



**I.Mak**®

REDÜKTÖR & VARYATÖR A.Ş.

## ***Monoblok Ağır Hizmet Serisi***

*Horizontal Helical Gear Unit  
Réducteur hélicoïdal à usage industriel*



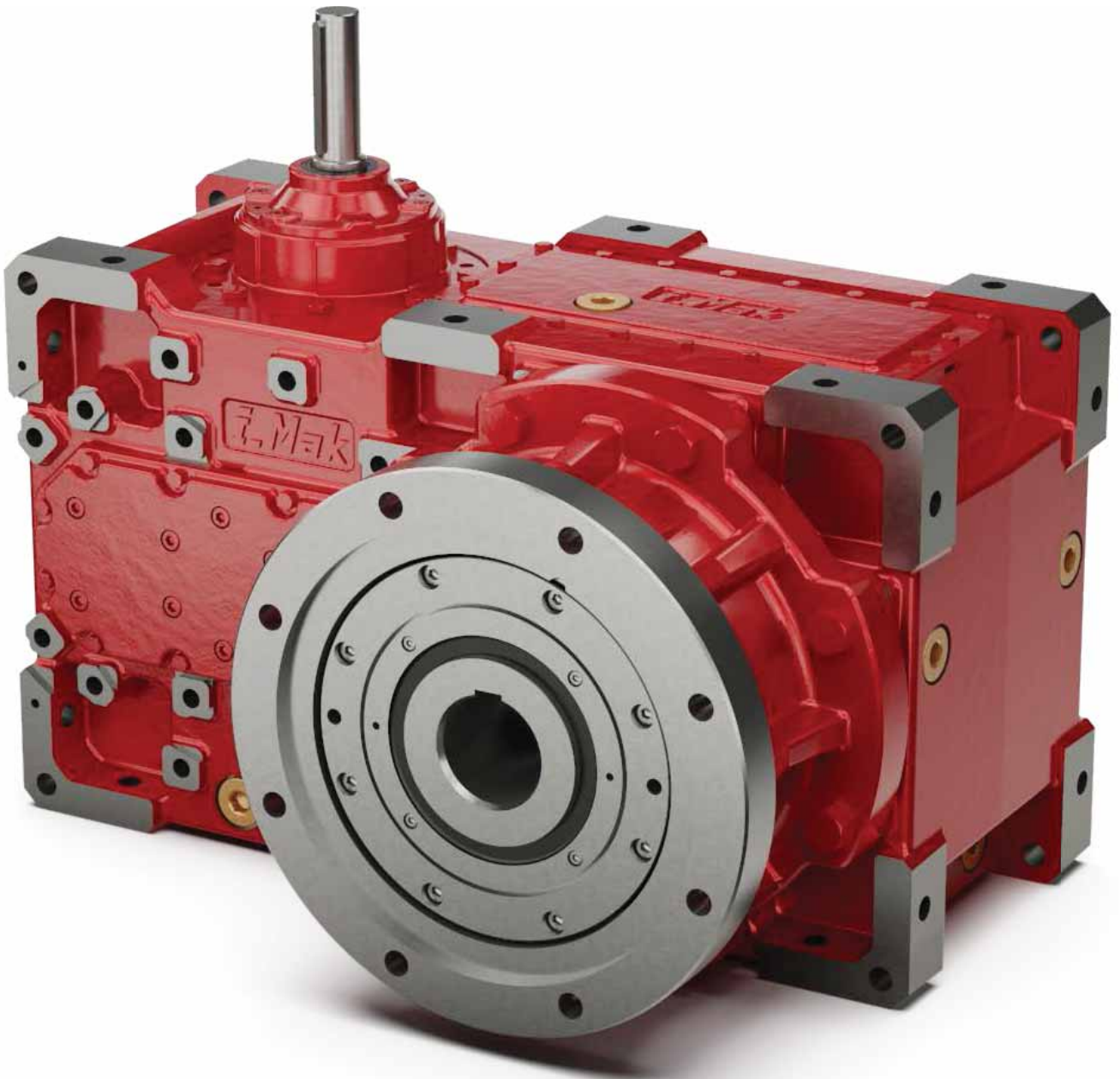
**M02**



SERIES  
MA  
MK  
MKE

2022  
TR | EN | FR

Gearboxes and Drives / Moto Réducteurs



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# MA

SERİSİ / SERIES / SÉRIES



- Monoblok döküm gövdeli
- 6 farklı gövde büyüklüğü
- 10300 – 38800 Nm moment aralığı
- 6 – 512 Tahvil aralığı

- Cast iron monobloc housing
- 6 size of housing
- Torque range from 10300 to 38800 Nm
- Ratio range from 6 to 512

- *Carter monobloc en fonte*
- *6 tailles de carter*
- Couple allant de 10300 à 38800 Nm
- Rapport de réduction compris entre 6 et 512

# MK

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# MKE

SERİSİ / SERIES / SÉRIES



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- 6 – 512 Tahvil aralığı

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- Rapport de réduction compris entre 6 et 512

**MA SERIES**

Tip Type Type	Moment (Max) Torque (Max) Couple (Max)	Kovan Çapı Hollow Shaft Diamètre de l'arbre creux	Mil Çapı Shaft Diameter Diamètre de l'arbre de sortie
MA 502-503	10300 Nm	Ø95	Ø100
MA 602-603	12900 Nm	Ø105	Ø110
MA 702-703-704	19400 Nm	Ø115	Ø120
MA 802-803-804	24100 Nm	Ø125	Ø130
MA 902-903-904	29930 Nm	Ø135	Ø140
MA 1002-1003-1004	36000 Nm	Ø150	Ø160
<b>Range of Ratios / Rappports de réduction</b>			
6,028 .... 423,479			
<b>Applicable Motor Power / Puissance Moteur Applicable</b>			
2,2 kW...560 kW			

**Monoblok Ağır Hizmet Serisi (Helisel Dişli)**  
**Monobloc industrial gear unit**  
**Monobloc Réducteur hélicoïdal à usage industriel**

**Monoblok Ağır Hizmet Serisi (Konik Dişli)**  
**Monobloc industrial gear unit**  
**Monobloc Réducteur hélicoïdal à usage industriel**


Tip Type Type	Moment (Max) Torque (Max) Couple (Max)	Kovan Çapı Hollow Shaft Diamètre de l'arbre creux	Mil Çapı Shaft Diameter Diamètre de l'arbre de sortie
MK 503-504	10300 Nm	Ø95	Ø100
MK 603-604	12900 Nm	Ø105	Ø110
MK 703-704	19400 Nm	Ø115	Ø120
MK 803-804	22520 Nm	Ø125	Ø130
MK 903-904	29530 Nm	Ø135	Ø140
MK 1003-1004	37580 Nm	Ø150	Ø160
<b>Range of Ratios / Rappports de réduction</b>			
15,674 .... 511,760			
<b>Applicable Motor Power / Puissance Moteur Applicable</b>			
0,55 kW...250 kW			

**MK SERIES**
**MAE SERIES**

Tip Type Type	Moment (Max) Torque (Max) Couple (Max)	Kovan Çapı Hollow Shaft Diamètre de l'arbre creux
MAE 502-503	10300 Nm	Ø70
MAE 602-603	12900 Nm	Ø80
MAE 702-703-704	19400 Nm	Ø90
MAE 802-803-804	24100 Nm	Ø100
MAE 902-903-904	29930 Nm	Ø110
MAE 1002-1003-1004	36000 Nm	Ø120
<b>Range of Ratios / Rappports de réduction</b>		
6,028 .... 423,479		
<b>Applicable Motor Power / Puissance Moteur Applicable</b>		
2,2 kW ... 560 kW		

**Monoblok Ağır Hizmet Serisi (Extruder)**  
**Monobloc extruder gear units**  
**Réducteur monobloc pour extrudeuse**

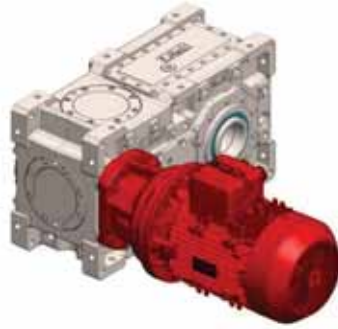
**MKE SERIES**

Tip Type Type	Moment (Max) Torque (Max) Couple (Max)	Kovan Çapı Hollow Shaft Diamètre de l'arbre creux
MKE 503-504	10300 Nm	Ø70
MKE 603-604	12900 Nm	Ø80
MKE 703-704	19400 Nm	Ø90
MKE 803-804	22520 Nm	Ø100
MKE 903-904	29530 Nm	Ø110
MKE 1003-1004	37580 Nm	Ø120
<b>Range of Ratios / Rappports de réduction</b>		
15,674 .... 511,760		
<b>Applicable Motor Power / Puissance Moteur Applicable</b>		
0,55 kW ... 250 kW		





**MA**  
**Giriş Milli**  
Solid input shaft  
*Arbre d'entrée*



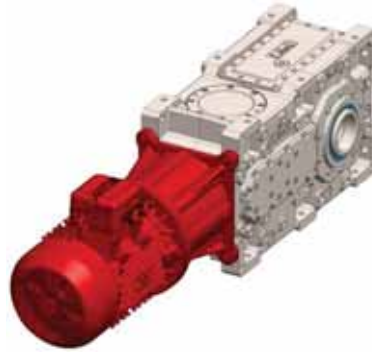
**MAPM**  
**IEC Pam Flanşlı Motorlu**  
IEC input flange with motor  
*Avec bride PAM-IEC et moteur*



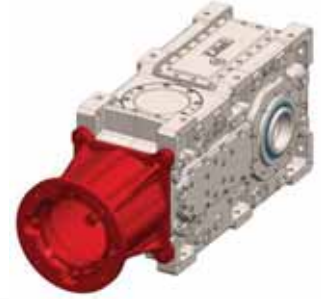
**MAP**  
**IEC Pam Flanşlı**  
IEC input flange  
*Avec bride PAM – IEC*



**MK – G07**  
**Giriş Milli**  
Solid input shaft  
*Arbre d'entrée*



**MKPM – G09**  
**IEC Pam Flanşlı Motorlu**  
IEC input flange with motor  
*Avec bride PAM-IEC et moteur*



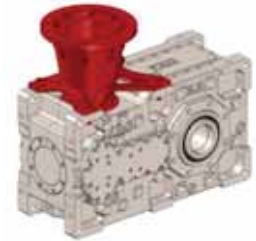
**MKP – G09**  
**IEC Pam Flanşlı**  
IEC input flange  
*Avec bride PAM – IEC*



**MK – G08**  
**Giriş Milli**  
Solid input shaft  
*Arbre d'entrée*



**MKPM – G10**  
**IEC Pam Flanşlı Motorlu**  
IEC input flange with motor  
*Avec bride PAM-IEC et moteur*



**MKP – G10**  
**IEC Pam Flanşlı**  
IEC input flange  
*Avec bride PAM – IEC*



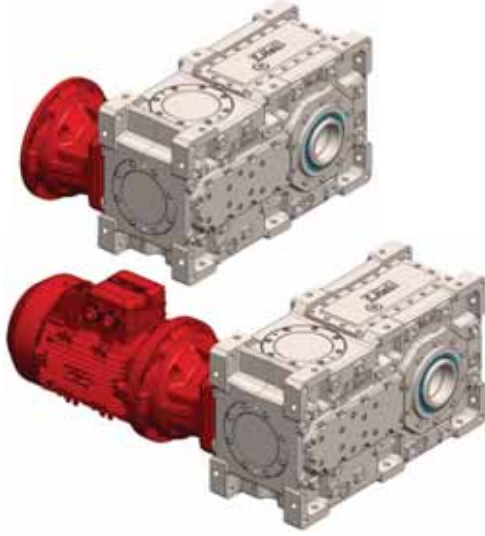
**G00**  
**Sol Giriş Milli**  
Solid input shaft (Left)  
Arbre d'entrée (Gauche)



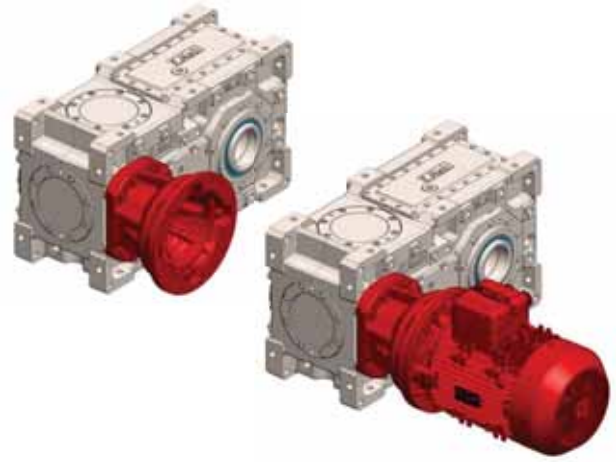
**G01**  
**Sağ Giriş Milli**  
Solid input shaft (Right)  
Arbre d'entrée (Droite)



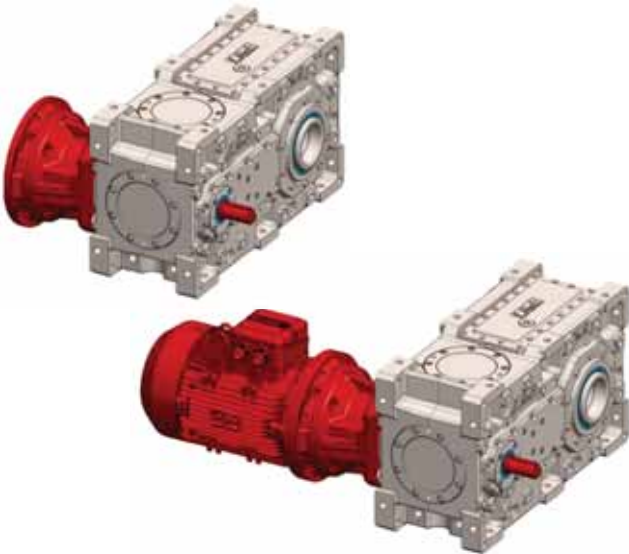
**G02**  
**Çift Giriş Milli**  
Double Solid input shaft  
Double arbre d'entrée



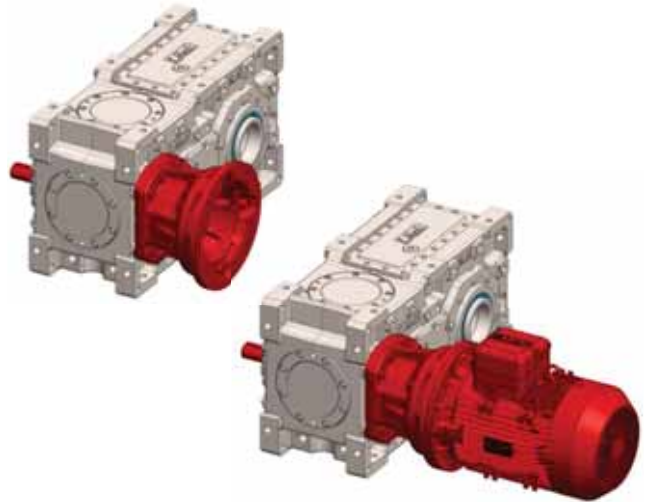
**G03**  
**Sol Pam Flanşlı veya Motorlu**  
IEC input flange or With motor (Left)  
Avec bride PAM - IEC ou Moteur (Gauche)



**G04**  
**Sağ Pam Flanşlı veya Motorlu**  
IEC input flange or With motor (Right)  
Avec bride PAM - IEC ou Moteur (Droite)



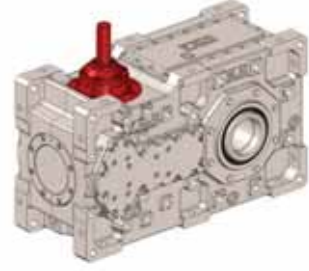
**G05**  
**Sol Pam Flanşlı veya Motorlu + Sağ Giriş Milli**  
IEC input flange or With motor (Left) + Solid input shaft (Right)  
Avec bride PAM - IEC ou Moteur (Gauche) + Arbre d'entrée (Droite)



**G06**  
**Sağ Pam Flanşlı veya Motorlu + Sol Giriş Milli**  
IEC input flange or With motor (Right) + Solid input shaft (Left)  
Avec bride PAM - IEC ou Moteur (Droite) + Arbre d'entrée (Gauche)



**G07**  
**Önden Giriş Milli**  
Input shaft from the front  
*Arbre d'entrée de face*



**G08**  
**Üstten Giriş Milli**  
Overhead input shaft  
*Arbre d'entrée supérieur*



**G09**  
**Önden Pam Flanşlı veya Motorlu**  
IEC input flange or With motor from the front  
*Avec bride PAM - IEC ou Moteur de face*



**G10**  
**Üstten Pam Flanşlı veya Motorlu**  
Overhead IEC input flange or With motor  
*Avec bride PAM - IEC ou Moteur supérieur*



**MA / MK ....**  
**Hollow output shaft**  
*Arbre creux*



**MA / MK .... SL**  
**Output shaft (Left)**  
*Arbre de sortie (Gauche)*



**MA / MK .... SR**  
**Output shaft (Right)**  
*Arbre de sortie (Droite)*



**MA / MK .... SD**  
**Double output shaft**  
*Double arbre de sortie*



**MA / MK .... FL**  
**Output flange (Left)**  
*Bride de sortie (Gauche)*



**MA / MK .... FR**  
**Output flange (Right)**  
*Bride de sortie (Droite)*



**MA / MK .... FD**  
**Double output flange**  
*Bride de sortie (Double)*



**MA / MK .... FL-SL**  
**Output flange-Output shaft (Left)**  
*Arbre et bride de sortie (Gauche)*



**MA / MK .... FR-SR**  
**Output flange-Output shaft (Right)**  
*Arbre et bride de sortie (Droite)*



**MA / MK .... FD-SD**  
**Double output flange-Double output shaft**  
*Bride de sortie double - Arbre de sortie double*







Giriş Yönlerine Göre Bağlanabilir Çıkış Opsiyonları / - / -

Giriş Yönleri Entry Aspects Aspects d'entree	Çıkış Opsiyonları / Output Options / Options de sortie									
	Kovanlı	SL	SR	SD	FL	FR	FD	FL-SL	FR-SR	FD-SD
G00										
G01										
G02										
G03										
G04										
G05										
G06										
G07										
G08										
G09										
G10										

