME
MGF
MG

L
FNA 81
FNB 125

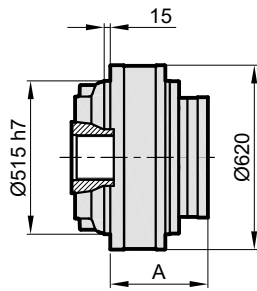
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	276	519	-
S2	-	-	-	-	458	635	-
S3	538	88	235	550	552	662	699
S4	640	88	140	380	611,5	673	720

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

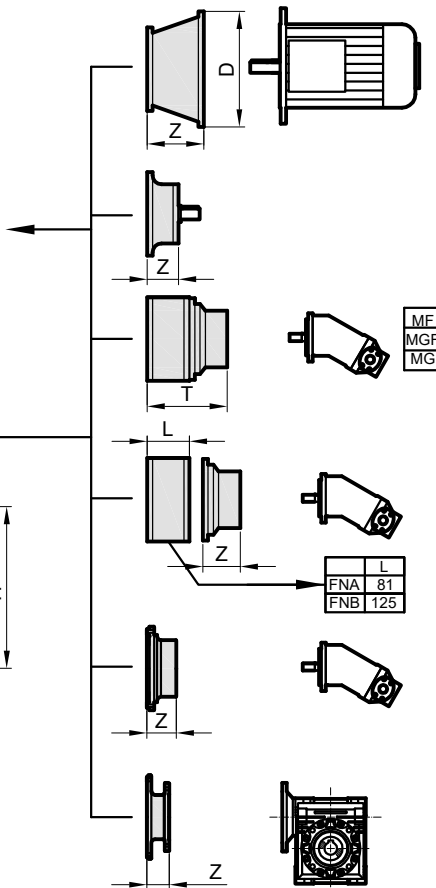
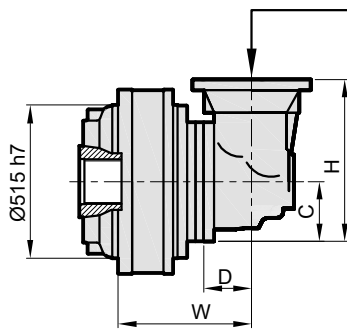
S



IPR..



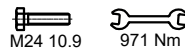
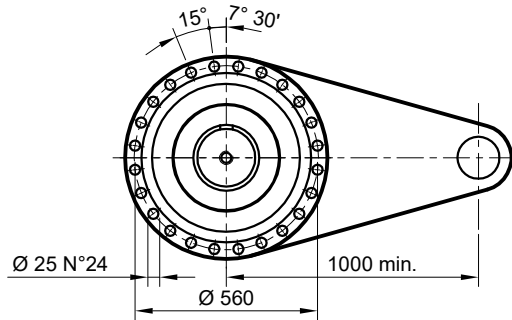
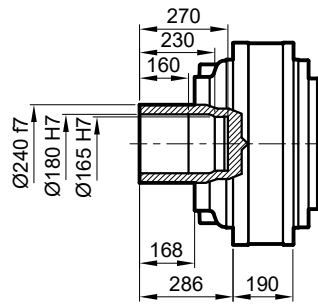
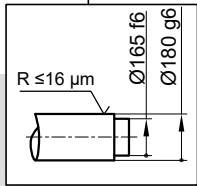
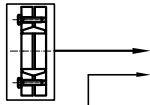
IPRK..



Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	293	423	-
S2	-	-	-	-	475	539	-
S3	555	88	235	550	569	566	603
S4	657	88	140	380	628,5	577	624

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

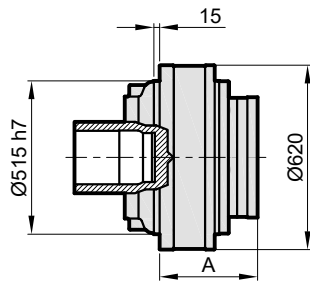
SD



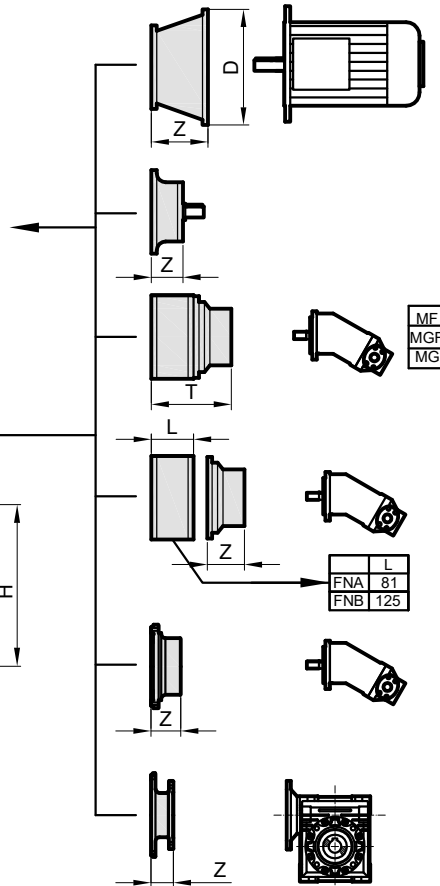
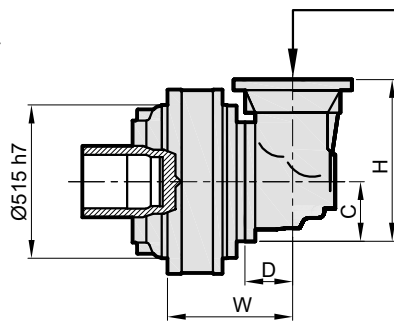
$M_{max} = 176 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte, maximale Drehmoment gilt nur mit von I-MAK.

IPR..



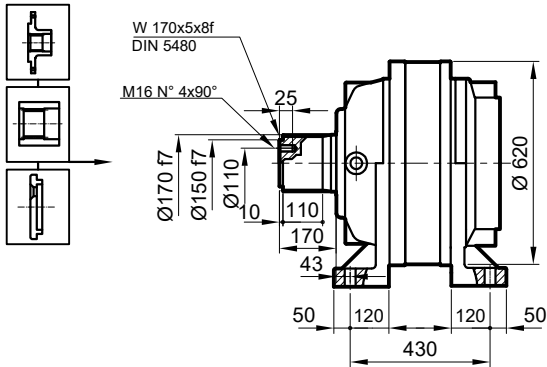
IPRK..



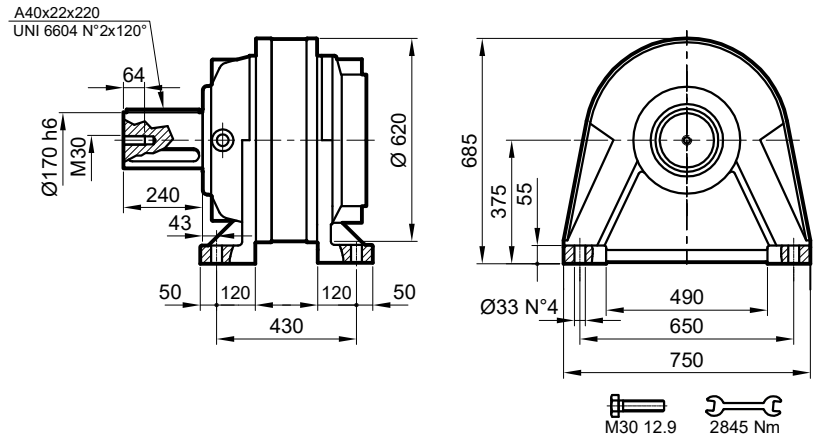
Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	293	445	-
S2	-	-	-	-	475	561	-
S3	555	88	235	550	569	588	625
S4	657	88	140	380	628,5	599	646

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

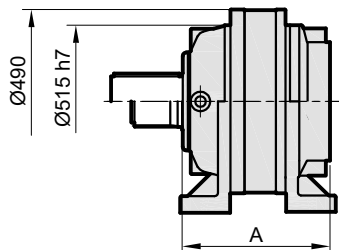
FVS



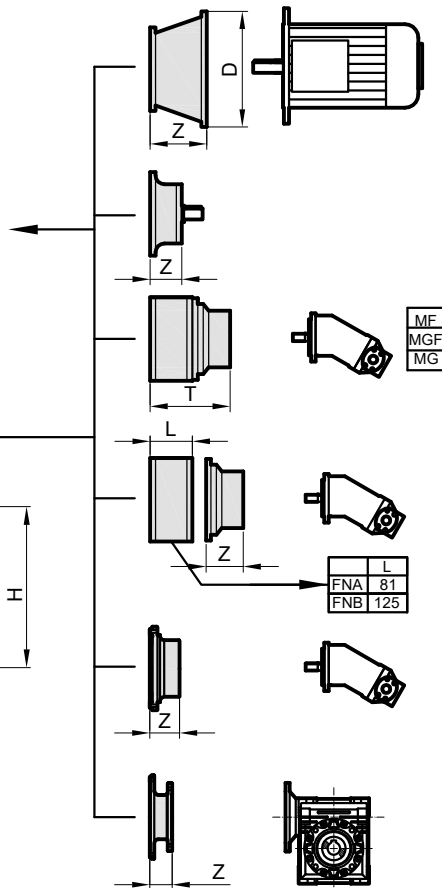
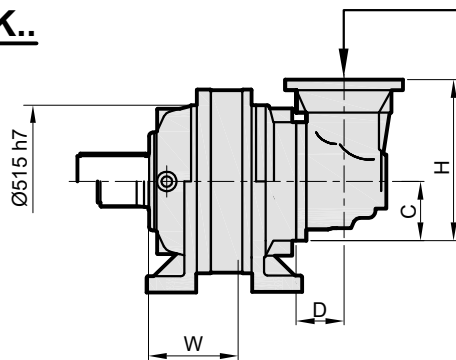
FVC



IPR..



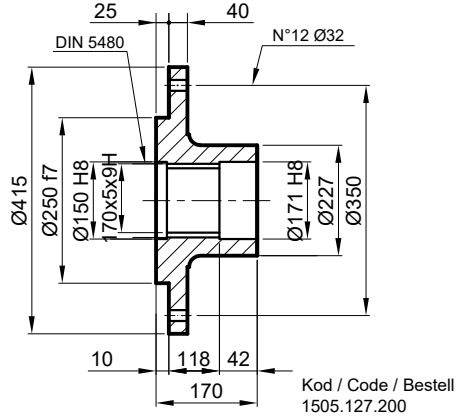
IPRK..



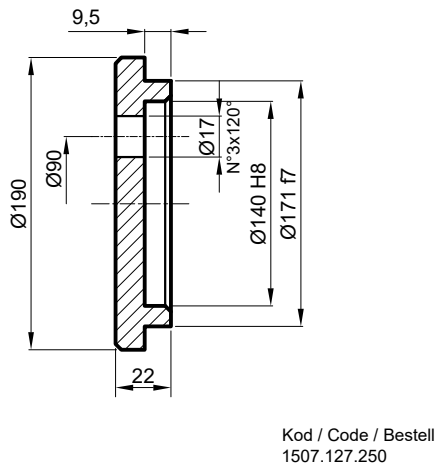
Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	456	691	-
S2	-	-	-	-	638	807	-
S3	718	88	235	550	732	834	871
S4	820	88	140	380	791,5	845	892

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

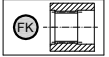
FL Flanş / Flange / Flansch



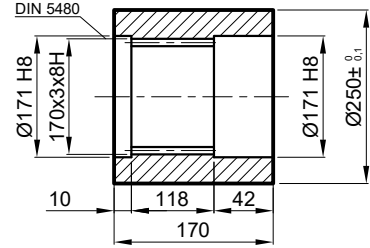
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

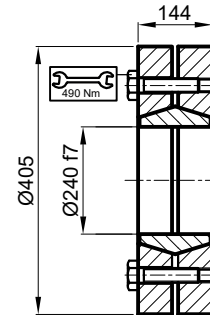


Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.127.100

SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
176 kNm

Kod / Code / Bestell
2501.127.001

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

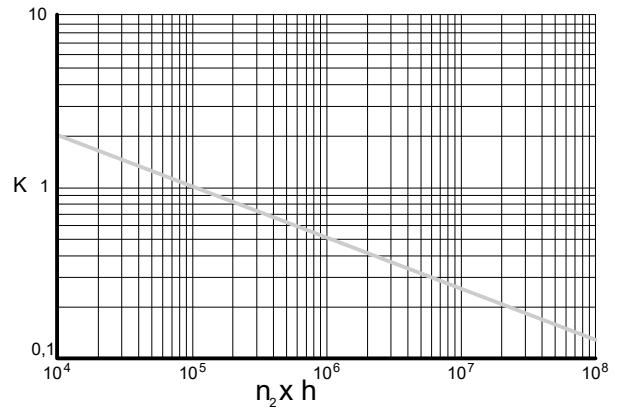
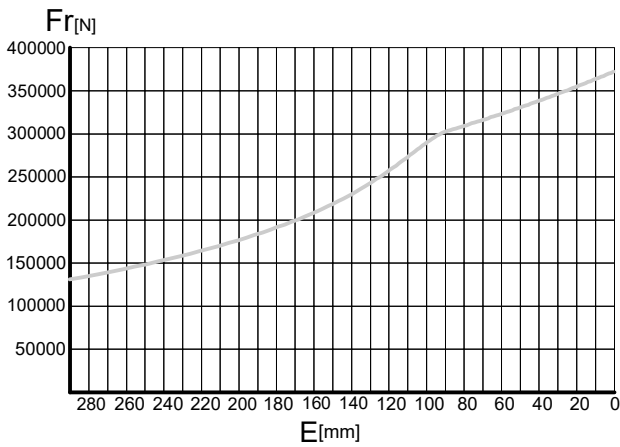
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

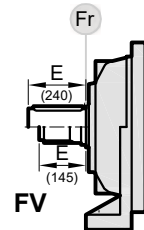
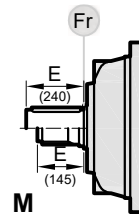
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

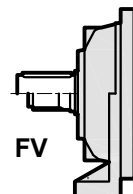
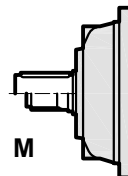
AXIAL LOADS (Fa)

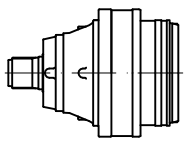
The values of the axial loads in the table refer to the output versions and load directions of application.

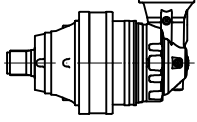
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	M	FV	← →
		40000	
	70000	70000	



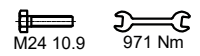
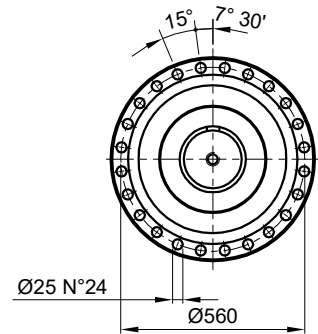
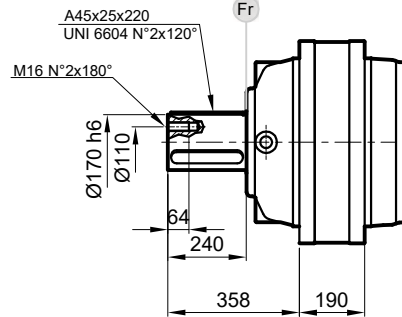
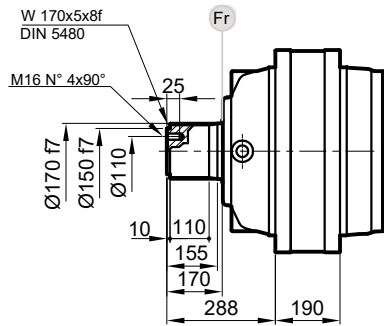
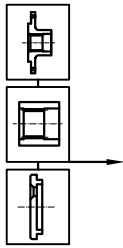
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 129 S1	3.83	156600	140900	122700	115000	200	211350	75
	4.40	144800	130300	113400	110000	200	195450	75
IPR 129 S2	15.33	156600	140900	122700	115000	1500	211350	60
	18.04	156600	140900	122700	115000	1500	211350	60
	20.71	144800	130300	113400	110000	1500	195450	60
IPR 129 S3	54.52	156600	140900	122700	115000	2000	211350	40
	65.71	156600	140900	122700	115000	2000	211350	40
	75.43	144800	130300	113400	110000	2000	195450	40
	88.74	144800	130300	113400	110000	2000	195450	40
	115.95	144800	130300	113400	110000	2000	195450	40
	139.77	144800	130300	113400	110000	2000	195450	40
	205.96	156600	140900	122700	115000	2000	211350	40
IPR 129 S4	248.25	156600	140900	122700	115000	2000	211350	40
	271.07	156600	140900	122700	115000	2000	211350	40
	281.68	156600	140900	122700	115000	2800	211350	30
	311.14	144800	130300	113400	110000	2800	195450	30
	335.24	144800	130300	113400	110000	2800	195450	30
	380.38	144800	130300	113400	110000	2800	195450	30
	395.26	156600	140900	122700	115000	2800	211350	30
	443.64	156600	140900	122700	115000	2800	211350	30
	476.43	156600	140900	122700	115000	2800	211350	30
	546.86	144800	130300	113400	110000	2800	195450	30
	599.09	144800	130300	113400	110000	2800	195450	30
	643.36	144800	130300	113400	110000	2800	195450	30
	695.72	144800	130300	113400	110000	2800	195450	30
	840.66	144800	130300	113400	110000	2800	195450	30
	1113.29	144800	130300	113400	110000	2800	195450	30
IPR 129 S5	732.30	156600	140900	122700	115000	2800	211350	21
	799.61	156600	140900	122700	115000	2800	211350	21
	882.68	156600	140900	122700	115000	2800	211350	21
	963.81	156600	140900	122700	115000	2800	211350	21
	1001.53	156600	140900	122700	115000	2800	211350	21
	1063.95	156600	140900	122700	115000	2800	211350	21
	1153.37	156600	140900	122700	115000	2800	211350	21
	1207.20	156600	140900	122700	115000	2800	211350	21
	1390.22	156600	140900	122700	115000	2800	211350	21
	1577.40	156600	140900	122700	115000	2800	211350	21
	1693.97	156600	140900	122700	115000	2800	211350	21
	1829.73	156600	140900	122700	115000	2800	211350	21
	2208.00	156600	140900	122700	115000	2800	211350	21
	2661.43	156600	140900	122700	115000	2800	211350	21
	2956.80	144800	130300	113400	110000	2800	195450	21
	3228.56	144800	130300	113400	110000	2800	195450	21
	3691.29	144800	130300	113400	110000	2800	195450	21
	4043.86	144800	130300	113400	110000	2800	195450	21
	5674.45	144800	130300	113400	110000	2800	195450	21



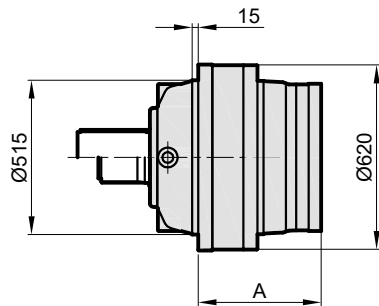
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 129 S4	167.45	156600	140900	122700	115000	2500	211350	28
	201.84	156600	140900	122700	115000	2500	211350	28
	272.56	144800	130300	113400	110000	2500	195450	28
	306.67	156600	140900	122700	115000	2500	211350	28
	356.14	144800	130300	113400	110000	2500	195450	28
	414.12	144800	130300	113400	110000	2500	195450	28
	459.95	144800	130300	113400	110000	2500	195450	28
	541.11	144800	130300	113400	110000	2500	195450	28
	652.24	144800	130300	113400	110000	2500	195450	28
IPRK 129 S5	711.49	156600	140900	122700	115000	2800	211350	20
	857.60	156600	140900	122700	115000	2800	211350	20
	973.07	156600	140900	122700	115000	2800	211350	20
	1074.8	144800	130300	113400	110000	2800	195450	20
	1224.4	156600	140900	122700	115000	2800	211350	20
	1351.6	156600	140900	122700	115000	2800	211350	20
	1514.2	144800	130300	113400	110000	2800	195450	20
	1694.0	144800	130300	113400	110000	2800	195450	20
	1992.9	144800	130300	113400	110000	2800	195450	20
	2146.6	156600	140900	122700	115000	2800	195450	20
	2496.2	144800	130300	113400	110000	2800	195450	20
	2772.4	144800	130300	113400	110000	2800	195450	20
	3138.8	144800	130300	113400	110000	2800	195450	20
	3219.6	144800	130300	113400	110000	2800	195450	20
	3502.7	144800	130300	113400	110000	2800	195450	20
	3931.5	144800	130300	113400	110000	2800	195450	20
	4576.9	144800	130300	113400	110000	2800	195450	20
5516.8	144800	130300	113400	110000	2800	195450	20	

MS

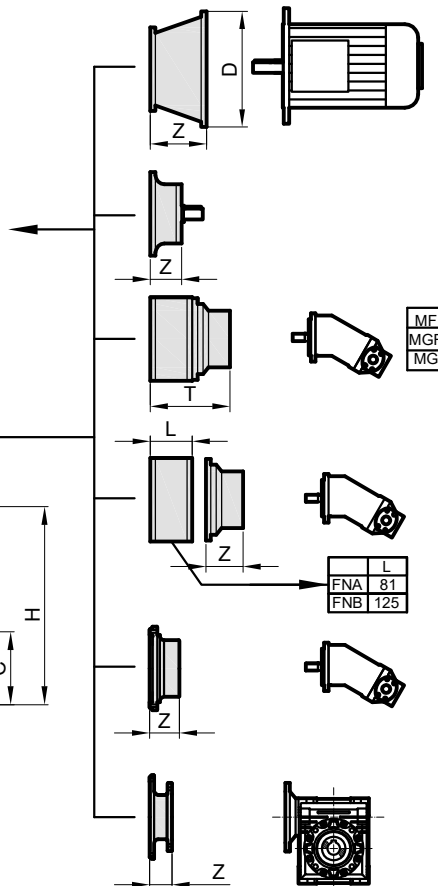
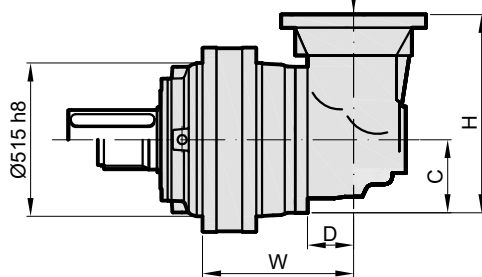
MC



IPR..



