50 yıl

i.Mak®

REDÜKTÖR & VARYATÖR A.Ş.

Ağır Hizmet Tipi Redüktörler

Horizontal Helical Gear Unit

Motoréducteurs hélicoïdaux à usage industriel

DS00



SERIES 4DS

2024

TR | EN | FR

Gearboxes and Drives / Moto Réducteurs

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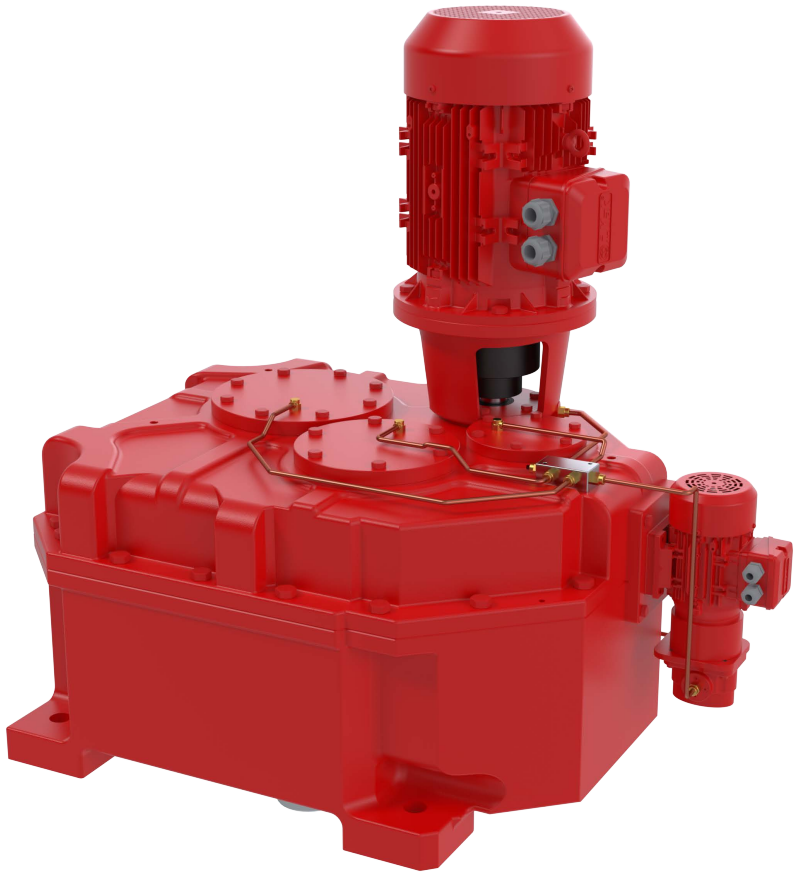
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General Information
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4DS

SERİSİ / SERIES / SÉRIES



- 3 Farklı gövde büyüklüğü
- 875 – 18547 Nm moment aralığı
- 8 – 145 Tahvil aralığı

- 3 Size of housing
- Torque range from 875 to 18547 Nm
- Ratio range from 8 to 145

- *3 tailles de carter*
- *Couple allant de 875 à 18547 Nm*
- *Rapport de réduction compris entre 8 et 145*

	Redüktör Opsiyonları	Gearboxes options	*Options des motoréducteurs*
Kod / Code	**Opsiyon**	**Options**	**Options**
OTS	Yağ sıcaklık sensörü	Oil temperature sensor	Capteurs de température

	Motor Opsiyonları	Motor options	*Options des Moteurs*
Kod / Code	**Opsiyon**	**Options**	**Options**
BR	Fren	Brake	Frein
BRH	Manuel kollu fren	Brake with hand release	Frein avec ouverture manuel
BD	Çift Fren	Double brake	Double frein
BDH	Manuel kollu çift fren	Double brake with hand release	Double frein avec ouverture manuel
E	Encoder	Encoder	Encoder
BS	Mekanik kilit	Backstop	Roulement anti-retour
EMK	Elektromanyetik kavrama	Electromagnetic clutches	Disque electromagnetique
CF	Harici fan	External fan	Ventilation externe
FG	Kanopi	Canopy	Canopé
U	Fansız motor (güdük)	Without fan	Sans ventilation
M	Monofaze motor	Mono phase motor	Moteur monophasé
DS	Çift çıkış (kuyruk) milli motor	Double shaft motor	Doble Ejes

	Çıkış Mili	Output shaft	*Arbre de sortie*
Kod / Code	**Varyasyon**	**Options**	**Options**
111	Özel mil ölçüsü	Special shaft dimensions	Dimensions de l'arbre spéciale
112	Özel mil malzemesi	Special shaft materials	Matériel de l'arbre spéciale
113	Sertleştirilmiş mil	Hardened shaft	Axe durci
114	Diş çekilmiş mil	Screw	Axe à vis
115	Çoklu kama uygulaması	Shaft with multiple key	Arbre à multi clavette

	Yağ	Oil	*Huiles*
Kod / Code	**Varyasyon**	**Options**	**Options**
211	Sentetik yağ VG 220 (SHC 630)	Synthetic oil VG 220 (SHC 630)	Huile synthétique VG 220 (SHC 630)
212	Gıda uyumlu yağ VG 220 (CIBUS 220)	Food compatible oil VG 220 (CIBUS 220)	Huile pour industrie agroalimentaire VG 220 (CIBUS 220)
213	-40C° Uyumlu yağ VG 220 (SHC 630)	Cold resistant oil -40C° VG 220 (SHC 630)	Huile base température -40C° VG220 (SHC 630)

	Yağlama	Lubrication	*Lubrification*
Kod / Code	**Varyasyon**	**Options**	**Options**
216	Pompalı Cebri Yağlama	Auxilary Lubrication	Lubrification auxiliaire
217	Genleşme Tankı	Expansion Tank	Réservoir d'huile
218	Nilos Ring uygulaması	Nilos – Ring Application	Joint Nilos

	Keçe - Tapa	Seal - Cover	*Joint - Bouchon*
Kod / Code	**Varyasyon**	**Options**	**Options**
221	Özel ölçü keçe	Dimensions of special seal	Dimensions du joint spéciale
222	Özel ölçü tapa	Dimensions of special cover	Dimensions du bouchon spéciale
223	Özel marka keçe	Special brand of seal	Marque du joint spéciale
224	Özel marka tapa	Special brand of cover	Marque du bouchon spéciale
225	Viton keçe	Viton seal	Joint en viton
226	Özel tip keçe uygulaması	Special configuration of seal	Configuration spéciale du joint

	Redüktör Rulmanı	Gearboxes Bearing	*Roulement des motoréducteurs*
Kod / Code	**Varyasyon**	**Options**	**Options**
233	Özel marka rulman	Special brand of bearing	Marque du roulement spéciale

	Gövde	Housing	*Carter*
Kod / Code	**Varyasyon**	**Options**	**Options**
241	Özel işlenmiş gövde	Special housing	Carter spéciale
242	Özel malzeme	Special housing materials	Carter avec matériaux spéciaux

	Soğutma	Cooling	*Refroidissement*
Kod / Code	**Varyasyon**	**Options**	**Options**
244	Fanlı soğutma	Fan Cooling	Refroidissement par ventilation
245	Radyatörlü soğutma	Radiator Cooling	Radiateur de refroidissement
247	Plakalı eşanjörlü soğutma	Plate Heat Exchanger Cooling	Refroidissement par plaque
248	Borulu eşanjörlü soğutma	Tubed Heat Exchanger Cooling	Refroidissement tubulaire
249	Lehimli eşanjörlü soğutma	Brazed Heat Exchanger Cooling	Refroidissement par échangeur brasé

	Boya	Paint	*Peinture*
Kod / Code	**Varyasyon**	**Options**	**Options**
251	Özel renk boya	Special paint color	Couleur spéciale
252	Özel tip boya	Special paint type	Type de peinture spéciale
253	Epoksi boya	Epoxy paint	Peinture epoxy
254	Akrilik boya (dış ortam)	Acrilic paint	Peinture acrylique (Environement extérieur)
255	Su bazlı boya	Water based paint	Peinture à base d'eau
256	Antikorozif boya	Anti-corrosion paint	Peinture anti-corrosion

	Dişli	Gears	*Pignons*
Kod / Code	**Varyasyon**	**Options**	**Options**
261*	Özel imalat dişli	Special gear	Pignons spéciaux
262	Katalog dışı tahvil	Gear ratio (Catalogue)	Rapport de réduction des pignons (Catalogue)

*** 261 kodu, 262 kodunu kapsamaktadır.** / 261 and 262 codes are equivalent. / *Les codes 261 et 262 sont équivalents.*

	Voltaj - Frekans	Voltage and frequency	*Voltage et frequence*
Kod / Code	**Varyasyon**	**Options**	**Options**
311	Özel voltaj motor	Special Voltage	Voltage spéciale
312	Özel frekans motor	Special frequency	Fréquence spéciale

*** 400 V 50 Hz dışı tüm sarımlar standart dışı kabul edilir.** / 400 V 50 Hz are considered as standard / *400 V 50 Hz sont les normes standards*

	Koruma Sınıfı	IP Classification	*Classification IP*
Kod / Code	**Varyasyon**	**Options**	**Options**
321	IP 54	IP 54	IP 54
322	IP 56	IP 56	IP 56
323	IP 65	IP 65	IP 65
324	IP 66	IP 66	IP 66

*** IP 55 Standart kabul edilir.** / IP 55 is our standard / *IP 55 étant la classe standard*

	İzolasyon Sınıfı	Isolation class	*Classe d'isolations*
Kod / Code	**Varyasyon**	**Options**	**Options**
331	B sınıfı	B - class	Classe - B
332	H sınıfı	H - class	Classe - H

*** F izolasyon sınıfı standart kabul edilir.** / F class is accepted as a standard / *La classe F étant la norme d'isolation standard*

	Rulman	Bearing	*Roulement*
Kod / Code	**Varyasyon**	**Options**	**Options**
341	Sıcak ortam rulmanı*	Bearing for hot environment	Roulement pour environement a températures élévées
342	Soğuk ortam rulmanı*	Bearing for cold environment	Roulement pour environement a températures négatives
343	İzole rulman	Isolated bearing	Roulement isolé
344	Gresörlük	Bearing with greasing nipples	Roulement avec graisseurs
345	Mekanik kilit CW	Backstop bearing (CW)	Roulement anti-retour (CW)
346	Mekanik kilit CCW	Backstop bearing (CCW)	Roulement anti-retou (CCW)

*** 0 C° ile 40 C° aralığı dışındaki ortam sıcaklıkları için bilgi alınız.**/ Adapted for outside environment with temperature in between 0 C° and 40 C° /*Adapté aux environnements exterieurs avec une température comprises entre 0° C et 40° C*

	Motor Markası	Brand motor	*Marque de moteur*
Kod / Code	**Varyasyon**	**Options**	**Options**
351	Gamak Motor	Gamak Motor	Gamak Motor
353	İ.Mak/A Motor*	İ.Mak/A Motor*	İ.Mak/A Motor*
354	İ.Mak/W Motor	İ.Mak/W Motor	İ.Mak/W Motor
356	Diğer**	Others**	Autres**

*** İ.Mak/A marka motor standart kabul edilir.** / İ.Mak brand motor standard category / *Catégorie standard de moteur de marque İ.Mak*

**** Diğer motor seçenegi, sadece pam flanşlı baglantı olarak verilebilmektedir** / Other motors options are only available with IEC Connection flange / *Les moteurs non listés sont disponibles seulement en configuration bride IEC*