Termal Güç Tablosu / - / -

SOĞUTMASIZ REDÜKTÖR TERMAL GÜÇ [kW]					
	60X	70X	80X	90X	100X
MA__2	72	91	102	114	134
MA__3	48	61	69	77	90
MA__4	37	46	52	58	68
MK__3	48	61	69	77	90
MK__4	37	46	52	58	68

RADYATÖR SOĞUTMALI REDÜKTÖR TERMAL GÜÇ [kW]					
	60X	70X	80X	90X	100X
MA__2	139	158	304	316	470
MA__3	94	106	204	212	315
MA__4	71	80	154	160	238
MK__3	94	106	204	212	315
MK__4	71	80	154	160	238

SERPANTİN SOĞUTMALI REDÜKTÖR TERMAL GÜÇ [kW]					
	60X	70X	80X	90X	100X
MA__2	160	200	225	246	277
MA__3	108	135	151	166	186
MA__4	81	102	114	125	140
MK__3	108	135	151	166	186
MK__4	81	102	114	125	140

LEHİMLİ EŞANJÖR SOĞUTMALI REDÜKTÖR TERMAL GÜÇ [kW]					
	60X	70X	80X	90X	100X
MA__2	139	158	304	316	470
MA__3	94	106	204	212	315
MA__4	71	80	154	160	238
MK__3	94	106	204	212	315
MK__4	71	80	154	160	238



**Redüktör opsiyonları / Gearboxes options / Options des motoréducteurs**

Kod	Opsiyon	Options	Options
SL	Sol taraf çıkış mili	Output shaft left	Arbre de sortie ( gauche )
SR	Sağ taraf çıkış mili	Output shaft right	Arbre de sortie ( Droite)
SD	Çift çıkış mili	Output shaft double	Arbre de sortie ( Double )
FL	Sol taraf çıkış flanşı	Output flange left	Bride de sortie ( Gauche )
FR	Sağ taraf çıkış flanşı	Output flange right	Bride de sortie ( Droite )
FD	Çift çıkış flanşı	Double output flange	Bride de sortie ( Double )
TL	Sol tork kolu	Torque arm left	Bras de couple ( Gauche )
TR	Sağ tork kolu	Torque arm right	Bras de couple ( Droit )
H	Çektirme pulu	Retaining screw washer	Epaullement ( vis de fixation )
SDL	Sol sıkma bilezik	Shrink disc left	Frette de serrage ( Gauche )
SDR	Sağ sıkma bilezik	Shrink disc right	Frette de serrage ( Droit )
OC	Çıkış koruma kapağı	Output cover	Bouchon ( arbre creux )

**Motor opsiyonları / Motor's options / Options moteurs**

Kod	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	Enkoder	Encoder	Encoder
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
BS	Mekanik kilit	Backstop	Roulement anti-retour

## Çıkış mili / Output shaft / Arbre de sortie

Kod / Code	Varyasyon	Options	Options
111	Özel mil ölçüsü	Special shaft dimensions	Dimensions de l'arbre spécial
112	Özel mil malzemesi	Special shaft materials	Matériel de l'arbre spécial
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

## Kovan / Hollow shaft / Bride

Kod / Code	Varyasyon	Options	Options
121	Özel kovan ölçüsü	Dimensions of special shaft	Arbre creux spécial
122	Özel kovan malzemesi	Material of special output shaft	Arbre creux en matériaux spéciaux
123	Sertleştirilmiş kovan *	Hardened steel hollow shaft*	Arbre creux en acier trempé*
124	Diş çekilmiş kovan**	Hollow shaft with screw**	Arbre creux a vis**
125	Opsiyonel kovan	Optional output shaft	Arbre creux optionnel
126	Çoklu kama uygulaması	Hollow shaft with splining	Arbre creux cannelé

## Giriş mili - pam mili / Input shaft / Arbre d'entrée

Kod / Code	Varyasyon	Options	Options
131	Özel mil ölçüsü	Dimensions of the shaft	Dimensions de l'arbre ( Spécial )
132	Özel mil malzemesi	Material of special shaft	Matériaux de l'arbre ( Spécial )
133	Sertleştirilmiş mil	Hardened steel shaft	Arbre en acier trempé
134	Çoklu kama uygulaması	Hollow shaft with screw	Arbre creux a vis
135	Özel alın mili	Spécial input shaft	Arbre d'entrée spécial
136	Diş çekilmiş mil	Shaft with screw	Arbre de sortie avec vis

## Çıkış flanşı / Output flange / Bride de sortie

Kod / Code	Varyasyon	Options	Options
141	Özel flanş ölçüsü	Dimensions of special output flange	Dimensions de la bride de sortie (Spéciale)
142	Özel flanş malzemesi	Material of special output flange	Matériaux de la bride de sortie (Spéciale)
143	Opsiyonel flanş	Optional output flange	Bride de sortie optionnelle
144	Standart dışı flanş*	Special output flange*	Bride d'entrée spéciale*

\* İstenilen değişiklik ürünün standart flanşı üzerinde yapılamayıp yeni bir flanş tasarlanması durumudur. / In the case your configuration require the production of a special flange / Dans le cas où la configuration de votre application requiert une bride d'entrée spéciale.

## Giriş flanşı / Input flange / Bride d'entrée

Kod / Code	Varyasyon	Options	Options
151	Özel flanş ölçüsü	Dimension of special input flange	Bride d'entrée ( Spéciale )
152	Özel flanş malzemesi	Material of special input flange	Matériaux de la bride d'entrée ( spéciale )
153	Standart dışı flanş*	Special input flange*	Bride d'entrée ( Spéciale )*
154	IEC B14 Flanş	IEC B14 Flange	IEC B14 Bride
155	IEC B5 Flanş	IEC B5 Flange	IEC B5 Bride
156	Kaplinli Pam Flanş	IEC PAM with integrated coupling	Bride IEC avec accouplement intégré
157	NEMA Flanş	NEMA input flange	Bride NEMA

\* İstenilen değişiklik ürünün standart flanşı üzerinde yapılamayıp yeni bir flanş tasarlanması durumudur. / In the case your configuration require the production of a special flange / Dans le cas où la configuration de votre application requiert une bride de sortie spéciale.

**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 )

**Keçe-tapa / Seal-cover / Joint- bouchon**

Kod / Code	Varyasyon	Options	Options
221	Özel ölçü keçe	Dimensions of special seal	Dimensions du joint (Spécial)
222	Özel ölçü tapa	Dimensions of special cover	Dimensions du bouchon ( Spécial )
223	Özel marka keçe	Special brand of seal	Marque du joint ( Spécial )
224	Özel marka tapa	Special brand of cover	Marque du bouchon ( Spécial )
225	Viton keçe	Viton seal	Joint en viton
226	Özel tip keçe uygulaması	Special configuration of seal	Configuration spéciale du joint
227	Toz kapağı	Dust cover	Bouchon anti-poussière

**Rulman / Bearing / Roulement**

Kod / Code	Varyasyon	Options	Options
231	Güçlendirilmiş çıkış rulmanı	Reinforced output bearing	Roulement renforcé ( Sortie )
232	Güçlendirilmiş giriş rulmanı	Reinforced input bearing	Roulement renforcée ( Entrée )
233	Özel marka rulman	Special brand of bearing	Marque du roulement ( Spécial )
234	Özel ölçü rulman	Special dimensions of bearing	Dimensions du roulement ( Spécial )
235	Mekanik kilit CW*	Backstop bearing ( CW )	Roulement anti-retour ( CW )
236	Mekanik kilit CCW*	Backstop bearing ( CCW )	Roulement anti-retour ( CCW )

**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

**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)	Acrylic paint	Peinture acrylique (Environnement 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 yi 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 spécial
312	Özel frekans motor	Special frequency	Fréquence spéciale

\*400 V 50 Hz dışı tüm sınırlar 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

\* 0 C° ile 40 C° aralığı dışındaki ortam sıcaklıkları için fabrikaya danışınız / Adapted for outside environment with temperature in between 0 C° and 40 C° / Adapté aux environnements extérieurs avec une température comprises entre 0° C et 40° C

## Rulman / Bearing / Roulement

Kod / Code	Varyasyon	Options	Options
341	Sıcak ortam rulmanı*	Bearing for hot environment	Roulement pour environnement a températures élevées
342	Soğuk ortam rulmanı*	Bearing for cold environment	Roulement pour environnement 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 fabrikaya danışınız / For outside environment with temperature out of 0C° and 40C° consult our technical team / Pour des environnements avec des température non comprises entre 0C° et 40C° consulté nos équipes techniques.

## Marka / Brand / Marque

Kod / Code	Varyasyon	Options	Options
351	Gamak Motor	Gamak Motor	Gamak Moteur
352	Volt Elektrik Motor	Volt Motor	Volt Moteur
353	Aemot Motor	Aemot Motor	Aemot Moteur
354	Wat Motor	Wat Motor	Wat Moteur
356	Diğer	Diğer	Diğer

## Verim sınıfı / Efficiency classifications / Classes d'efficience énergétique

Kod / Code	Varyasyon	Options	Options
361	IE1	IE1	IE1
362	IE3	IE3	IE3
363	IE4	IE4	IE4

\* IE 2 verim sınıfı standart kabul edilir. / IE 2 is the standard category / IE 2 étant la norme standard

### Fren markası / Brake's brand / Marque du frein

Kod / Code	Varyasyon	Options	Options
411	EMF fren	EMF brake	Frein - EMF
412	Fatih fren	Fatih brake	Frein - Fatih
413	Diğer	Other	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 refroidissement
424	24 V soğutmasız*	24 V without cooler	24 V - sans refroidissement
425	Çift balatalı fren	Double disk brake	Frein avec double disque
426	Özel tip fren	Special brake type	Type de frein spécial
427	Özel voltaj fren	Special voltage for brake	Frein avec voltage spécial

\* Soğutmasız frenlerde motor fan muhafazası bulunmamaktadır / The brake without cooling are installed without fan or cover / Les freins sans refroidissement ne sont pas équipés de couvercle ou d'hélice.

### 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 enkoder çeşitleri için fabrikaya danışınız / For different type of encoder contact our sales team / Pour des type de codeurs différents contactez notre équipe technique

### 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	Basın 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 coil heat	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	Explosion 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 fabrikamız 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 catalogue.

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 caractéristique de l'application. Ont distingue trois type de charges différentes

1. Charges uniformes (U)
2. Charges modérées (M)
3. Charges élevées (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'arrêt/rédémarrage est donc à prendre en compte lors de l'analyse du service facteur.

L'exemple çı-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 électrique. La charge est "élevée" et la durée de fonctionnement journalière 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 (Caterpillar)	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 construction machines	M	Machine de construction(routes)	M

Kaldırma ve İletme Tesisleri		Conveyor		Convoyeurs	
Zincirli konveyör	M	Through chain conveyors	M	Convoyeurs à chaines	M
Mafsallı 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
<b>Elekt. Motorlu</b> / Elect. Motor / Moteurs élect. <b>Türbin</b> / Turbin / Turbine <b>Hidrolik</b> / Hydraulic / Hydraulique	0.....3	0.8	1	1.5
	3....10	1	1.25	1.75
	10...24	1.25	1.5	2
<b>Pistonlu Makinalar ( 4....6 Silindir</b> 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
<b>Pistonlu Makinalar ( 1....2 Silindir</b> 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

Ventilatör Ve Aspiratörler		Fans		Ventilations	
Pistonlu ventilatörler	M	Rotary piston blowers	M	Souffleurs rotatifs	M
Ventilatör ( 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
Silindirme 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 testereleler	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
<b>Elekt. Motorlu</b> / Elect. Motor / Moteurs élect. <b>Türbin</b> / Turbin / Turbine <b>Hidrolik</b> / Hydraulic / Hydraulique	0....3	0.8	1	1.5
	3....10	1	1.25	1.75
	10...24	1.25	1.5	2
<b>Pistonlu Makinalar ( 4....6 Silindir</b> 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
<b>Pistonlu Makinalar ( 1....2 Silindir</b> 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		Métallurgie 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 Tahrir )	M	Machines tools ( Main Drives )	M	Machine outil ( Axe principal )	M
Takım tezgahları ( Yardımcı Tahrir )	U	Machines tools ( Auxiliarily Drives )	U	Machine outil ( axe secondaire )	U

Gıda Endüstri Makinaları		Food Industry Machines		Industrie Agroalimentaire	
Doldurma makinaları (Şişe, Kavanoz vs.)	U	Filling machines ( Bottles, Containers.)	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	Türbin ( Light - Liquids )	U	Turbine (Liquides légers)	U
Türbin ( Ağır Akışkan )	M	Türbin ( Semi - Liquids )	M	Turbine (Semi-liquide)	M

Tahrir 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
<b>Elekt. Motorlu</b> / Elect. Motor / Moteurs élect. <b>Türbin</b> / Turbin / Turbine <b>Hidrolik</b> / Hydraulic / Hydraulique	0....3	0.8	1	1.5
	3....10	1	1.25	1.75
	10...24	1.25	1.5	2
<b>Pistonlu Makinalar ( 4....6 Silindir</b> 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
<b>Pistonlu Makinalar ( 1....2 Silindir</b> 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

Kağıt 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

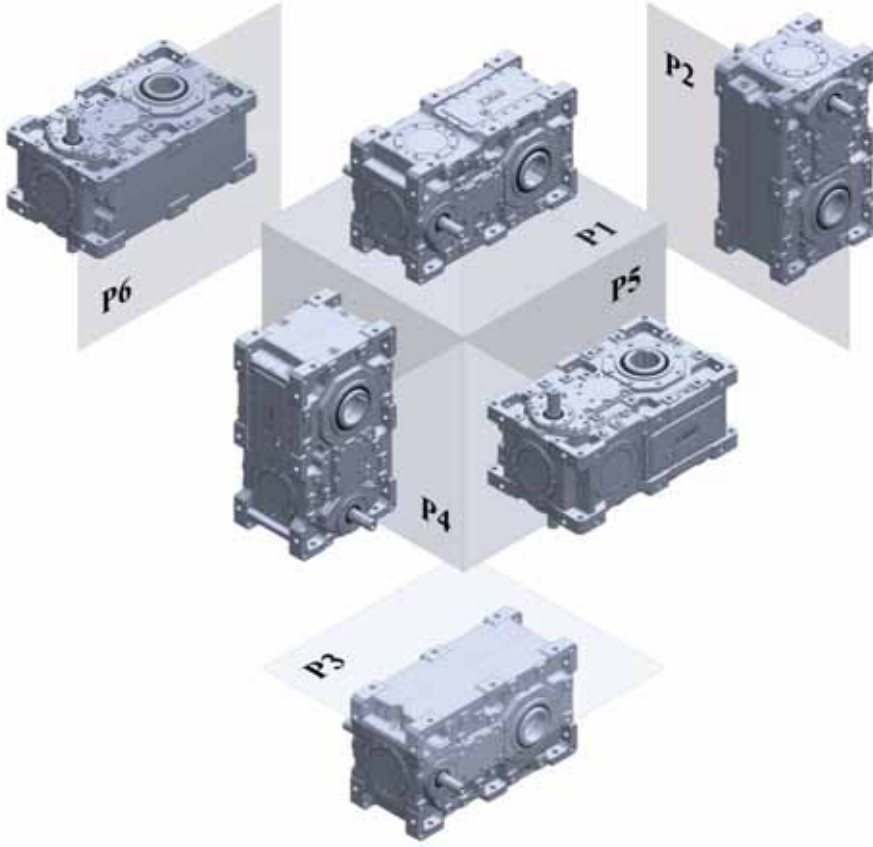
Taş ve Kil Makinaları		Stone and Clay Working Machines		Roches et Argiles	
Kırıcılar	H	Breakers	H	Broyeurs	H
Döner fırınlar	M	Rotary ovens	M	Four rotatifs	M
Çekiçli değirmenler	H	Hammer mills	H	Broyeux à marteaux	H
Bilyalı değirmenler	H	Ball mills	H	Broyeurs à billes	H
Çarpmalı öğütücüler	H	Beater mills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

Silindirme ve Çekme Tesisleri		Metal Rolling Mills		Acieries	
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

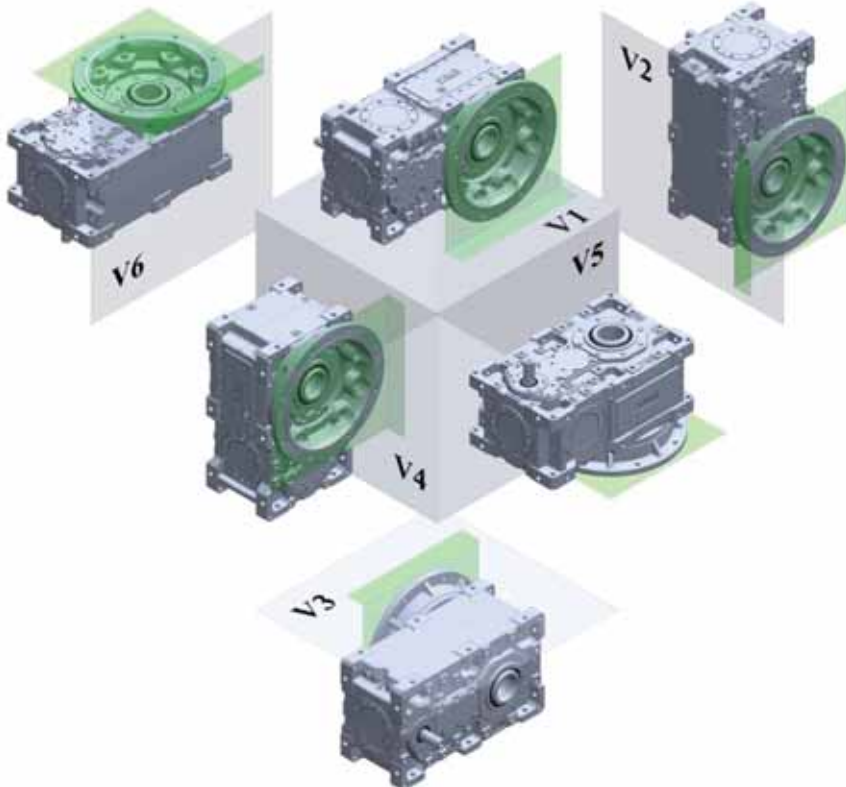
Tahrik Makinası Torque Machine Machines couplées	Günlük Çalışma Müddeti (Saat) Daily Working Period (Hour) Utilisation journalière (Heure)	Makinanın Yükleme Karakteristiği Load Characteristics of Machines Caractéristique des charges		
		Hafif Yük U Uniform Load U Charge uniforme U	Orta Yük M Moderate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



Ayak montajlı redüktörlerde montaj pozisyonu "P" ile gösterilir.