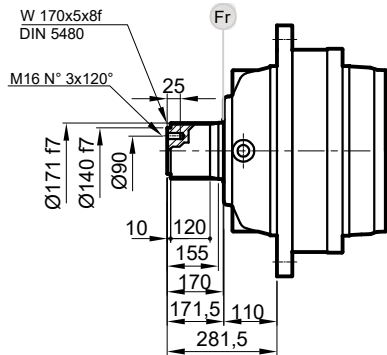
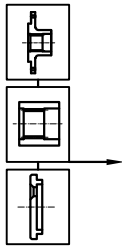
IPRK..



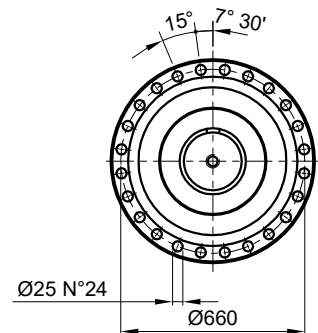
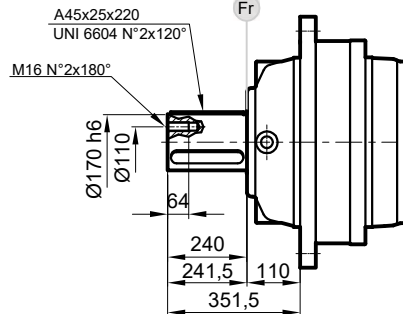
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	293	805	-
S2	-	-	-	-	475	855	-
S3	555	88	235	550	569	871	964
S4	657	88	140	380	628,5	879	913

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

FS

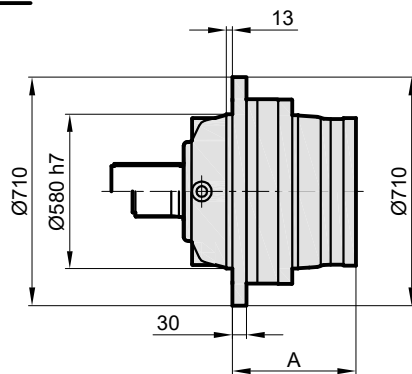


FC

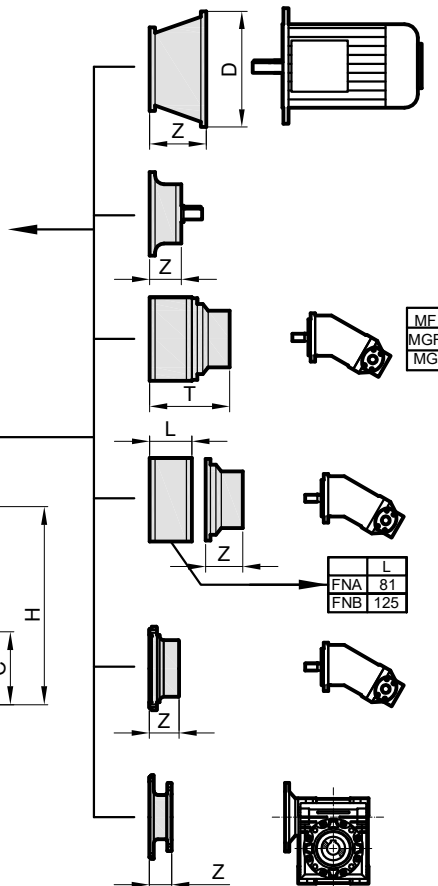
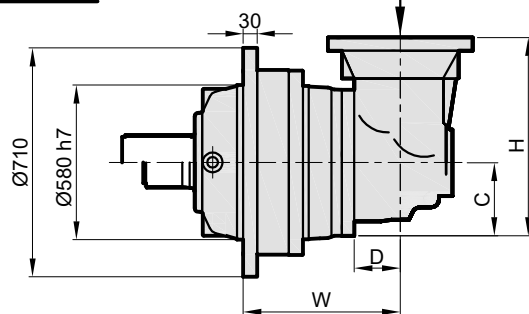


M24 10.9 971 Nm

IPR..



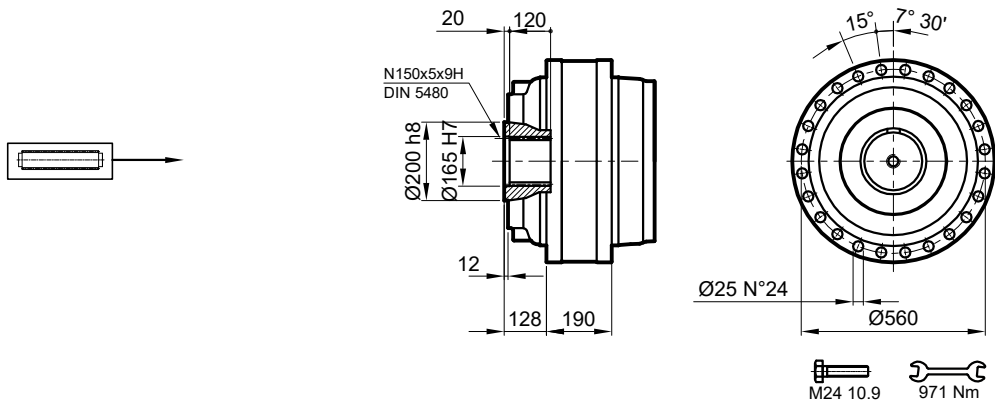
IPRK..



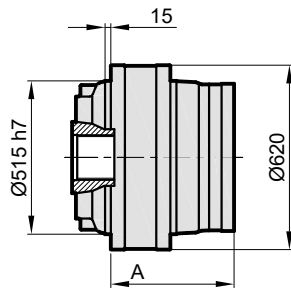
Stage	W	D	C	H	A	IPR F	IPRK F
S1	-	-	-	-	276	805	-
S2	-	-	-	-	458	855	-
S3	538	88	235	550	552	871	964
S4	640	88	140	380	611,5	879	913

	IEC71	IEC80-90	IEC100	IEC132	IEC160-180	IEC200	IEC225	IEC250-280
Stage	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-
S3	-	-	-	-	350	120	400	148
S4	-	-	-	-	350	120	400	148
S5	-	-	-	250	71	300	104	350

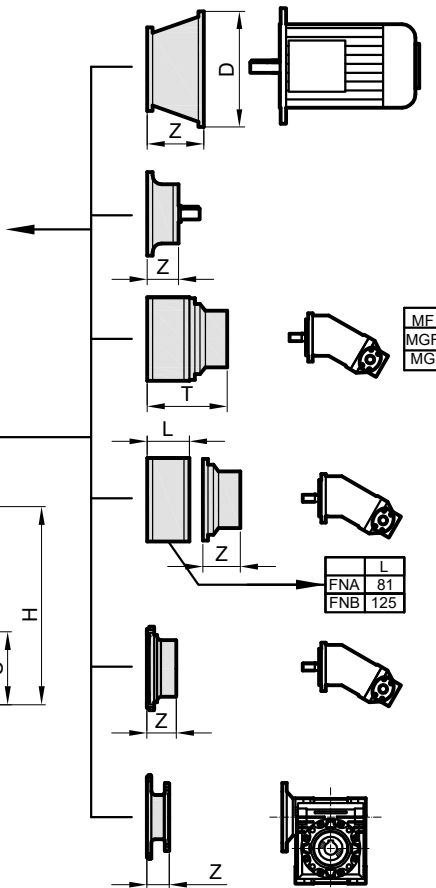
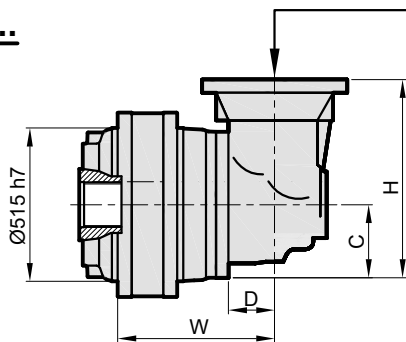
S



IPR..



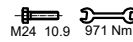
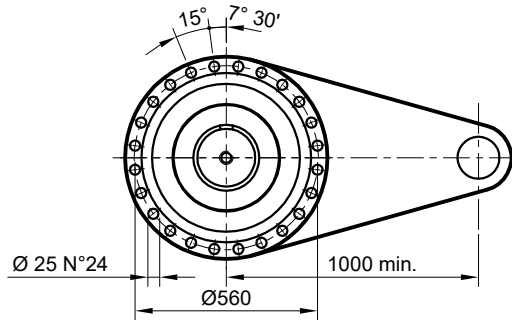
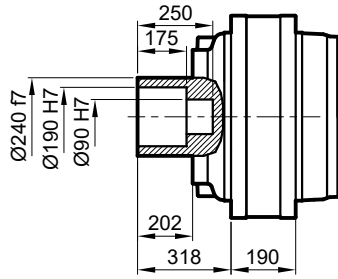
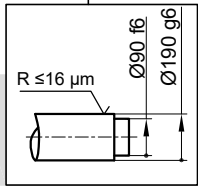
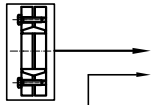
IPRK..



Stage	W	D	C	H	A	IPR	IPRK
S1	-	-	-	-	293	735	-
S2	-	-	-	-	475	785	-
S3	555	88	235	550	569	801	894
S4	657	88	140	380	628,5	809	843

	IEC71	IEC80-90	IEC100	IEC132	IEC160-180	IEC200	IEC225	IEC250-280
Stage	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-
S3	-	-	-	-	350	120	400	148
S4	-	-	-	-	350	120	400	148
S5	-	-	-	-	250	71	300	104

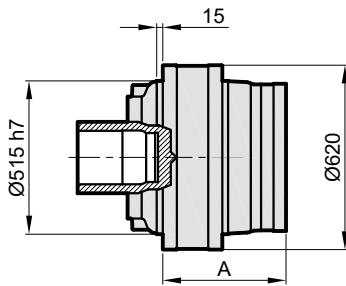
SD



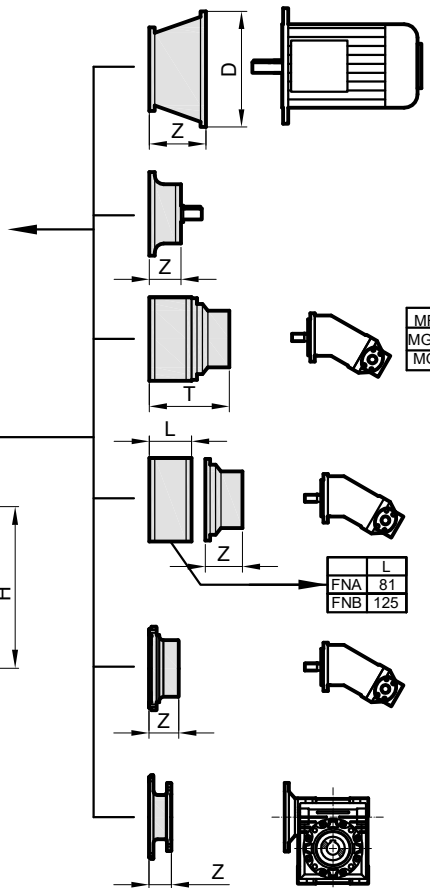
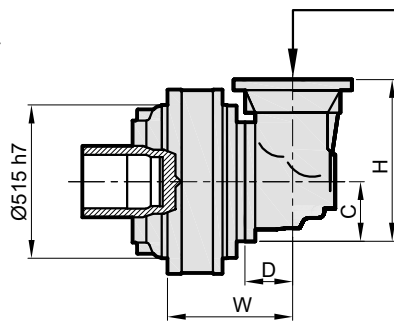
$M_{max} = 176 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

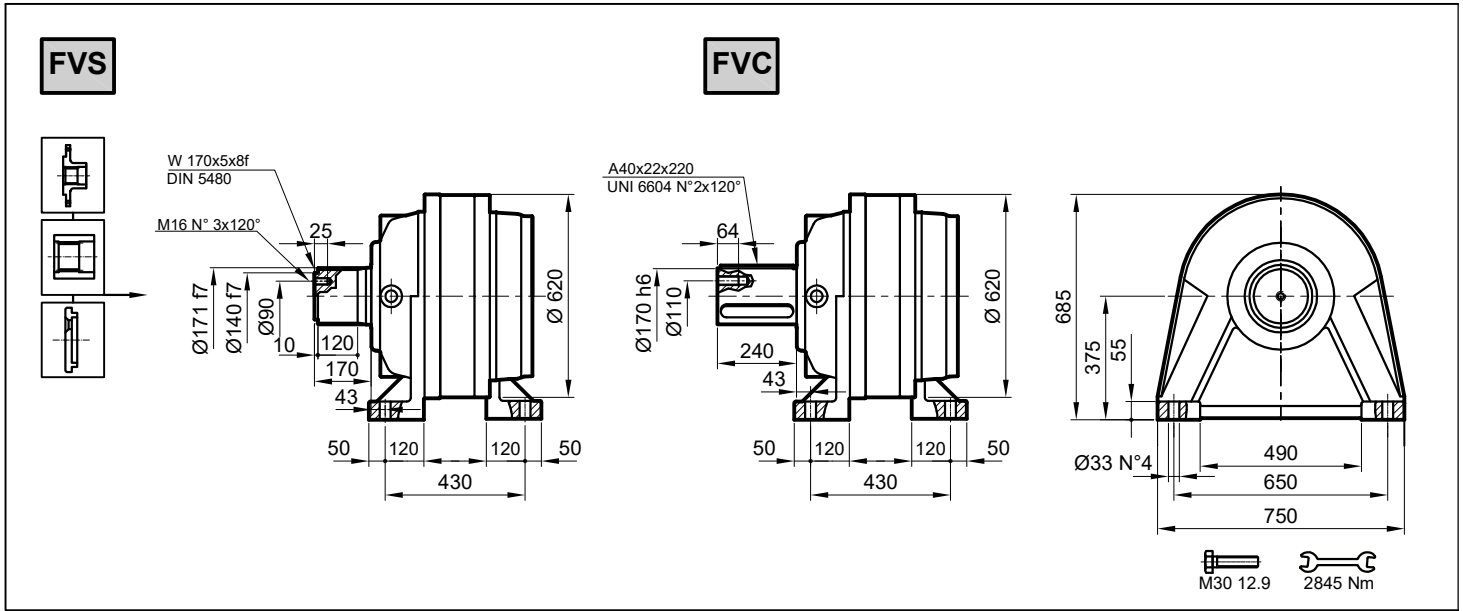


IPRK..

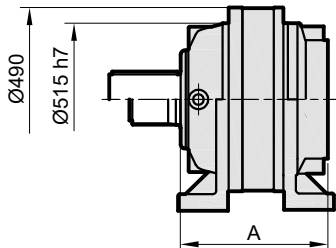


Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	293	773	-
S2	-	-	-	-	475	823	-
S3	555	88	235	550	569	839	932
S4	657	88	140	380	628,5	847	891

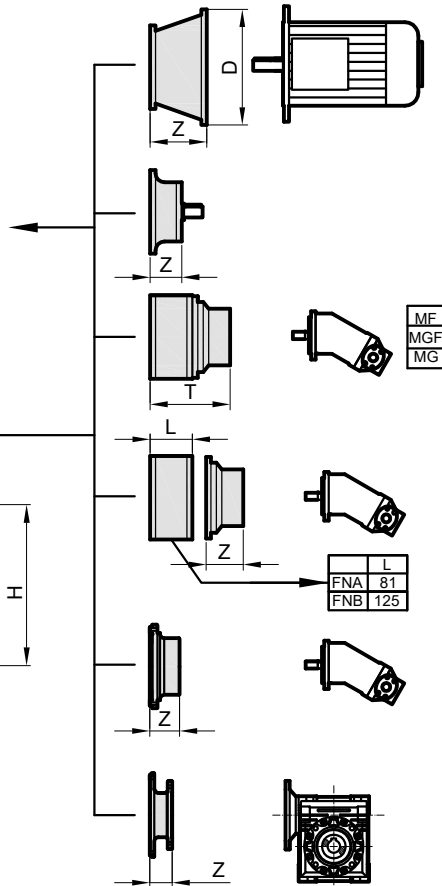
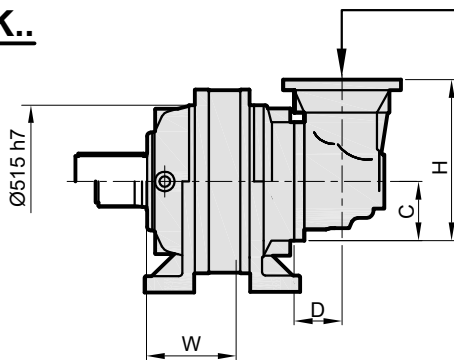
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-



IPR..



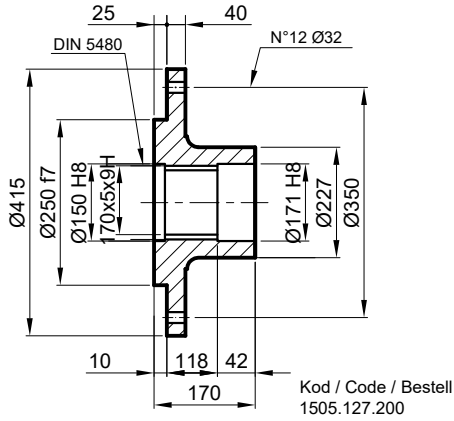
IPRK..