	Verim Sınıfı	Efficiency classifications	*Classes d'efficience énergétique*
Kod / Code	**Varyasyon**	**Options**	**Options**
363	IE4	IE4	IE4

*** IE3 verim sınıfı standart kabul edilir.** / IE3 is the standard category / *IE3 étant la norme standard*

	Kuyruk Milli Motor	Double shaft motor	*Ejes con Doble Extensión*
Kod / Code	**Varyasyon**	**Options**	**Options**
367	Özel mil ölçüsü	Dimensions of the shaft	Dimensions de l'arbre spéciale
368	Standart dışı mil*	Special output shaft*	Arbre de sortie spéciale*

*** İstenilen değişiklik ürünün standart mili üzerinde yapılamayıp yeni bir mil tasarlanması durumudur. /**The requested change cannot be made on the standard

	Fren markası	Brake's brand	*Marque du frein*
Kod / Code	**Varyasyon**	**Options**	**Options**
412	EMF fren	EMF brake	Frein - EMF
413	Fatih fren	Fatih brake	Frein - Fatih
414	Diğer	Others	Autres

	Fren Tipi	Type of brake	*Type de frein*
Kod / Code	**Varyasyon**	**Options**	**Options**
421	220 V soğutmalı	220 V cooler	220 V - avec refroidissement
422	24 V soğutmalı	24 V cooler	24 V - avec refroidissement
423	220 V soğutmasız*	220 V without cooler	220 V - sans refroissement
424	24 V soğutmasız*	24 V without cooler	24 V - sans refroissement
425	Çift balatalı fren	Double disk brake	Frein avec double disque
426	Özel tip fren	Special brake type	Type de frein spéciale
427	Özel voltaj fren	Special voltage for brake	Frein avec voltage spéciale

*** Soğutmasız frenlerde motor fan muhafazası bulunmamaktadır /** The brake wihout cooling are installed without fan or cover. / *Les freins sans refroissiment ne sont*

	Enkoder	Encoder	*Codeur*
Kod / Code	**Varyasyon**	**Options**	**Options**
431	HPL 100 Pulse rotary enkoder	HPL 100 Pulse rotary encoder	HPL 100 Codeur d'impulsions rotatif
432	HPL 360 Pulse rotary enkoder	HPL 360 Pulse rotary encoder	HPL 360 Codeur d'impulsions rotatif
433	HPL 500 Pulse rotary enkoder	HPL 500 Pulse rotary encoder	HPL 500 Codeur d'impulsions rotatif
434	HPL 1024 Pulse rotary enkoder	HPL 1024 Pulse rotary encoder	HPL 1024 Codeur d'impulsions rotatif
435	HPL 2048 Pulse rotary enkoder	HPL 2048 Pulse rotary encoder	HPL 2048 Codeur d'impulsions rotatif
436	HTL 1024 Pulse rotary enkoder	HTL 1024 Pulse rotary encoder	HTL 1024 Codeur d'impulsions rotatif
437	HTL 2048 Pulse rotary enkoder	HTL 2048 Pulse rotary encoder	HTL 2048 Codeur d'impulsions rotatif
438	TTL 1024 Pulse rotary enkoder	TTL 1024 Pulse rotary encoder	HTL 1024 Codeur d'impulsions rotatif
439	TTL 2048 Pulse rotary enkoder	TTL 2048 Pulse rotary encoder	TTL 2048 Codeur d'impulsions rotatif
440	Diğer	Others	Autres

*** Diğer encoder çeşitleri için fabrikaya danışınız. /** For different type of encoder contact our sales team. / *Pour des de codeurs différents contactez notre équipe*

	Termistör - Isıtıcı	Thermistor and heater	*Thermistatet chauffage*
Kod / Code	**Varyasyon**	**Options**	**Options**
441	PTC X 1 termistör	PTC X 1 thermistor	PTC X 1 Thermistat
442	Bimetal termostat	Bimetallic switch	Interupteur bilame
443	Basınç sensörü	Pressure sensor	Senseur pression
444	110 V sargı ısıtıcı	110 V coil heat	Bobine chauffante 110 V
445	220 V sargı ısıtıcı	220 V colt hear	Bobine chauffante 220 V
446	PT 100	PT 100	PT 100

	Harici Fan	External fan	*Ventilateur externe*
Kod / Code	**Varyasyon**	**Options**	**Options**
451	24 VDC (EBM)	24 VDC (EBM)	24 VDC (EBM)
452	230 VAC (EBM)	230 VAC (EBM)	230 VAC (EBM)
453	380 VAC (EBM)	380 VAC (EBM)	380 VAC (EBM)
454	230 VAC	230 VAC	230 VAC
455	380 VAC	380 VAC	380 VAC

	Özel Motorlar	Special motor	*Moteur spécial*
Kod / Code	**Varyasyon**	**Options**	**Options**
461	Servo motor*	Servo motor	Servo moteur
462	DC motor*	DC motor	Moteur DC
463	Vektör motor	Vector motor	Moteur vecteur
464	Tork motoru	Tork motor	Moteur à couple élevé
465	Hidro motor*	Hydraulic motor	Moteur hydraulique
466	Pnömatik motor*	Compressed air motor	Moteur a air comprimé
467	Ex-proof motor	Explosition proof motor	Moteur anti-explosion
468	Senkron relüktans motor	Synchronous reluctance motors	Moteur à reluctance synchrone
469	Senkron motor*	Synchronous motors	Moteurs synchrones
470	Müşteri motoru	Customer's motor	Moteur en provenance du client

*** Motorlar firmamız tarafından tedarik edilmemektedir** / Our factory is not providing such motors / *Moteur non fournis par notre usine*
Özel motor kodları motorların farbrikamız tarafından takıldığı durumlarda uygulanır/ Motors installed in our factory / *Moteur installés dans notre usine*

Servis Faktörü (S_f)
Servis Faktörü = İşletme Katsayısı = (S_f)

Redüktörlerdeki bu değer, tahrik edeceği makinenin bütün teknik ve karakteristik özelliklerine dayanma süresine bağlıdır. Genel olarak makineler yüklenme bakımından üç tip karakteristik gösterirler.

1. HAFİF YÜK (U)
2. ORTA YÜK (M)
3. AĞIR YÜK (H)

Üç değişik yükleme biçiminde çalışan, üç ayrı makinede üretilen momentler birbirine eşitte olsalar, ağır çalışan makinede daha büyük işletme katsayılı Redüktör kullanılmaktadır.

Günlük çalışma saati ise, çalışan dişli ve transmisyon elemanlarının malzeme yorulmasına maruz kalması bakımından, çalışma saatinin fazla olması halinde zararlı yönde etki eder.

Star-Stop durumuna gelince, her makinenin ilk kalkış esnasında en yüksek yüke maruz kaldığı düşünülürse tehlikeli görülür. Müteakip çalışmalarda bu daha aşağıya düşer.

Kataloğumuzda işletme katsayılarının nasıl kullanıldığının anlaşılması için bir misal ile belirtelim.

Önce tablo-1'den makinenin çalışma sahasına göre karakteristiğini belirleyelim. Makinemiz elektrik motor tahrikli ZİNCİR KOVALI EKSKAVATÖR ise yükleme durumu AĞIR' dır. (H) Tablo 2'den makine 24 saat çalışacağına göre minimum işletme katsayısı S_f = 2 bulunur.

Service Factor (S_f)

Value of the service factor of a gearbox depends on all technical and characteristic specifications of a driven machine. Generally machines have three types of loading characteristics:

1. UNIFORM LOAD (U)
2. MODERATE LOAD (M)
3. HEAVY LOAD (H)

Even if the torques required by three different machines operating at three different load specifications are equal.

Gearbox of the machine operating under heavy load conditions should have greater service factor.

Daily working period has effect on gearbox elements due to the materials fatigue of working parts.

It must be taken into account that all machines are subject to the greatest load at the first start, so that the number of starts has also effect on service factor.

This is an example how to use the service factor given in the cataloque.

Load specification of machine should be determined first, from table 1 in our example, the machine is CHAIN BUCKET EXCAVATOR driven by electric motor has HEAVY load specification and daily operation time is 24 hours. So that minimum service factor S_f = 2 is taken from Table 2.

Service facteur (S_f)

La valeur du service facteur d'un motoréducteur dépend des charactéristique de l'application. Ont distingue trois type de charges différentes

1. Charges uniformes (U)
2. Charges modérées (M)
3. Charges élévées (H)

Les spécifications des charges restent les même lorsque trois machines différentes sont soumises à des charges distinctes.

Les réducteurs utilisés dans des applications soumises à de fortes charges doivent obligatoirement avoir des services facteurs élevés.

Le nombre d'heures d'utilisations journalières a une influence directe sur l'usure des pièces et composants du réducteur.

Le réducteur est soumis à une charge maximale lors du démarrage de l'application. Le nombre d'arrét/rédemarrage est donc à prendre en compte lors de l'analyse du service facteur.

L'example çi-dessous explique le processus d'analyse et de calcul du service facteur.

L'application étudiée est un excavateur a godets (Tableau 1) , le réducteur est actionné par un moteur éléctrique. La charge est "élévée" et la durée de fonctionnement journaliére est de 24h. En se basant sur le tableau 2, le service facteur minimum requis est S_f = 2

Ekskavatörler		Excavators		Excavateur	
Zincir kovalı ekskavatörler	H	Chain-Bucket excavators	H	Excavateurs à gaudets	H
Paletli yürüyüşler	H	Travelling gears (Caterpiller)	H	Convoyeur à étage	H
Ray üzerinde yürüyüşler	M	Travelling gears (Rails)	M	Convoyeur à rails	M
Manevra mekanizmaları	U	Manoevring winches	U	Grues à manœuvre	U
Emiş pompaları	M	Pumps	M	Pompes	M
Kovalı çarklar	H	Bucket wheels	H	Roue à gaudets	H
Dönüş mekanizmalar	M	Slewing gears	M	Pignons rotatif	M

İnşaat Makinaları		Building Machines		Machine de Construction	
İnşaat asansörleri	U	Hoists	U	Grues de construction	U
Betoniyerler	M	Concrete mixers	M	Malaxeur à béton	M
Yol inşaat makinaları	M	Road contruction machines	M	Machine de construction(routes)	M

Kaldırma ve İletme Tesisleri		Conveyor		Convoyeurs	
Zincirli konveyör	M	Through chain conveyors	M	Convoyeurs à chaines	M
Mafsal bantlı konveyörler	M	Link conveyors	M	Convoyeur à bande souple	M
Lastik bantlı konveyörler (Dökme Yükler)	U	Belt conveyors (Bulk Goods)	U	Convoyeur à bande rigide	U
Lastik bantlı elevatörler	M	Ballast elevators	M	Elevateurs à bande	M
Lastik cepli elevatörler	M	Ballast pocket elevators	M	Elevateur à poche	M
Lastik bantlı konveyörler (Parça Yükler)	M	Belt conveyors (Piece Goods)	M	Convoyeur à bande	M
Askılı konveyörler	U	Chain conveyors	U	Convoyeur à chaines	U
Yük asansörleri	M	Goods lifts	M	Elévateur à chaines	M
Kovalı elevatörler (Toz Malzeme)	U	Bucket elevators (Flour Goods)	U	Elévateur à godets (graviers)	U
Helezon konveyör	M	Screw conveyors	M	Vis d'Archimède	M
Kovalı elevatörler (Parçalı Malzeme)	M	Bucket elevators (Piece Goods)	M	Elévateurs à godets (Roches	M
Eğik asansörler	H	Inclined hoists	H	Grues inclinées	H
Çelik bantlı konveyörler	M	Steel belt conveyors	M	Convoyeur à bande (Acier)	M
Paletli konveyörler	M	Apron conveyors	M	Convoyeurs à palettes	M