Foot mounted gearboxes position are defined as "P"

Les positions de montages des réducteurs à pattes sont définis par "P"



Flanş montajlı redüktörlerde montaj pozisyonu "V" ile gösterilir.

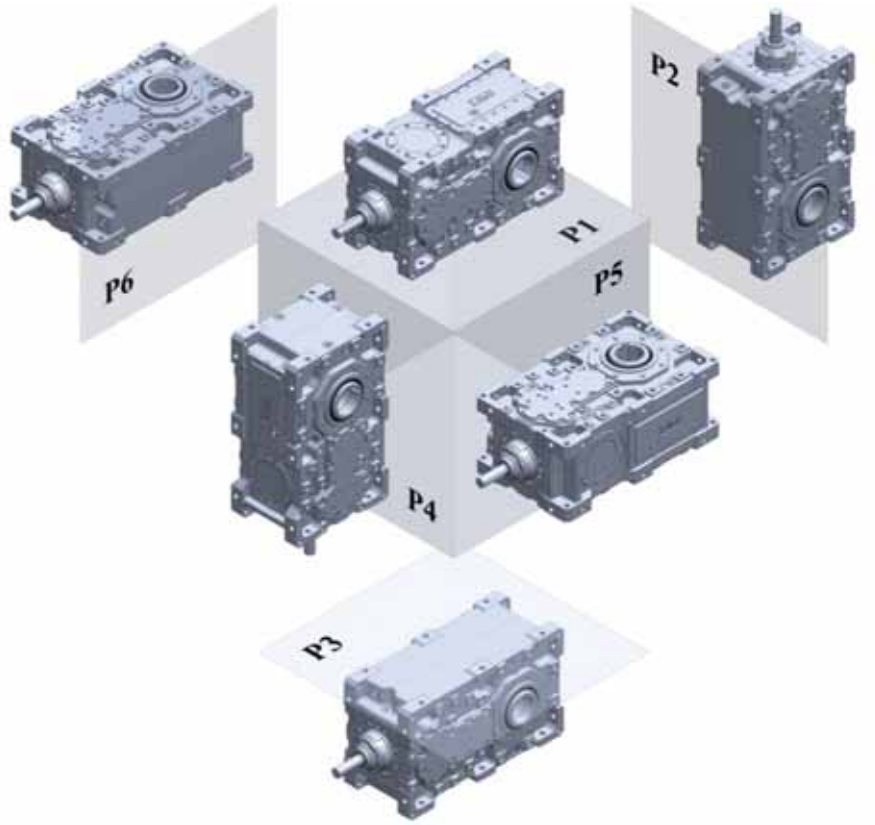
Flange mounted gearboxes position are defined as "V"

Les positions de montages des réducteurs à brides sont définis par "V"

Ayak montajlı redüktörlerde  
montaj pozisyonu "P" ile  
gösterilir.

Foot mounted gearboxes  
position are defined as "P"

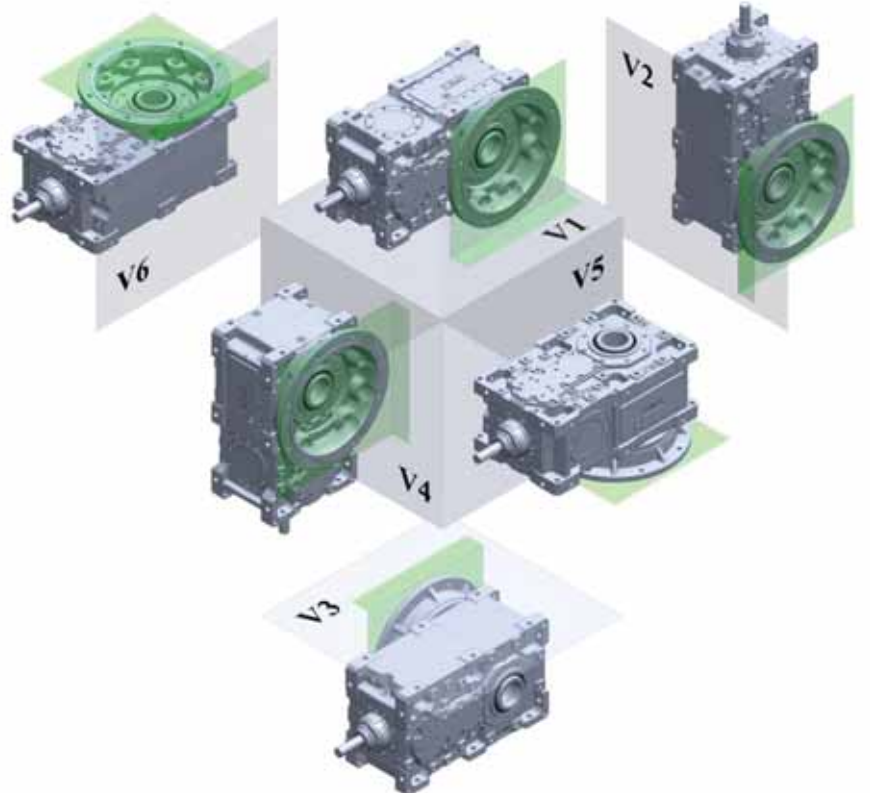
Les positions de montages  
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définis par "P"

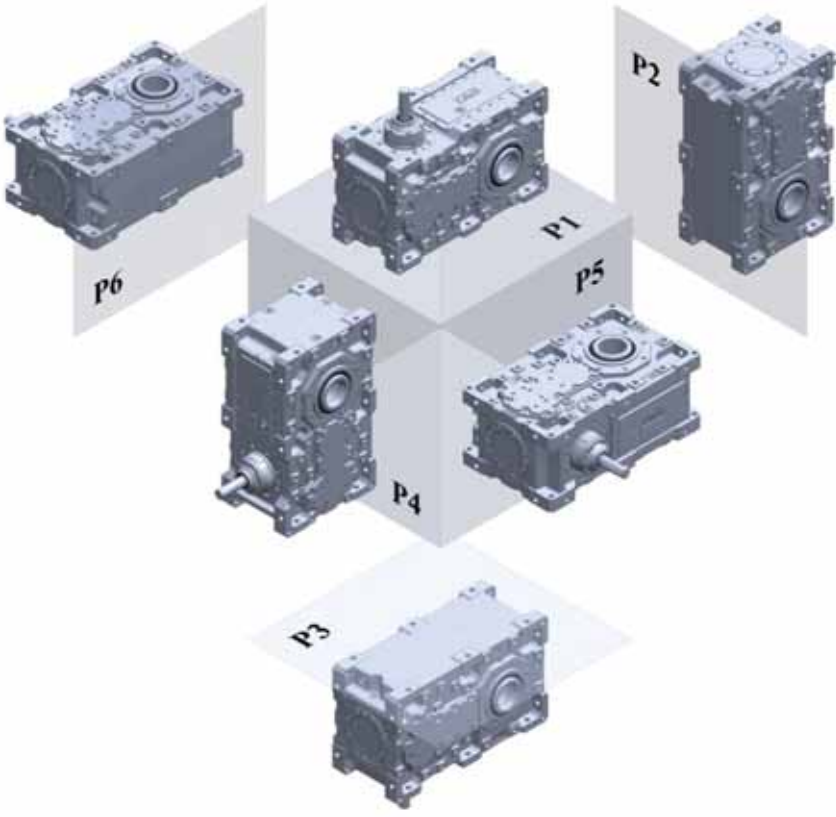


Flanş montajlı redüktörlerde  
montaj pozisyonu "V" ile  
gösterilir.

Flange mounted gearboxes  
position are defined as "V"

Les positions de montages  
des réducteurs à brides sont  
définis par "V"

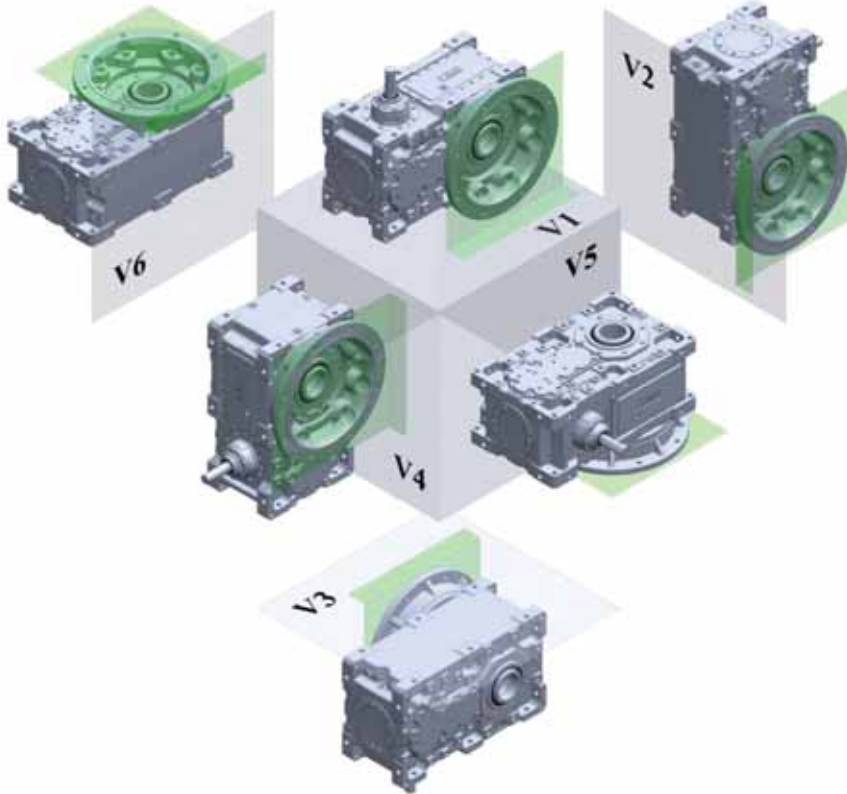




Ayak montajlı redüktörlerde montaj pozisyonu "P" ile gösterilir.

Foot mounted gearboxes position are defined as "P"

Les positions de montages des réducteurs à pattes sont définis par "P"



Flanş montajlı redüktörlerde montaj pozisyonu "V" ile gösterilir.

Flange mounted gearboxes position are defined as "V"

Les positions de montages des réducteurs à brides sont définis par "V"



## 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 sıkılmak 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 entraînant 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.

Korozyon Sınıfı Corrosion Categories Catégories de corrosion	Uygulama Alanları Field of Applications Domaines d'applications	Boya Türü Type of Paint Type de Peinture	Boya Kalınlığı (µm) Paint Thickness (µm) Epaisseur des Peintures (µm)	Toplam Boya Kalınlığı (µm) Total Paint Thickness (µm) Epaisseur des Peintures Total (µm)
C2 EN 12944	Üstü kapalı olacak şekilde iç mekan ve dış mekan uygulamaları. Nem ve kir değerleri kontrol altında olan çevre koşulları.  Indoor installation and outdoor applications with protection roof. Environment with controlled humidity and low contamination.  <i>Installation en intérieur, applications à l'extérieur avec une protection contre les intempéries. Environnement avec une humidité contrôlée et une faible contamination.</i>	Çinko fosfat pigmentli epoksi Epoxy including zinc phosphate pigment <i>Expozy au composants de zinc et pigment phosphates</i>	60	120
		Alifatik akrilik poliüretan Aliphatic acrylic polyurethane <i>Acrylique-polyuréthane aliphatique</i>	60	
C3 EN 12944	Olağan hava koşullarına maruz iç mekan ve dış mekan uygulamaları. Nemli ve kirli çevre koşulları.  Indoor and outdoor applications with regular exposition to weathering. Environment with the presence of humidity and contamination.  <i>Installations en intérieur et extérieur soumises aux aléas climatiques. Environnement avec la présence d'humidité et de contamination.</i>	Çinko fosfat pigmentli epoksi Epoxy including zinc phosphate pigment <i>Expozy au composants de zinc et pigment phosphates</i>	110	160
		Alifatik akrilik poliüretan Aliphatic acrylic polyurethane <i>Acrylique-polyuréthane aliphatique</i>	50	
C4 EN 12944	Olağan hava koşullarına maruz iç mekan ve dış mekan uygulamaları. Yüksek nemli ve kimyasal kirlilikli çevre koşulları.  Indoor and outdoor applications with regular exposition to weathering. Environment with the presence of high humidity and chemical contamination.  <i>Installations en intérieur et extérieur soumises aux aléas climatiques. Environnement avec la présence d'une forte humidité et de contaminations chimiques.</i>	Çinko fosfat pigmentli epoksi Epoxy including zinc phosphate pigment <i>Expozy au composants de zinc et pigment phosphates</i>	90	240
		Yüksek yapılı epoksi High-volume epoxy <i>Epoxy haut volume</i>	100	
		Alifatik akrilik poliüretan Aliphatic acrylic polyurethane <i>Acrylique-polyuréthane aliphatique</i>	50	
C5 EN 12944	Olağan hava koşullarına maruz iç mekan ve dış mekan uygulamaları. Yüksak oranda daimi neme maruz ve kirliliğe karşı kimyasal temizlik ürünü kullanılan çevre koşulları.  Indoor and outdoor applications with regular exposition to weathering. Environment with the presence of continuous high humidity and chemical cleaning contamination.  <i>Installations en intérieur et extérieur soumises aux aléas climatiques. Environnement avec la présence d'une forte humidité et de contaminations chimiques.</i>	Çinko fosfat pigmentli epoksi Epoxy including zinc phosphate pigment <i>Expozy au composants de zinc et pigment phosphates</i>	80	500
		Yüksek yapılı MOI epoksi High-volume MOI epoxy <i>Epoxy MOI à haut volume</i>	160	
		Alifatik akrilik poliüretan Aliphatic acrylic polyurethane <i>Acrylique-polyuréthane aliphatique</i>	60	

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

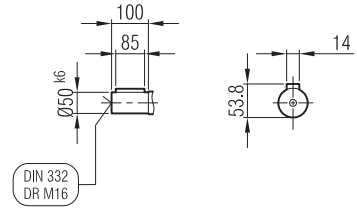
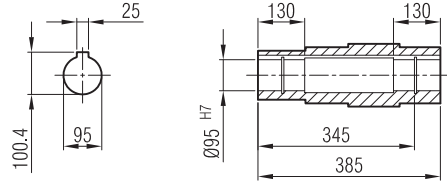
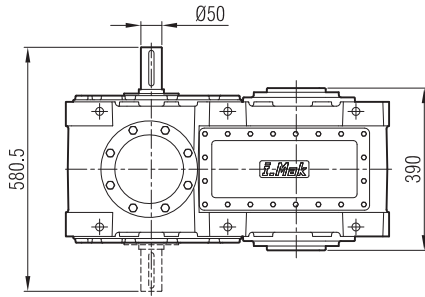
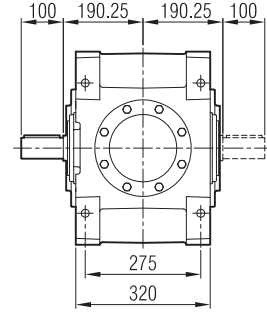
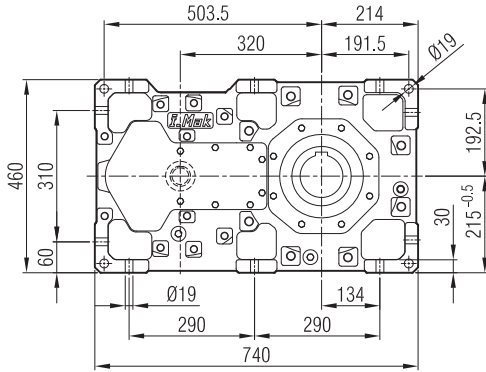
## MA Serisi Redüktörler Ölçü Sayfaları

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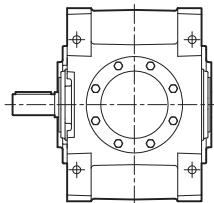
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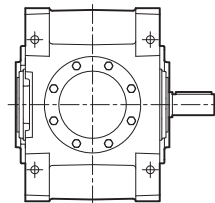
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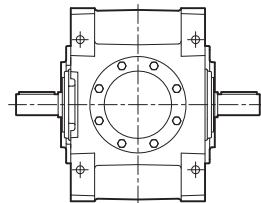
**Giriş Seçenekleri / Input Options / Option D'Entree**



**G00**



**G01**

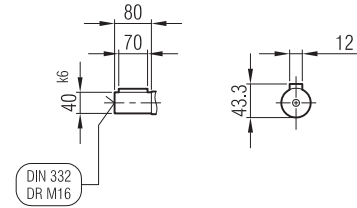
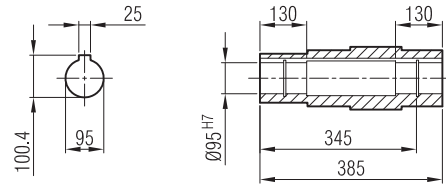
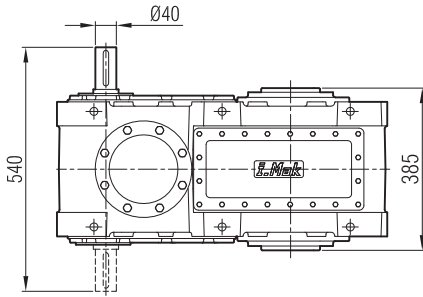
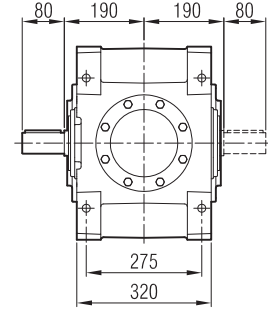
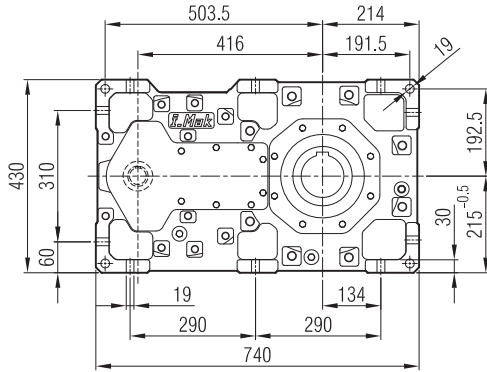