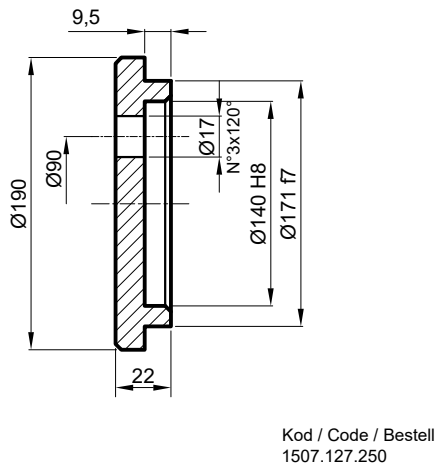
Stage	W	D	C	H	A	IPR FVC	IPRK FVC
S1	-	-	-	-	456	977	-
S2	-	-	-	-	638	1027	-
S3	718	88	235	550	732	1043	1136
S4	820	88	140	380	791,5	1051	1085

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

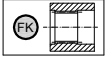
FL Flanş / Flange / Flansch



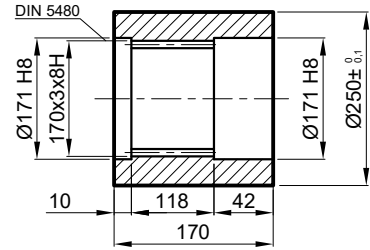
SP Sabitleme Pulu / Stop bottom plate / Endscheibe



FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

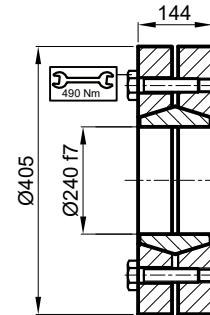


Malzeme / Material / Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.127.100

SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
176 kNm

Kod / Code / Bestell
2501.127.001

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

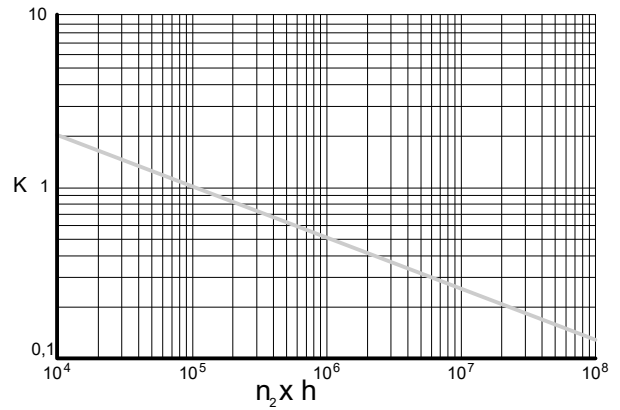
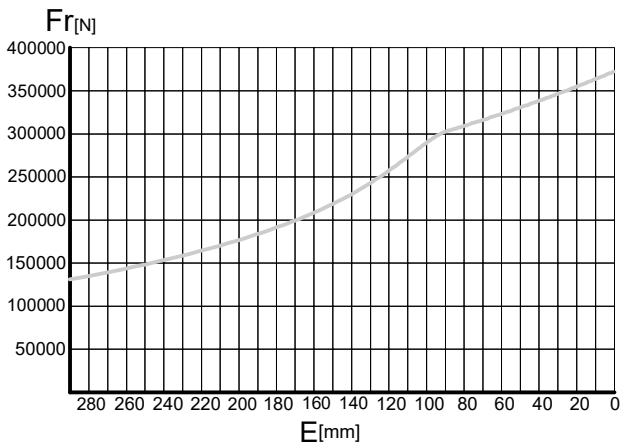
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

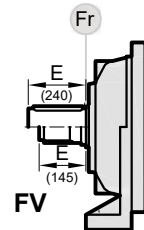
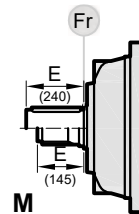
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

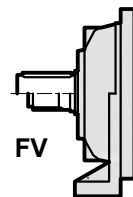
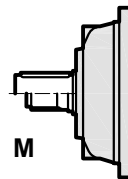
AXIAL LOADS (Fa)

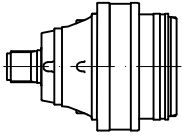
The values of the axial loads in the table refer to the output versions and load directions of application.

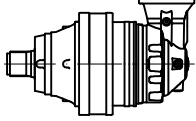
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

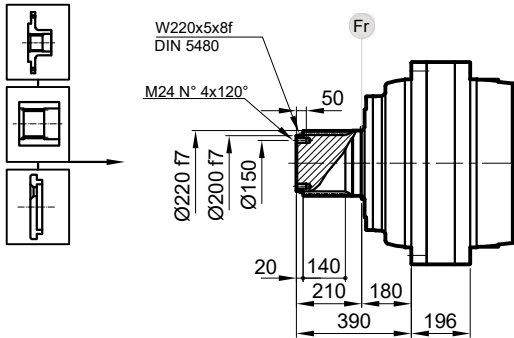
F_a [N]	M	FV	← →
		40000	
	70000	70000	



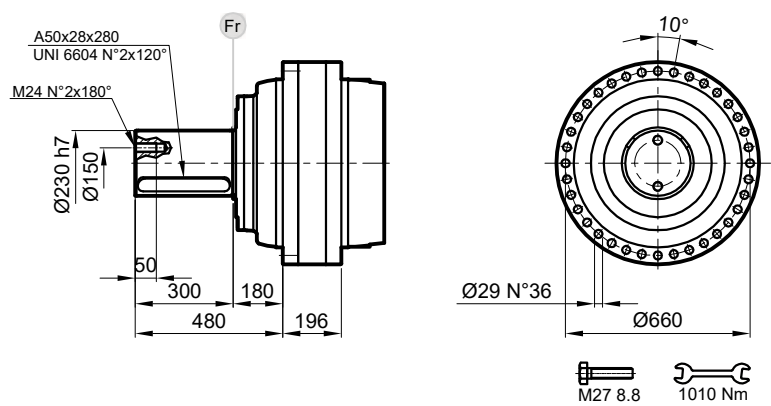
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 131 S1	3.91	204000	184000	160000	153000	200	276000	83
	4.94	159000	143000	125000	125000	200	214500	83
IPR 131 S2	15.47	204000	184000	160000	153000	1200	276000	67
	19.81	204000	184000	160000	153000	1200	276000	67
IPR 131 S3	25.01	159000	143000	125000	125000	1200	214500	67
	29.65	159000	143000	125000	125000	2000	214500	47
	55.02	204000	184000	160000	153000	2000	276000	47
	66.32	204000	184000	160000	153000	2000	276000	47
	74.79	204000	184000	160000	153000	2000	276000	47
	86.66	204000	184000	160000	153000	2000	276000	47
	95.75	204000	184000	160000	153000	2000	276000	47
	107.21	159000	143000	125000	125000	2000	214500	47
	120.91	159000	143000	125000	125000	2000	214500	47
	133.71	204000	184000	160000	153000	2000	276000	47
	166.02	159000	143000	125000	125000	2000	214500	47
200.12	159000	143000	125000	125000	2000	214500	47	
IPR 131 S4	250.53	204000	184000	160000	153000	2800	276000	37
	327.36	204000	184000	160000	153000	2800	276000	37
	386.42	204000	184000	160000	153000	2800	276000	37
	438.64	204000	184000	160000	153000	2800	276000	37
	487.96	159000	143000	125000	125000	2800	214500	37
	519.93	204000	184000	160000	153000	2800	276000	37
	574.48	204000	184000	160000	153000	2800	276000	37
	624.68	159000	143000	125000	125000	2800	214500	37
	684.72	159000	143000	125000	125000	2800	214500	37
	725.43	159000	143000	125000	125000	2800	214500	37
	793.33	159000	143000	125000	125000	2800	214500	37
	840.50	159000	143000	125000	125000	2800	214500	37
	969.43	204000	184000	160000	153000	2800	276000	37
	1038.88	159000	143000	125000	125000	2800	214500	37
	1203.68	159000	143000	125000	125000	2800	214500	37
1450.86	159000	143000	125000	125000	2800	214500	37	
IPR 131 S5	1531.94	204000	184000	160000	153000	2800	276000	27
	1604.90	159000	143000	125000	125000	2800	214500	27
	1727.69	204000	184000	160000	153000	2800	276000	27
	1811.16	204000	184000	160000	153000	2800	276000	27
	1907.19	204000	184000	160000	153000	2800	276000	27
	2001.73	204000	184000	160000	153000	2800	276000	27
	2091.27	159000	143000	125000	125000	2800	214500	27
	2181.66	159000	143000	125000	125000	2800	214500	27
	2363.88	204000	184000	160000	153000	2800	276000	27
	2476.47	159000	143000	125000	125000	2800	214500	27
	2608.36	204000	184000	160000	153000	2800	276000	27
	2792.91	159000	143000	125000	125000	2800	214500	27
	2960.82	204000	184000	160000	153000	2800	276000	27
	3900.44	159000	143000	125000	125000	2800	214500	27
	5145.91	159000	143000	125000	125000	2800	214500	27
	5888.65	159000	143000	125000	125000	2800	214500	27
	6979.14	159000	143000	125000	125000	2800	214500	27
8124.82	159000	143000	125000	125000	2800	214500	27	
9793.30	159000	143000	125000	125000	2800	214500	27	

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 131 S3	60.02	159000	143000	125000	125000	2500	214500	45
	72.11	204000	184000	160000	153000	2500	276750	45
	76.83	159000	143000	125000	125000	2500	214500	45
	91.06	159000	143000	125000	125000	2500	214500	45
	116.74	159000	143000	125000	125000	2500	214500	45
	138.35	159000	143000	125000	125000	2500	214500	45
IPRK 131 S4	256.76	204000	184000	160000	153000	2500	276750	35
	328.69	204000	184000	160000	153000	2500	276750	35
	390.80	159000	143000	125000	125000	2500	214500	35
	440.74	159000	143000	125000	125000	2500	214500	35
	500.30	159000	143000	125000	125000	2500	214500	35
	564.22	159000	143000	125000	125000	2500	214500	35
	653.72	159000	143000	125000	125000	2500	214500	35
	787.97	159000	143000	125000	125000	2500	214500	35
IPRK 131 S5	933.89	159000	143000	125000	125000	2500	214500	35
	1183.67	204000	184000	160000	153000	2800	276750	25
	1334.92	204000	184000	160000	153000	2800	276750	25
	1440.05	159000	143000	125000	125000	2800	214500	25
	1550.23	204000	184000	160000	153000	2800	276750	25
	1685.69	159000	143000	125000	125000	2800	214500	25
	1759.71	204000	184000	160000	153000	2800	276750	25
	1880.74	159000	143000	125000	125000	2800	214500	25
	1996.18	159000	143000	125000	125000	2800	214500	25
	2205.01	159000	143000	125000	125000	2800	214500	25
	2407.67	159000	143000	125000	125000	2800	214500	25
	2656.68	159000	143000	125000	125000	2800	214500	25
	3085.18	159000	143000	125000	125000	2800	214500	25
	3949.56	159000	143000	125000	125000	2800	214500	25
	4576.05	159000	143000	125000	125000	2800	214500	25
5423.46	159000	143000	125000	125000	2800	214500	25	
6537.21	159000	143000	125000	125000	2800	214500	25	
7899.13	159000	143000	125000	125000	2800	214500	25	

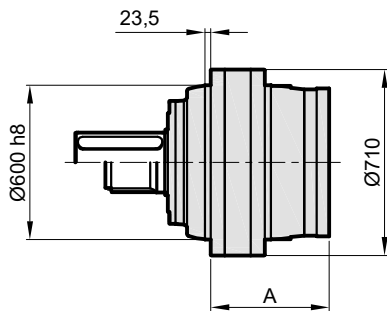
MS



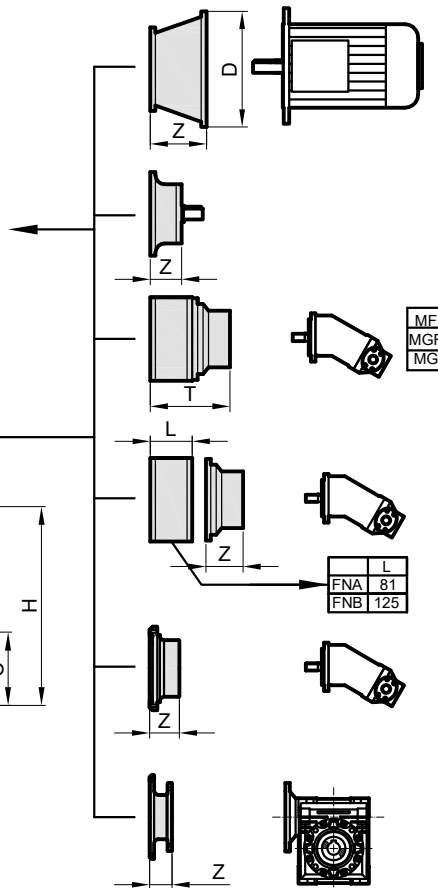
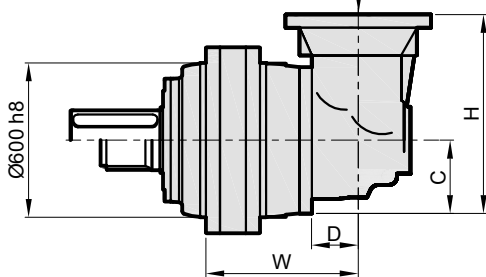
MC



IPR..



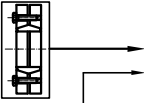
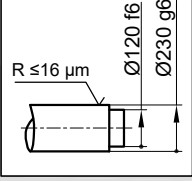
IPRK..



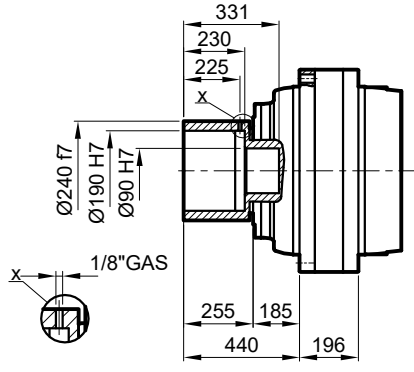
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	-	1150	-
S2	-	-	-	-	562,5	1332	-
S3	743,5	88	235	550	669,5	1391	1473
S4	804,5	88	235	550	741	1407	1500
S5	842,5	88	140	380	802	1415	1453

	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

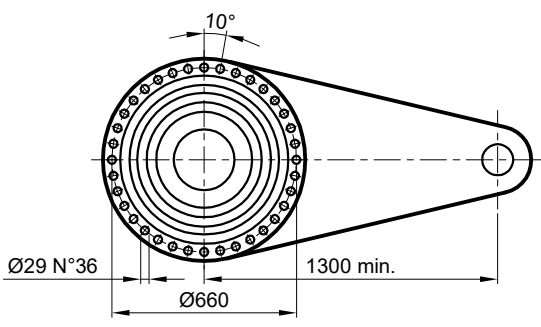
SD



R ≤ 16 μm
Ø120 f6
Ø230 g6



331
230
225
X
Ø240 f7
Ø190 H7
Ø90 H7
1/8" GAS
255 185
440 196



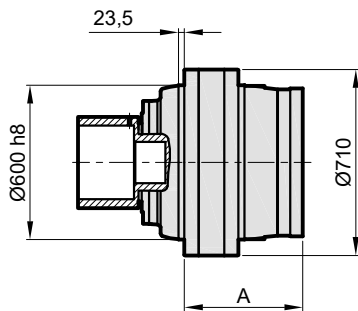
10°
Ø29 N°36
Ø660
1300 min.

 M27 8.8
  1010 Nm

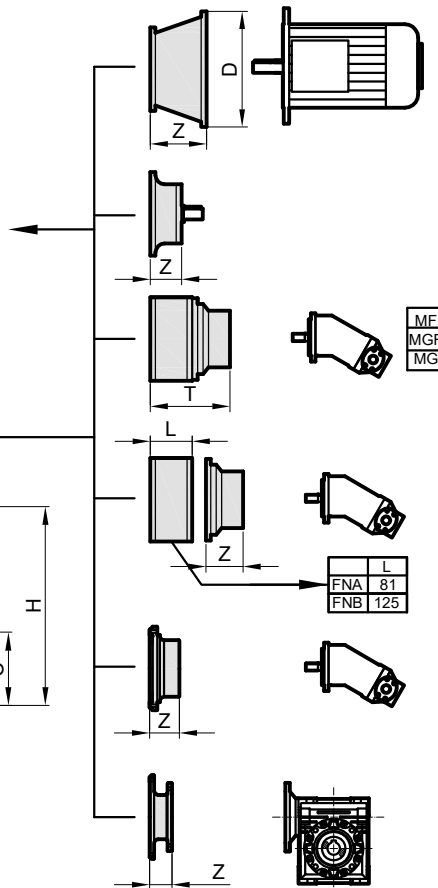
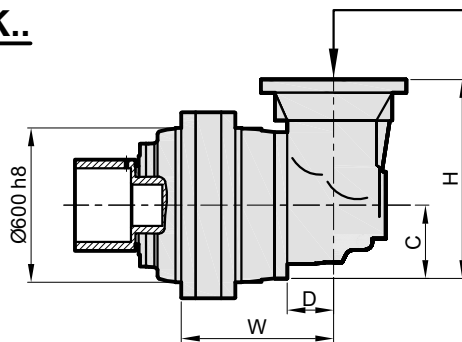
M_{max} = 355 kNm

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

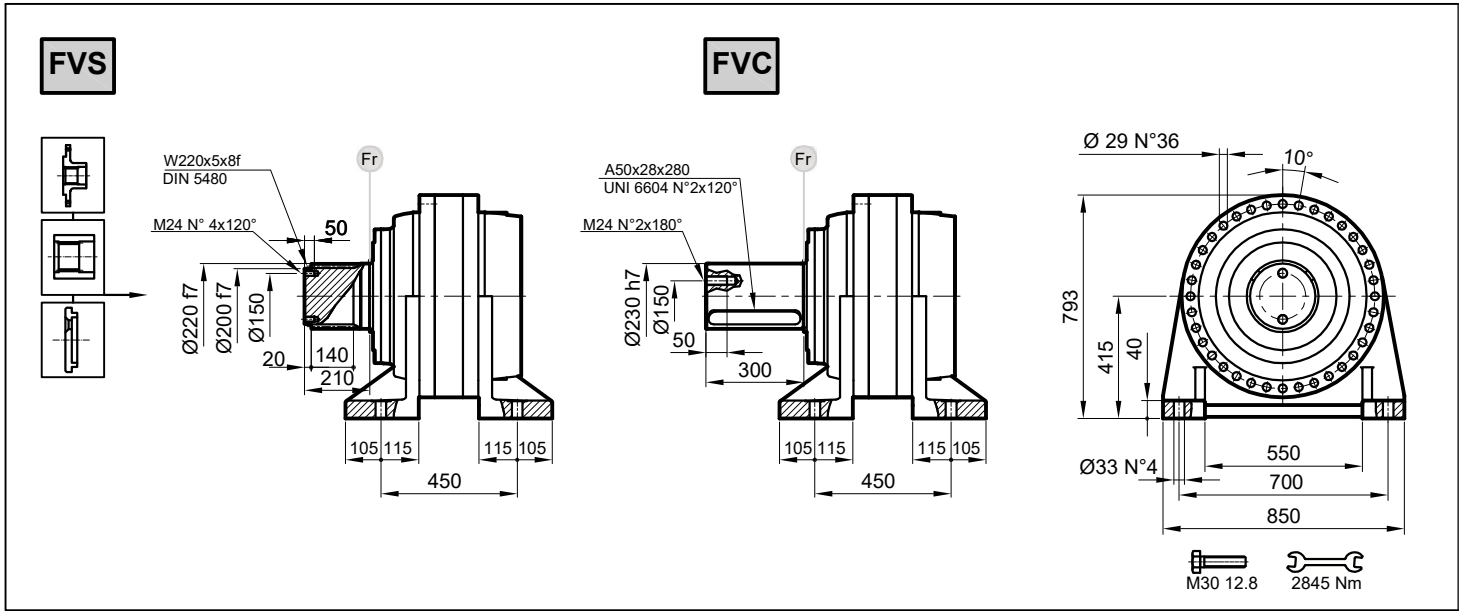


IPRK..