Tahrik Makinası Torque Machine *Machines couplées*	**Günlük Çalışma Müddeti (Saat)** Daily Working Period (Hour) *Utilisation journalière (Heure)*	**Makinanın Yükleme Karakteristiği** Load Characteristics of Machines *Caractéristique des charges*		
		Hafif Yük U Uniform Load U *Charge uniforme U*	**Orta Yük M** Moderate Load M *Charge modérée M*	**Ağır Yük H** Heavy Load H *Charge élevée H*
Elekt. Motorlu / Elect. Motor / *Moteurs éléct.* **Türbin** / Turbin / *Turbine* **Hidrolik** / Hydraulic / *Hydraulique*	0…..3	0.8	1	1.5
	3….10	1	1.25	1.75
	10…24	1.25	1.5	2
Pistonlu Makinalar (4….6 Silindir Piston Machines (4….6 Cylinder) *Machine à pistons (4…..6 Cylindres)*	0…..3	1	1.25	2
	3….10	1.25	1.5	2
	10…24	1.5	1.75	2
Pistonlu Makinalar (1….2 Silindir) Piston Machines (1….2 Cylinder) *Machine à pistons (1…..2 Cylindres)*	0…..3	1.25	1.5	2
	3….10	1.5	1.75	2.25
	10…24	1.75	2	2.5

Kimya Endüstrisi		Chemical Industry		Industrie Chimique	
Soğutma tamburları	M	Cooling drums	M	Tambours de refroidissement	M
Karıştırıcılar	M	Mixers	M	Mixeurs	M
Çalkalayıcılar (Hafif Akışkanlar)	U	Agitators (Liquids)	U	Agitateurs (Liquides)	U
Çalkalayıcılar (Ağır Akışkanlar)	M	Agitators (Semi Liquids)	M	Agitateurs (Semi liquide)	M
Tambur kurutucuları	M	Drying drums	M	Tambours de séchage	M
Sanrifüjler	U	Centrifuges (Lights)	U	Centrifugeuse (Légère)	U
Sanrifüjler	H	Centrifuges (Heavy)	H	Centrifugeuse (Lourde)	H

Petrol Endüstrisi		Oil Industry		Pétrole et Hydrocarbures	
Boru hattı pompaları	M	Pipeline pumps	M	Pompes à oléoducs	M
Kuyu açma mekanizmaları	H	Rotary drilling equipment	H	Foreuse à cylindres	H

Vantilatör Ve Aspiratörler		Fans		Ventilations	
Pistonlu vantilatörler	M	Rotary piston blowers	M	Souffleurs rotatifs	M
Vantilatör (Aksiyal ve Radyal)	U	Blowers (Axial and Radial)	U	Souffleurs (Axe et radial)	U
Santrifüj (türbinli) körük	H	Centrifugal	H	Centrifugeuse	H

Kauçuk Makinaları		Rubber Machines		Industrie du Caoutchouc	
Ekstruder ve kanderler	H	Extruders and calenders	H	Extrudeuse	H
Yoğurma makinaları	H	Pug mills	H	Malaxeur	H
Karıştırıcılar	M	Mixers	M	Mixeurs	M
Silindirleme makinaları	H	Rolling mills	H	Presse	H

Ağaç İşleme Makinaları		Wood Working Machine		Industries Forestières	
Yontma tamburları	H	Backers	H	Presse à bois	H
Planya makinaları	M	Planing machines	M	Aplanisseuses	M
Ağaç işleme tezgahları	U	Wood working machines	U	Découpe de bois	U
Şerit testereler	H	Band saws	H	Scie	H

Yıkama Makinaları		Washing Machines		Laveuses	
Yıkama makinaları	U	Washing machines	U	Machine de lavage	U
Tamburlu kurutucular	M	Tumblers	M	Tambours	M

Tahrik Makinası Torque Machine *Machines couplées*	**Günlük Çalışma Müddeti (Saat)** Daily Working Period (Hour) *Utilisation journalière (Heure)*	**Makinanın Yükleme Karakteristiği** Load Characteristics of Machines *Caractéristique des charges*		
		Hafif Yük U Uniform Load U *Charge uniforme U*	**Orta Yük M** Moderate Load M *Charge modérée M*	**Ağır Yük H** Heavy Load H *Charge élevée H*
Elekt. Motorlu / Elect. Motor / *Moteurs éléct.* **Türbin** / Turbin / *Turbine* **Hidrolik** / Hydraulic / *Hydraulique*	0…..3	0.8	1	1.5
	3….10	1	1.25	1.75
	10…24	1.25	1.5	2
Pistonlu Makinalar (4….6 Silindir Piston Machines (4….6 Cylinder) *Machine à pistons (4…..6 Cylindres)*	0…..3	1	1.25	2
	3….10	1.25	1.5	2
	10…24	1.5	1.75	2
Pistonlu Makinalar (1….2 Silindir) Piston Machines (1….2 Cylinder) *Machine à pistons (1…..2 Cylindres)*	0…..3	1.25	1.5	2
	3….10	1.5	1.75	2.25
	10…24	1.75	2	2.5

Vinç Tesisleri		Cranes		Grues	
Bom kaldırma	H	Derricking jib bomm gear	H	Bras ouvrant	H
Vinç yürüyüşerleri	U	Travelling gears	U	Grues(Charriot)	U
Yük kaldırma	H	Hoist gears	H	Grues	H
Dönüş tertibatları	U	Slewing gears	U	Pignons rotatifs	U

Metal İşleme Makinaları		Metal Working Machines		Métalurgie et Acieries	
Planya makineleri	S	Planing machine	S	Aplaniseuses	S
Çekiç tokmak	S	Hammer	S	Marteau	S
Oyma makinesi	S	Engraving machine	S	Graveuses	S
Presler	H	Presses	H	Presses	H
Makaslar (Giyotin)	M	Shears	M	Découpeuses	M
Sıcak basma presleri	H	Forging presses	H	Presse à forge	H
Takım tezgahları (Ana Tahrik)	M	Machines tools (Main Drives)	M	Machine outil (Axe principal)	M
Takım tezgahları (Yardımcı Tahrik)	U	Machines tools (Auxiliarly Drives)	U	Machine outil (axe secondaire)	U

Gıda Endüstri Makinaları		Food Industry Machines		Industrie Agroalimentaire	
Doldurma makinaları (Şişe, Kavanoz vs.)	U	Filling machines (Bottles, Contaniers.)	U	Embouteilleuse	U
Yoğurma makinaları	M	Kneading machines	M	Malaxeurs	M
Ambalaj makinaları	U	Packaging machines	U	Machine d'emballage	U
Şeker kamışı kırıcıları	M	Cane crushers	M	Presse à canne	M
Şeker kamışı kesicileri	M	Cane cutters	M	Découpeuse de canne	M
Şeker kamışı öğütücüleri	H	Cane millis	H	Broyeurs de cannes	H
Şeker pancarı kesicileri	M	Sugar beet cutters	M	Découpeuse de betteraves	M
Şeker pancarı yıkayıcıları	M	Suger beet washers	M	Laveuse à betteraves	M

Pompalar		Pumps		Pompes	
Pistonlu pompalar (Q1 / 100)	H	Piston pumps (Q1 / 100)	H	Pompes à piston (Q1 / 100)	H
Pistonlu pompalar (Q1 / 100 : 1 / 20)	M	Piston pumps (Q1 / 100 : 1 / 20)	M	Pompes à piston (Q1 / 100 : 1 / 20)	M
Türbin (Hafif Akışkan)	U	Turbin (Light - Liquids)	U	Turbine (Liquides légers)	U
Türbin (Ağır Akışkan)	M	Turbin (Semi - Liquids)	M	Turbine (Semi-liquide)	M

Tahrik Makinası Torque Machine *Machines couplées*	**Günlük Çalışma Müddeti (Saat)** Daily Working Period (Hour) *Utilisation journalière (Heure)*	**Makinanın Yükleme Karakteristiği** Load Characteristics of Machines *Caractéristique des charges*		
		Hafif Yük U Uniform Load U *Charge uniforme U*	**Orta Yük M** Moderate Load M *Charge modérée M*	**Ağır Yük H** Heavy Load H *Charge élevée H*
Elekt. Motorlu / Elect. Motor / *Moteurs éléct.* **Türbin** / Turbin / *Turbine* **Hidrolik** / Hydraulic / *Hydraulique*	0…..3	0.8	1	1.5
	3….10	1	1.25	1.75
	10…24	1.25	1.5	2
Pistonlu Makinalar (4….6 Silindir Piston Machines (4….6 Cylinder) *Machine à pistons (4…..6 Cylindres)*	0…..3	1	1.25	2
	3….10	1.25	1.5	2
	10…24	1.5	1.75	2
Pistonlu Makinalar (1….2 Silindir) Piston Machines (1….2 Cylinder) *Machine à pistons (1…..2 Cylindres)*	0…..3	1.25	1.5	2
	3….10	1.5	1.75	2.25
	10…24	1.75	2	2.5

Kağit Endüstri Makinaları		Paper Industry Machines		Indusrtie Papetière	
Düzleme silindirleri	H	Glazing Cylinders	H	Cylindres appliniseurs	H
Holender	M	Hollenders	M	Holenders	M
Kağıt hamur makineleri	H	Pulpers	H	Pulpeuses	H
Kalender	H	Calender	H	Calendrier	H
Taş presler	H	Stone Presses	H	Presse	H
Vakum presler	H	Vacum Presses	H	Presse à aspiration	H
Kuru silindirler	H	Drying Cylinders	H	Cylindres de séchage	H

Taş ve Kil Makinaları		Stone and Clay Working Machines		Roches et Argiles	
Kırıcılar	H	Breakers	H	Broyeurs	H
Döner fırınlar	M	Rotary ovens	M	Four rotatifs	M
Çekiçli değirmenler	H	Hammer mills	H	Broyeux à marteaux	H
Bilyalı değirmenler	H	Ball mills	H	Broyeurs à billes	H
Çarpmalı öğütücüler	H	Beater mills	H	Broyeux à percussions	H
Tuğla presleri	H	Brick presses	H	Presse à pavès	H

Tekstil Makinaları		Textile Machines		Industrie du Textile	
Sargı makinaları (Q1 / 100)	M	Batchers (Q1 / 100)	M	Machines d'emballages	M
Basma ve boyama mak.	M	Printing and dyeing machines	M	Presse et imprimante	M
Dokuma tezgahları	M	Looms	M	Tisseuse	M

Kompresörler		Compressors		Compresseurs	
Turbo kompresör	M	Turbo compressors	M	Turbocompresseurs	M