**G02**

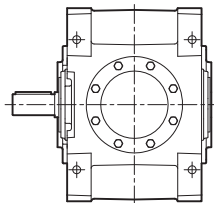




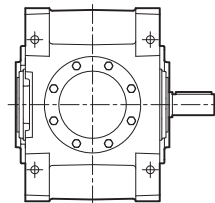
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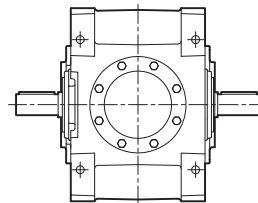
**Giriş Seçenekleri / Input Options / Option D'Entree**



**G00**



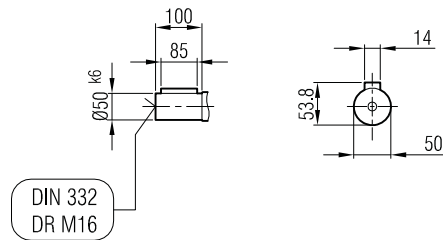
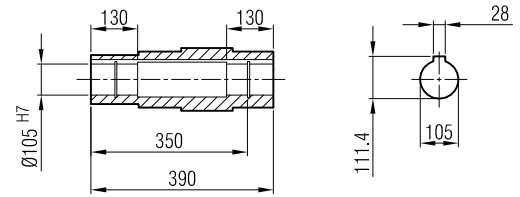
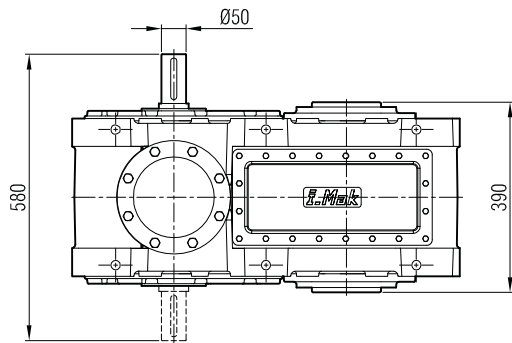
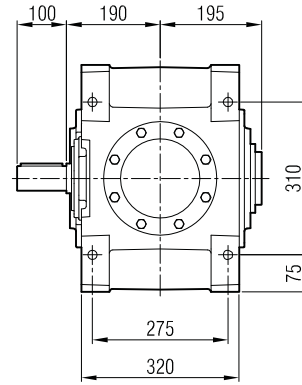
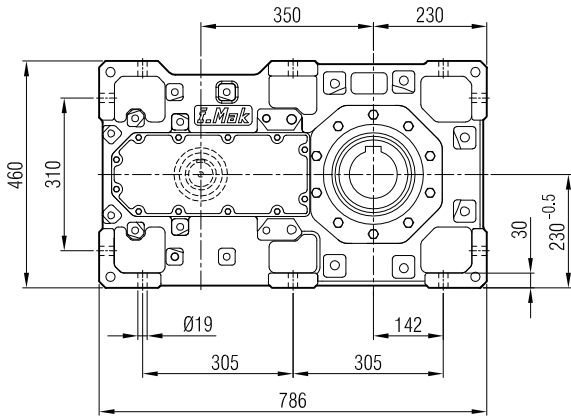
**G01**



**G02**



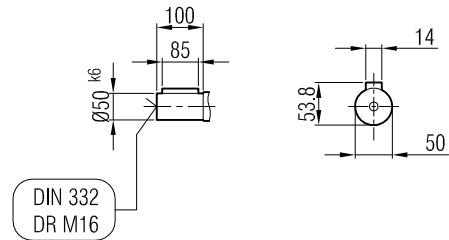
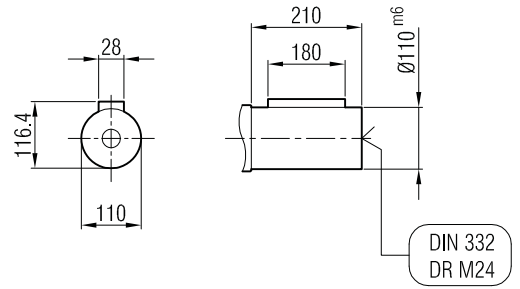
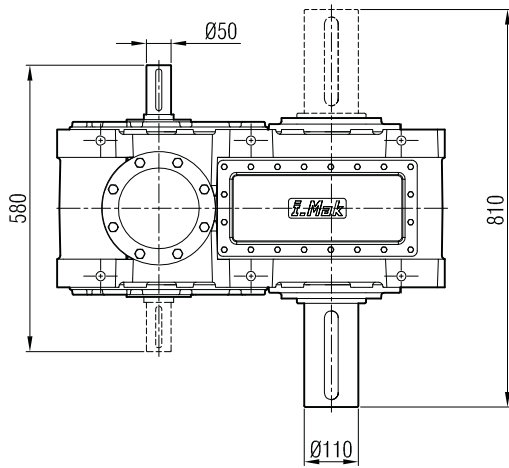
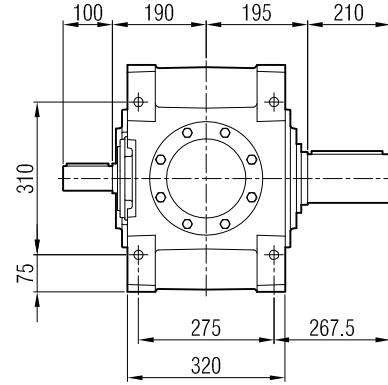
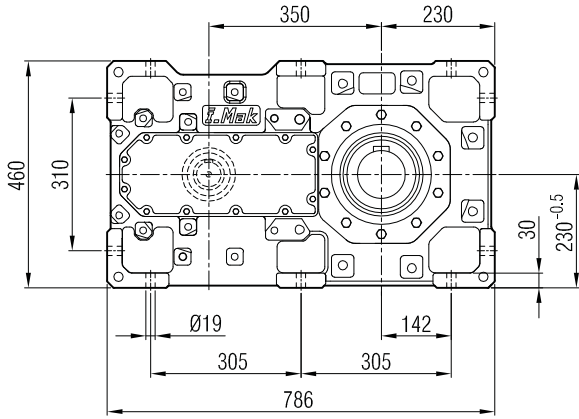
**MA 602**





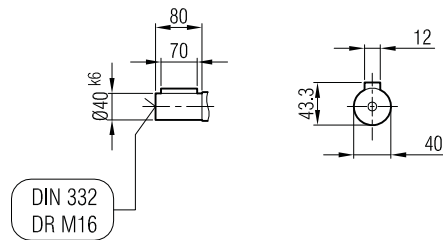
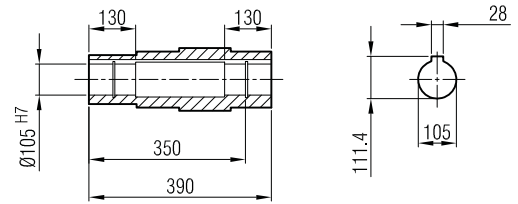
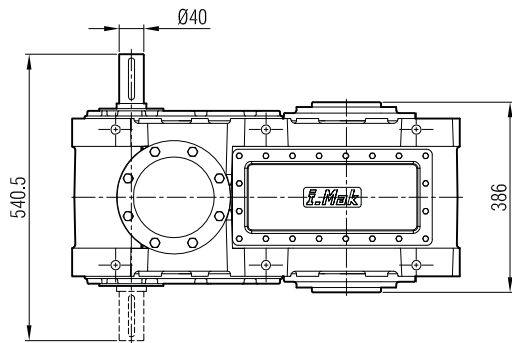
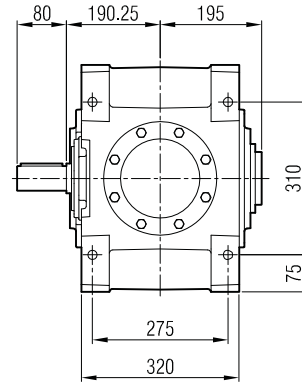
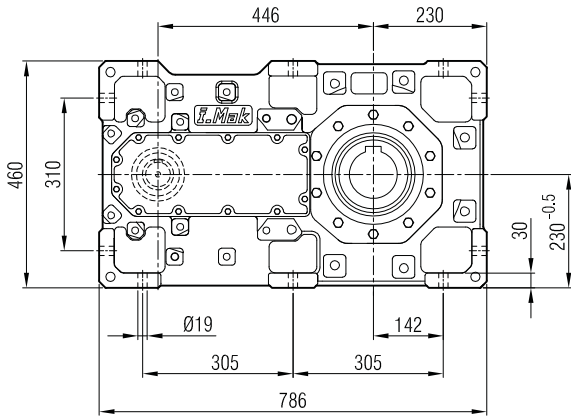
**MA 602**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





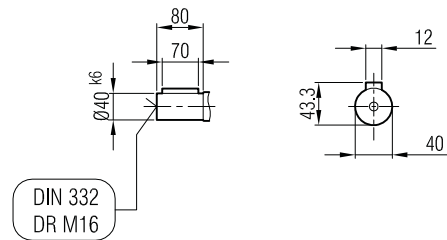
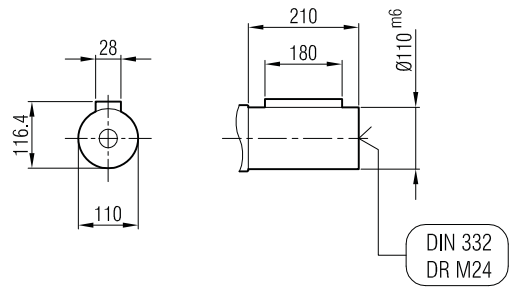
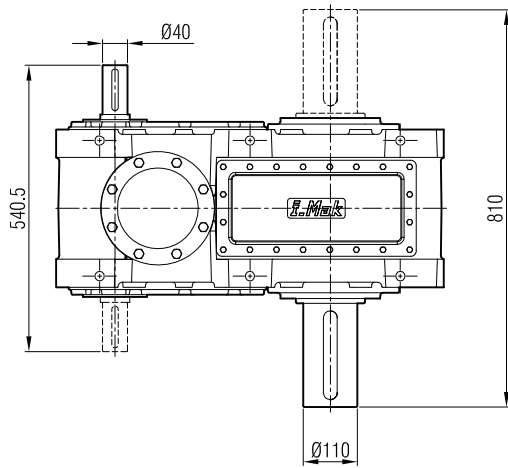
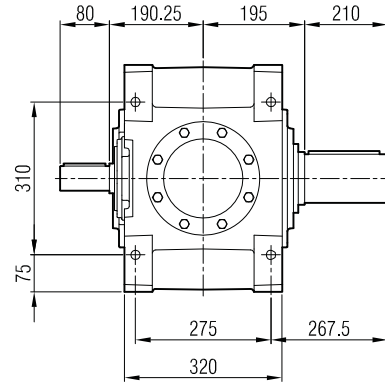
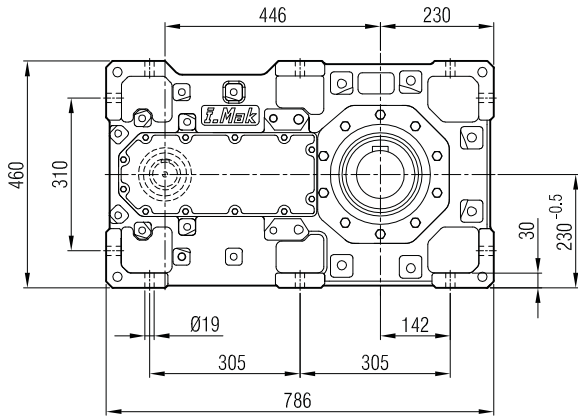
**MA 603**





**MA 603**

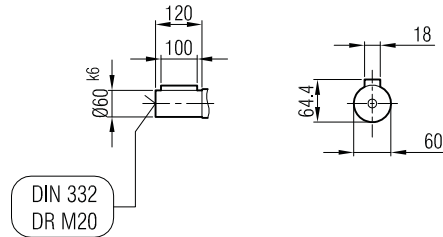
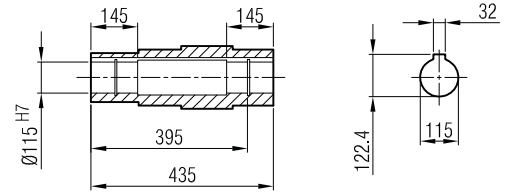
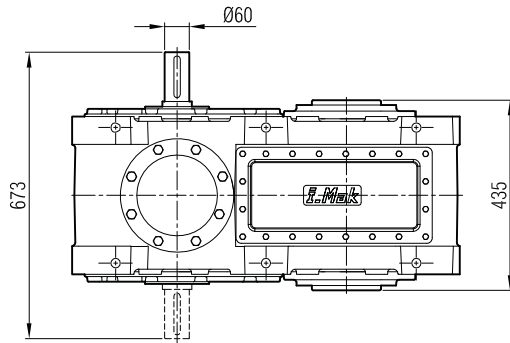
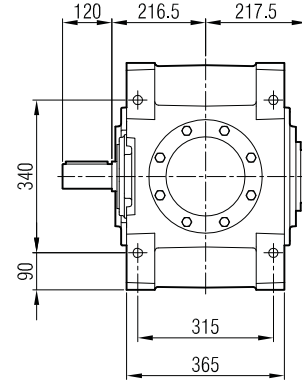
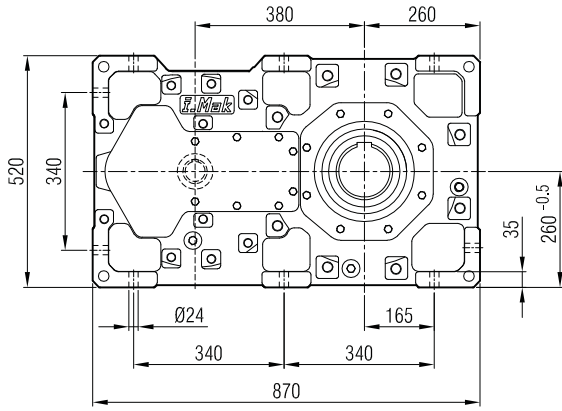
(Çıkış Milli / Output Shaft / Avec arbre de sortie)







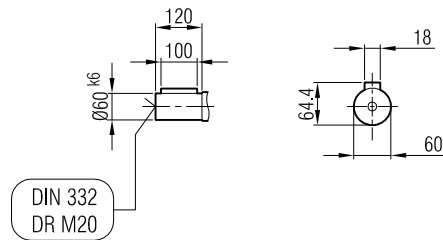
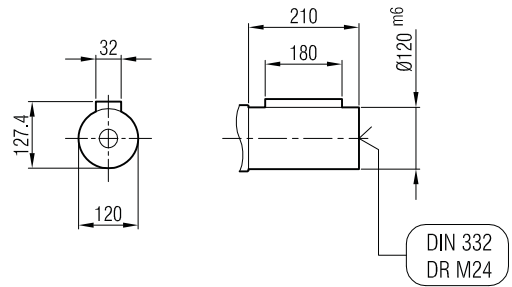
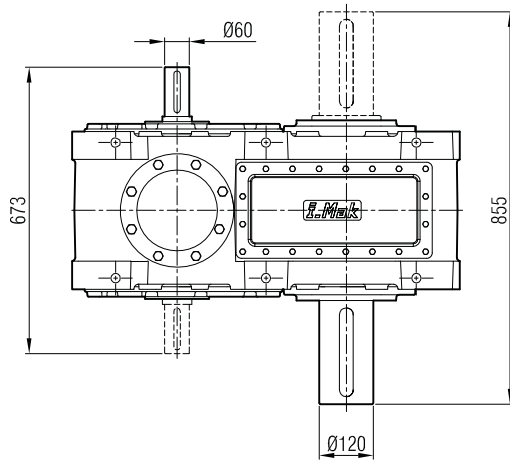
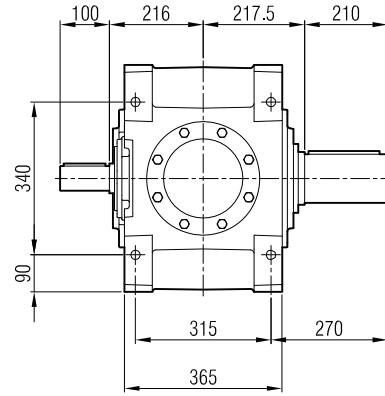
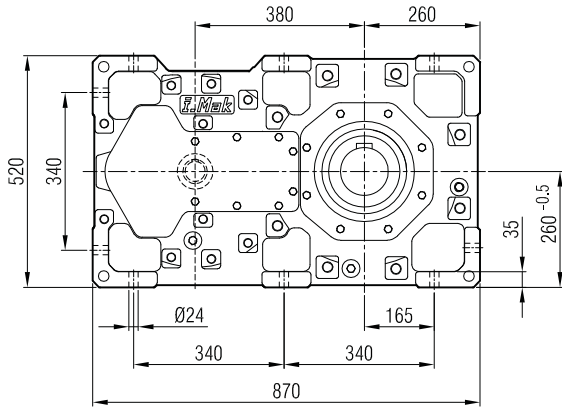
**MA 702**





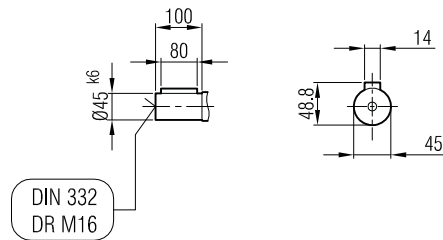
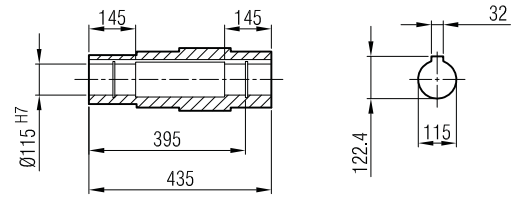
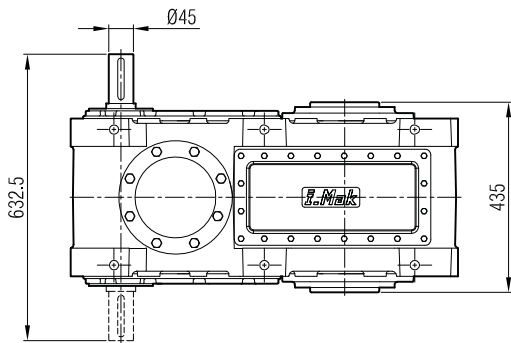
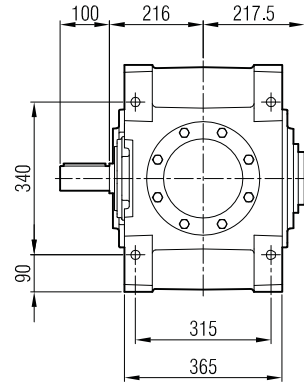
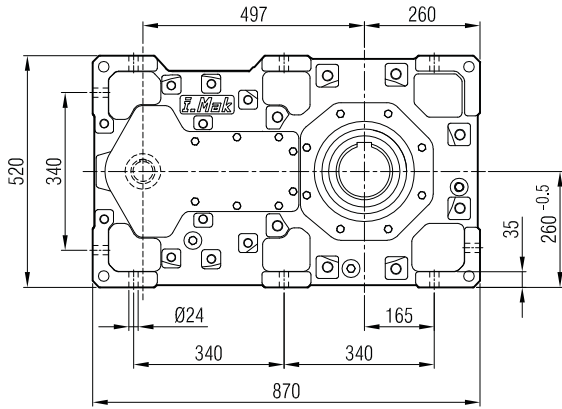
**MA 702**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