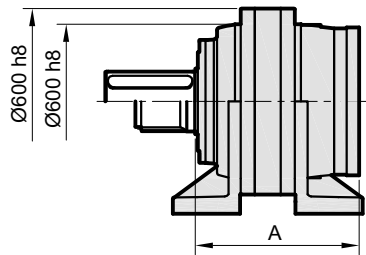


Stage	W	D	C	H	A	IPR		IPRK	
						SD	SD	SD	SD
S1	-	-	-	-	-	1071	-	-	-
S2	-	-	-	-	562,5	1271	-	-	-
S3	743,5	88	235	550	669,5	1330	1495	-	-
S4	804,5	88	235	550	741	1346	1439	-	-
S5	842,5	88	140	380	802	1354	1392	-	-

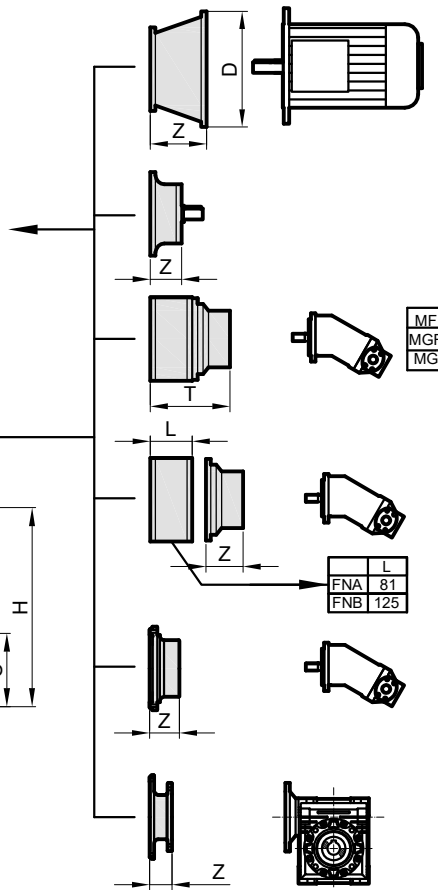
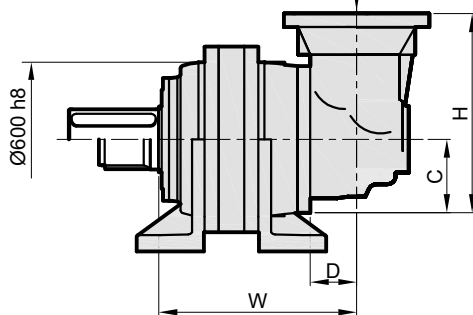
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-



IPR..



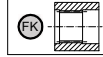
IPRK..



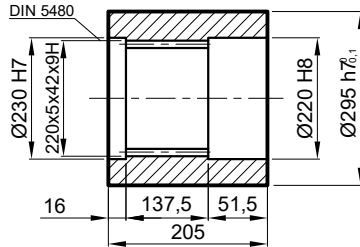
Stage	W	D	C	H	A	IPR EV	IPRK EV
S1	-	-	-	-	-	1150	-
S2	-	-	-	-	742,5	1332	-
S3	923,5	88	235	550	849,5	1391	1473
S4	984,5	88	235	550	921	1407	1500
S5	1022,5	88	140	380	982	1415	1453

	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

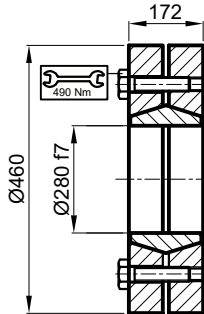


Malzeme / Material Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.131.100

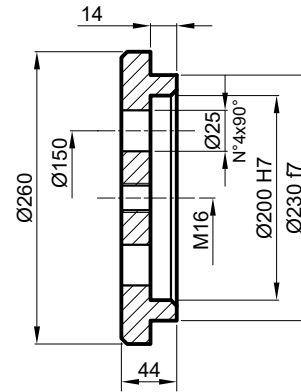
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
355 kNm

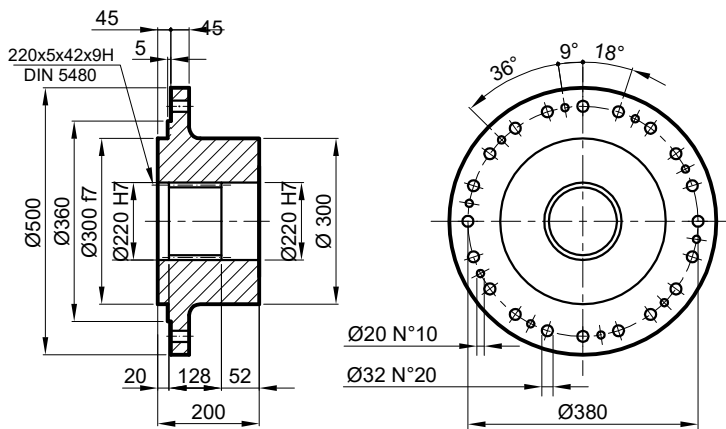
Kod / Code / Bestell
2501.131.001

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.131.250

FL Flanş / Flange / Flansch



Kod / Code / Bestell
1505.131.200

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

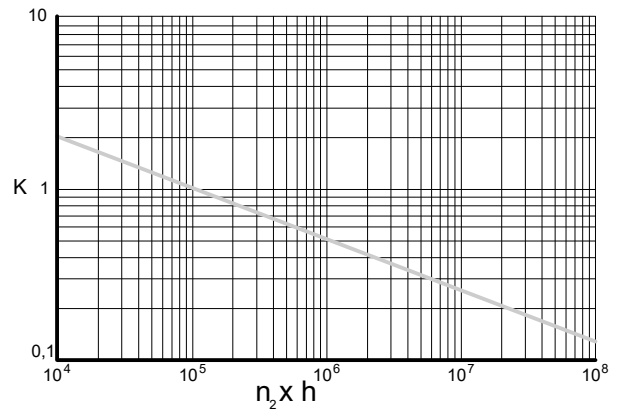
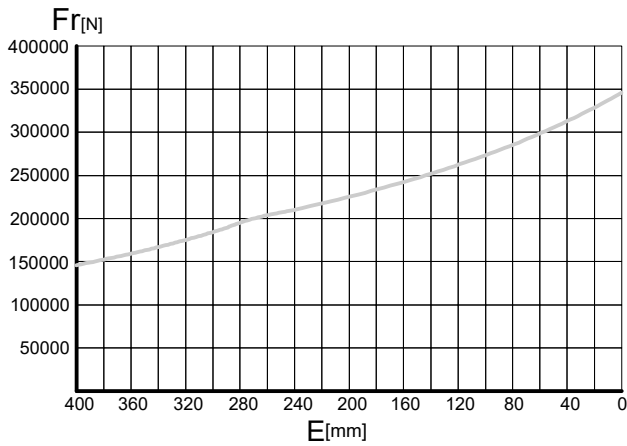
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

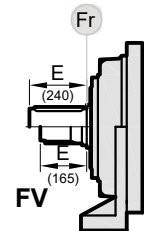
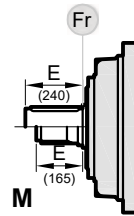
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

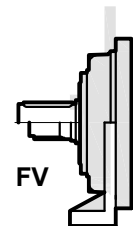
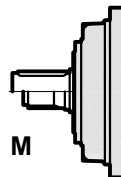
AXIAL LOADS (Fa)

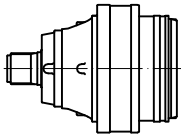
The values of the axial loads in the table refer to the output versions and load directions of application.

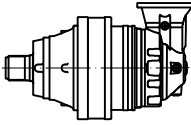
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

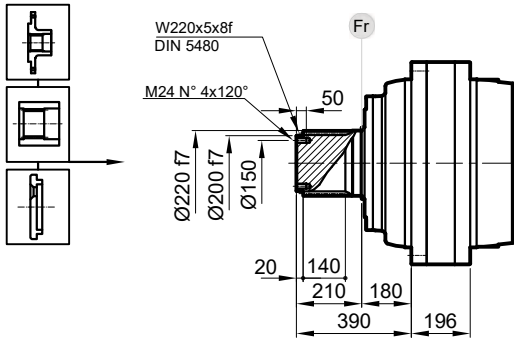
Fa [N]	M	FV	← →
		45000	
	75000	75000	



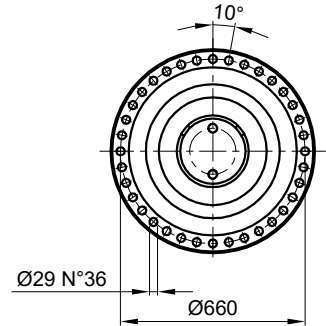
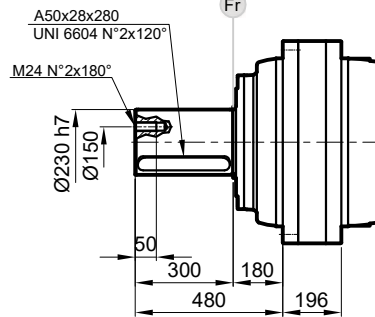
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 133 S1	3.68	238000	215000	190000	190000	200	322500	83
	4.94	188000	169000	154000	154000	200	253500	83
IPR 133 S2	14.55	238000	215000	190000	190000	1200	322500	67
	19.54	188000	169000	154000	154000	1200	253500	67
	25.01	188000	169000	154000	154000	1200	253500	67
IPR 133 S3	29.65	188000	169000	154000	154000	2000	253500	47
	62.37	238000	215000	190000	190000	2000	322500	47
	70.34	238000	215000	190000	190000	2000	322500	47
	83.74	188000	169000	154000	154000	2000	253500	47
	94.44	188000	169000	154000	154000	2000	253500	47
	107.21	188000	169000	154000	154000	2000	253500	47
	120.91	188000	169000	154000	154000	2000	253500	47
	140.08	188000	169000	154000	154000	2000	253500	47
	168.85	188000	169000	154000	154000	2000	253500	47
	200.12	188000	169000	154000	154000	2000	253500	47
	257.27	238000	215000	190000	190000	2000	322500	47
IPR 133 S4	336.00	188000	169000	154000	154000	2800	253500	37
	389.58	188000	169000	154000	154000	2800	253500	37
	432.68	188000	169000	154000	154000	2800	253500	37
	487.96	188000	169000	154000	154000	2800	253500	37
	533.65	188000	169000	154000	154000	2800	253500	37
	577.84	188000	169000	154000	154000	2800	253500	37
	624.68	188000	169000	154000	154000	2800	253500	37
	681.46	188000	169000	154000	154000	2800	253500	37
	725.43	188000	169000	154000	154000	2800	253500	37
	793.33	188000	169000	154000	154000	2800	253500	37
	840.50	188000	169000	154000	154000	2800	253500	37
	921.18	188000	169000	154000	154000	2800	253500	37
	1013.10	188000	169000	154000	154000	2800	253500	37
	1200.71	188000	169000	154000	154000	2800	253500	37
	1450.86	188000	169000	154000	154000	2800	253500	37
1497.10	238000	215000	190000	190000	2800	322500	37	
IPR 133 S5	1590.41	238000	215000	190000	190000	2800	322500	27
	1669.64	188000	169000	154000	154000	2800	253500	27
	1736.58	188000	169000	154000	154000	2800	253500	27
	1804.54	238000	215000	190000	190000	2800	322500	27
	1854.33	188000	169000	154000	154000	2800	253500	27
	1934.48	188000	169000	154000	154000	2800	253500	27
	1998.02	188000	169000	154000	154000	2800	253500	27
	2091.27	188000	169000	154000	154000	2800	253500	27
	2181.66	188000	169000	154000	154000	2800	253500	27
	2268.01	188000	169000	154000	154000	2800	253500	27
	2314.95	188000	169000	154000	154000	2800	253500	27
	2422.99	188000	169000	154000	154000	2800	253500	27
	2476.47	188000	169000	154000	154000	2800	253500	27
	2677.18	188000	169000	154000	154000	2800	253500	27
	3166.03	188000	169000	154000	154000	2800	253500	27
	4216.56	188000	169000	154000	154000	2800	253500	27
	6217.97	188000	169000	154000	154000	2800	253500	27
8263.10	188000	169000	154000	154000	2800	253500	27	

	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 133 S3	60.02	188000	169000	154000	154000	2500	253500	45
	76.83	188000	169000	154000	154000	2500	253500	45
	91.06	188000	169000	154000	154000	2500	253500	45
	103.04	238000	215000	190000	190000	2500	322500	45
	116.74	188000	169000	154000	154000	2500	253500	45
	138.35	188000	169000	154000	154000	2500	253500	45
IPRK 133 S4	250.31	238000	215000	190000	190000	2500	322500	35
	336.09	188000	169000	154000	154000	2500	253500	35
	390.80	188000	169000	154000	154000	2500	253500	35
	440.74	188000	169000	154000	154000	2500	253500	35
	500.30	188000	169000	154000	154000	2500	253500	35
	564.22	188000	169000	154000	154000	2500	253500	35
	592.94	188000	169000	154000	154000	2500	253500	35
	653.72	188000	169000	154000	154000	2500	253500	35
787.97	188000	169000	154000	154000	2500	253500	35	
IPRK 133 S5	933.89	188000	169000	154000	154000	2800	253500	25
	1113.19	238000	215000	190000	190000	2800	322500	25
	1267.42	188000	169000	154000	154000	2800	253500	25
	1399.10	188000	169000	154000	154000	2800	253500	25
	1494.70	188000	169000	154000	154000	2800	253500	25
	1587.47	188000	169000	154000	154000	2800	253500	25
	1689.17	238000	215000	190000	190000	2800	322500	25
	1735.78	188000	169000	154000	154000	2800	253500	25
	1880.74	188000	169000	154000	154000	2800	253500	25
	1997.48	188000	169000	154000	154000	2800	253500	25
	2157.97	188000	169000	154000	154000	2800	253500	25
	2269.56	188000	169000	154000	154000	2800	253500	25
	2355.68	188000	169000	154000	154000	2800	253500	25
	2486.76	188000	169000	154000	154000	2800	253500	25
	2656.68	188000	169000	154000	154000	2800	253500	25
	2903.54	188000	169000	154000	154000	2800	253500	25
	3472.89	188000	169000	154000	154000	2800	253500	25
4231.67	188000	169000	154000	154000	2800	253500	25	
6537.21	188000	169000	154000	154000	2800	253500	25	
7899.13	188000	169000	154000	154000	2800	253500	25	

MS

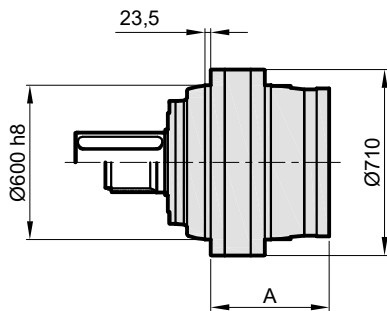


MC

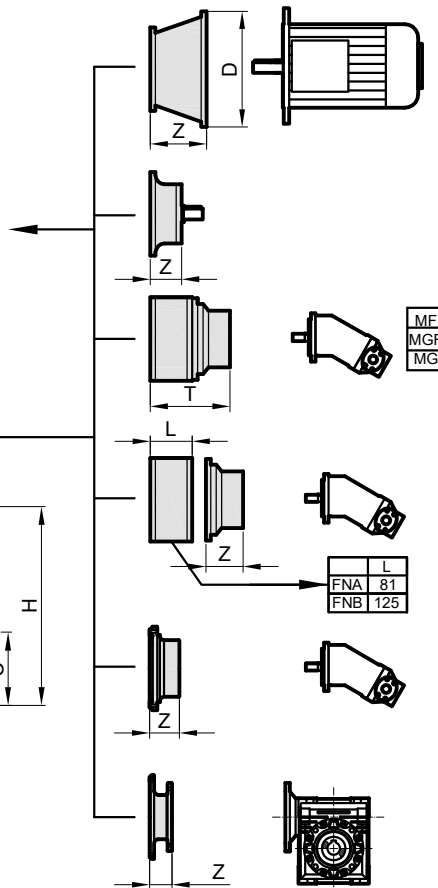
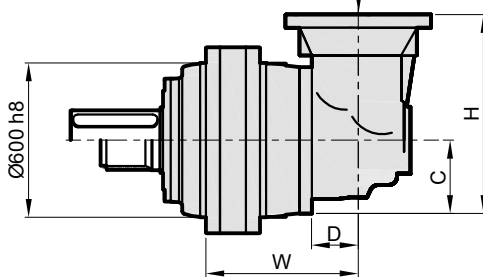


M27 8.8 1010 Nm

IPR..



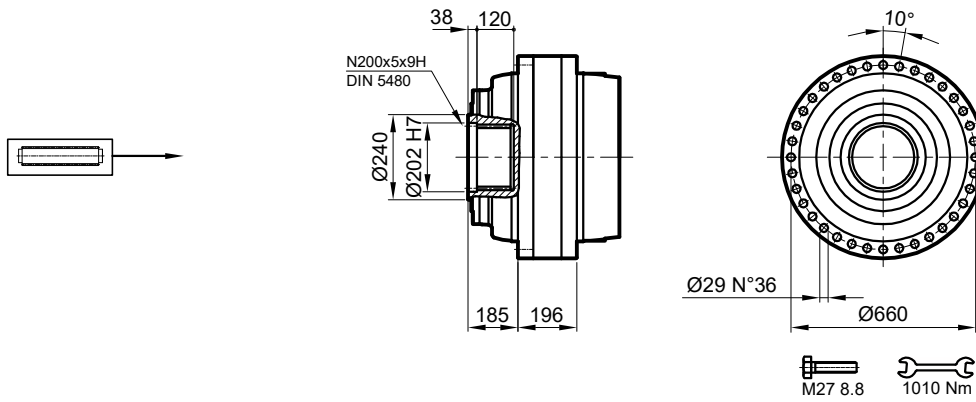
IPRK..



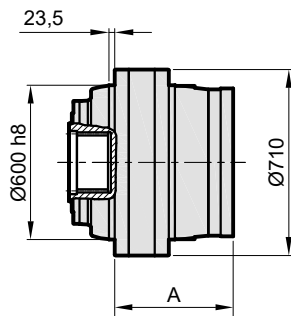
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	-	1150	-
S2	-	-	-	-	562,5	1332	-
S3	743,5	88	235	550	669,5	1391	1473
S4	804,5	88	235	550	741	1407	1500
S5	842,5	88	140	380	802	1415	1453

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

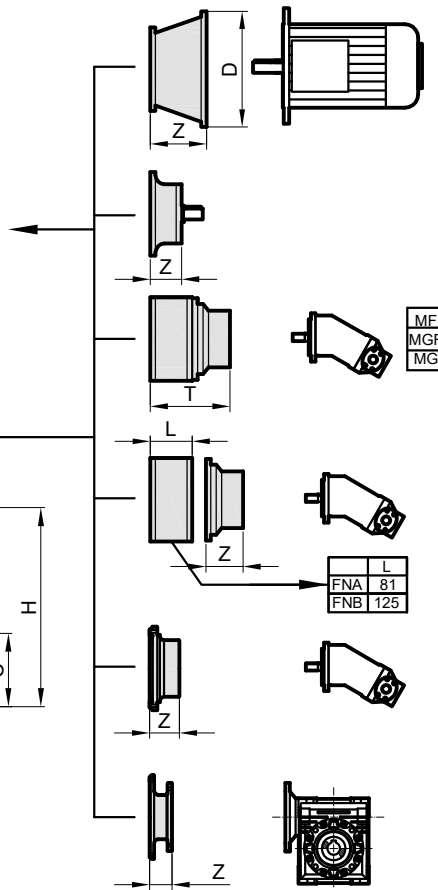
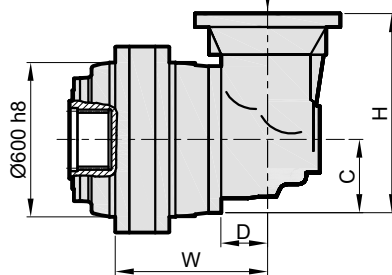
S



IPR..



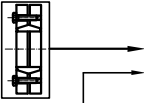
IPRK..