Silindirleme ve Çekme Tesisleri		Metal Rolling Mills		Aciéries	
Sac kesme makineleri	H	Sheet metal cutting machines	H	Découpeuses	H
Hız ayarlı silindirler	M	Roller adjustment drivers	M	Ajusteuse à presses	M
Çubuk kesme makinaları	H	Billet shears	H	Scies	H
Kabuk sıyırma makinaları	H	Descaling machines	H	Eplucheuse	H
Tel çekme tesisleri	M	Wire drawing machines	M	Enrouleuses	M
Soğuk çekme tesisleri	H	Cooling beds	H	Bande de refroidissements	H
Rulolu nakil (Hafif)	M	Roller tables (Lights)	M	Enrouleuses (légères)	M
Rulolu nakil (Ağır)	H	Roller tables (Heavy)	H	Enrouleuses (lourdes)	H
Silindir haddeleme	H	Manipulators	H	Cylindres	H

Tahrik Makinası Torque Machine *Machines couplées*	**Günlük Çalışma Müddeti (Saat)** Daily Working Period (Hour) *Utilisation journalière (Heure)*	**Makinanın Yükleme Karakteristiği** Load Characteristics of Machines *Caractéristique des charges*		
		Hafif Yük U Uniform Load U *Charge uniforme U*	**Orta Yük M** Moderate Load M *Charge modérée M*	**Ağır Yük H** Heavy Load H *Charge élevée H*
Elekt. Motorlu / Elect. Motor / *Moteurs éléct.* **Türbin** / Turbin / *Turbine* **Hidrolik** / Hydraulic / *Hydraulique*	0…..3	0.8	1	1.5
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Pistonlu Makinalar (4….6 Silindir Piston Machines (4….6 Cylinder) *Machine à pistons (4…..6 Cylindres)*	0…..3	1	1.25	2
	3….10	1.25	1.5	2
	10…24	1.5	1.75	2
Pistonlu Makinalar (1….2 Silindir) Piston Machines (1….2 Cylinder) *Machine à pistons (1…..2 Cylindres)*	0…..3	1.25	1.5	2
	3….10	1.5	1.75	2.25
	10…24	1.75	2	2.5

Radyal Yüklerin Belirlenmesi

Meydana gelen radyal yükün hesaplanabilmesi için redüktörün çıkış veya giriş miline bağlanan iletme elemanının tipi dikkate alınmalıdır. Aşağıdaki tabloda bazı iletme elemanları faktörleri (f_i) verilmiştir.

İletme Elemanı	İletme Elemanı Faktörü (f_i)	Açıklama
Dişli	1,15	< 17 diş
Zincir Dişli	1,40	< 13 diş
Zincir Dişli	1,25	< 20 diş
V- Kayış Kasnakları	1,75	Ön Gerilme Kuvveti
Düz Kayış Kasnakları	2,50	Ön Gerilme Kuvveti
Triger Kayış Kasnakları	1,50	Ön Gerilme Kuvveti

Mil üzerindeki radyal yük aşağıdaki formülle hesaplanır:

$$F_R = \frac{Md \,.\, 2000}{d_0} \cdot f_i$$

$F_R[N]$ = Radyal Yük
$M_d[Nm]$ = Döndürme Momenti
$d_0[mm]$ = İletme elemanının Ortalama Çapı
f_i = *İletme Elemanı Faktörü*

Bu değerler gözönüne alınarak hesaplanan sonuçlar doğrultusunda, kataloğumuzda yer alan redüktörlere ait radyal yükleri görerek seçim yapabilirsiniz. Bu tablolarda verilen radyal yükler rulman ömrüne göre belirlenmiş olup $S_f = 1$ şartına ve yükün milin ortasını yüklediği durumlar için verilmiştir.

Determining of Overhung Loads

Type of transmission component mounting output or input shaft has to be consideration to find occured overhung loads. Some transmission component factor (f_i) is given at the table below.

Transmission Component	Transmission Component Factor (f_i)	Explanation
Gear	1,15	< 17 teeth
Sprockets	1,40	< 13 teeth
Sprockets	1,25	< 20 teeth
V- Belt Pulleys	1,75	Pre-tension
Flat Belt Pulleys	2,50	Pre-tension
Trigger Belt Pulleys	1,50	Pre-tension

Overhung Loads on shaft is find by at the formula below:

$$F_R = \frac{Md \,.\, 2000}{d_0} \cdot f_i$$

$F_R[N]$ = Overhung Load
$M_d[Nm]$ = Torque
$d_0[mm]$ = Mean Diameter of Transmission Component
f_i = Transmission Component Factor

You can Choose, by seeing overhung loads belong to gearboxes in our catalog according to determined results by considering these values. The given overhung loads on the tables are determined according to working life, on $S_f = 1$ and force which are applied to the midpoint of the shaft

Calcul des charges radiales

Afin de determiner les charges radials en bouts d'arbres il conviens de prendre en compte les paramètre et coéfficients suivants. Le coefficient correcteur (f_i) est a appliquer en fonction du type de transmission

Elément de transmission	Coefficient correcteur (f_i)	Remarques
Pignons	1,15	< 17 dents
Roue a chaine	1,40	< 13 dents
Roue a chaine	1,25	< 20 dents
Poulies a gorges	1,75	En fonction de la précontrainte
Poulies plates	2,50	En fonction de la précontrainte
Poulies dentées	1,50	En fonction de la précontrainte

La charge radiale en bout d'arbre se calcule en utilisant la formule suivante:

$$F_R = \frac{Md \,.\, 2000}{d_0} \cdot f_i$$

$F_R[N]$ = Charge appliquée en bout d'arbre(N)
$M_d[Nm]$ = Couple en Nm
$d_0[mm]$ = Diamétre de l'élément de transmission(mm)
f_i = Coefficient correcteur pour charge radiale

Les résultats sont définis en fonction de la durée de vie et d'utilisation des réducteurs. Les résultats se basent sur les charges radiales appliquées au centre de l'arbre.

1500 d/d Motorlar / 1500 r.p.m. Motors / *Moteurs 1500 r.p.m.*

Kod Code *Code*	Güç (kW) Power (kW) *Puissance (kW)*	Hız (d/d) Speed (r.p.m.) *Vitesse (r.p.m.)*	Anma Akımı Rated Current *Ampére*	Moment (Nm) Torque (Nm) *Couple (Nm)*	Verim 100% | 75% Efficiency 100% | 75% *Efficience* *100%* *75%*		IE Sınıfı IE Class *Classe IE*	Çalışma Sınıfı Duny Type *Classe d'utilisation*
63M4a	0,12	1315	0,42	0,88	50,0	49,8	IE1	S1
63M4b	0,18	1320	0,58	1,30	57,0	56,5		
71M4a	0,25	1375	0,71	1,80	68,5	66,1	IE2	
71M4b	0,37	1375	1,12	2,50	66,0	64,9		
80M4a	0,55	1410	1,55	3,70	77,1	74,5		
80M4b	0,75	1435	1,90	5,00	82,5	81,0	IE3	
90S4a	1,1	1435	2,55	7,35	84,1	82,9		
90L4a	1,5	1450	3,40	9,9	85,3	84,8		
100L4a	2,2	1450	4,90	14,5	86,7	86,7		
100L4b	3	1450	6,40	19,8	87,7	87,3		
112M4a	4	1450	8,20	26,3	88,6	87,8		
132S4a	5,5	1460	11,5	35,8	89,6	89,3		
132M4a	7,5	1460	15,9	49,1	90,4	89,1		
160M4a	11	1470	22,9	71,6	91,4	91,4		
160L4a	15	1470	30,5	97,5	92,1	90,3		
180M4a	18,5	1475	36,3	120	92,6	92,5		
180L4a	22	1480	44,5	143	93,0	92,6		
200L4a	30	1470	52,5	195	93,6	92,4		
225S4a	37	1470	64,8	240	93,9	93,6		
225M4a	45	1480	81,0	290	94,2	93,4		
250M4a	55	1480	96,0	355	94,6	94,6		
280S4a	75	1490	128,6	481	96,0	95,2	IE4	
280M4a	90	1490	153,0	577	96,1	94,5		
315S4a	110	1489	193,5	705	96,3	95,4		
315M4a	132	1488	230,0	847	96,4	95,2		
315M4b	160	1485	271,7	1029	96,6	96,1		
315L4a	185	1482	317,7	1195	96,6	96,3		
315L4b	200	1486	347,1	1285	96,7	96,6		
355M4a	250	1485	460,0	1608	96,7	96,5		
355M4b	315	1484	535,3	2027	96,7	96,6		
355L4c	355	1485	588,7	2286	96,7	96,5		
355L4d	400	1482	686,2	2577	96,7	96,3		
400L4a	450	1483	754,7	2898	96,7	96,4		

* Motor teknik değerleri İ.Mak-A marka motorlar içindir, kullanılan diğer markalar için değişiklik gösterebilir.

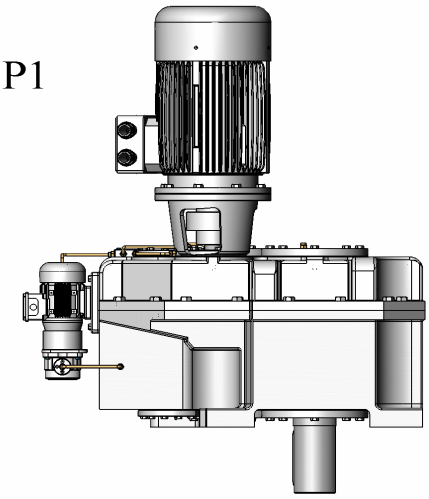
1000 d/d Motorlar / 1000 r.p.m. Motors / *Moteurs 1000 r.p.m.*

Kod Code *Code*	**Güç (kW)** Power (kW) *Puissance (kW)*	**Hız (d/d)** Speed (r.p.m.) *Vitesse (r.p.m.)*	**Anma Akımı** Rated Current *Ampére*	**Moment (Nm)** Torque (Nm) *Couple (Nm)*	**Verim** **100%** / **75%** Efficiency 100% / 75% *Efficience* *100%* / *75%*		**IE Sınıfı** IE Class *Classe IE*	**Çalışma Sınıfı** Duny Type *Classe d'utilisation*
71M6a	0,18	835	0,75	2,00	45,5	43,6	IE1	S1
71M6b	0,25	860	0,80	2,70	52,1	46,3		
80M6a	0,37	950	1,15	3,73	73,5	72,5	IE3	
80M6b	0,55	950	1,60	5,64	74,4	73,6		
90S6a	0,75	940	2,05	7,62	78,9	77,5		
90L6a	1,1	935	3,05	11,30	81,0	78,5		
10L6a	1,5	940	3,60	15,3	82,5	81,5		
112M6a	2,2	970	5,10	21,2	84,3	83,5		
132S6a	3	970	6,90	29,7	85,6	87,4		
132M6a	4	965	8,75	39,6	86,8	87,6		
132M6b	5,5	960	12,5	54,6	88,0	87,7		
160M6a	7,5	975	16,2	73,5	89,1	89,8		
160L6a	11	975	25,0	107,7	90,3	89,9		
180L6a	15	975	30,0	147,0	91,2	91,0		
200L6a	18,5	980	35,0	181	91,7	91,1		
200L6b	22	975	43,0	215	92,2	91,6		
225M6a	30	985	58,0	290	92,9	92,0		
250M6a	37	985	69,5	360	93,3	92,2		
280S6a	45	985	90,2	436	93,7	93,5		
280M6a	55	985	109,8	530	94,1	93,3		
315S6a	75	995	145,6	719	95,4	95,4	IE4	
315M6a	90	995	168,3	869	95,6	95,5		
315M6b	110	992	209,3	1059	95,8	95,6		
315L6a	132	991	236,2	1272	96,0	95,8		
355M6a	160	990	289,2	1543	96,2	96,2		
355M6b	200	992	365,6	1930	96,3	96,2		
355M6c	250	992	437,8	2407	96,5	96,2		
355L6a	315	991	547,2	3035	96,6	96,5		
355L6b	355	990	602,8	3424	96,6	96,5		

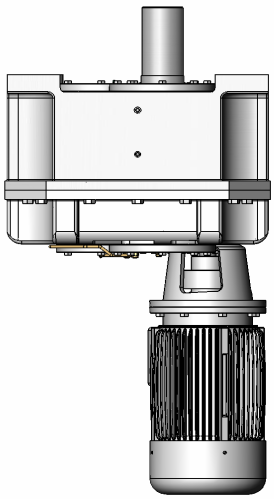
* Motor teknik değerleri İ.Mak-A marka motorlar içindir, kullanılan diğer markalar için değişiklik gösterebilir.