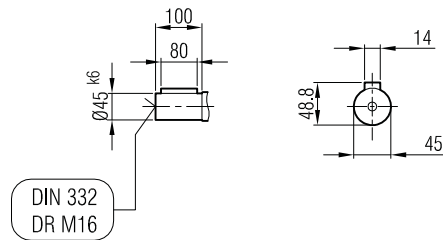
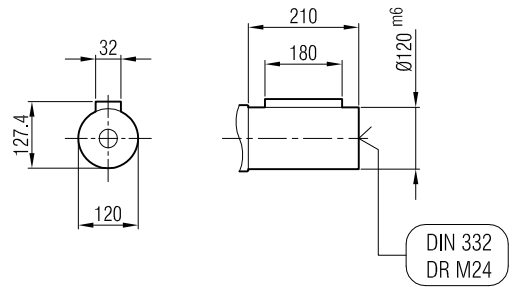
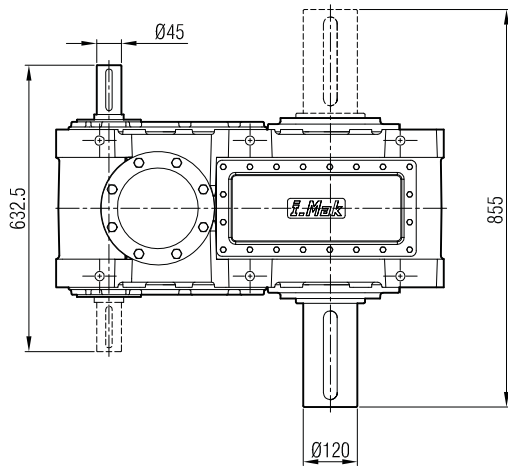
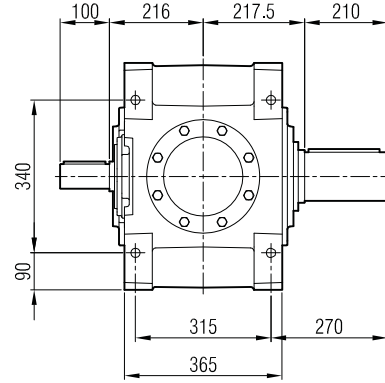
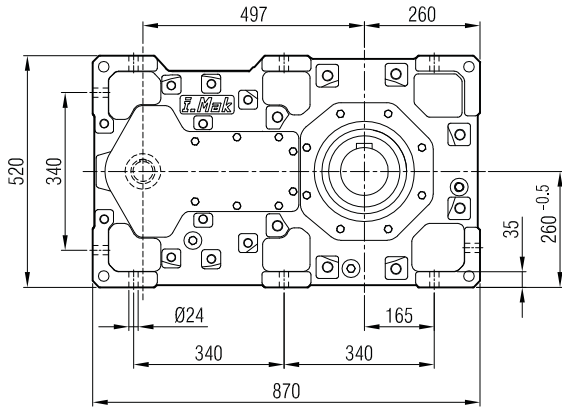
**MA 703**





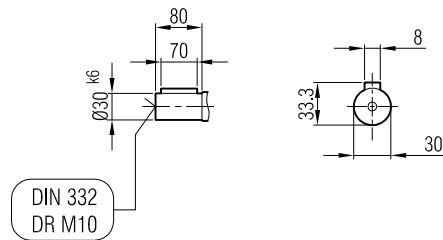
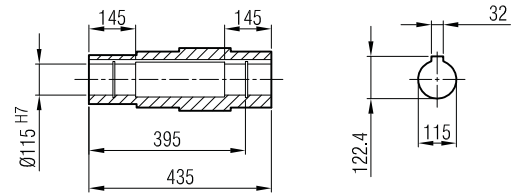
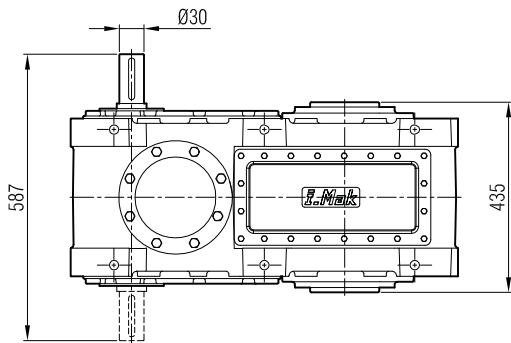
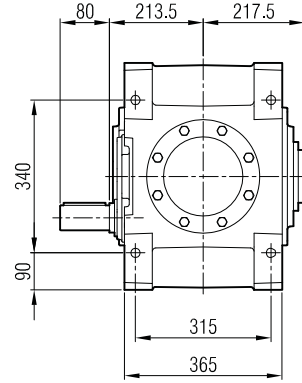
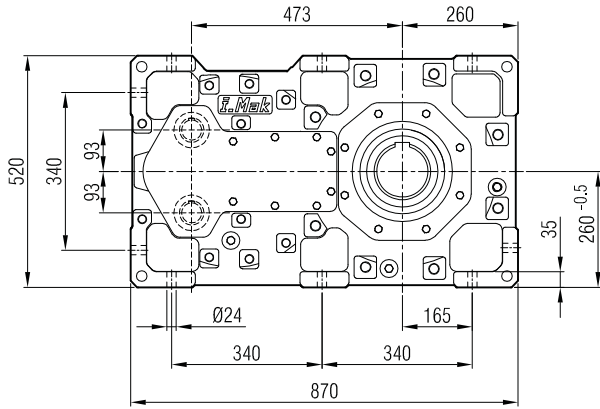
**MA 703**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





**MA 704**

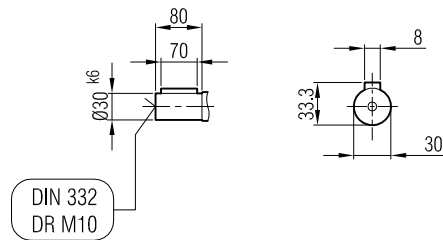
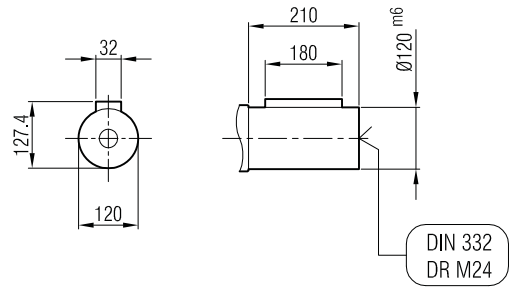
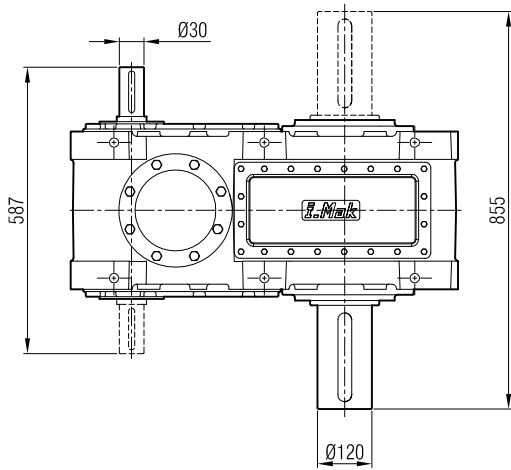
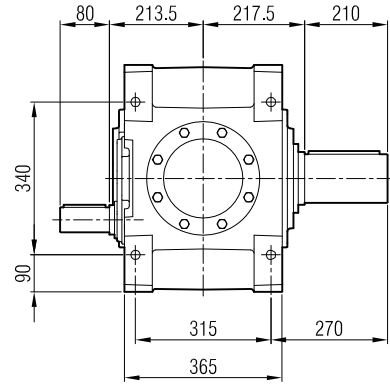
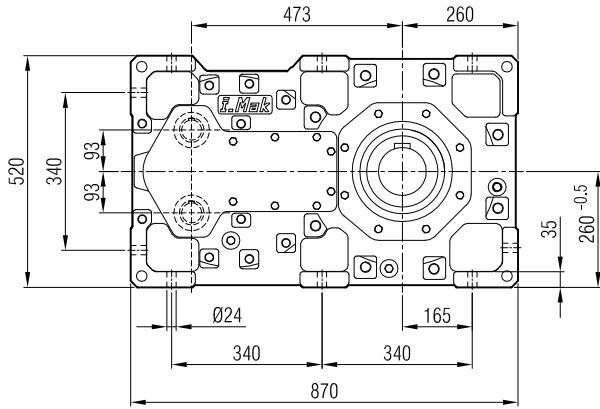






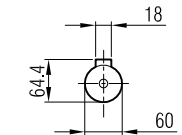
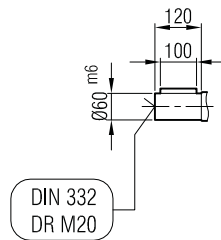
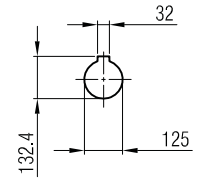
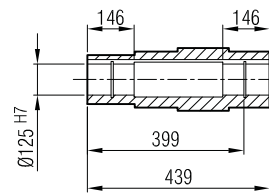
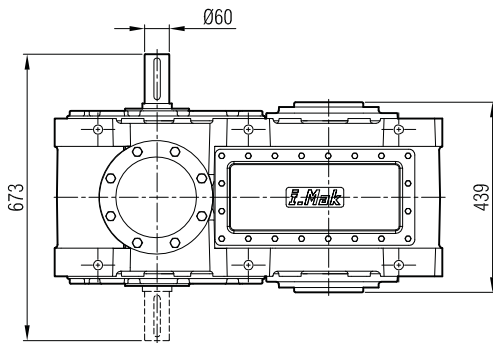
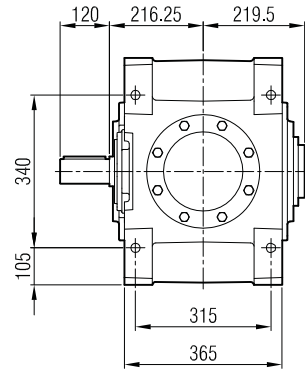
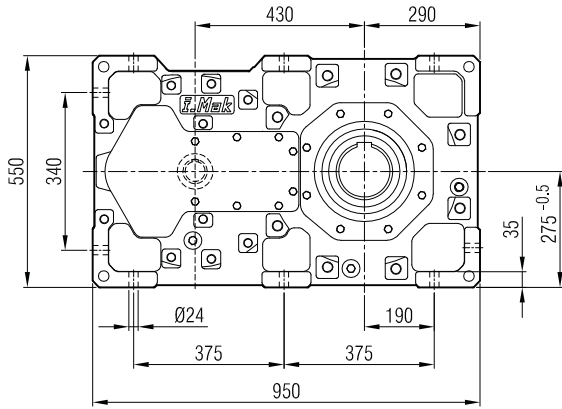
**MA 704**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





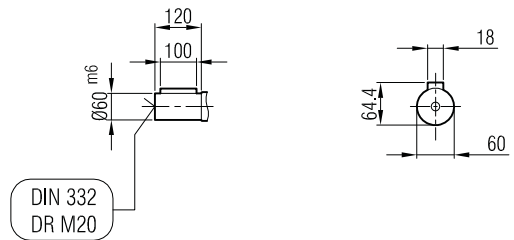
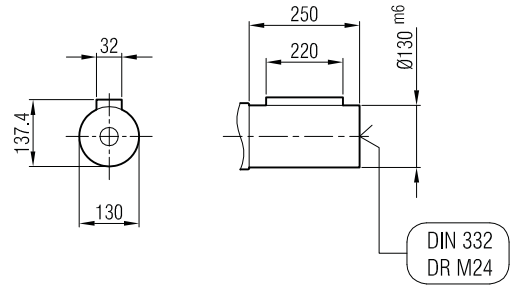
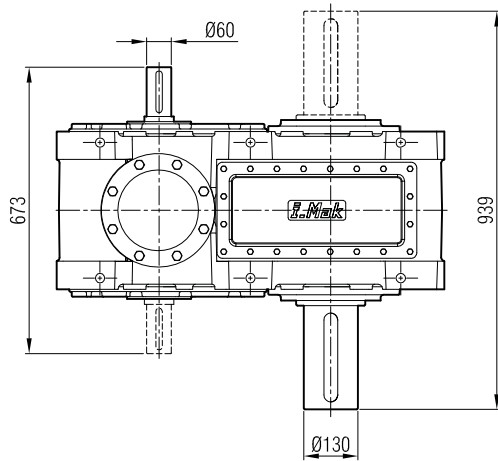
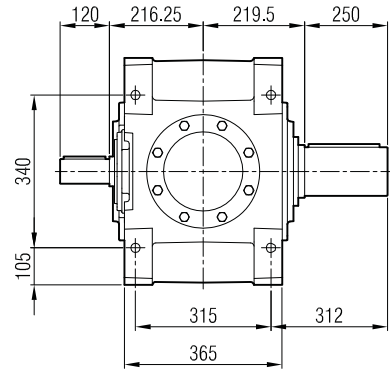
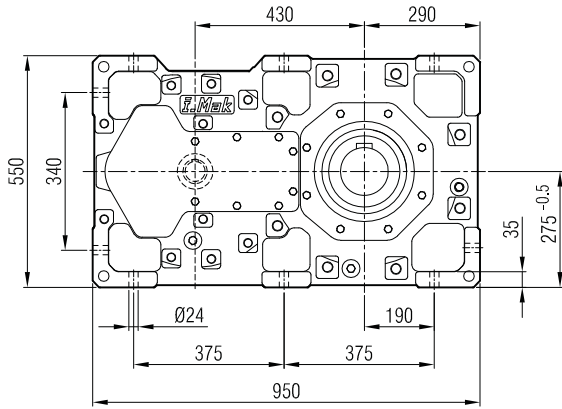
**MA 802**





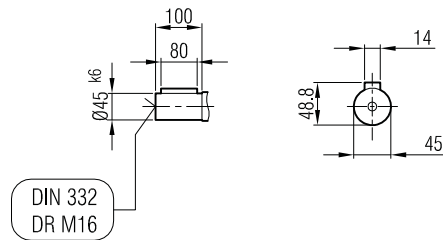
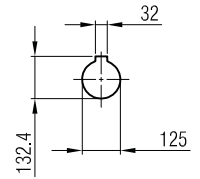
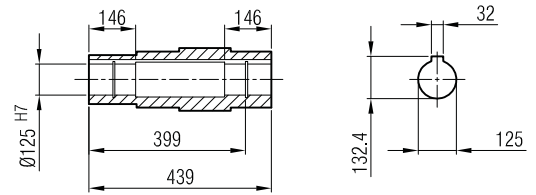
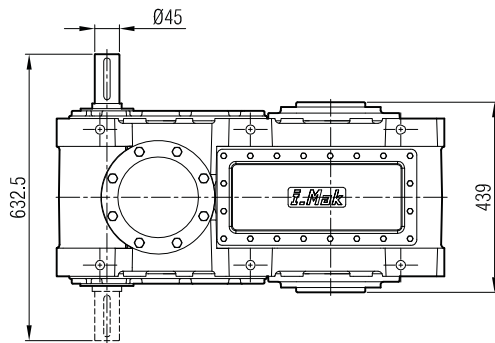
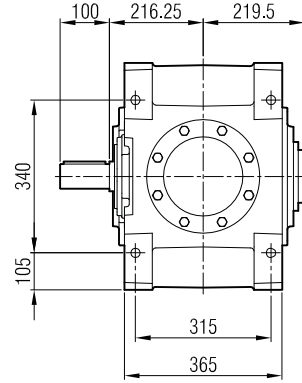
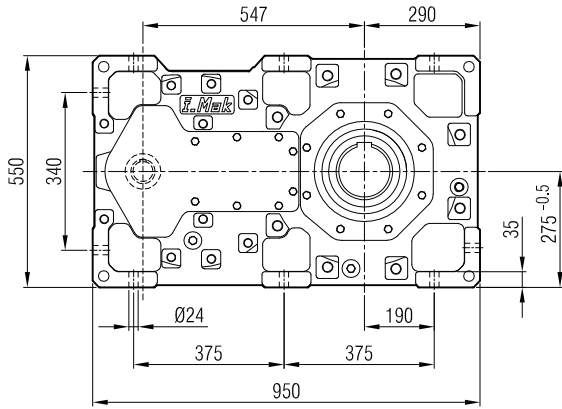
**MA 802**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