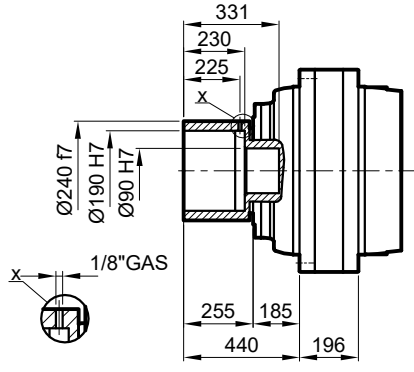


Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	-	1050	-
S2	-	-	-	-	562,5	1232	-
S3	743,5	88	235	550	669,5	1292	1457
S4	804,5	88	235	550	741	1308	1401
S5	842,5	88	140	380	802	1316	1354

	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

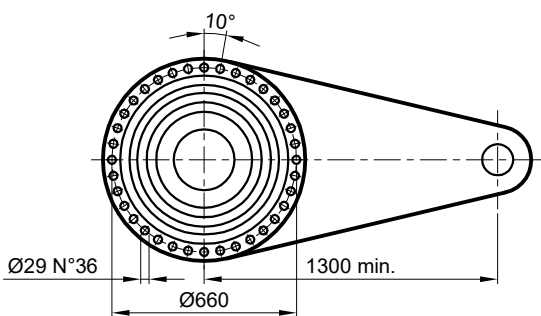
SD



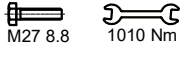


$\varnothing 240\text{ f7}$
 $\varnothing 190\text{ H7}$
 $\varnothing 90\text{ H7}$
 $1/8''\text{ GAS}$

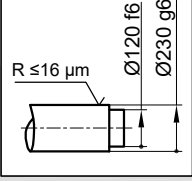
331, 230, 225, 255, 185, 440, 196



10°
 $\varnothing 29\text{ N}^\circ 36$
 $\varnothing 660$
 1300 min.



M27 8.8
 1010 Nm

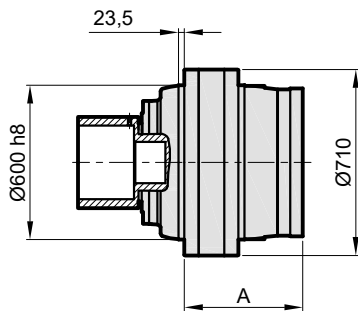


$R \leq 16\ \mu\text{m}$
 $\varnothing 120\text{ f6}$
 $\varnothing 230\text{ g6}$

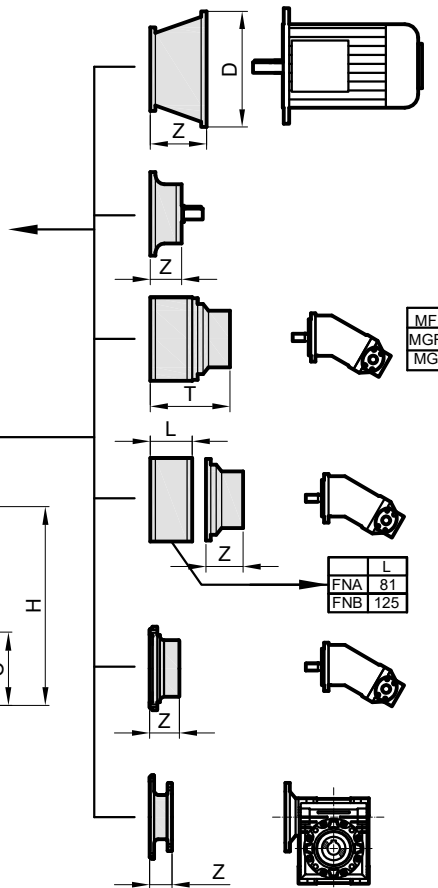
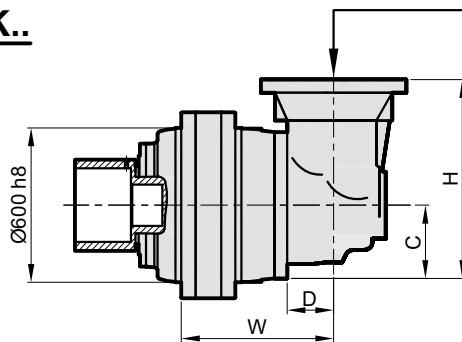
$M_{\text{max}} = 355\text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

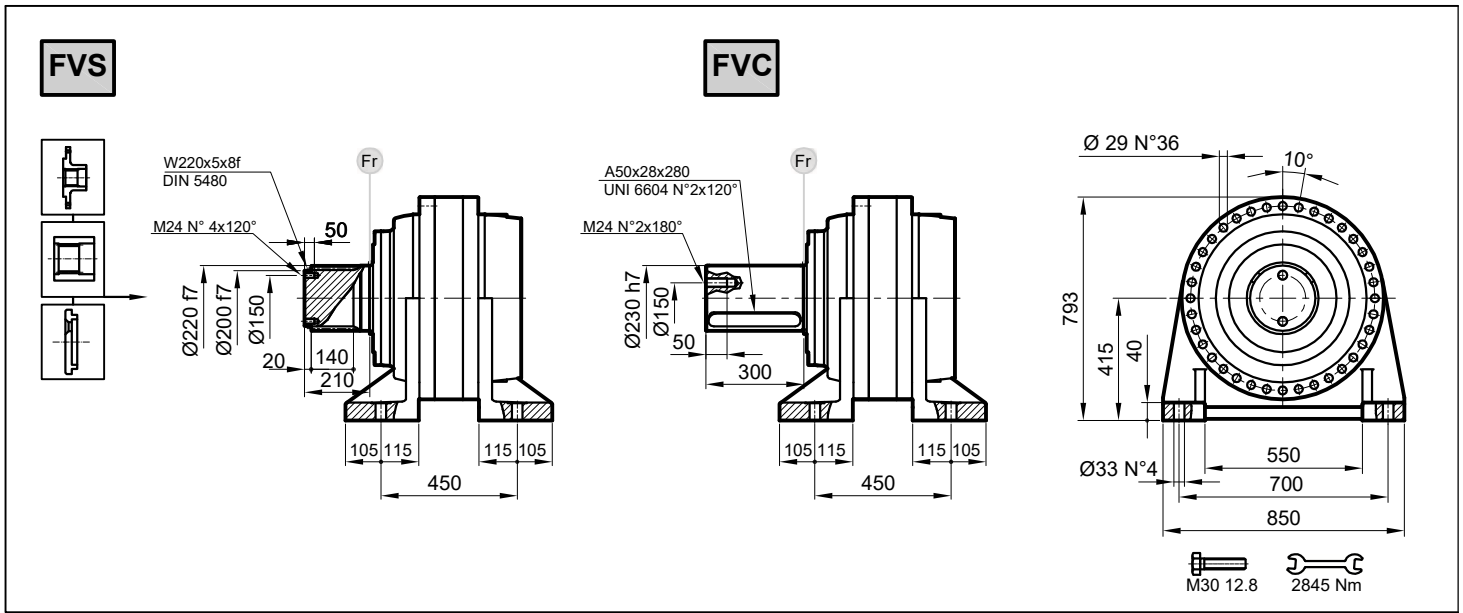


IPRK..

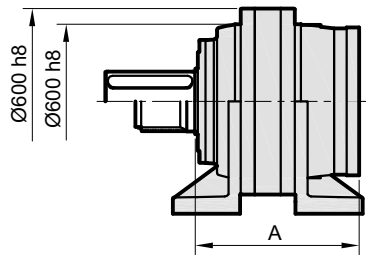


Stage	W	D	C	H	A	IPR		IPRK	
						SD	SD	SD	SD
S1	-	-	-	-	-	1071	-	-	-
S2	-	-	-	-	562,5	1271	-	-	-
S3	743,5	88	235	550	669,5	1330	1495	-	-
S4	804,5	88	235	550	741	1346	1439	-	-
S5	842,5	88	140	380	802	1354	1392	-	-

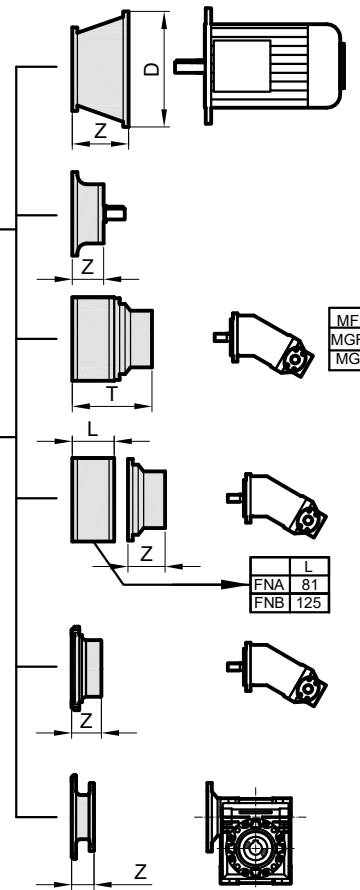
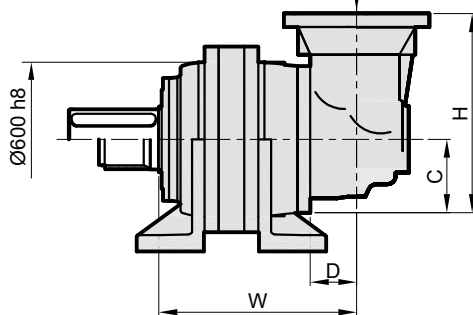
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-



IPR..



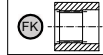
IPRK..



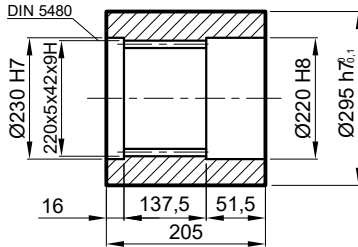
Stage	W	D	C	H	A	IPR EV	IPRK EV
S1	-	-	-	-	-	1150	-
S2	-	-	-	-	742,5	1332	-
S3	923,5	88	235	550	849,5	1391	1473
S4	984,5	88	235	550	921	1407	1500
S5	1022,5	88	140	380	982	1415	1453

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S2	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S3	-	-	-	-	-	-	-	-	350	120	400	148	450	148	550	183
S4	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-
S5	-	-	-	-	250	71	300	104	350	120	400	148	450	148	-	-

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

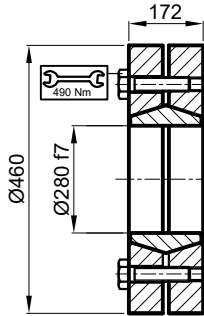


Malzeme / Material Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.131.100

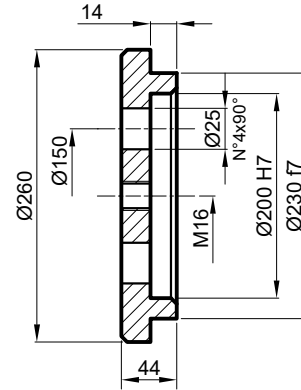
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
355 kNm

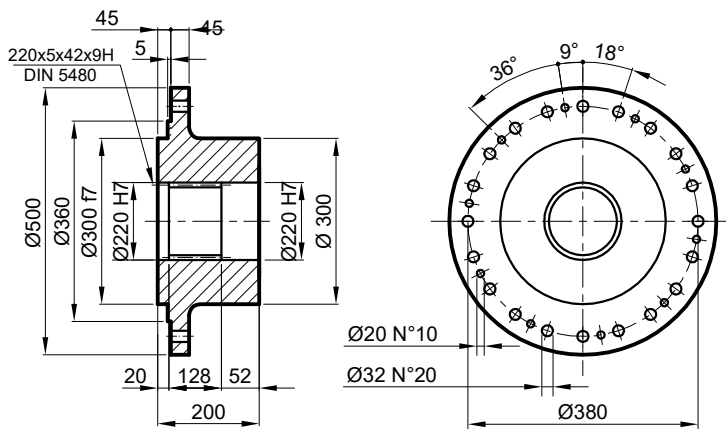
Kod / Code / Bestell
2501.131.001

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.131.250

FL Flanş / Flange / Flansch



Kod / Code / Bestell
1505.131.200

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

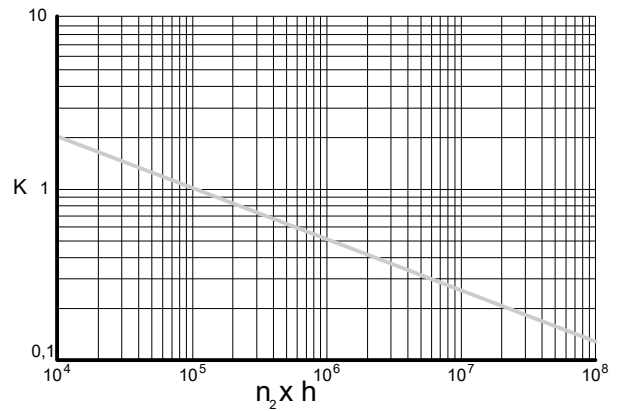
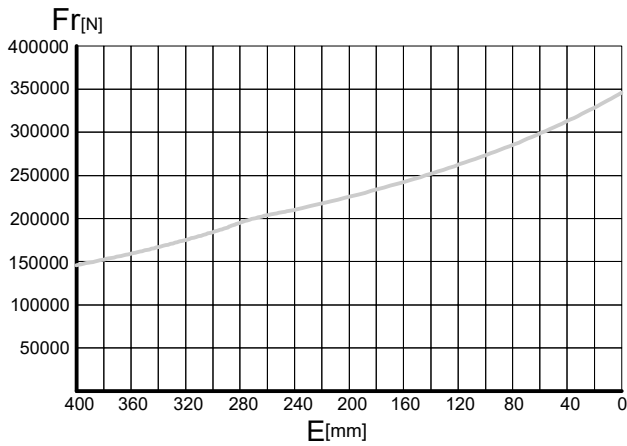
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

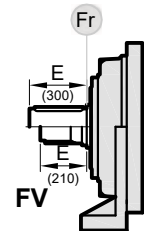
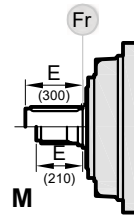
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$				
	10^5	10^4	10^6	10^7	10^8
M	Fr		Fr . K		
FV	Fr . 0,75		Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

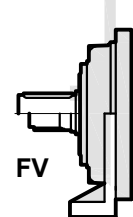
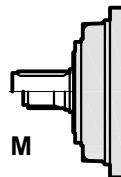
AXIAL LOADS (Fa)

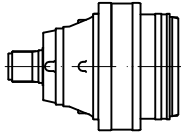
The values of the axial loads in the table refer to the output versions and load directions of application.

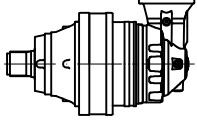
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

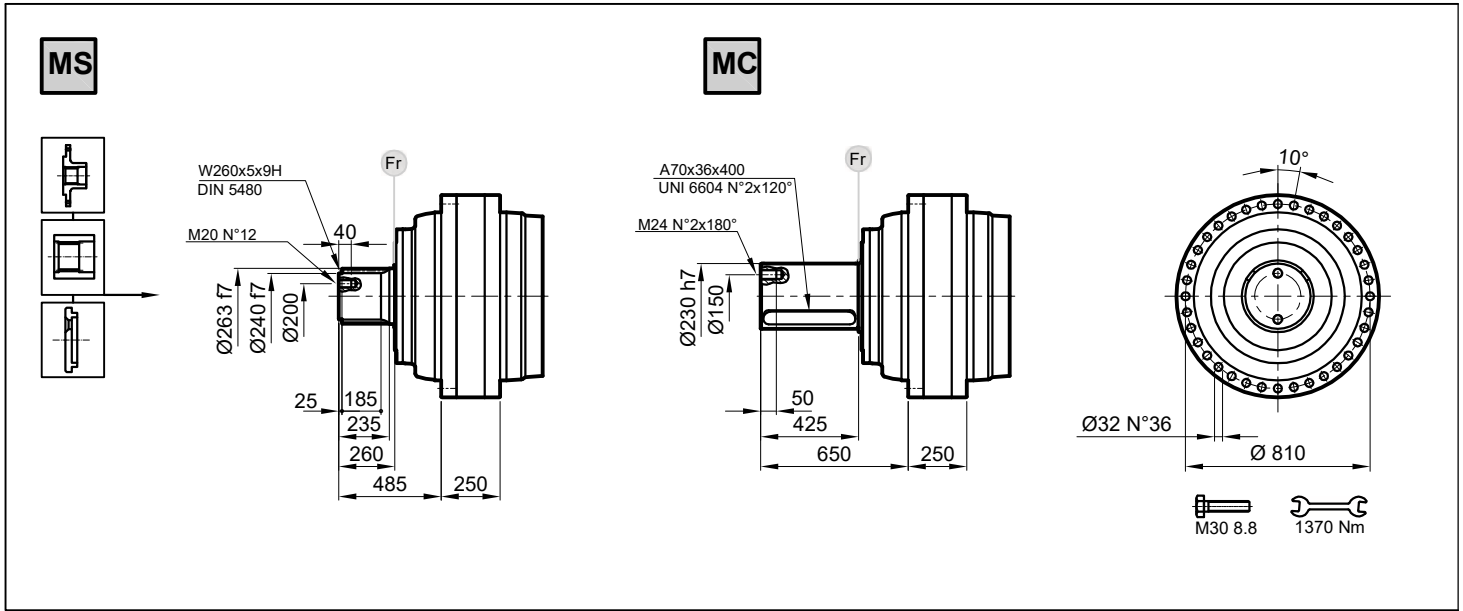
Fa [N]	M	FV	← →
		45000	
	75000	75000	



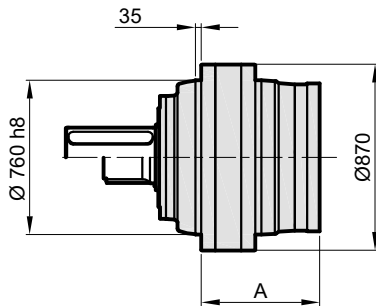
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 135 S1	4.09	369600	332800	289600	265000	200	432640	110
	5.25	275100	247700	215600	207000	200	322010	110
IPR 135 S2	16.54	369600	332800	289600	265000	750	432640	80
	20.94	369600	332800	289600	265000	750	432640	80
	26.87	275100	247700	215600	207000	750	322010	80
IPR 135 S3	86.02	369600	332800	289600	265000	1500	432640	71
	103.38	369600	332800	289600	265000	1500	432640	71
	110.39	275100	247700	215600	207000	1500	322010	71
	120.90	275100	247700	215600	207000	1500	322010	71
	132.68	275100	247700	215600	207000	1500	322010	71
	167.92	275100	247700	215600	207000	1500	322010	71
IPR 135 S4	242.61	369600	332800	289600	265000	2800	432640	50
	315.39	369600	332800	289600	265000	2800	432640	50
	380.93	369600	332800	289600	265000	2800	432640	50
	430.08	369600	332800	289600	265000	2800	432640	50
	482.12	369600	332800	289600	265000	2800	432640	50
	551.93	275100	247700	215600	207000	2800	322010	50
	618.72	275100	247700	215600	207000	2800	322010	50
	698.56	275100	247700	215600	207000	2800	322010	50
	758.92	369600	332800	289600	265000	2800	432640	50
	810.33	275100	247700	215600	207000	2800	322010	50
973.95	275100	247700	215600	207000	2800	322010	50	
IPR 135 S5	1513.94	369600	332800	289600	265000	2800	432640	37
	1586.47	369600	332800	289600	265000	2800	432640	37
	1629.52	369600	332800	289600	265000	2800	432640	37
	1758.12	369600	332800	289600	265000	2800	432640	37
	1846.79	275100	247700	215600	207000	2800	322010	37
	1942.89	275100	247700	215600	207000	2800	322010	37
	2006.73	275100	247700	215600	207000	2800	322010	37
	2113.14	275100	247700	215600	207000	2800	322010	37
	2256.26	275100	247700	215600	207000	2800	322010	37
	2364.35	275100	247700	215600	207000	2800	322010	37
	2506.11	275100	247700	215600	207000	2800	322010	37
	2646.76	275100	247700	215600	207000	2800	322010	37
	2726.32	275100	247700	215600	207000	2800	322010	37
	2855.65	275100	247700	215600	207000	2800	322010	37
	3570.59	275100	247700	215600	207000	2800	322010	37
	4461.95	275100	247700	215600	207000	2800	322010	37
	5064.55	275100	247700	215600	207000	2800	322010	37
6733.34	275100	247700	215600	207000	2800	322010	37	
8522.08	275100	247700	215600	207000	2800	322010	37	