Yağ Cinsi Lubricant *Art des Lubrifiant*	**ISO Viskozite sinifi** Viscocity class *Catégorie de viscosite*	DIN 51517-3	**Kullanim sicakliği** Usage temperature *Gebrauchs température d'usage* C°	**Firma** Firm *Marque*						
				Mobil	ARAL	bp	Shell	Castrol	KLÜBER LUBRICATION	BELGIN
Mineral Yağ Mineral Oil *Huile Minéral*	ISO VG 320	CLP	-10.....+90	Mobilgear 600 XP 320	Degol BG 320	Energol GR-XP 320	Omala S2 GX 320	Alpha SP 320	Klüberoil GEM 1 N 320	Recompound FL 320
	ISO VG 220	CLP	-10.....+90	Mobilgear 600 XP 220	Degol BG 220	Energol GR-XP 220	Omala S2 GX 220	Alpha SP 220	Klüberoil GEM 1 N 220	Recompound FL 220
	ISO VG 150	CLP	-10.....+90	Mobilgear 600 XP 150	Degol BG 150	Energol GR-XP 150	Omala S2 GX 150	Alpha SP 150	Klüberoil GEM 1 N 150	Recompound FL 150
	ISO VG 100	CLP	-15.....+90	Mobilgear 600 XP 100	-	-	Omala S2 GX 100	Alpha SP 100	Klüberoil GEM 1 N 100	Recompound FL 100
Sentetik Yağ Synthetic Oil *Huile Synthétique*	ISO VG 320	CLP HC	-30.....+110	Mobil SHC Gear 320	Degol GS 320	Enersyn SG-XP320	Omala S4 GX V 320	Optigear Synthetic PD 320 ES	Klübersynth GEM 4 N 320	Recompound Syn 320
	ISO VG 220	CLP HC	-35.....+110	Mobil SHC Gear 220	Degol GS 220	Enersyn SG-XP220	Omala S4 GX V 220	Optigear Synthetic PD 220 ES	Klübersynth GEM 4 N 220	Recompound Syn 220
	ISO VG 150	CLP HC	-40.....+110	Mobil SHC Gear 150	Degol GS 150	Enersyn SG-XP150	Omala S4 GX V 150	Optigear Synthetic PD 150 ES	Klübersynth GEM 4 N 150	Recompound Syn 150
	ISO VG 100	CLP HC	-45.....+110	Mobil SHC 627	-	-	-	Optigear Synthetic PD 100 ES	Klübersynth GEM 4 N 100	Recompound Syn 100

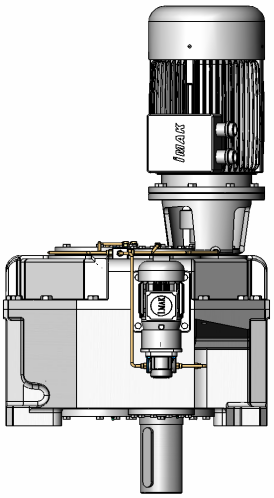
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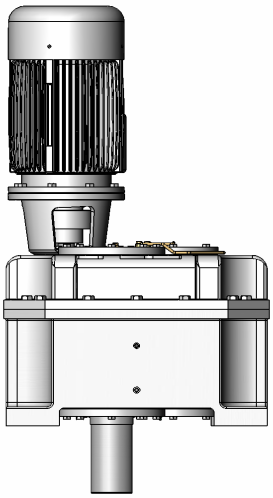
P2



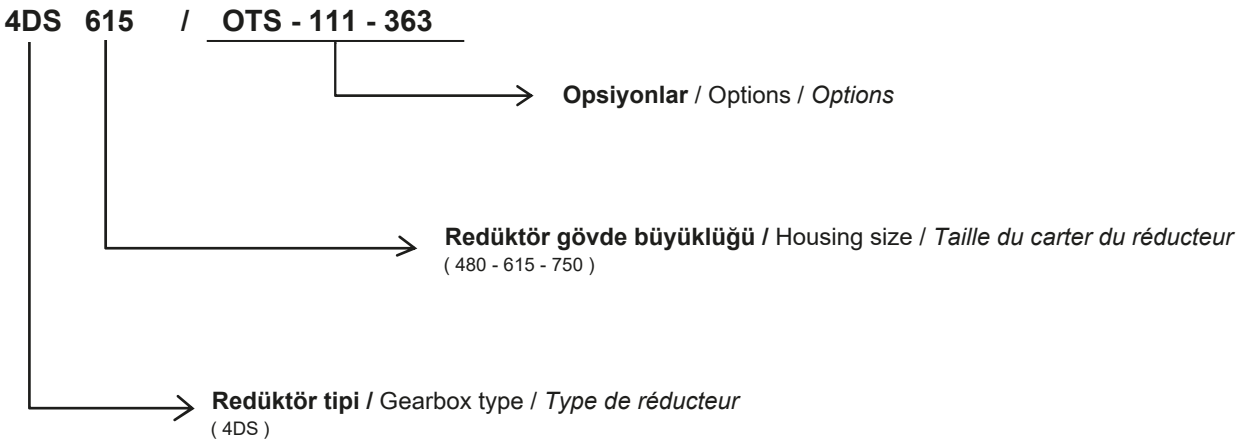
P4



P3



TİP Type *Typ*	**Bağlantı Pozisyonları için Yağ Miktarları (litre)** Oil Quantities for Mounting Positions (liter) *Ölmengen Tabellen für Bauformen (liter)*			
	P1	**P2**	**P3**	**P4**
4DSM 480	25			
4DSM 615	35			
4DSM 750	45			


4DS 615 / OTS - 111 - 363
Opsiyonlar / Options / *Options*
Redüktör gövde büyüklüğü / Housing size / *Taille du carter du réducteur*
(480 - 615 - 750)
Redüktör tipi / Gearbox type / *Type de réducteur*
(4DS)

Redüktörlerin Kontrol ve Bakımları

- Redüktörlerin yağ seviyesi ve miktarını kontrol ediniz. Yağın cinsini İ.MAK kataloğunda yer alan yağ çizelgelerini kullanarak seçiniz.
- Havalandırma tapasının faal olup olmadığına bakınız. Hava tahliye deliği çalışmaz ise redüktör gövdesinin içinde biriken hava, basınç oluşturarak keçelerden yağ sızmasına sebep olur. Böylece yağ azalarak çevre kirliliğine yol açar ve redüktörün verimli çalışmasını engellemiş olur.
- Redüktör bağlantı cıvatalarının gevşeyip gevşemediğini kontrol ediniz, gevşeyen cıvatalar var ise sıkmak suretiyle tedbir alınız. Redüktör montajında meydana gelen eksen kaçıklığında zararlı sarsıntılara dikkat ediniz.
- Redüktörün ilk çalıştırmadan 500 saat sonra, sonraki her 6000 saatte periyodik olarak yağını değiştiriniz.
- Özel hususlar ve çalışma şartları hakkında mutlaka firmamıza danışınız.

Control and maintenance gearboxes

- Check the oil levels and quantity of your gearboxes. Choose the type and quantity of oil from the İ.MAK catalogue.
- Check if the ventilation stopper is active or not. If the air evacuation hole does not work properly, the accumulated air in the gearbox trunk might causes pressure and gas leakage from the mats.
- Before starting your geared motors, proceed to the checking of connection bolts and screw. Check if they have loosened or not during transport or installation. Take measures by firming loosened bolts. A wrong connexion might create vibration to the axis and conduct to damage of the geared motor.
- Change the oil after 500 hours of initial operation and periodically every 6000 hours of operating the geared motor.
- If you are facing any technical issue, please consult the user guide delivered with the geared motor. In case of special issue or emergency please directly contact your reseller or the closest I-MAK technical center.

Contrôle et maintenance des réducteurs

- Vérifiez le niveau et la quantité d'huile de façons régulière. Consultez le catalogue I-MAK pour obtenir les niveaux d'huiles requis en fonction du modèle et de la position du réducteur.
- Vérifiez le fonctionnement de la valve d'aération. L'absence d'évacuation de l'air peut provoquer une augmentation de la pression dans le réducteur pouvant conduire à des fuites d'huiles.
- Contrôler les vis et boulons reliant le moteur au réducteur, en cas de mauvaise fermeture le moteur peut créer des vibrations de l'arbre entrainant l'endommagement du motoréducteur.
- La première vidange doit être effectuée après 500 heures d'utilisations du motoréducteur, les vidanges suivantes doivent être effectuées au bout de 6000 heures d'utilisations.
- En cas de problèmes techniques, consultez le manuel d'utilisation fournis à la livraison du motoréducteur. En cas de problèmes particulier ou d'urgence, veillez à contacter votre revendeur ou le centre technique I-MAK le plus proche.

		**YERLİ MALI BELGESİ** Domestic goods certificate *Certificat de produit national*
	TSEK	**TÜRK STANDARTLARI ENSTİTÜSÜ KRİTERE UYGUNLUK BELGESİ** Certificate of conformity to Turkish standards *Certificats de conformité aux standards Turcs*
	TÜRK PATENT ENSTİTÜSÜ	**MARKA YENİLEME BELGESİ** Certificate of trademark registration *Certificat d'enregistrement de marque*
	ISO	**ISO 9001:2008 YÖNETİM SİSTEMİ** ISO 9000:2008 Quality management system *ISO 9000:2008 : Sytémes de management de la qualité*
	ISO	**ISO10002:2004 MÜŞTERİ MEMNUNİYETİ YÖNETİM SİSTEMİ** ISO 10002:2004 Customer satisfaction management system *ISO 10002:2004 Management de la qualité - Satisfaction clients*
	ISO	**OHSAS 18001:2007 İŞ SAĞLIĞI VE GÜVENLİĞİ YÖNETİM SİSTEMİ** OHSAS 18001:2007 : Occupational health and safety management *OHSAS 18001:2007 : Management de la santé et de la sécurité au travail*
	CE	**AT UYGUNLUK BEYANI** CE Declaration of conformity *Déclaration de conformité aux standards CE*
	Ex	**EC TYPE EXAMINATION CERTIFICATE** ATEX Certificate *Certificat ATEX*