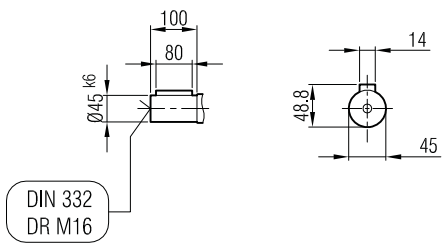
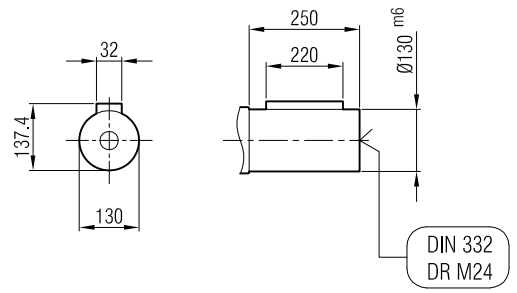
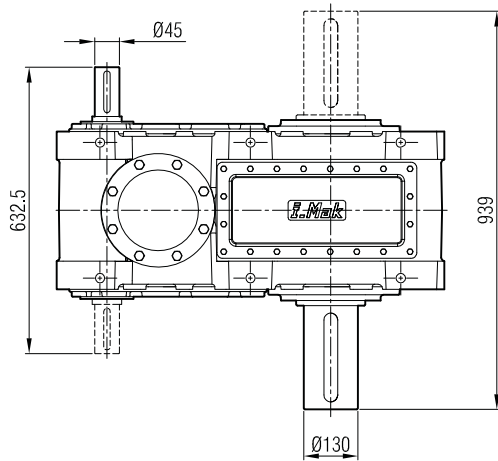
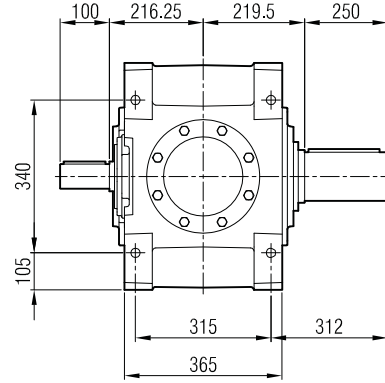
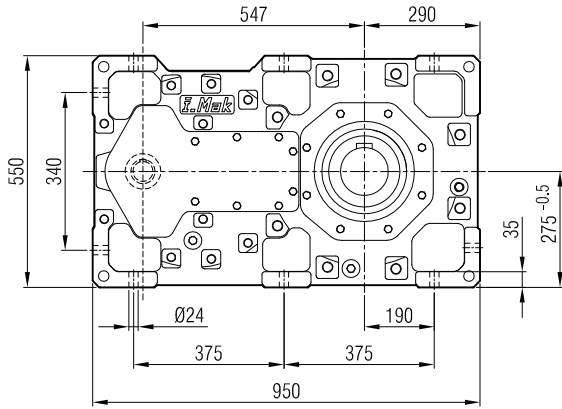
**MA 803**





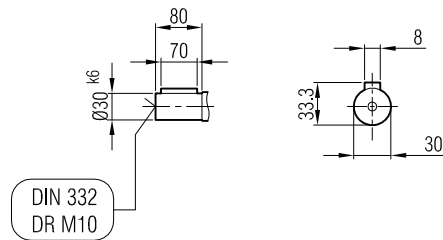
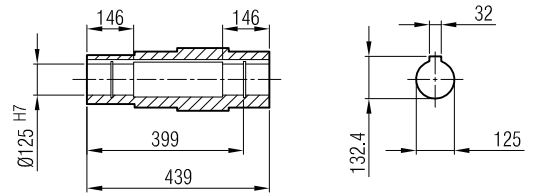
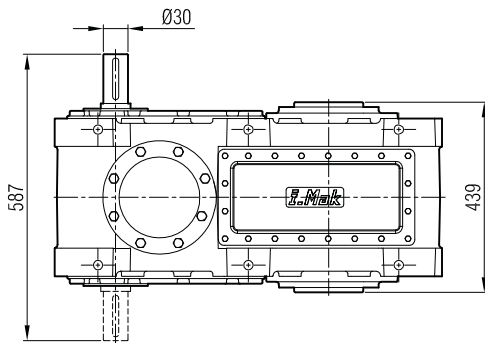
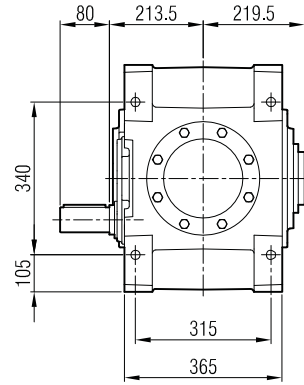
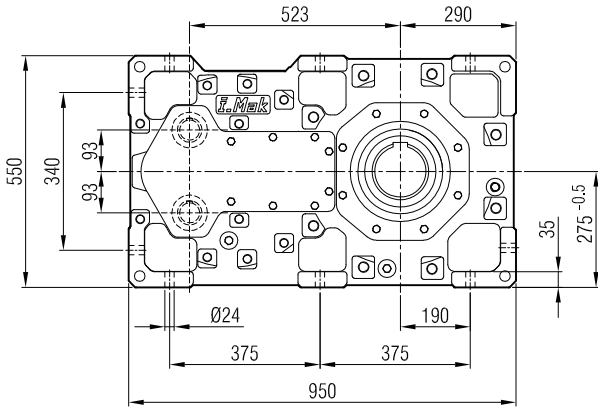
**MA 803**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





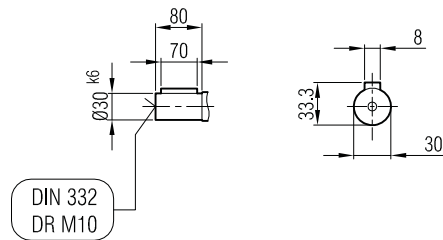
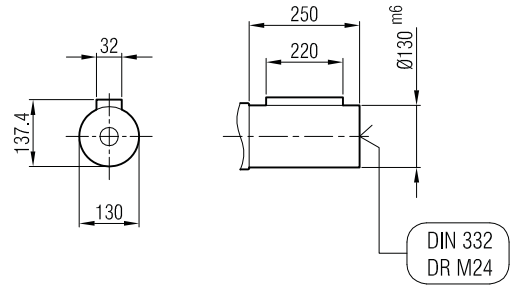
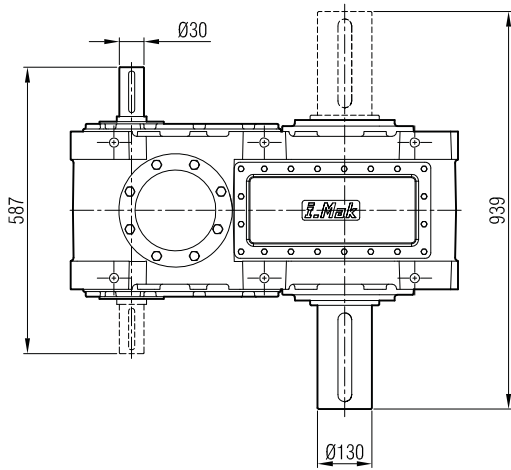
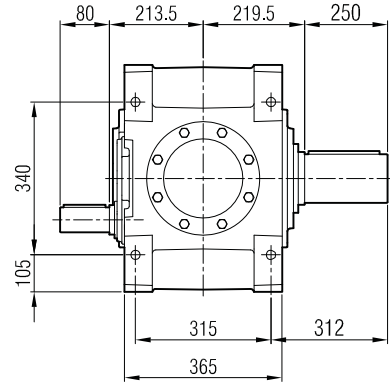
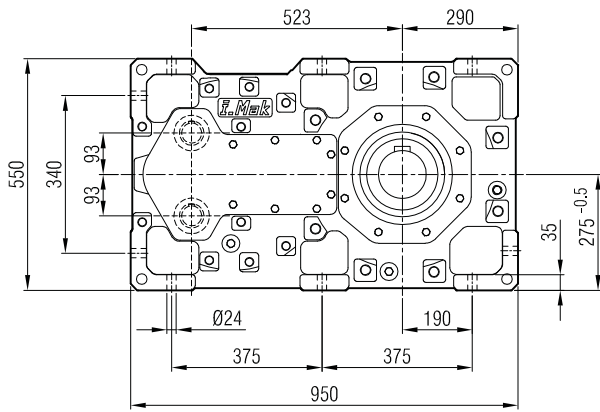
**MA 804**





**MA 804**

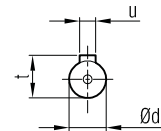
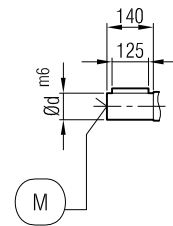
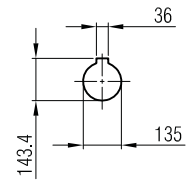
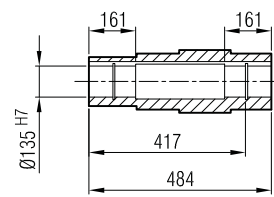
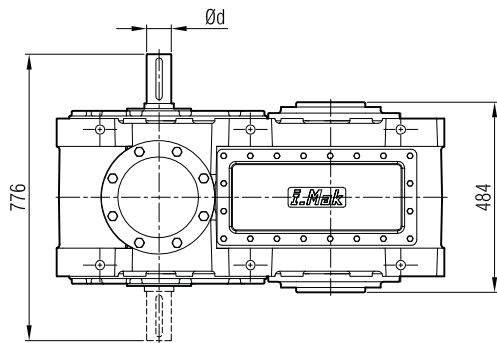
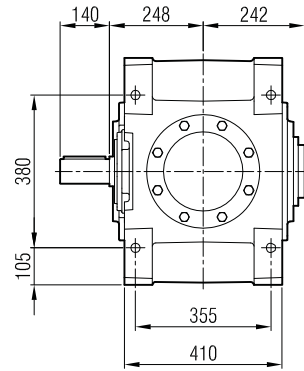
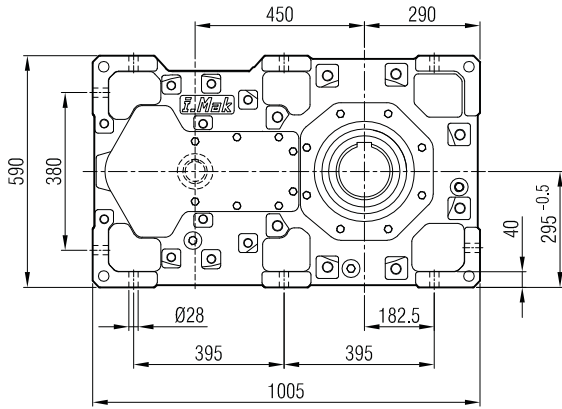
(Çıkış Milli / Output Shaft / Avec arbre de sortie)







**MA 902**

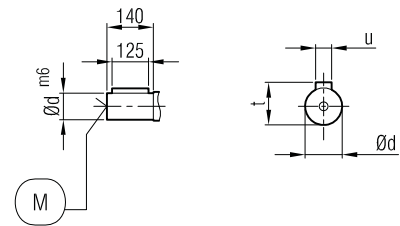
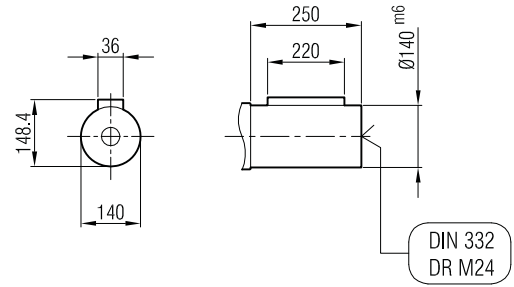
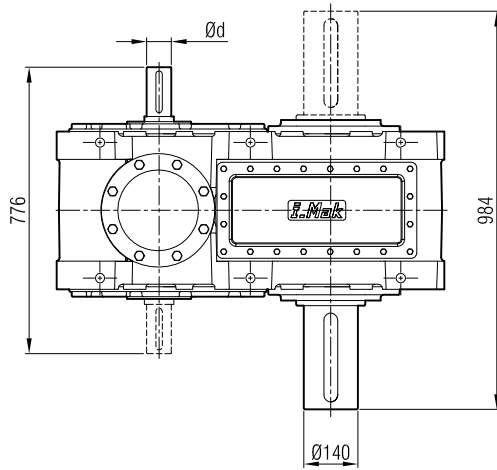
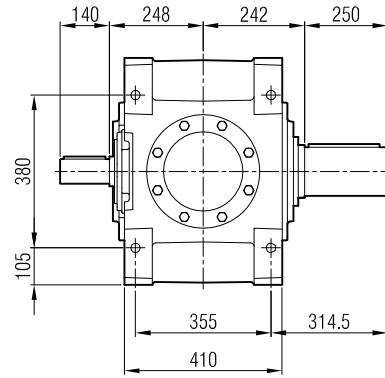
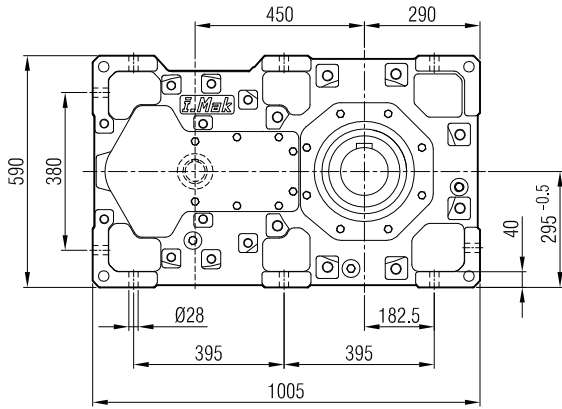


Tahvil / Ratio	M	Ød	u	t
$i \leq 11,55$	DIN 332 DR M20	Ø75	20	79.9
$i \geq 12,19$	DIN 332 DR M16	Ø60	18	64.4



**MA 902**

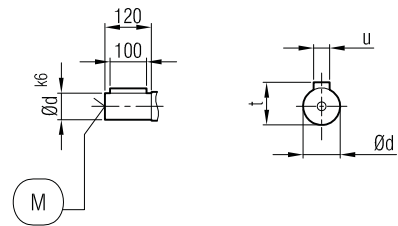
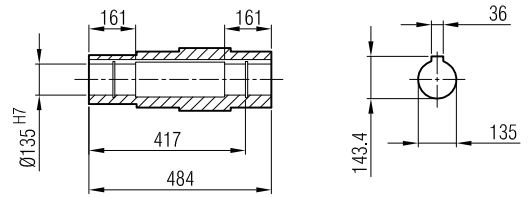
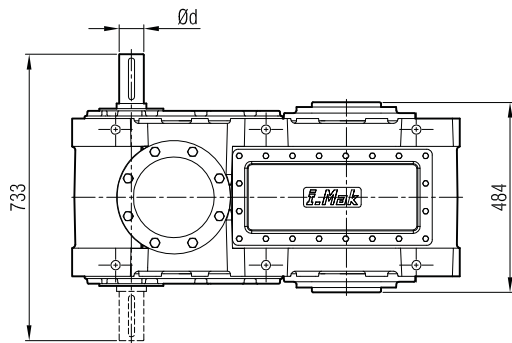
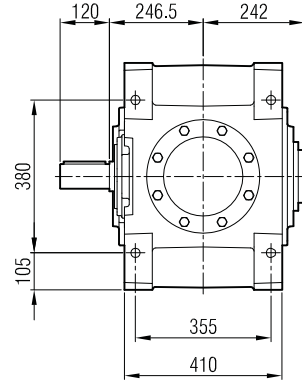
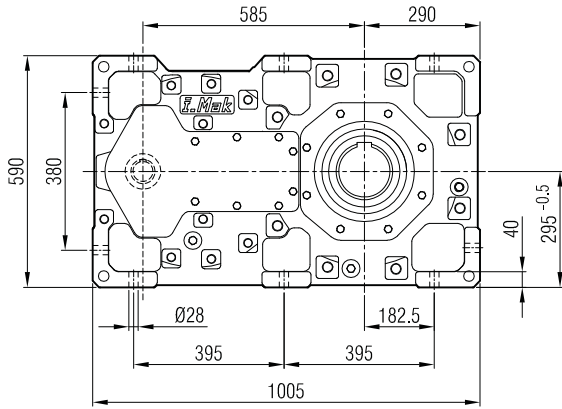
(Çıkış Milli / Output Shaft / Avec arbre de sortie)



Tahvil / Ratio	M	Ød	u	t
$i \leq 11,55$	DIN 332 DR M20	Ø75	20	79.9
$i \geq 12,19$	DIN 332 DR M16	Ø60	18	64.4



**MA 903**

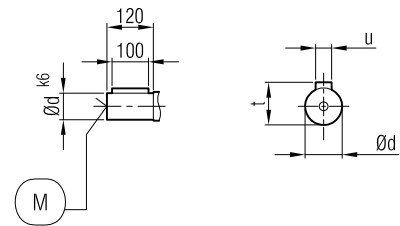
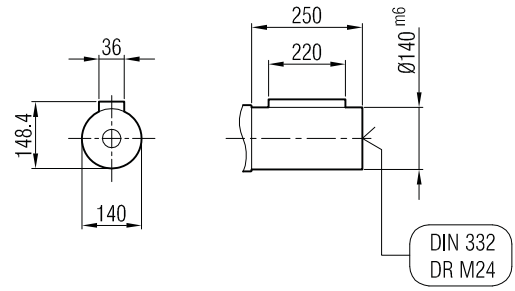
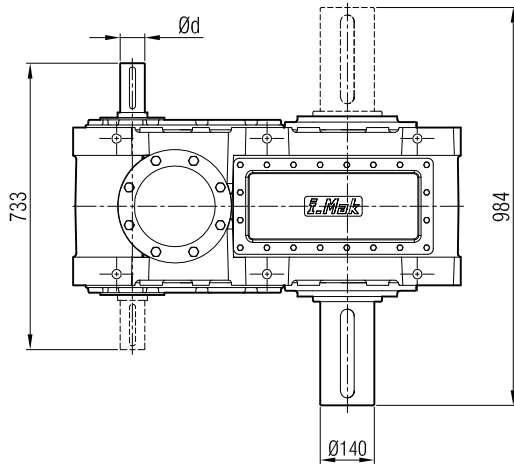
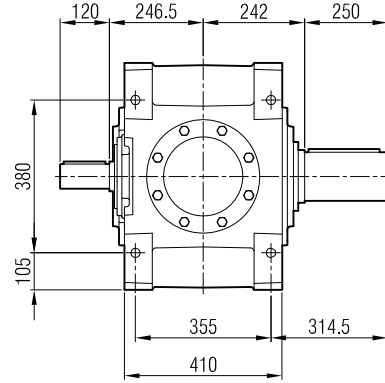
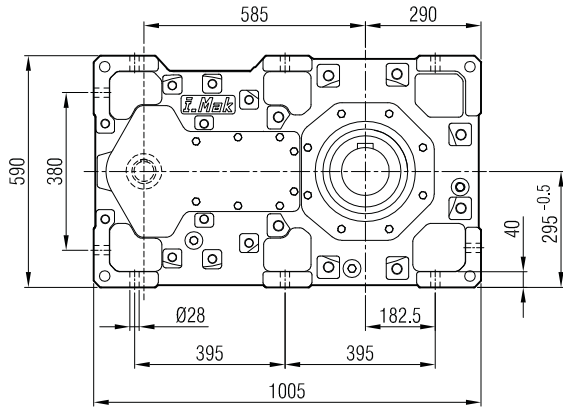