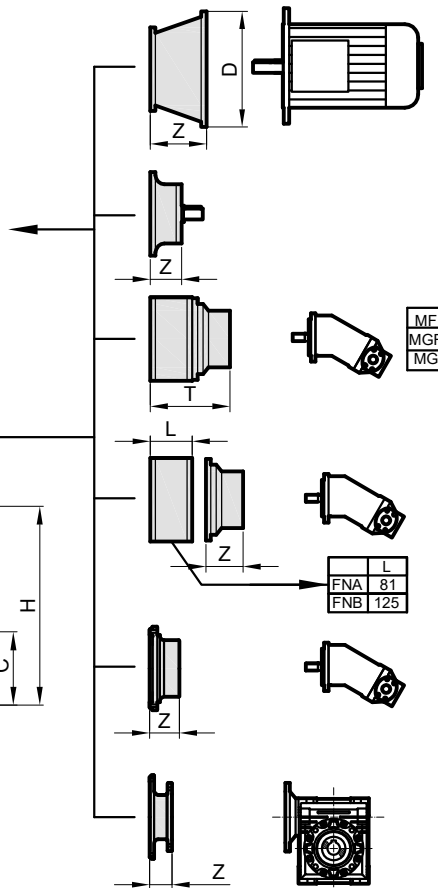
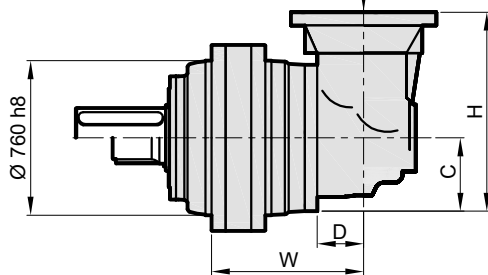
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 135 S4	264.19	369600	332800	289600	265000	2500	432640	45
	401.41	369600	332800	289600	265000	2500	432640	45
	501.53	275100	247700	215600	207000	2500	332010	45
	652.00	275100	247700	215600	207000	2500	332010	45
	783.64	275100	247700	215600	207000	2500	332010	45
IPRK 135 S5	1142.87	369600	332800	289600	265000	2800	432640	40
	1315.93	369600	332800	289600	265000	2800	432640	40
	1485.72	369600	332800	289600	265000	2800	432640	40
	1644.16	275100	247700	215600	207000	2800	332010	40
	1688.78	275100	247700	215600	207000	2800	332010	40
	1769.68	275100	247700	215600	207000	2800	332010	40
	1856.31	275100	247700	215600	207000	2800	332010	40
	1906.68	275100	247700	215600	207000	2800	332010	40
	2029.78	275100	247700	215600	207000	2800	332010	40
	2127.02	275100	247700	215600	207000	2800	332010	40
	2211.75	275100	247700	215600	207000	2800	332010	40
	2413.20	275100	247700	215600	207000	2800	332010	40
	2569.00	275100	247700	215600	207000	2800	332010	40
	2925.59	275100	247700	215600	207000	2800	332010	40
	3368.61	275100	247700	215600	207000	2800	332010	40
	4411.79	275100	247700	215600	207000	2800	332010	40
	5324.57	275100	247700	215600	207000	2800	332010	40
6399.72	275100	247700	215600	207000	2800	332010	40	



IPR..



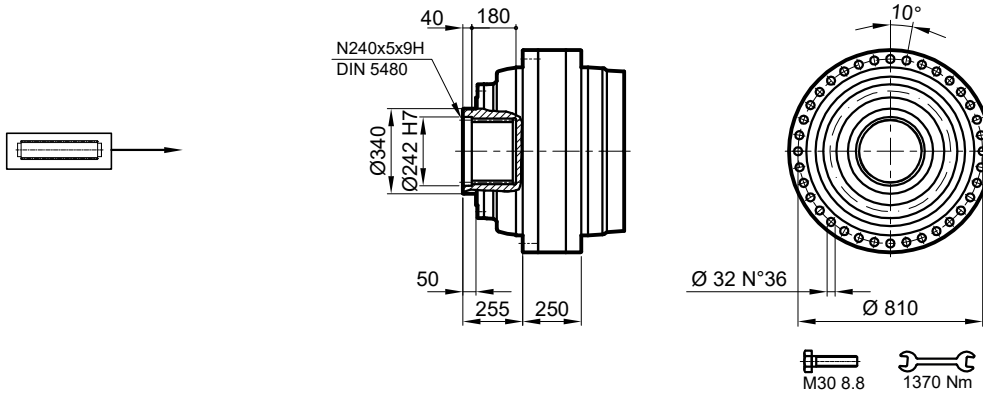
IPRK..



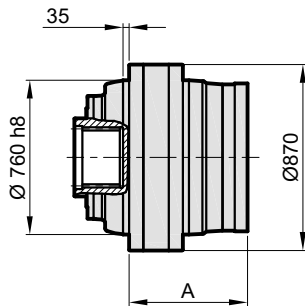
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	-	1950	-
S2	-	-	-	-	740	2263	-
S3	-	-	-	-	922	2379	-
S4	1002	88	235	550	1016	2406	2501
S5	1104	88	140	380	1075,5	2418	2443

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

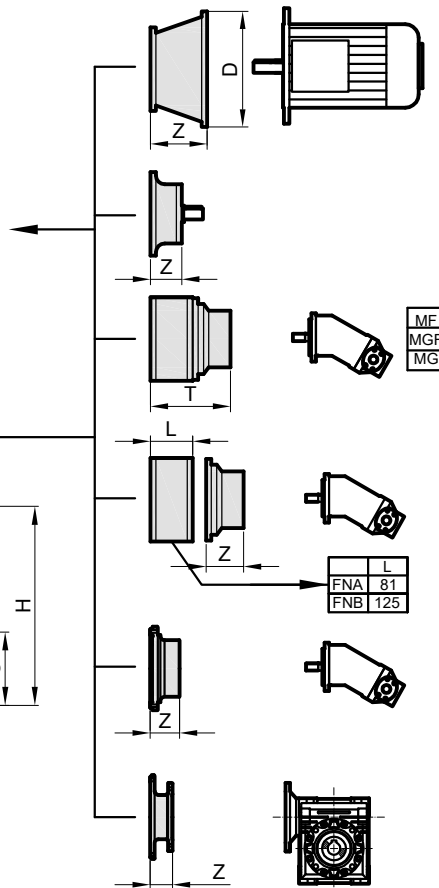
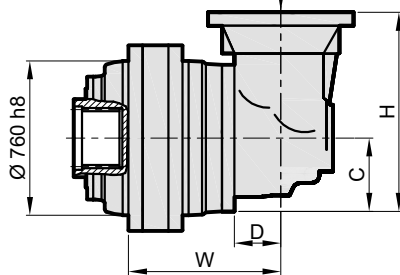
S



IPR..



IPRK..



Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	-	1870	-
S2	-	-	-	-	740	2194	-
S3	-	-	-	-	922	2310	-
S4	1002	88	235	550	1016	2337	2431
S5	1104	88	140	380	1075,5	2349	2374

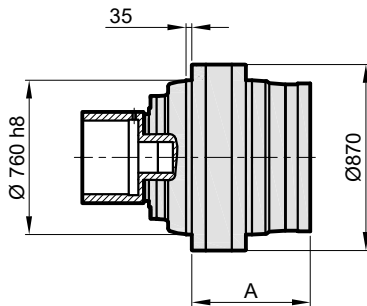
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

SD

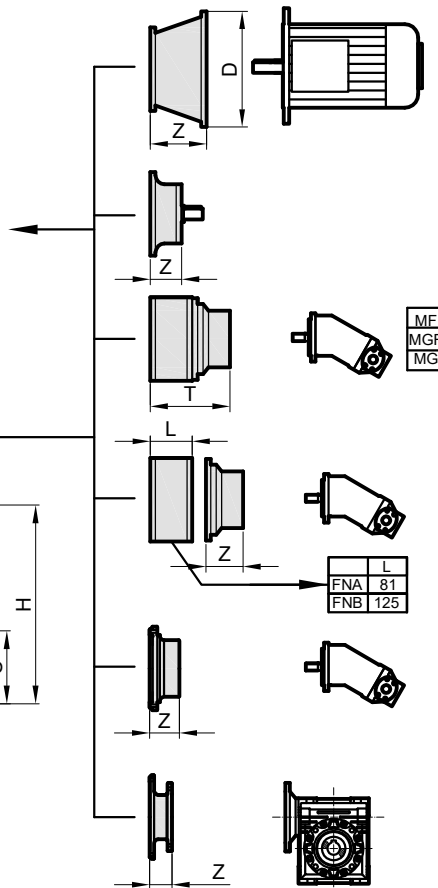
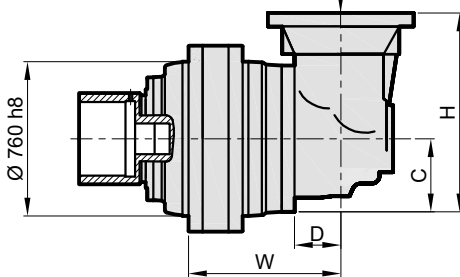
$M_{max} = 689 \text{ kNm}$

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

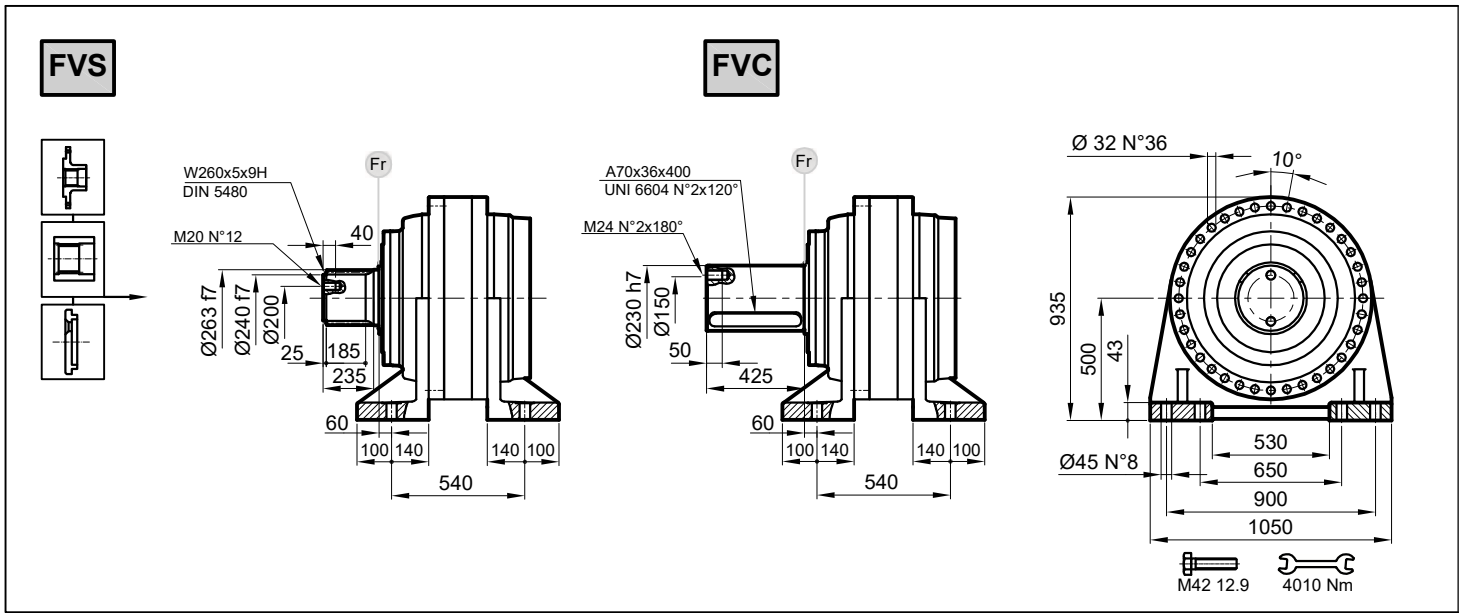


IPRK..

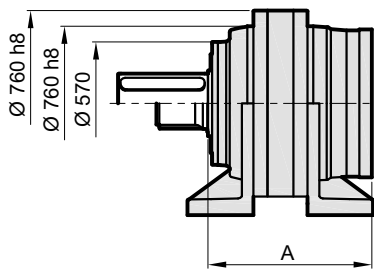


Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	-	1908	-
S2	-	-	-	-	740	2232	-
S3	-	-	-	-	922	2348	-
S4	1002	88	235	550	1016	2375	2469
S5	1104	88	140	380	1075,5	2387	2412

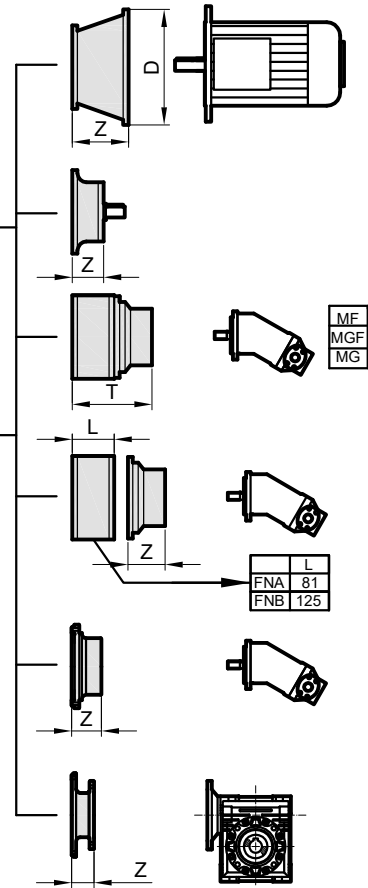
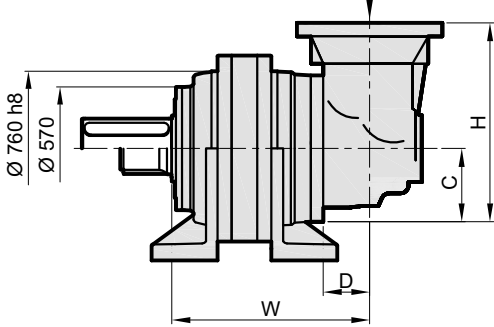
	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-



IPR..



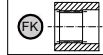
IPRK..



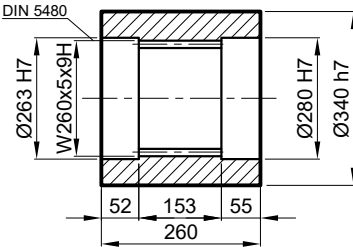
Stage	W	D	C	H	A	IPR EV	IPRK EV
S1	-	-	-	-	-	2035	-
S2	-	-	-	-	965	2348	-
S3	-	-	-	-	1147	2464	-
S4	1227	88	235	550	1241	2491	2586
S5	1329	88	140	380	1300,5	2503	2528

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

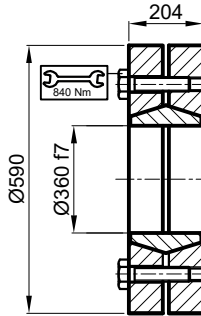


Malzeme / Material Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.135.100

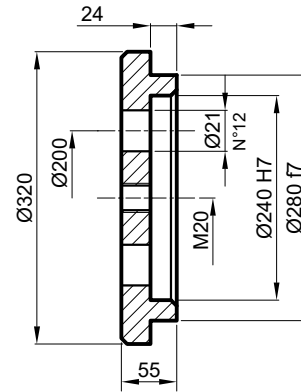
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
689 kNm

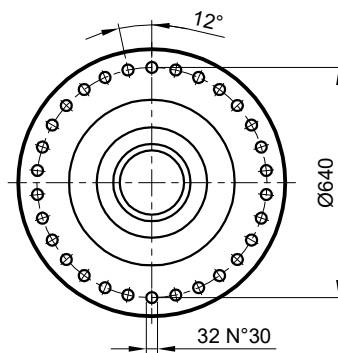
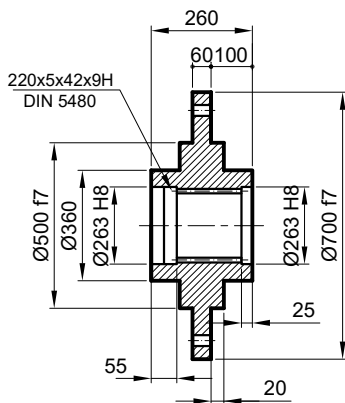
Kod / Code / Bestell
2501.135.001

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.135.250

FL Flanş / Flange / Flansch



Kod / Code / Bestell
1505.135.200

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

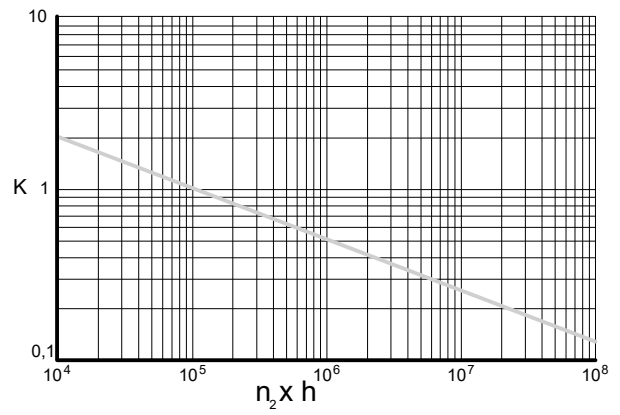
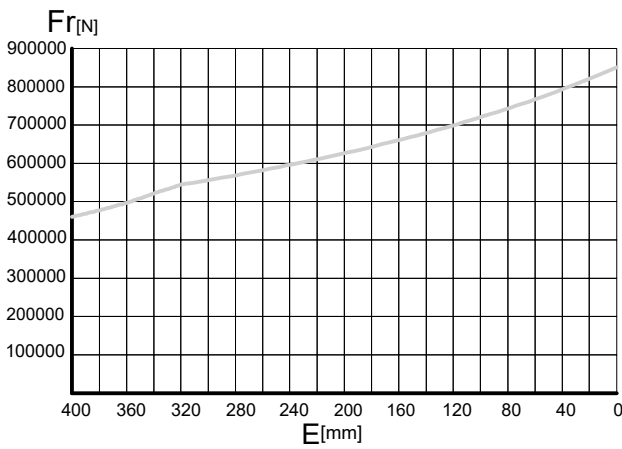
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

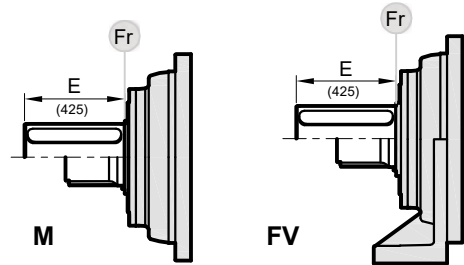
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$			
	10^5	10^4	10^6	10^7
M	Fr	Fr . K		
FV	Fr . 0,75	Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

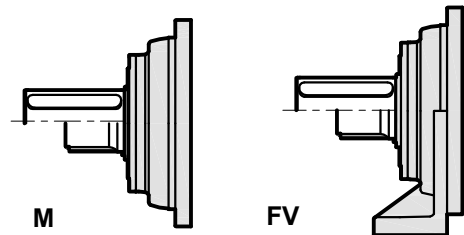
AXIAL LOADS (Fa)

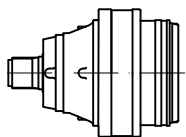
The values of the axial loads in the table refer to the output versions and load directions of application.

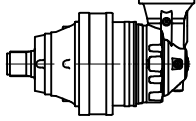
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastichtung.