4DS Serisi Redüktörler Güç ve Devir Tabloları

4DS Series Power Ratings and Output Speed

4DS Series puissances et vitesses de sorties



P_1 **GÜÇ** Power *Puissance* **[kW]** Hp	n_2 **Çıkış Devri** Output Speeds *Vitesse de sortie* **[r.p.m]**	**İ** **Tahvil** Ratio *Rapport de réduction*	S_f **Servis Faktörü** Service Factor *Service facteur*	M_2 **Çıkış Momenti** Output Torque *Couple de sortie* **[Nm]**	F_{Qlo} **Rad. Yük** Over Loads *Charges radiales* **[N]**	**Tip Type** *Types*			**~kg**
1,5 2	4,8	145	2,65	2617	75000	**4DSM**	**480 / 112 M 8a**	29	520
	6,4	109	3,55	1957	75000				
	7,2	97,16	4,00	1750	75000				
	8,8	79,28	4,86	1427	75000				
	6,2	145	3,41	2033	75000	**4DSM**	**480 / 100 L 6a**	29	510
	8,3	109	4,53	1537	75000				
	9,3	97,16	5,09	1370	75000				
	9,6	145	5,28	1313	75000	**4DSM**	**480 / 90 L 4a**	29	496
	13	109	7,12	977	75000				
	14	97,16	7,97	875	75000				
2,2 3	4,8	145	1,80	3854	75000	**4DSM**	**480 / 132 S 8a**	29	526
	6,4	109	2,44	2845	75000				
	7,2	97,16	2,71	2568	75000				
	8,8	79,28	3,30	2101	75000				
	6,2	145	2,43	2846	75000	**4DSM**	**480 / 112 M 6a**	29	520
	8,3	109	3,24	2150	75000				
	9,3	97,16	3,62	1926	75000				
	9,6	145	3,60	1927	75000	**4DSM**	**480 / 100 L 4a**	29	508
	13	109	4,84	1433	75000				
	14	97,16	5,43	1284	75000				
	18	79,28	6,62	1050	75000				
	21	66,01	8,00	873	75000				
3 4	4,8	145	1,29	5368	74500	**4DSM**	**480 / 132 M 8a**	29	534
	6,4	109	1,74	4003	74500				
	7,2	97,16	1,94	3602	74500				
	8,8	79,28	2,40	2897	74500				
	6,2	145	1,78	3881	74500	**4DSM**	**480 / 132 S 6a**	29	529
	8,3	109	2,37	2932	74500				
	9,3	97,16	2,65	2626	74500				
	9,6	145	2,64	2628	74500	**4DSM**	**480 / 100 L 4b**	29	511
	13	109	3,65	1955	74500				
	14	97,16	3,98	1751	74500				
	18	79,28	4,85	1432	74500				
	21	66,01	5,86	1189	74500				
4 5,5	5,0	141	2,69	6726	100000	**4DSM**	**615 / 160 M 8a**	30	963
	6,1	114	3,15	5424	100000				
	7,4	95,10	3,85	4486	100000				
	8,7	80,56	4,53	3822	100000				
	6,2	145	1,31	5255	74500	**4DSM**	**480 / 132 M 6a**	29	537
	8,3	109	1,83	3794	74500				
	9,3	97,16	2,00	3503	74500				
	11	79,28	2,43	2850	74500				
	14	66,01	2,94	2368	74500				
	19	46,20	6,22	1664	74500				
5,5 7,5	5,0	141	1,95	9249	99000	**4DSM**	**615 / 160 M 8b**	30	973
	6,1	114	2,29	7458	99000				
	7,4	95,10	2,80	6166	99000				
	8,7	80,56	3,30	5255	99000				
	9,6	145	1,47	4718	74250	**4DSM**	**480 / 132 S 4a**	29	529
	13	109	1,96	3557	74250				
	14	97,16	2,21	3146	74250				
	18	79,28	2,71	2569	74250				
	21	66,01	3,25	2140	74250				
	30	46,20	6,93	1496	74250				

P_1 **GÜÇ** Power *Puissance* **[kW]** Hp	n_2 **Çıkış Devri** Output Speeds *Vitesse de sortie* **[r.p.m]**	**İ** **Tahvil** Ratio *Rapport de réduction*	S_f **Servis Faktörü** Service Factor *Service facteur*	M_2 **Çıkış Momenti** Output Torque *Couple de sortie* **[Nm]**	F_{Qlo} **Rad. Yük** Over Loads *Charges radiales* **[N]**	**Tip Type** *Types*			**~kg**
7,5 11	5,0	140	2,22	12363	118000	**4DSM**	**750 / 160 L 8a**	31	1357
	5,9	119	2,72	10510	118000				
	7,4	94,94	3,33	8406	118000				
	8,6	81,75	3,86	7249	118000				
	6,4	141	1,95	9273	99000	**4DSM**	**615 / 160 M 6a**	30	978
	7,9	114	2,28	7507	99000				
	9,5	95,10	2,77	6245	99000				
	11	80,56	3,27	5299	99000				
	9,6	145	1,08	6433	74000	**4DSM**	**480 / 132 M 4a**	29	537
	13	109	1,45	4813	74000				
	14	97,16	1,63	4290	74000				
	18	79,28	1,99	3503	74000				
	21	66,01	2,40	2906	74000				
	30	46,20	5,08	2041	74000				
	42	33,62	6,75	1484	74000				
11 15	5,0	140	1,51	18132	117000	**4DSM**	**750 / 180 L 8a**	31	1397
	5,9	119	1,85	15415	117000				
	7,4	94,94	2,27	12329	117000				
	8,6	81,75	2,63	10632	117000				
	6,4	140	2,03	13500	117000	**4DSM**	**750 / 160 L 6a**	31	1348
	7,6	119	2,41	11419	117000				
	9,5	94,94	3,06	9155	117000				
	11	81,75	3,62	7905	117000				
	9,9	141	2,02	8980	98500	**4DSM**	**615 / 160 M 4a**	30	971
	12	114	2,35	7283	98500				
	15	95,10	2,86	6048	98500				
	17	80,56	3,40	5110	98500				
	19	73,20	4,89	4648	98500				
	21	66,01	1,64	4204	74000	**4DSM**	**480 / 160 M 4a**	29	598
	30	46,20	3,53	2936	74000				
	42	33,62	4,69	2136	74000				
	52	26,69	6,89	1697	74000				
	58	24,00	6,54	1526	74000				
	65	21,67	7,23	1372	74000				
	78	17,87	8,77	1137	74000				
15 20	6,4	140	1,48	18547	116000	**4DSM**	**750 / 180 L 6a**	31	1404
	7,6	119	1,82	15765	116000				
	9,5	94,94	2,22	12612	116000				
	10,0	140	2,27	12127	116000	**4DSM**	**750 / 160 L 4a**	31	1357
	12	119	2,80	10254	116000				
	15	94,94	3,40	8243	116000				
	17	81,75	3,95	7086	116000				
	18	76,37	4,32	6603	116000				
	22	63,88	5,47	5557	116000				
	9,9	141	1,48	12245	97500	**4DSM**	**615 / 160 L 4a**	30	1003
	12	114	1,73	9931	97500				
	15	95,10	2,10	8247	97500				
	17	80,56	2,49	6968	97500				
	19	73,20	3,59	6338	97500				
	24	59,33	4,30	5127	97500				
	28	49,52	5,20	4290	97500				
	30	46,20	2,60	3991	73500	**4DSM**	**480 / 160 L 4a**	29	630
	42	33,62	3,45	2906	73500				
	52	26,69	4,32	2310	73500				



P_1 **GÜÇ** Power *Puissance* [kW] Hp	n_2 **Çıkış Devri** Output Speeds *Vitesse de sortie* [r.p.m]	**İ** **Tahvil** Ratio *Rapport de réduction*	S_f **Servis Faktörü** Service Factor *Service facteur*	M_2 **Çıkış Momenti** Output Torque *Couple de sortie* [Nm]	F_{Qlo} **Rad. Yük** Over Loads *Charges radiales* [N]	**Tip Type** *Types*			~kg
15 20	58	24,00	4,80	2077	73500	**4DSM**	**480 / 160 L 4a**	29	630
	65	21,67	5,32	1874	73500				
	78	17,87	6,45	1545	73500				
	86	16,30	7,08	1409	73500				
	94	14,82	7,80	1280	73500				
	104	13,51	8,55	1167	73500				
	113	12,35	9,35	1067	73500				
18,5 25	10,0	140	1,84	14957	114500	**4DSM**	**750 / 180 M 4a**	31	1377
	12	119	2,27	12646	114500				
	15	94,94	2,75	10166	114500				
	17	81,75	3,20	8740	114500				
	18	76,37	3,50	8140	114500				
	22	63,88	4,43	6854	114500				
	32	44,31	6,48	4745	114500				
	19	73,20	2,91	7817	96200	**4DSM**	**615 / 180 M 4a**	30	1023
	24	59,33	3,48	6323	96200				
	28	49,52	4,20	5291	96200				
	32	43,15	4,80	4602	96200				
	39	36,15	5,60	3860	96200				
	43	32,50	6,32	3464	96200				
	30	46,20	2,10	4922	72000	**4DSM**	**480 / 180 M 4a**	29	650
	42	33,62	2,80	3584	72000				
	52	26,69	3,50	2849	72000				
	58	24,00	3,89	2562	72000				
	65	21,67	4,31	2311	72000				
	78	17,87	5,23	1906	72000				
	86	16,30	5,74	1738	72000				
	94	14,82	6,32	1579	72000				
	104	13,51	6,93	1440	72000				
	113	12,35	7,58	1316	72000				
22 30	12	119	1,90	15040	113000	**4DSM**	**750 / 180 L 4a**	31	1402
	15	94,94	2,32	120090	113000				
	17	81,75	2,70	10393	113000				
	18	76,37	2,94	9685	113000				
	22	63,88	3,73	8150	113000				
	32	44,31	5,45	5643	113000				
	40	34,96	6,74	4426	113000				
	19	73,20	2,45	9295	94500	**4DSM**	**615 / 180 L 4a**	30	1048
	24	59,33	2,93	7520	94500				
	28	49,52	3,53	6292	94500				
	32	43,15	4,04	5473	94500				
	39	36,15	4,70	4590	94500				
	43	32,50	5,32	4120	94500				
	48	29,36	6,14	3722	94500				
	30	46,20	1,76	5853	71000	**4DSM**	**480 / 180 L 4a**	29	675
	42	33,62	2,35	4262	71000				
	52	26,69	2,95	3388	71000				
	58	24,00	3,27	3047	71000				
	65	21,67	3,62	2749	71000				
	78	17,87	4,40	2267	71000				
	86	16,30	4,83	2067	71000				
	94	14,82	5,31	1878	71000				
	104	13,51	5,83	1712	71000				
	113	12,35	6,37	1565	71000				