Tahvil / Ratio	M	Ød	u	t
$i \leq 49,17$	DIN 332 DR M20	Ø55	16	59.3
$i \geq 52,05$	DIN 332 DR M16	Ø45	14	48.8



**MA 903**

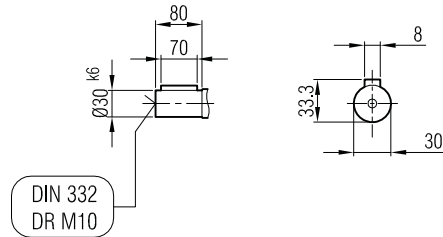
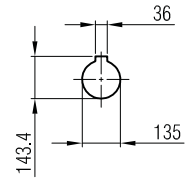
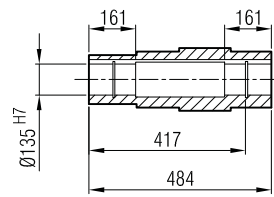
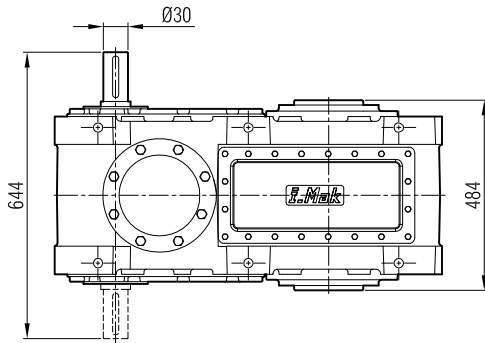
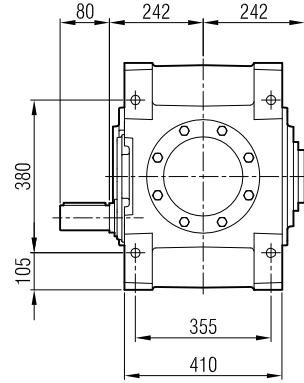
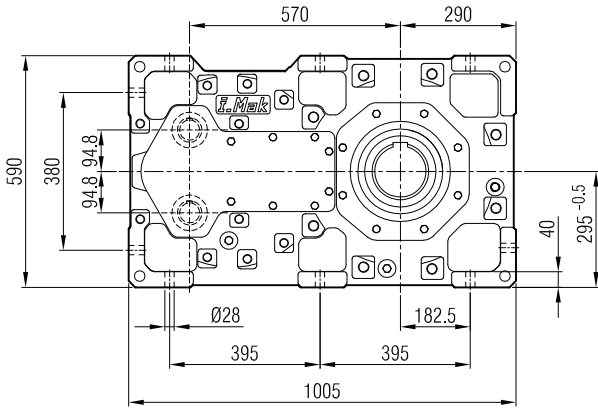
(Çıkış Milli / Output Shaft / Avec arbre de sortie)



Tahvil / Ratio	M	Ød	u	t
$i \leq 49,17$	DIN 332 DR M20	Ø55	16	59.3
$i \geq 52,05$	DIN 332 DR M16	Ø45	14	48.8



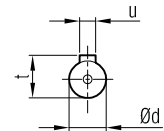
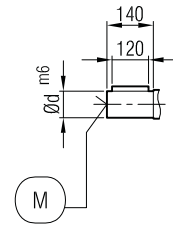
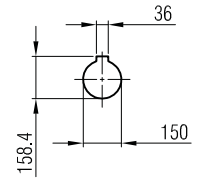
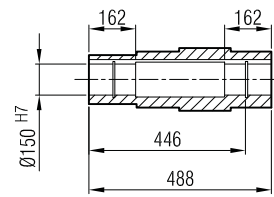
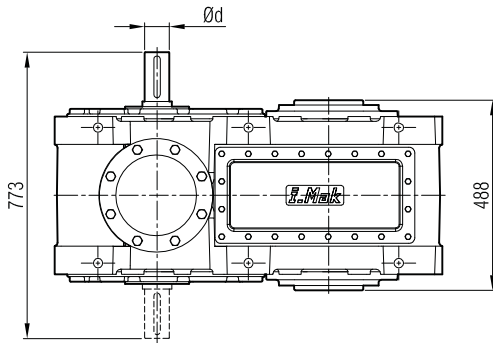
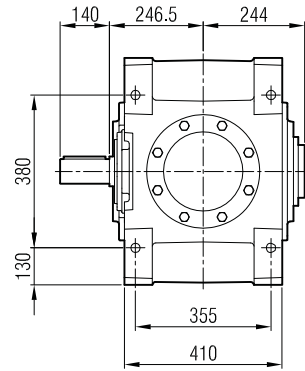
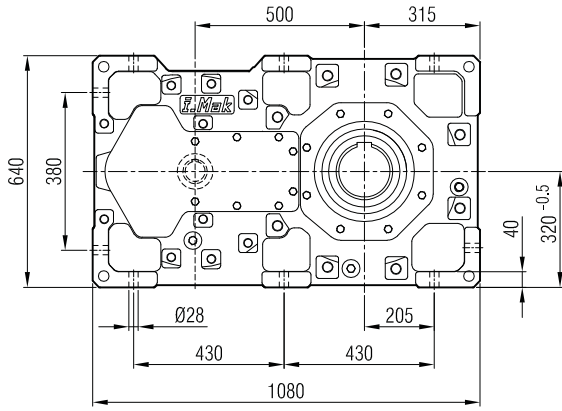
**MA 904**







**MA 1002**



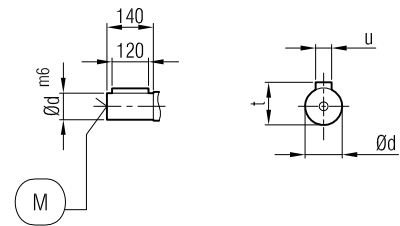
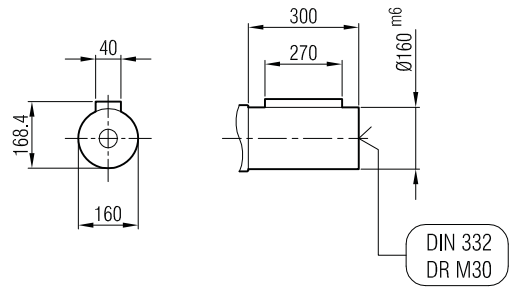
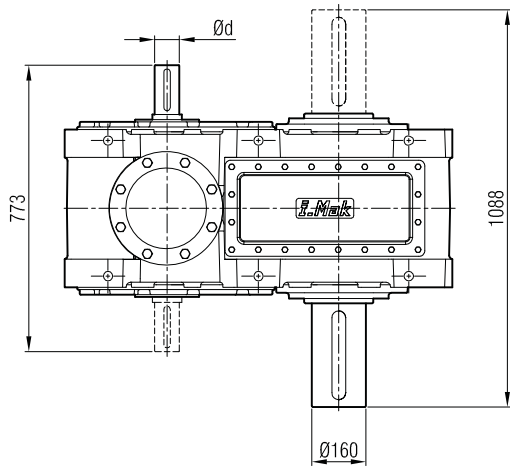
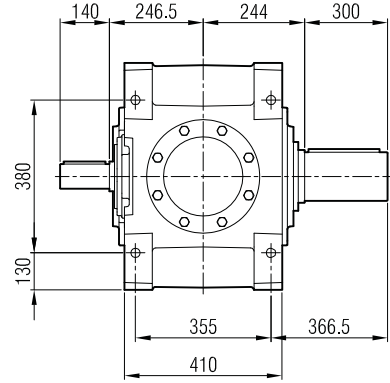
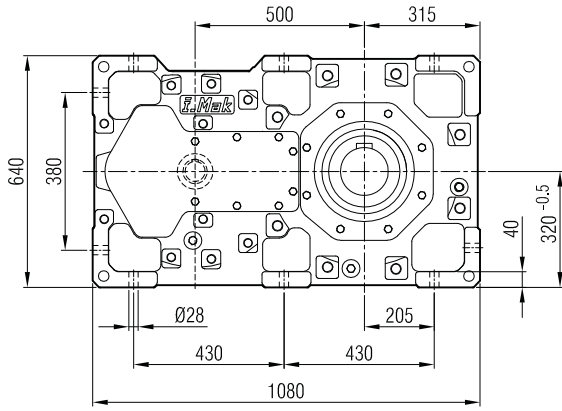
Tahvil / Ratio	M	Ød	u	t
$i \leq 15,95$	DIN 332 DR M20	Ø75	20	79.9
$i \geq 16,72$	DIN 332 DR M16	Ø60	18	64.4





**MA 1002**

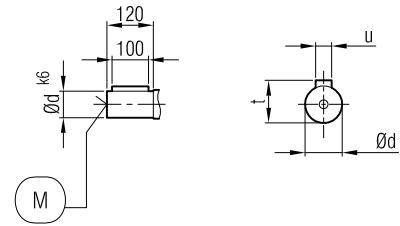
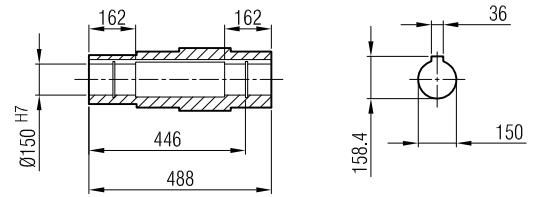
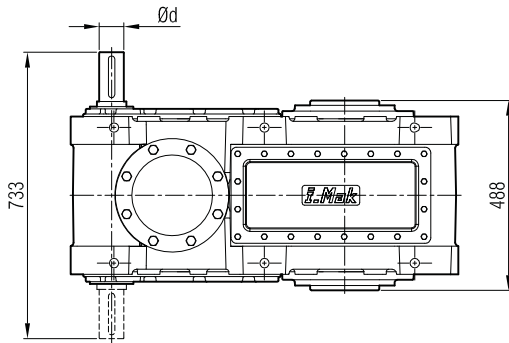
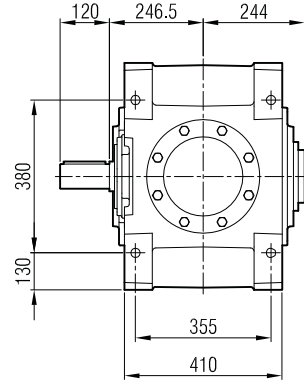
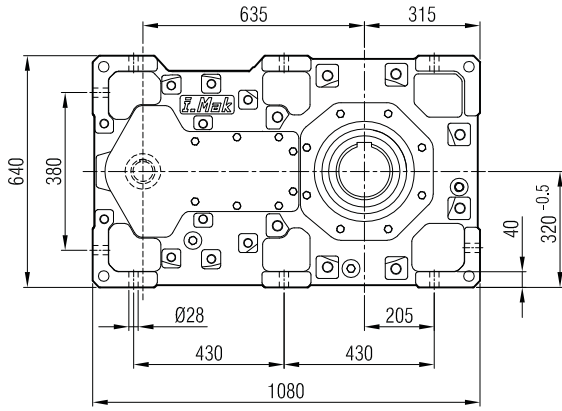
(Çıkış Milli / Output Shaft / Avec arbre de sortie)



Tahvil / Ratio	M	Ød	u	t
$i \leq 15,95$	DIN 332 DR M20	Ø75	20	79.9
$i \geq 16,72$	DIN 332 DR M16	Ø60	18	64.4



**MA 1003**

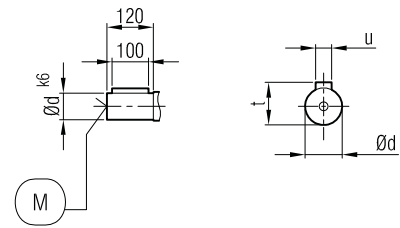
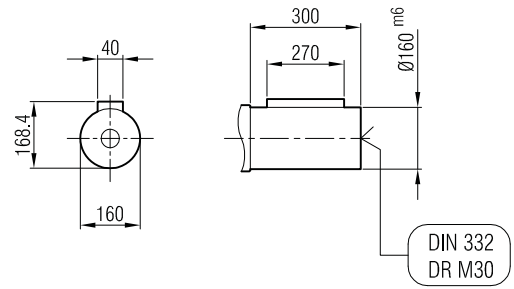
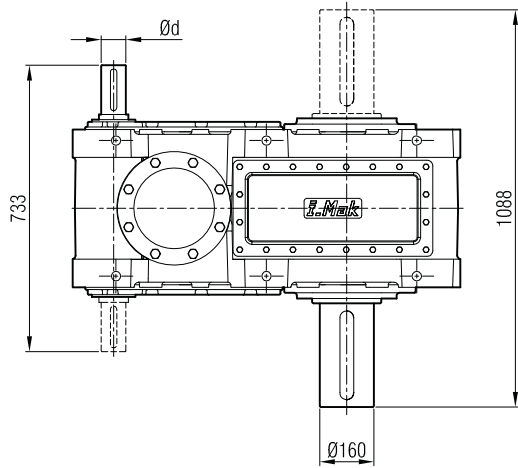
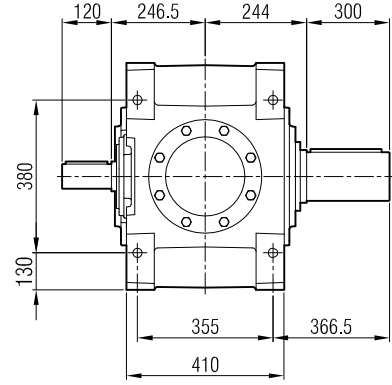
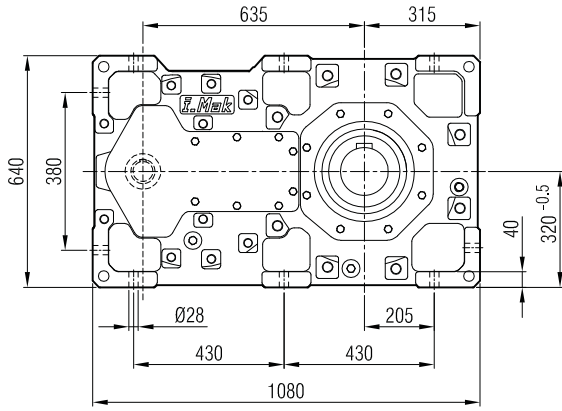


Tahvil / Ratio	M	Ød	u	t
$i \leq 57,86$	DIN 332 DR M20	Ø55	16	59.3
$i \geq 69,97$	DIN 332 DR M16	Ø45	14	48.8



**MA 1003**

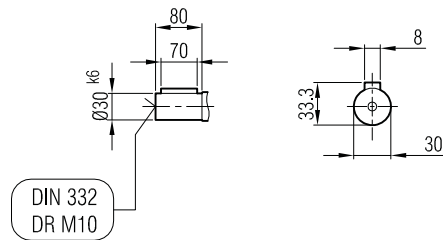
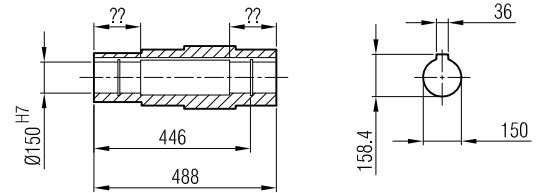
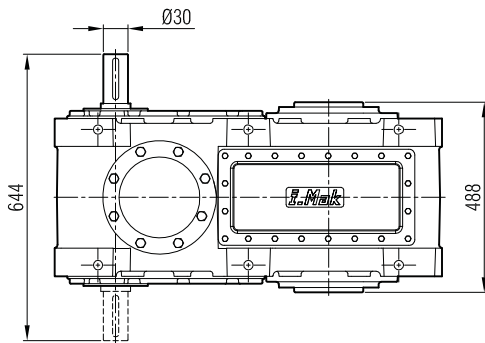
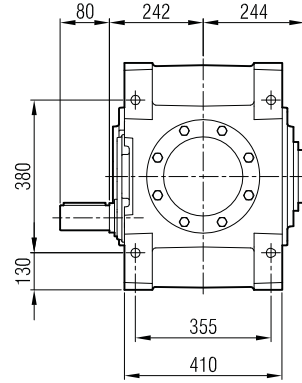
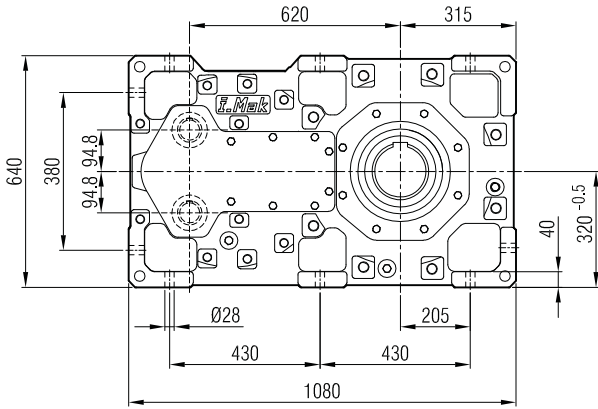
(Çıkış Milli / Output Shaft / Avec arbre de sortie)



Tahvil / Ratio	M	Ød	u	t
$i \leq 57,86$	DIN 332 DR M20	Ø55	16	59.3
$i > 69,97$	DIN 332 DR M16	Ø45	14	48.8