Fa [N]	M	FV	← →
	110000	80000	

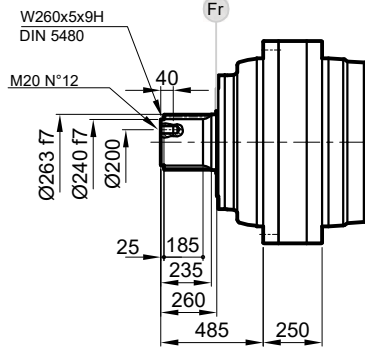
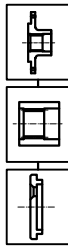


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 137 S1	3.83	434000	390000	340000	330000	200	507000	110
IPR 137 S2	15.50	434000	390000	340000	330000	750	507000	80
	19.62	434000	390000	340000	330000	750	507000	80
IPR 137 S3	62.00	434000	390000	340000	330000	1500	507000	71
	80.60	434000	390000	340000	330000	1500	507000	71
	96.87	434000	390000	340000	330000	1500	507000	71
	122.61	434000	390000	340000	330000	1500	507000	71
IPR 137 S4	227.33	434000	390000	340000	330000	2800	507000	50
	295.53	434000	390000	340000	330000	2800	507000	50
	356.94	434000	390000	340000	330000	2800	507000	50
	403.00	434000	390000	340000	330000	2800	507000	50
	467.48	434000	390000	340000	330000	2800	507000	50
	510.05	434000	390000	340000	330000	2800	507000	50
	591.66	434000	390000	340000	330000	2800	507000	50
	711.13	434000	390000	340000	330000	2800	507000	50
IPR 137 S5	858.81	434000	390000	340000	330000	2800	507000	37
	1037.26	434000	390000	340000	330000	2800	507000	37
	1278.74	434000	390000	340000	330000	2800	507000	37
	1418.61	434000	390000	340000	330000	2800	507000	37
	1601.65	434000	390000	340000	330000	2800	507000	37
	1844.19	434000	390000	340000	330000	2800	507000	37
	2082.15	434000	390000	340000	330000	2800	507000	37
	2157.58	434000	390000	340000	330000	2800	507000	37
	2415.29	434000	390000	340000	330000	2800	507000	37
	2635.28	434000	390000	340000	330000	2800	507000	37
	3257.90	434000	390000	340000	330000	2800	507000	37
	3550.00	434000	390000	340000	330000	2800	507000	37
	4266.80	434000	390000	340000	330000	2800	507000	37
	4444.59	434000	390000	340000	330000	2800	507000	37
	5155.72	434000	390000	340000	330000	2800	507000	37

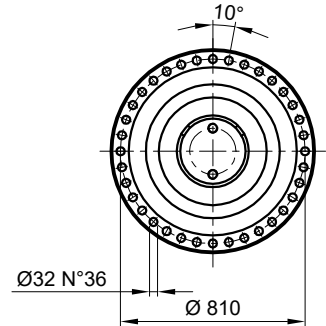
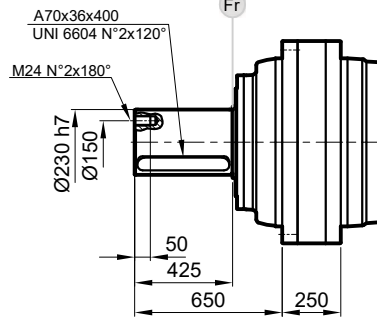


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 137 S4	190.43	434000	390000	340000	330000	2500	507000	45
	247.56	434000	390000	340000	330000	2500	507000	45
	313.32	434000	390000	340000	330000	2500	507000	45
	366.19	434000	390000	340000	330000	2500	507000	45
	476.05	434000	390000	340000	330000	2500	507000	45
	572.18	434000	390000	340000	330000	2500	507000	45
IPRK 137 S5	677.07	434000	390000	340000	330000	2500	507000	45
	816.12	434000	390000	340000	330000	2500	507000	45
	1028.73	434000	390000	340000	330000	2500	507000	45
	1240.00	434000	390000	340000	330000	2500	507000	45
	1386.31	434000	390000	340000	330000	2500	507000	45
	1620.25	434000	390000	340000	330000	2500	507000	45
	1953.00	434000	390000	340000	330000	2500	507000	45
	2106.33	434000	390000	340000	330000	2500	507000	45
	2471.80	434000	390000	340000	330000	2500	507000	45
	2665.89	434000	390000	340000	330000	2500	507000	45
	3204.19	434000	390000	340000	330000	2500	507000	45
	3862.19	434000	390000	340000	330000	2500	507000	45
4958.86	434000	390000	340000	330000	2500	507000	45	

MS

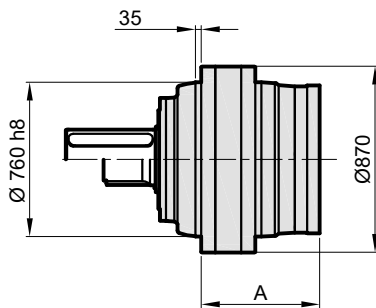


MC

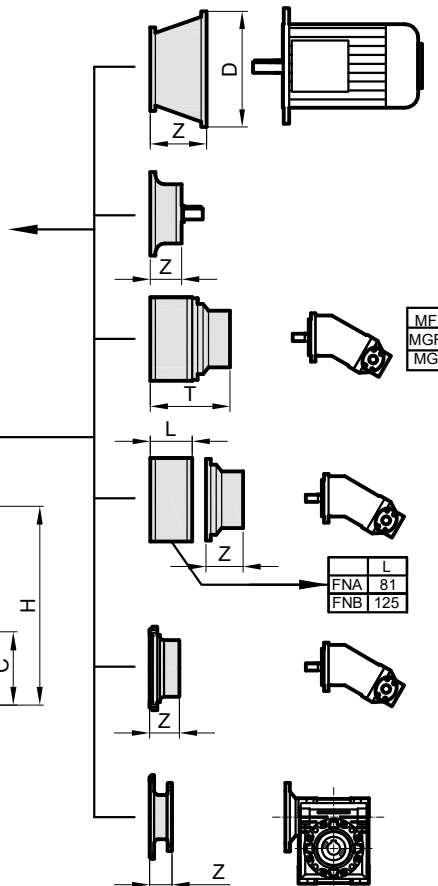
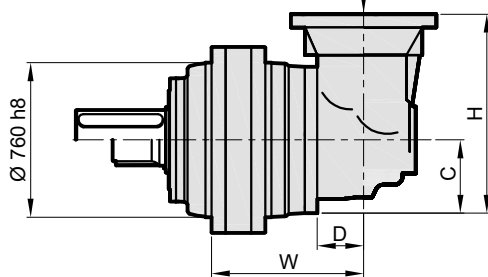


M30 8.8 1370 Nm

IPR..



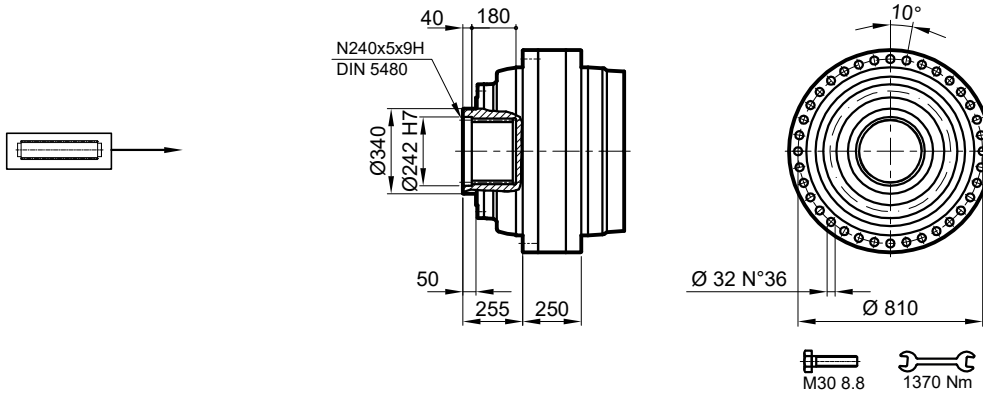
IPRK..



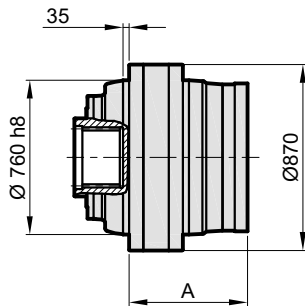
Stage	W	D	C	H	A	IPR M	IPRK M
S1	-	-	-	-	-	1950	-
S2	-	-	-	-	740	2263	-
S3	-	-	-	-	922	2379	-
S4	1002	88	235	550	1016	2406	2501
S5	1104	88	140	380	1075,5	2418	2443

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

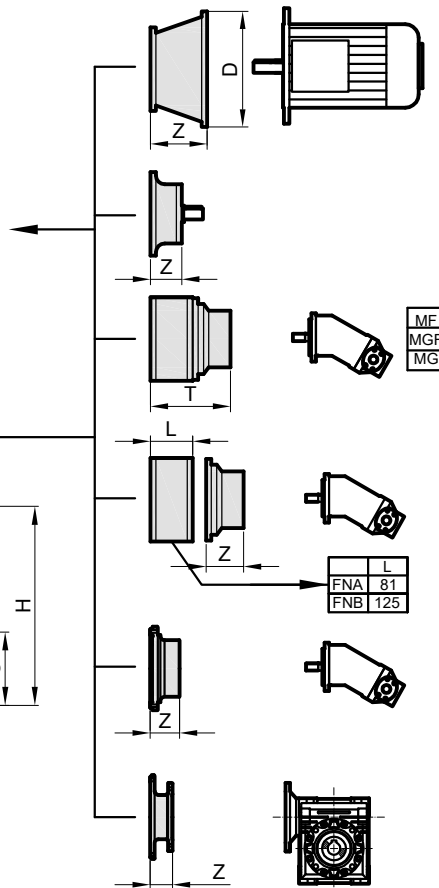
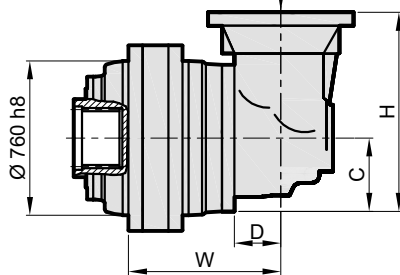
S



IPR..



IPRK..



Stage	W	D	C	H	A	IPR S	IPRK S
S1	-	-	-	-	-	1870	-
S2	-	-	-	-	740	2194	-
S3	-	-	-	-	922	2310	-
S4	1002	88	235	550	1016	2337	2431
S5	1104	88	140	380	1075.5	2349	2374

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

SD

Ø360 f7
Ø295 H7
Ø130 H7

280 90
265 X

320 205
575 250

1/4" GAS

R ≤ 16 µm
Ø130 f6
Ø295 g6

$M_{max} = 689 \text{ kNm}$

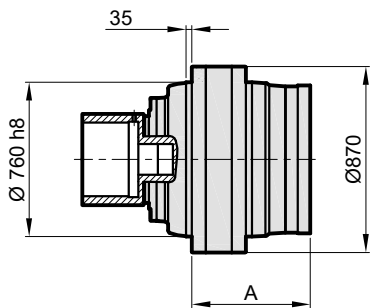
10°

Ø 32 N°36 1500 min.
Ø 810

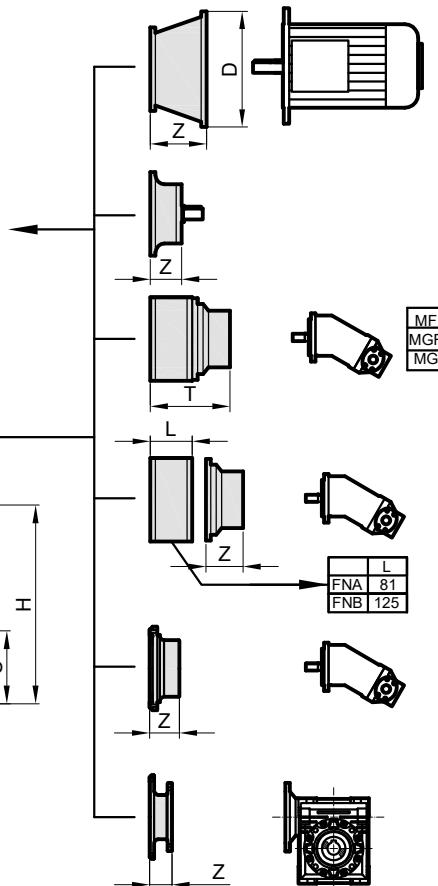
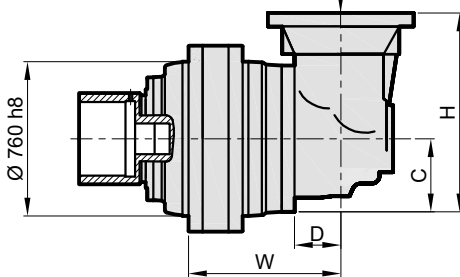
M30 8.8 1370 Nm

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..

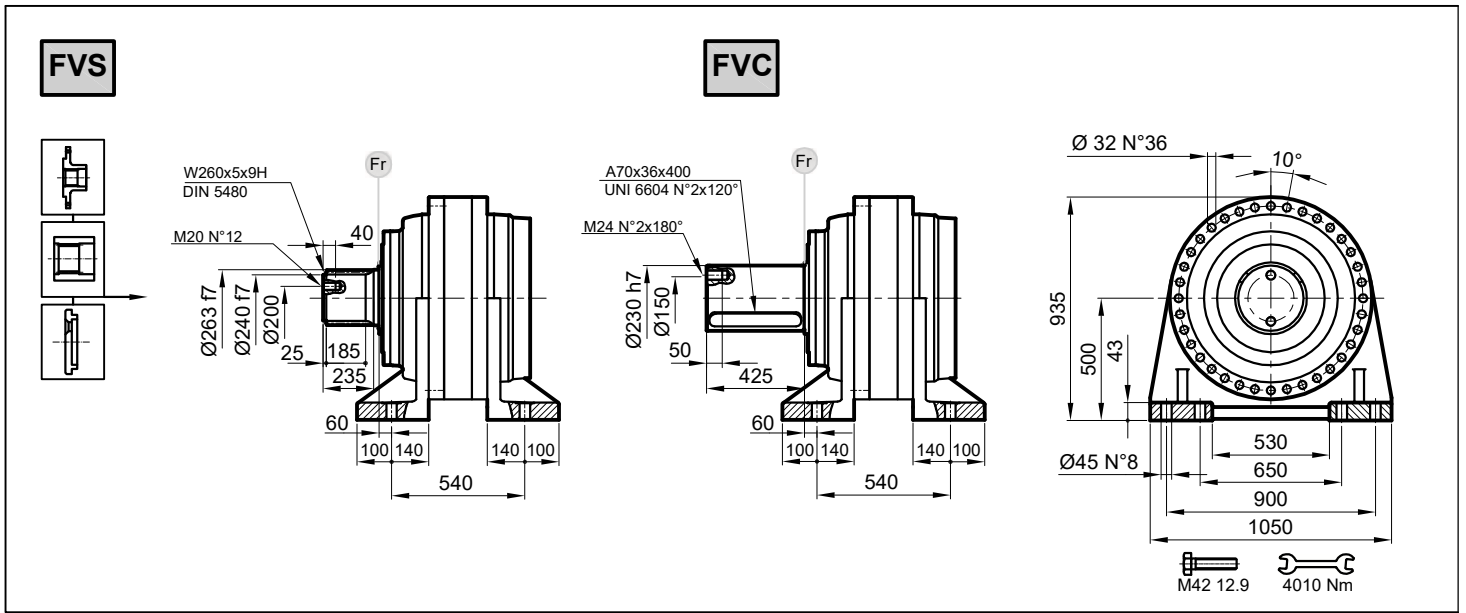


IPRK..

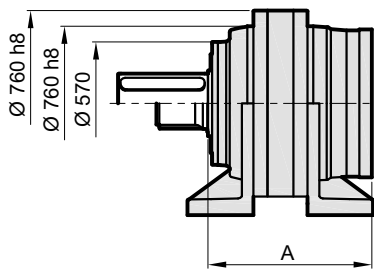


Stage	W	D	C	H	A	IPR		IPRK	
						SD	SD	SD	SD
S1	-	-	-	-	-	1908	-	-	-
S2	-	-	-	-	740	2232	-	-	-
S3	-	-	-	-	922	2348	-	-	-
S4	1002	88	235	550	1016	2375	2469	-	-
S5	1104	88	140	380	1075,5	2387	2412	-	-

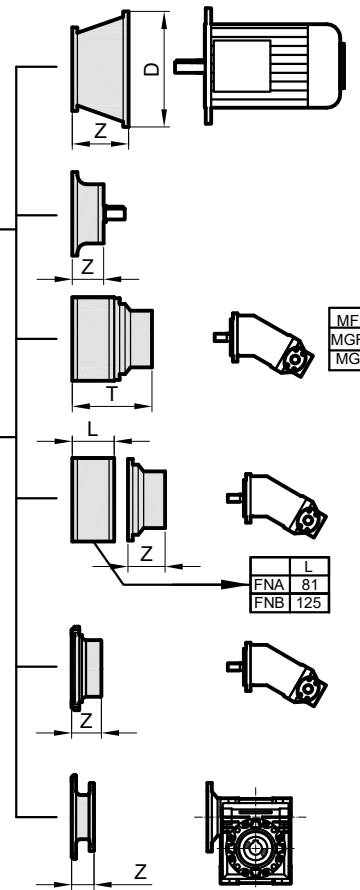
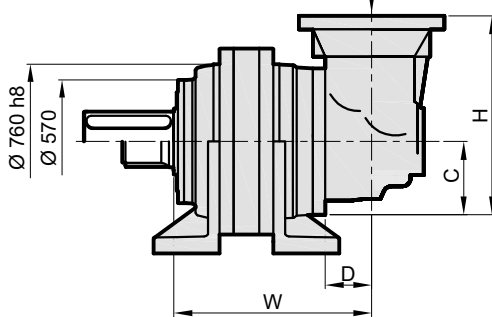
Stage	IEC71		IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280	
	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-



IPR..



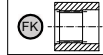
IPRK..



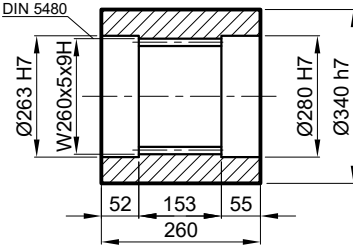
Stage	W	D	C	H	A	IPR EV	IPRK EV
S1	-	-	-	-	-	2035	-
S2	-	-	-	-	965	2348	-
S3	-	-	-	-	1147	2464	-
S4	1227	88	235	550	1241	2491	2586
S5	1329	88	140	380	1300,5	2503	2528

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S3	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

FK Frezeli Kaplin / Spined bushing
Innenverzahnte Buchse

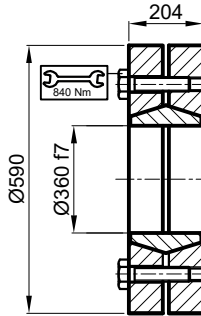


Malzeme / Material Material
UNI C40
SAE 1040
DIN Ck40



Kod / Code / Bestell
1503.135.100

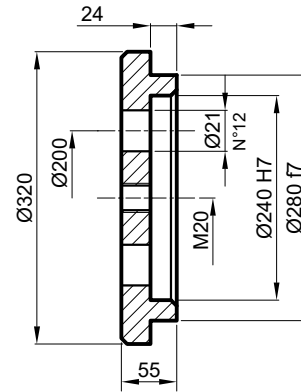
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
689 kNm

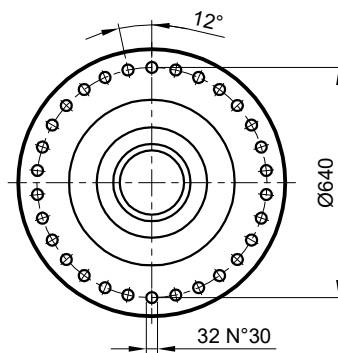
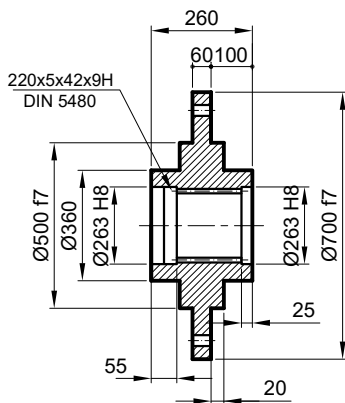
Kod / Code / Bestell
2501.135.001

SP Sabitleme Pulu / Stop bottom plate / Endscheibe



Kod / Code / Bestell
1507.135.250

FL Flanş / Flange / Flansch



Kod / Code / Bestell
1505.135.200

RADYAL YÜK(Fr)

Aşağıdaki diyagramlar radyal yükleri ve k faktörlerini arzu edilen $n_2 \times h$ değerlerinde verir.