P_1 **GÜÇ** Power *Puissance* **[kW]** Hp	n_2 **Çıkış Devri** Output Speeds *Vitesse de sortie* **[r.p.m]**	**İ** **Tahvil** Ratio *Rapport de réduction*	S_f **Servis Faktörü** Service Factor *Service facteur*	M_2 **Çıkış Momenti** Output Torque *Couple de sortie* **[Nm]**	F_{Qlo} **Rad. Yük** Over Loads *Charges radiales* **[N]**	**Tip Type** *Types*			**~kg**
30 40	17	81,75	1,97	14172	115000	**4DSM**	**750 / 200 L 4a**	31	1457
	18	76,37	2,15	13207	115000				
	22	63,88	2,73	11115	115000				
	32	44,31	4,00	7695	115000				
	40	34,96	4,95	6036	115000				
	50	28,27	6,90	5111	115000				
	55	25,29	7,50	4367	115000				
	19	73,20	1,80	12676	92000	**4DSM**	**615 / 200 L 4a**	30	1103
	24	59,33	2,15	10254	92000				
	28	49,52	2,60	8580	92000				
	32	43,15	2,96	7463	92000				
	39	36,15	3,45	6259	92000				
	43	32,50	3,90	5618	92000				
	48	29,36	4,50	5075	92000				
	53	26,62	4,80	4603	92000				
	58	24,21	5,31	4190	92000				
	63	22,08	5,68	3816	92000				
	69	20,21	6,41	3494	92000				
	52	26,69	2,16	4620	69400	**4DSM**	**480 / 200 L 4a**	29	730
	58	24,00	2,40	4155	69400				
	65	21,67	2,66	3748	69400				
	78	17,87	3,22	3091	69400				
	86	16,30	3,53	2818	69400				
	94	14,82	3,90	2561	69400				
	104	13,51	4,27	2335	69400				
	113	12,35	4,67	2134	69400				
	124	11,30	5,10	1954	69400				
	135	10,40	5,54	1798	69400				
37 50	22	63,88	2,22	13708	109500	**4DSM**	**750 / 225 S 4a**	31	1482
	32	44,31	3,24	9491	109500				
	40	34,96	4,01	7445	109500				
	50	28,27	5,60	6304	109500				
	55	25,29	6,08	5386	109500				
	28	49,52	2,10	10582	90000	**4DSM**	**615 / 225 S 4a**	30	1128
	32	43,15	2,40	9204	90000				
	39	36,15	2,80	7720	90000				
	43	32,50	3,16	6929	90000				
	48	29,36	3,65	6260	90000				
	53	26,62	3,90	5677	90000				
	58	24,21	4,31	5168	90000				
	63	22,08	4,60	4706	90000				
	69	20,21	5,20	4309	90000				
	76	18,43	5,67	3928	90000				
	86	16,30	2,80	3476	67700	**4DSM**	**480 / 225 S 4a**	29	755
	94	14,82	3,16	3158	67700				
	104	13,51	3,46	2880	67700				
	113	12,35	3,79	2632	67700				
	124	11,30	4,14	2409	67700				
	135	10,40	4,49	2217	67700				
	145	9,670	4,83	2083	67700				
	175	8,010	5,83	1727	67700				
45 60	32	44,31	2,65	11543	110000	**4DSM**	**750 / 225 M 4a**	31	1537
	40	34,96	3,30	9055	110000				
	50	28,27	4,60	7339	110000				
	55	25,29	5,00	6551	110000				
	62	22,76	5,80	5902	110000				



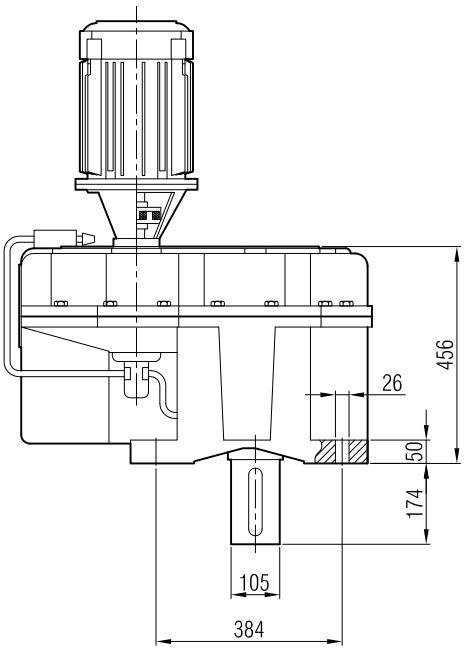
P_1 **GÜÇ** Power *Puissance* **[kW]** Hp	n_2 **Çıkış Devri** Output Speeds *Vitesse de sortie* **[r.p.m]**	**İ** **Tahvil** Ratio *Rapport de réduction*	S_f **Servis Faktörü** Service Factor *Service facteur*	M_2 **Çıkış Momenti** Output Torque *Couple de sortie* **[Nm]**	F_{Qlo} **Rad. Yük** Over Loads *Charges radiales* **[N]**	**Tip Type** *Types*			**~kg**
45 60	**43**	32,50	2,60	8427	88500	**4DSM**	**615 / 225 M 4a**	30	1183
	48	29,36	3,00	7613	88500				
	53	26,62	3,20	6904	88500				
	58	24,21	3,54	6285	88500				
	63	22,08	3,78	5724	88500				
	69	20,21	4,27	5240	88500				
	76	18,43	4,66	4777	88500				
	90	15,63	5,33	4055	88500				
	124	11,30	3,40	2930	65000	**4DSM**	**480 / 225 M 4a**	29	810
	135	10,40	3,69	2697	65000				
	145	9,670	3,97	2534	65000				
	175	8,010	4,80	2100	65000				
55 75	**32**	44,31	2,18	14108	107000	**4DSM**	**750 / 250 M 4a**	31	1617
	40	34,96	2,70	11067	107000				
	50	28,27	3,76	8970	107000				
	55	25,29	4,09	8007	107000				
	62	22,76	4,74	7214	107000				
	68	20,58	5,07	6522	107000				
	77	18,17	5,89	5759	107000				
	85	16,49	6,54	5225	107000				
	58	24,21	2,90	7682	85000	**4DSM**	**615 / 250 M 4a**	30	1263
	63	22,08	3,10	6996	85000				
	69	20,21	3,50	6405	85000				
	76	18,43	3,82	5839	85000				
	90	15,63	4,36	4956	85000				
	107	13,10	5,31	4198	85000				
75 100	**55**	25,29	3,00	10919	101000	**4DSM**	**750 / 280 S 4a**	31	1747
	62	22,76	3,48	9838	101000				
	68	20,58	3,72	8895	101000				
	77	18,17	4,32	7853	101000				
	85	16,49	4,80	7126	101000				
90 120	**68**	20,58	3,10	10673	98000	**4DSM**	**750 / 280 M 4a**	31	1827
	77	18,17	3,60	9424	98000				
	85	16,49	4,00	8551	98000				
	93	15,01	4,20	7785	98000				