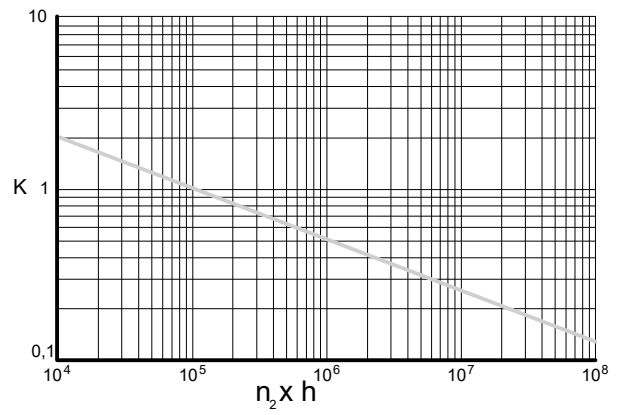
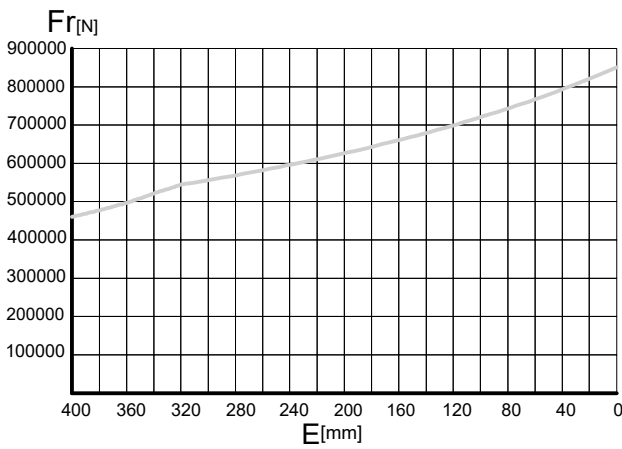
RADIAL LOADS(Fr)

The following curves show the radial loads and the K factors to obtain the required $n_2 \times h$ value.

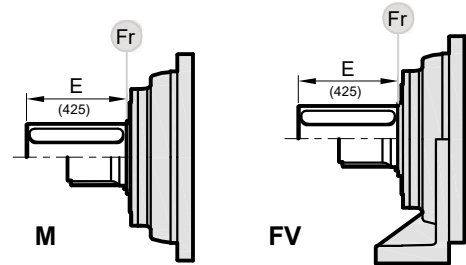
RADIALLAST (Fr)

In den nachstehenden Diagrammen ist die Radiallast und der Koeffizient K dargestellt und kann mit dem gewünschten Wert $n_2 \times h$ verglichen werden.

M-FV



	$n_2 \times h$			
	10^5	10^4	10^6	10^7
M	Fr	Fr . K		
FV	Fr . 0,75	Fr . K . 0,75		



AKSİYEL YÜKLER (Fa)

Tablodaki aksiyel yük değerleri çıkış tipi ve tatbik edilen yük yönünde verilmiştir.

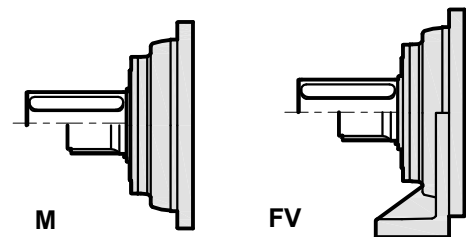
AXIAL LOADS (Fa)

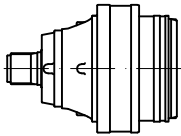
The values of the axial loads in the table refer to the output versions and load directions of application.

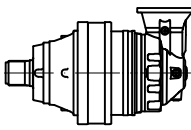
AXIALLAST (Fa)

Die dargestellten Werte der Axiallast basieren auf der Version und der applizierten Lastrichtung.

Fa [N]	M	FV	← →
	110000	80000	

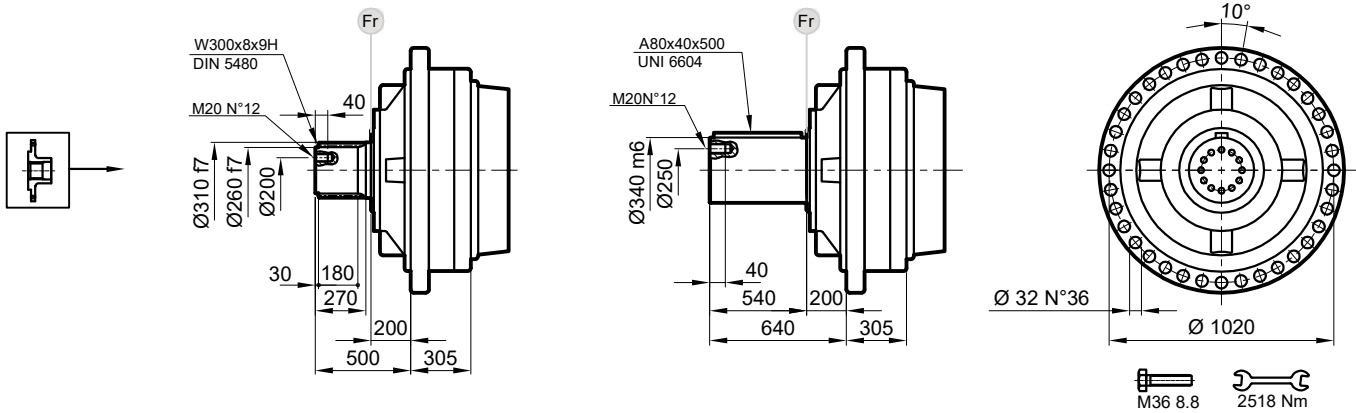


	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPR 139 S1	3.84	635700	572300	498200	450000	100	743990	160
IPR 139 S2	15.03	635700	572300	498200	450000	200	743990	110
	19.00	635700	572300	498200	450000	200	743990	110
IPR 139 S3	59.42	635700	572300	498200	450000	1200	743990	93
	75.00	635700	572300	498200	450000	1200	743990	93
	90.15	635700	572300	498200	450000	1200	743990	93
	96.06	635700	572300	498200	450000	1200	743990	93
	113.85	635700	572300	498200	450000	1200	743990	93
IPR 139 S4	211.27	635700	572300	498200	450000	2000	743990	70
	254.66	635700	572300	498200	450000	2000	743990	70
	266.79	635700	572300	498200	450000	2000	743990	70
	332.76	635700	572300	498200	450000	2000	743990	70
	362.67	635700	572300	498200	450000	2000	743990	70
	420.19	635700	572300	498200	450000	2000	743990	70
	506.48	635700	572300	498200	450000	2000	743990	70
	648.38	635700	572300	498200	450000	2000	743990	70
IPR 139 S5	798.14	635700	572300	498200	450000	2800	743990	49
	871.50	635700	572300	498200	450000	2800	743990	49
	1050.47	635700	572300	498200	450000	2800	743990	49
	1100.50	635700	572300	498200	450000	2800	743990	49
	1214.84	635700	572300	498200	450000	2800	743990	49
	1483.87	635700	572300	498200	450000	2800	743990	49
	1600.73	635700	572300	498200	450000	2800	743990	49
	1846.29	635700	572300	498200	450000	2800	743990	49
	2082.20	635700	572300	498200	450000	2800	743990	49
	2176.00	635700	572300	498200	450000	2800	743990	49
	2398.76	635700	572300	498200	450000	2800	743990	49
	2629.33	635700	572300	498200	450000	2800	743990	49
	3046.40	635700	572300	498200	450000	2800	743990	49
	3227.51	635700	572300	498200	450000	2800	743990	49
	3722.61	635700	572300	498200	450000	2800	743990	49
3890.31	635700	572300	498200	450000	2800	743990	49	
4700.79	635700	572300	498200	450000	2800	743990	49	
5571.30	635700	572300	498200	450000	2800	743990	49	

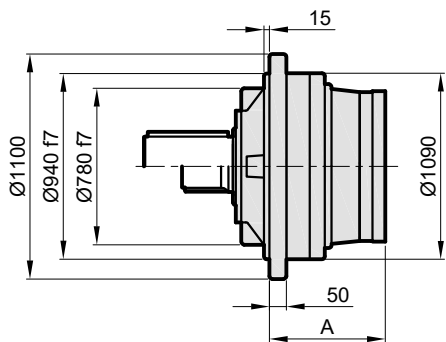
	i	T ₂ [Nm]				n _{1max} [min ⁻¹]	T _{2max} [Nm]	P _t [kW]
		n _{2xh}						
		10 000	20 000	50 000	100 000			
IPRK 139 S4	276.91	635700	572300	498200	450000	2500	743990	57
	295.03	635700	572300	498200	450000	2500	743990	57
	349.67	635700	572300	498200	450000	2500	743990	57
	448.27	635700	572300	498200	450000	2500	743990	57
	531.28	635700	572300	498200	450000	2500	743990	57
IPRK 139 S5	648.91	635700	572300	498200	450000	2500	743990	50
	782.17	635700	572300	498200	450000	2500	743990	50
	830.72	635700	572300	498200	450000	2500	743990	50
	985.94	635700	572300	498200	450000	2500	743990	50
	1113.90	635700	572300	498200	450000	2500	743990	50
	1245.00	635700	572300	498200	450000	2500	743990	50
	1426.00	635700	572300	498200	450000	2500	743990	50
	1593.83	635700	572300	498200	450000	2500	743990	50
	1869.12	635700	572300	498200	450000	2500	743990	50
	1960.90	635700	572300	498200	450000	2500	743990	50
	2396.17	635700	572300	498200	450000	2500	743990	50
	2839.90	635700	572300	498200	450000	2500	743990	50
	3025.79	635700	572300	498200	450000	2500	743990	50
3586.13	635700	572300	498200	450000	2500	743990	50	

FS

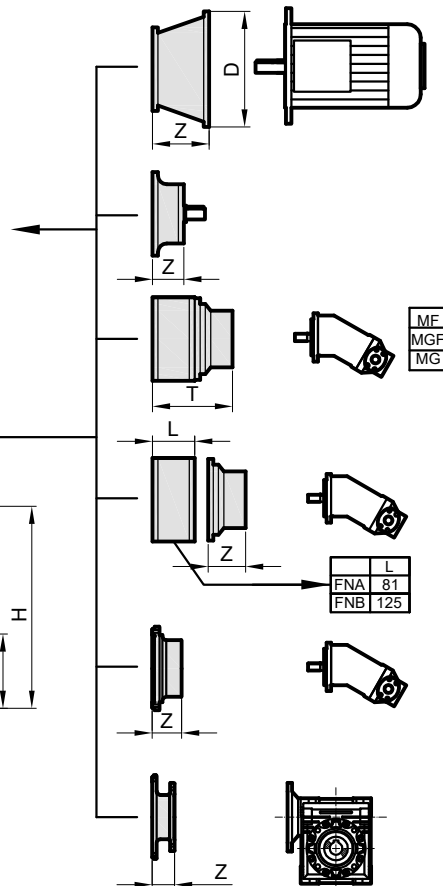
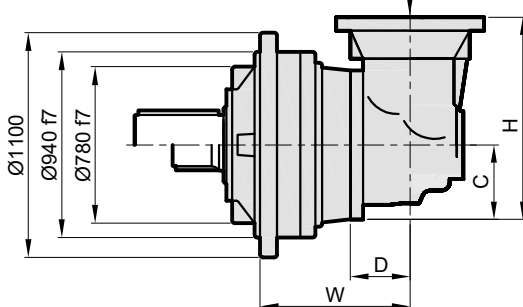
FC



IPR..



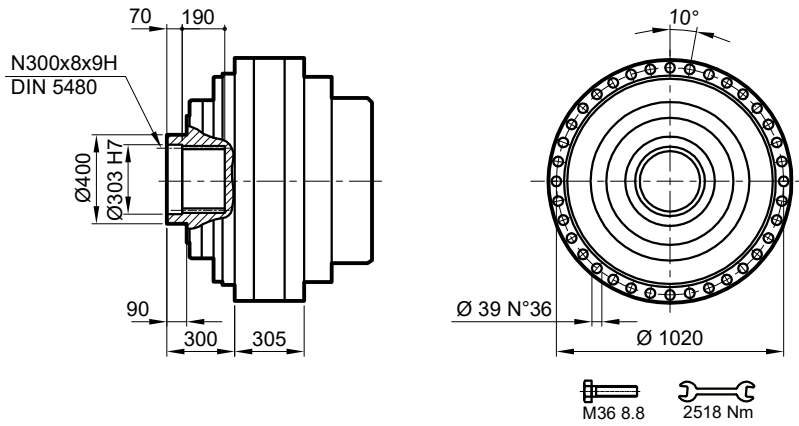
IPRK..



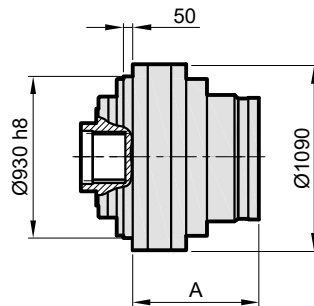
Stage	W	D	C	H	A	IPR		IPRK	
						F	U	F	U
S3	-	-	-	-	904	4053	4135		
S4	1174	88	235	550	1053	4069	4175		

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

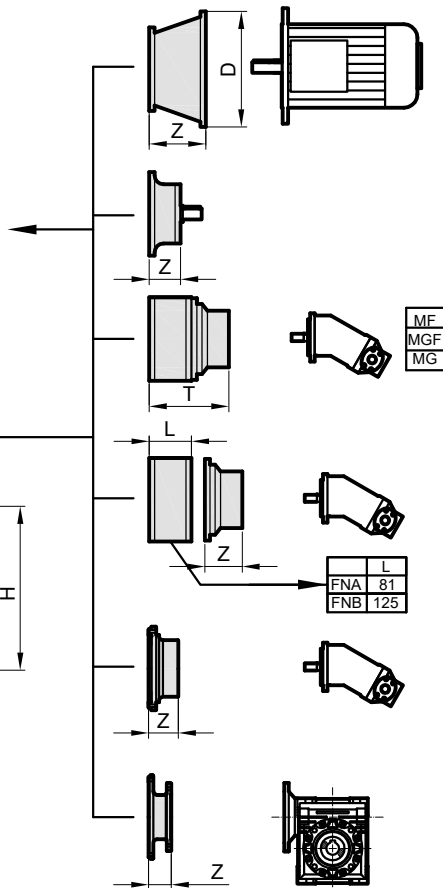
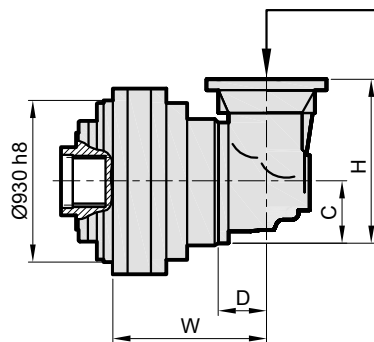
S



IPR..



IPRK..



Stage	W	D	C	H	A	IPR S ⬆	IPRK S ⬆
S1	-	-	-	-	-	2850	-
S2	-	-	-	-	903,5	3650	-
S3	-	-	-	-	1124,5	3844	-
S4	1305,5	88	235	550	1231,5	3903	3985
S5	1366,5	88	235	550	1303	3919	4025

	IEC71	IEC80-90		IEC100		IEC132		EC160-180		IEC200		IEC225		EC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

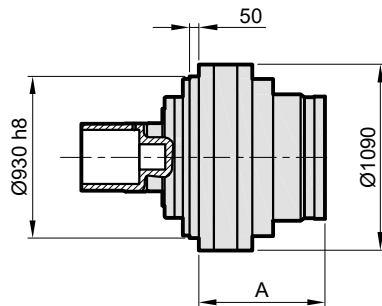
SD

$M_{max} = 814.5 \text{ kNm}$

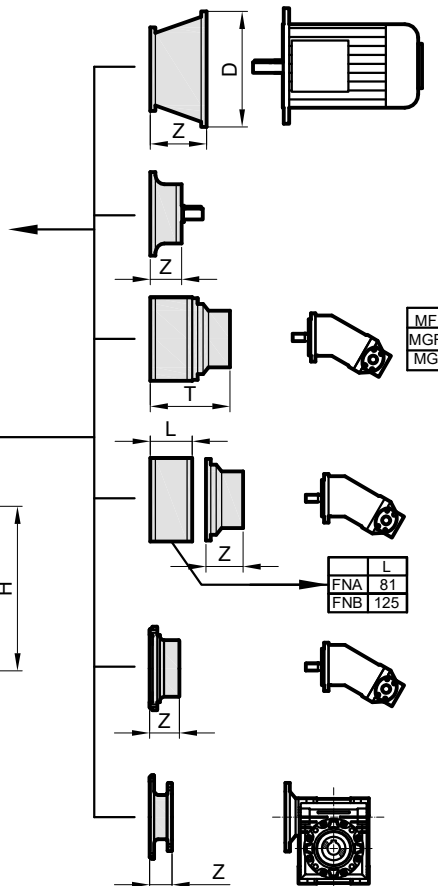
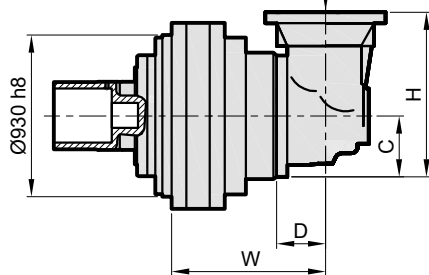
M36 8.8 2518 Nm

Belirtilen maksimum tork sadece I-MAK tarafından verilen sıkma bileziği ile mümkündür.
 The maximum torque indicated is valid only with shrink discs supplied by I-MAK.
 Das dargestellte , maximale Drehmoment gilt nur mit von I-MAK.

IPR..



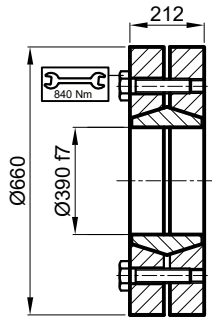
IPRK..



Stage	W	D	C	H	A	IPR SD	IPRK SD
S1	-	-	-	-	-	2907	-
S2	-	-	-	-	903,5	3707	-
S3	-	-	-	-	1124,5	3901	-
S4	1305,5	88	235	550	1231,5	3960	4042
S5	1366,5	88	235	550	1303	3976	4082

	IEC71	IEC80-90		IEC100		IEC132		IEC160-180		IEC200		IEC225		IEC250-280		
Stage	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z	D	Z
S4	-	-	-	-	-	-	-	-	-	-	400	148	450	148	550	183
S5	-	-	-	-	-	-	300	104	350	120	400	148	450	148	-	-

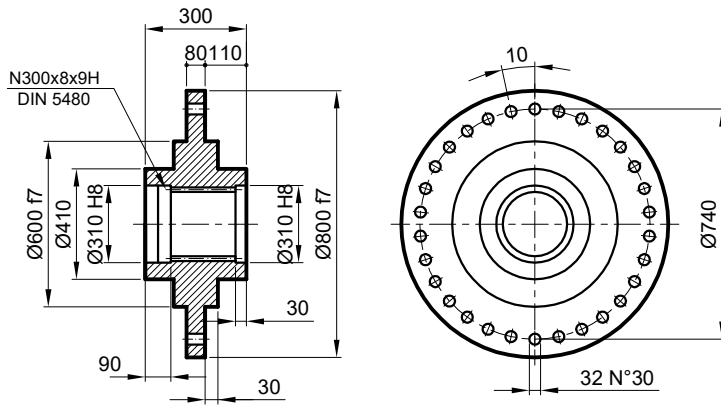
SB Sıkma Bileziği / Shrink disc
Schrumpfscheibe



Maksimum tork
Max. torque
Max. Drehmoment
814,5 kNm

Kod / Code / Bestell
2501.139.001

FL Flanş / Flange / Flansch



Kod / Code / Bestell
1505.139.200

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