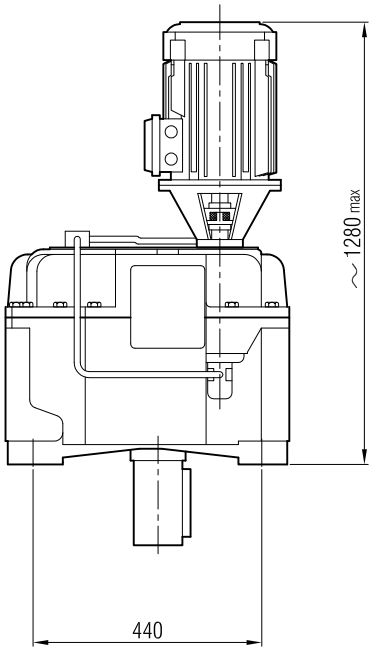
4DS Serisi Redüktörler Ölçü Sayfaları

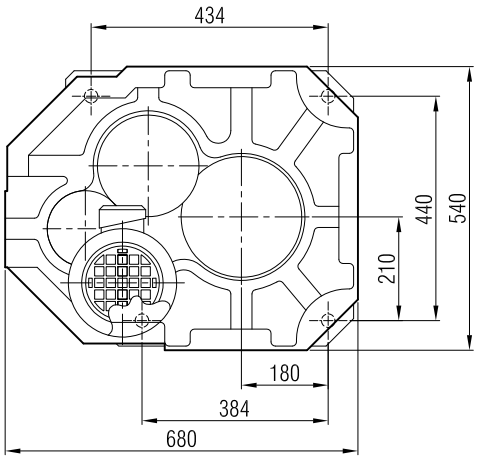
Dimensions Pages

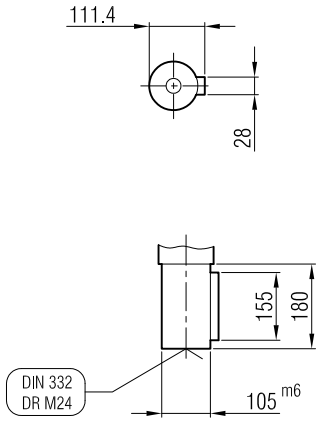
Dimensions

4DSM 480

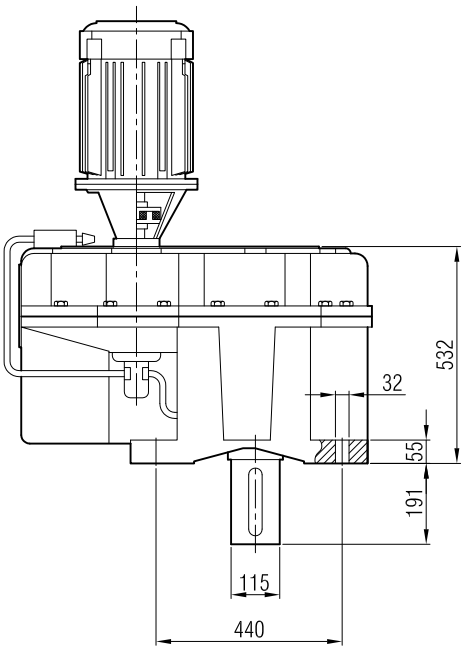

456
26
50
174
105
384

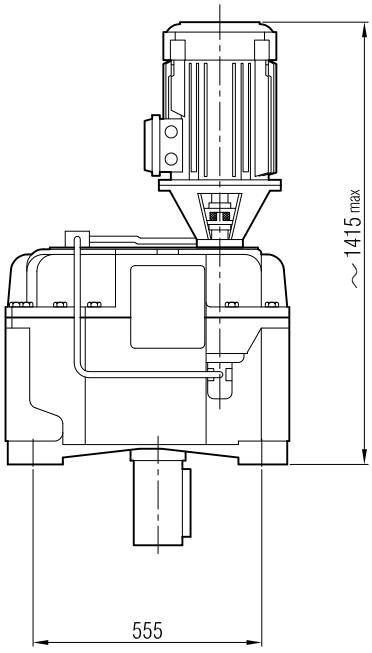

~1280 max
440

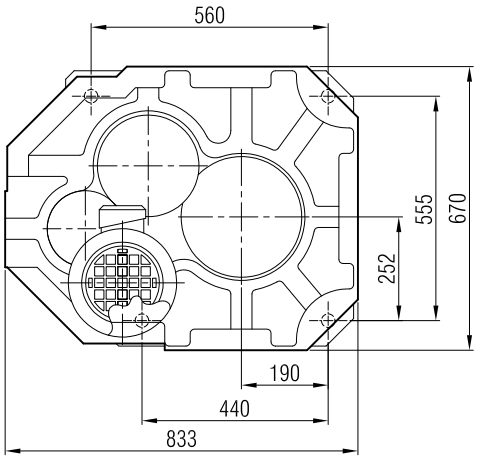

434
440
540
210
180
384
680

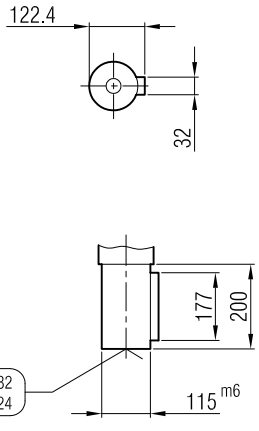

111.4
28
155
180
DIN 332
DR M24
105 m6

4DSM 615

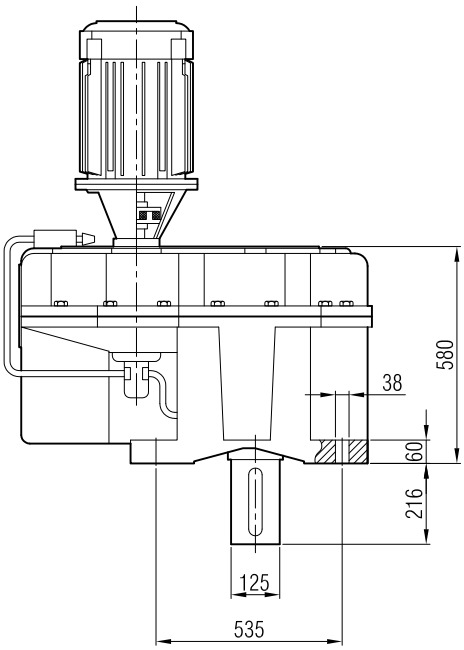

532
32
55
191
115
440

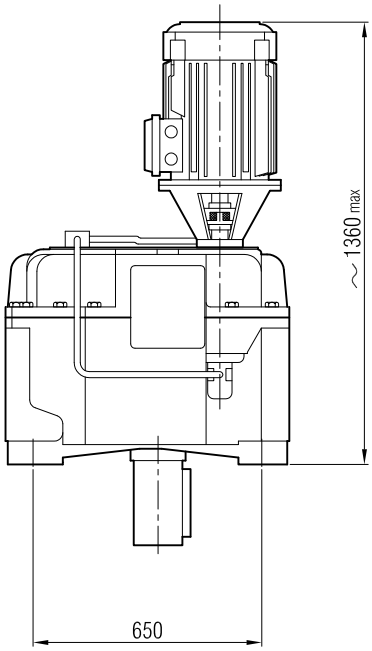

~1415 max
555

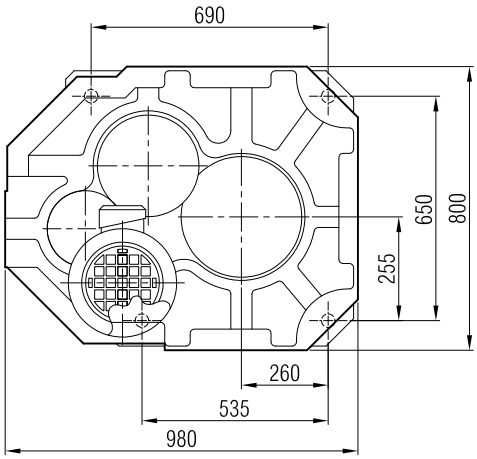

560
555
670
252
190
440
833

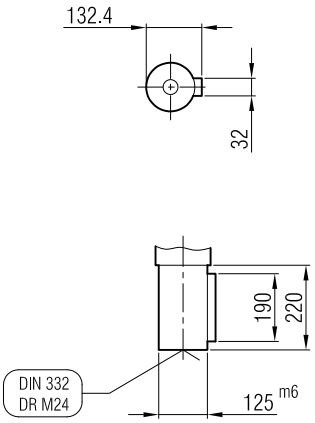

122.4
32
177
200
DIN 332
DR M24
115 m6

4DSM 750


580
38
60
216
125
535


~1360 max
650


690
650
800
255
260
535
980

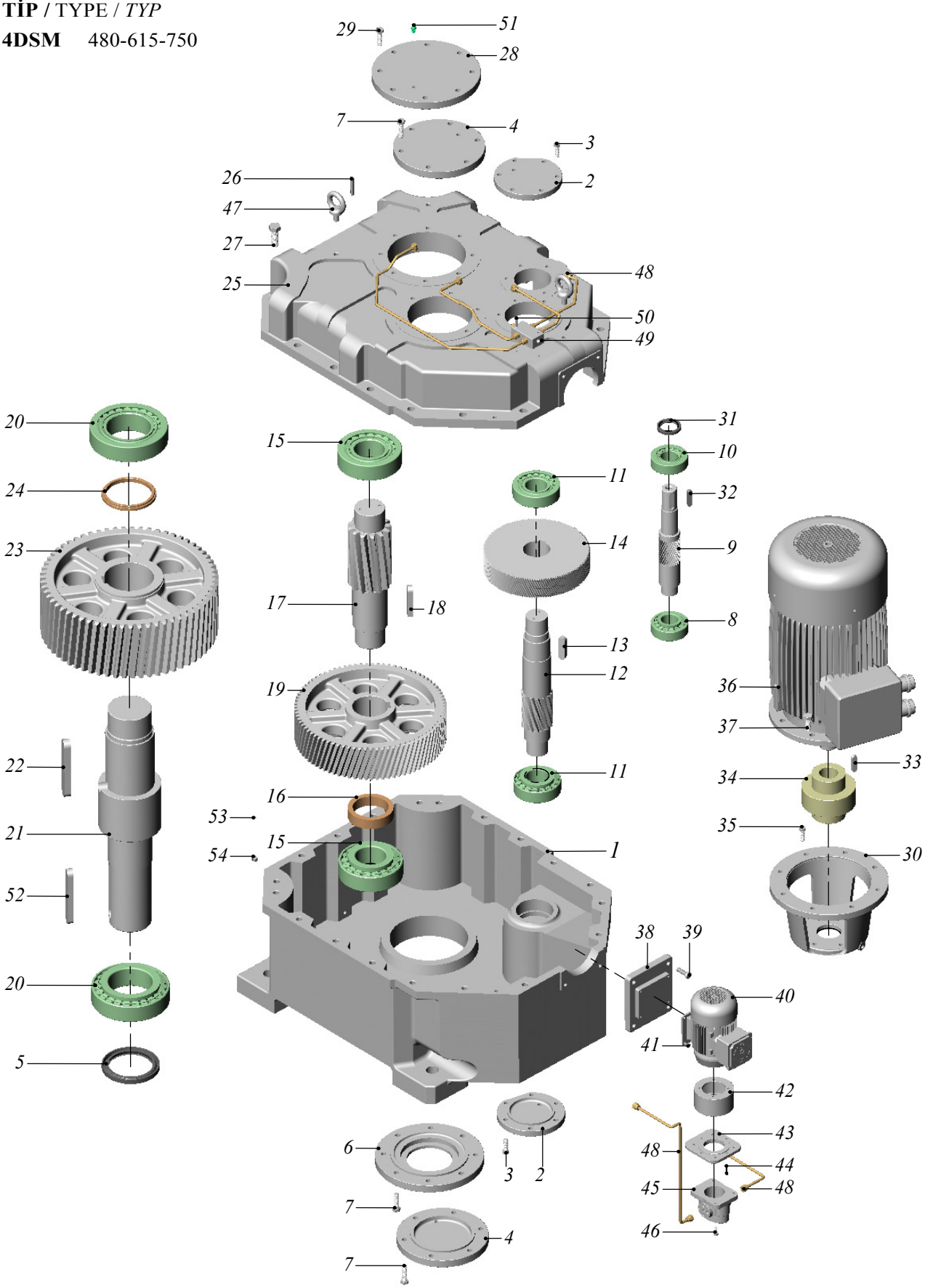

132.4
32
190
220
DIN 332
DR M24
125 m6

Helisel Dişlili Redüktörler Yedek Parça Listeleri

General Parts List

Liste des pièces détachèes

TİP / TYPE / *TYP*
4DSM 480-615-750

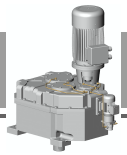




TİP / TYPE / *TYP*

4DSM } 480-615-750

1- Alt Gövde	1- Gear Case (Lower Part)	*1- Getriebegehäuse (Unterteil)*
2- Rulman Baskı Kapağı	2- Bearing Cover	*2- Lagerdeckel*
3- Cıvata	3- Bolt	*3- Sechskantschraube*
4- Rulman Baskı Kapağı	4- Bearing Cover	*4- Lagerdeckel*
5- Keçe	5- Seal	*5- Wellendichtring*
6- Keçe Kapağı	6- Seal Cover	*6- Dichtringflansch*
7- Cıvata	7- Bolt	*7- Sechskantschraube*
8- Rulman	8- Bearing	*8- Lager*
9- Milli Dişli Z1	9- Gear Z1	*9- Ritzelwelle Z1*
10- Rulman	10- Bearing	*10- Lager*
11- Rulman	11- Bearing	*11- Lager*
12- Milli Dişli Z3	12- Gear Z3	*12- Ritzelwelle Z3*
13- Kama	13- Key	*13- Passfeder*
14- Dişli Z2	14- Gear Z2	*14- Rad Z2*
15- Rulman	15- Bearing	*15- Lager*
16- Burç	16- Spacer	*16- Stützscheibe*
17- Milli Dişli Z5	17- Gear Z5	*17- Ritzelwelle Z5*
18- Kama	18- Key	*18- Passfeder*
19- Dişli Z4	19- Gear Z4	*19- Rad Z4*
20- Rulman	20- Bearing	*20- Lager*
21- Çıkış Mili	21- Output Shaft	*21- Abtriebswelle*
22- Kama	22- Key	*22- Passfeder*
23- Dişli Z6	23- Gear Z6	*23- Rad Z6*
24- Burç	24- Spacer	*24- Stützscheibe*
25- Üst Kapak	25- Upper Cover	*25- Getriebedeckel*
26- Pim	26- Pin	*26- Stift*
27- Cıvata	27- Bolt	*27- Sechskantschraube*
28- Rulman Baskı Kapağı	28- Bearing Cover	*28- Lagerdeckel*
29- Cıvata	29- Bolt	*29- Sechskantschraube*
30- Motor Bağlantı Boğazı	30- Motor Mounting Adapter	*30- Verlängerts Motoranschlussflansch*
31- Keçe	31- Seal	*31- Wellendichtring*
32- Kama	32- Key	*32- Passfeder*
33- Kama	33- Key	*33- Passfeder*
34- Kaplin	34- Coupler	*34- Kuppler*
35- Cıvata	35- Bolt	*35- Sechskantschraube*
36- Motor	36- Electric Motor	*36- Elektromotor*
37- Cıvata	37- Bolt	*37- Sechskantschraube*
38- Yan Kapak	38- Side Cover	*38- Getriebedeckel*
39- Cıvata	39- Bolt	*39- Sechskantschraube*
40- Yağ Pompalama Motoru	40- Oil Pumping Motor	*40- Ölpumpenmotor*
41- Cıvata	41- Bolt	*41- Sechskantschraube*
42- Ara Bağlantı Flanşı	42- Adapter Flange	*42- Anschlussflansch*
43- Flanş	43- Flange	*43- Flansch*
44- Cıvata	44- Bolt	*44- Sechskantschraube*
45- Yağ Pompası	45- Oil Pump	*45- Oilpumpen*
46- Cıvata	46- Bolt	*46- Sechskantschraube*
47- Taşıma Kancası	47- Lifting Eye Bolt	*47- Ringschraube*
48- Yağ Borusu	48- Oil Level Tube	*48- Ölrohr*
49- Yağ Dağıtıcısı	49- Oil Seperator	*49- Ölabscheider*
50- Yağ Dağıtıcı Cıvatası	50- Oil Seperator Bolt	*50- Ölabscheider-Schraube*
51- Yağ Pompalama Cıvatası	51- Oil Pump Bolt	*51- Oilpumpen-Schraube*
52- Kama	52- Key	*52- Passfeder*
53- Yağ Seviye Tespit Cıvatası	53- Oil Level Plug	*53- Ölstandschraube*
54- Yağ Boşaltma Cıvatası	54- Drain Plug	*54- Verschluss-Schraube*



Notlar
Notes

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