**MA 1004**

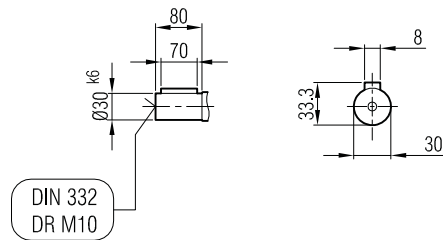
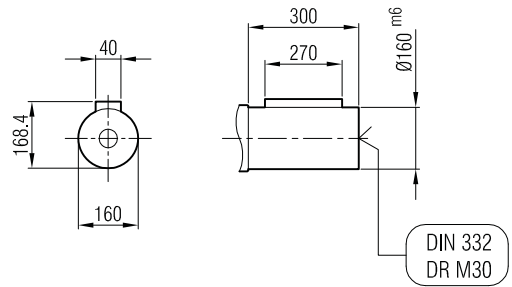
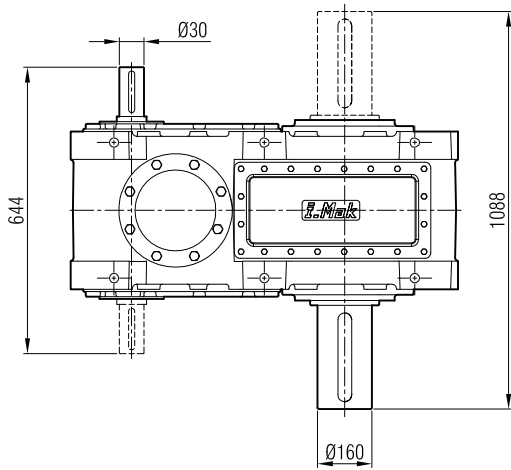
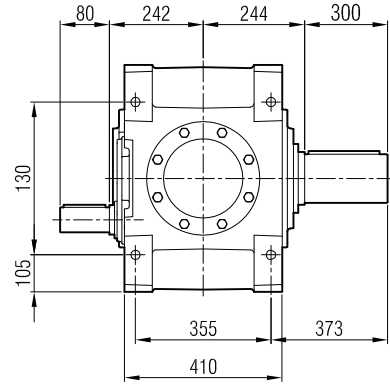
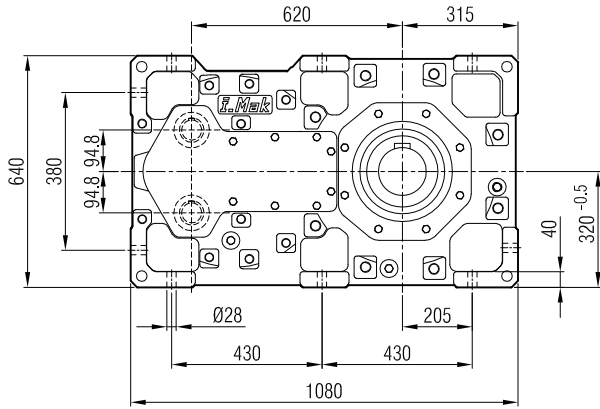


DIN 332  
DR M10



**MA 1004**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)



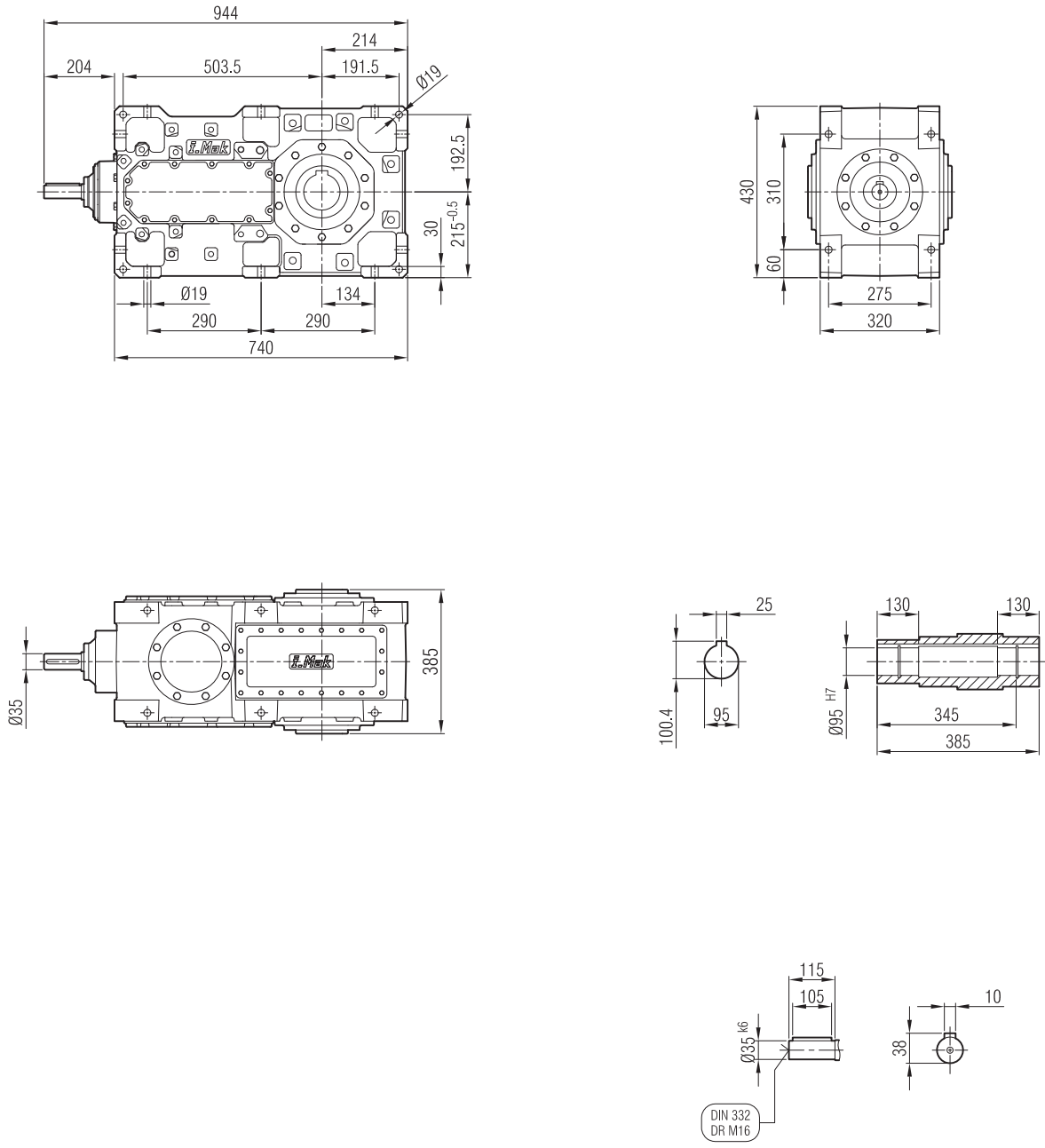
## **MK Serisi Redüktörler Ölçü Sayfaları**

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Dimensions Pages  
*Dimensions*



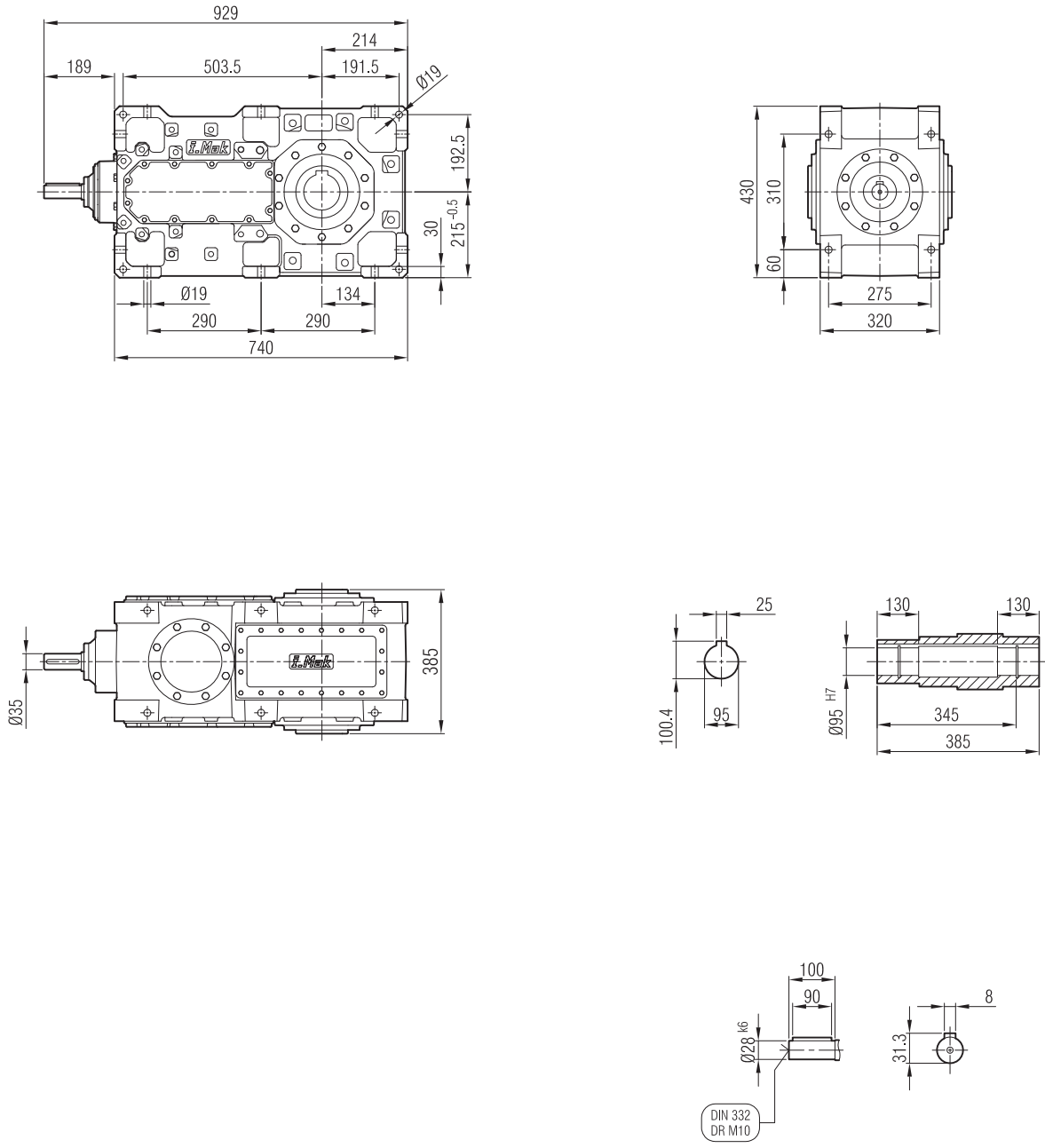
**MK 503-G07**





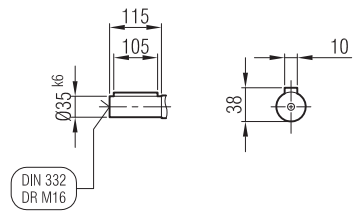
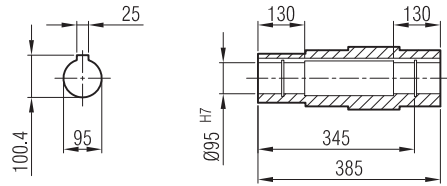
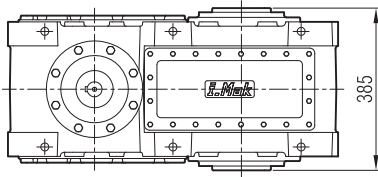
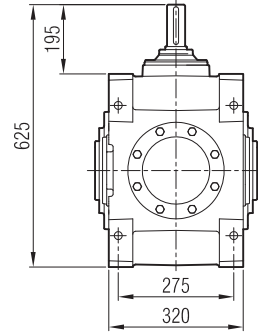
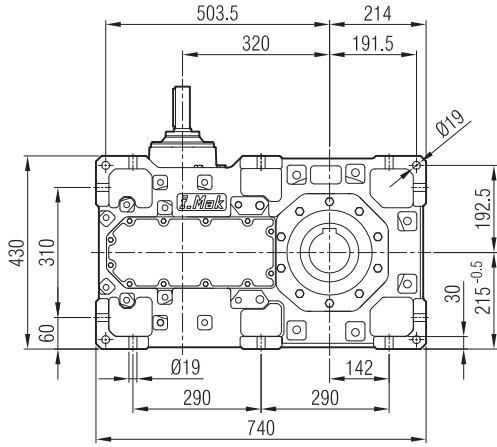


**MK 504-G07**



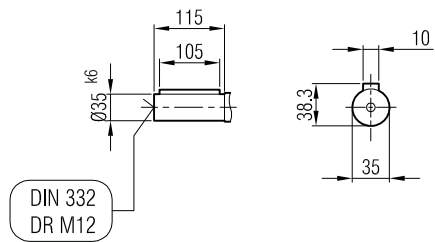
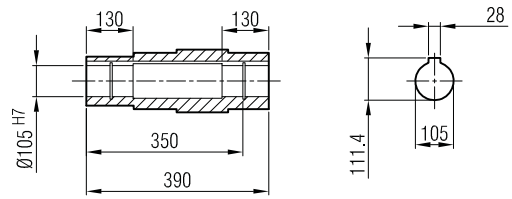
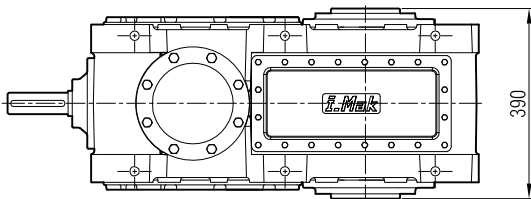
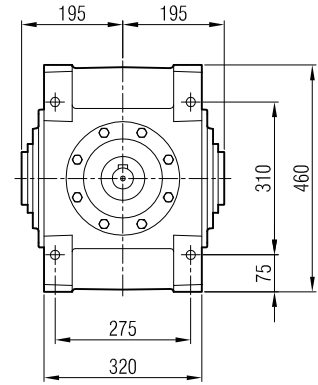
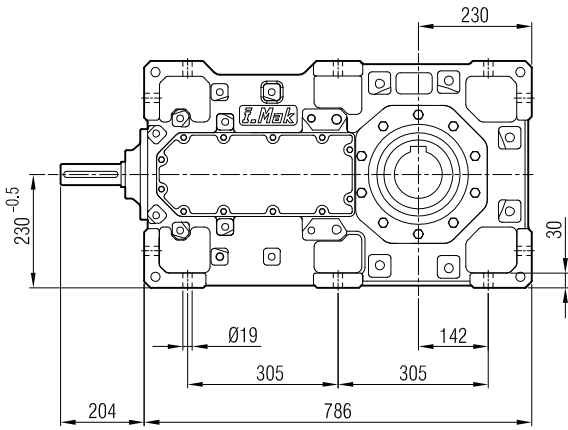


**MK 503-G08**





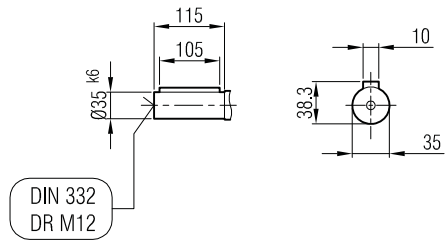
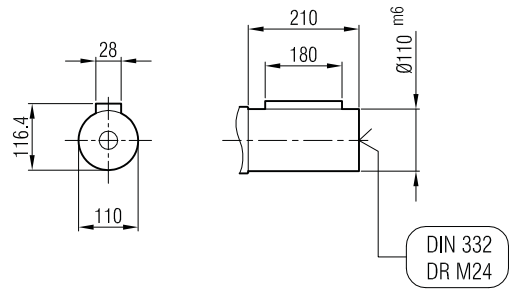
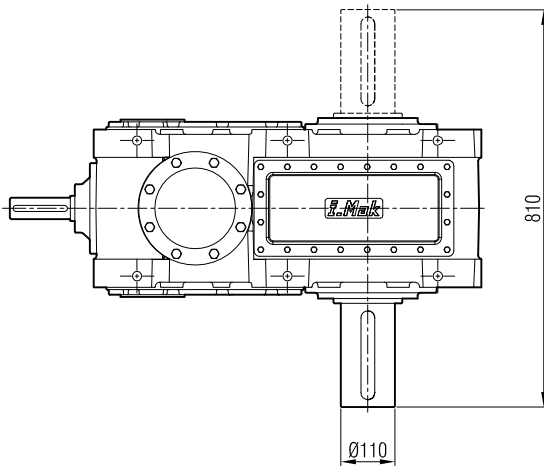
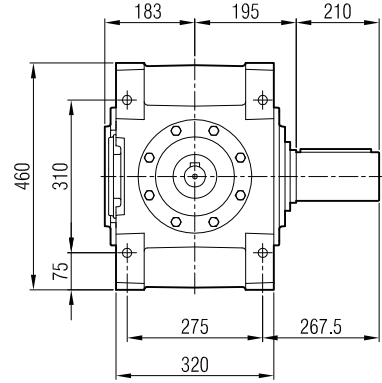
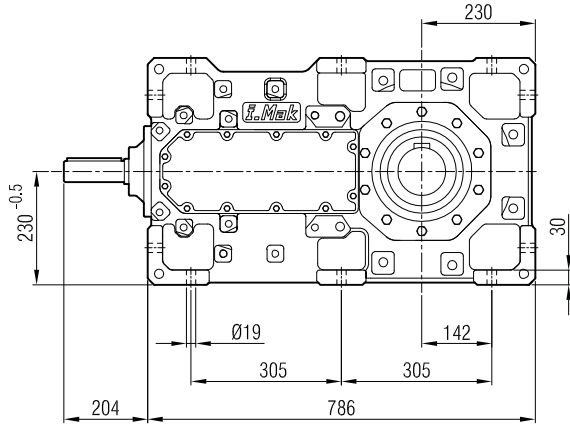
**MK 603 / G07**





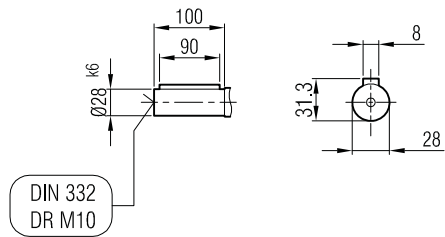
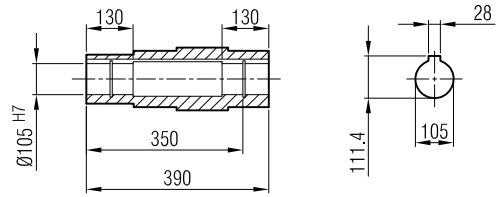
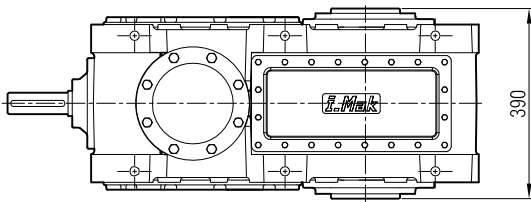
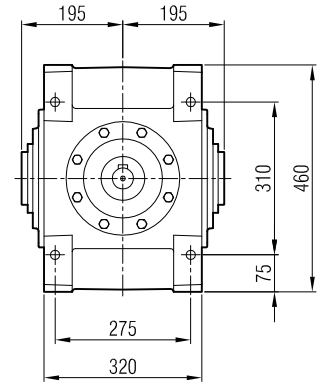
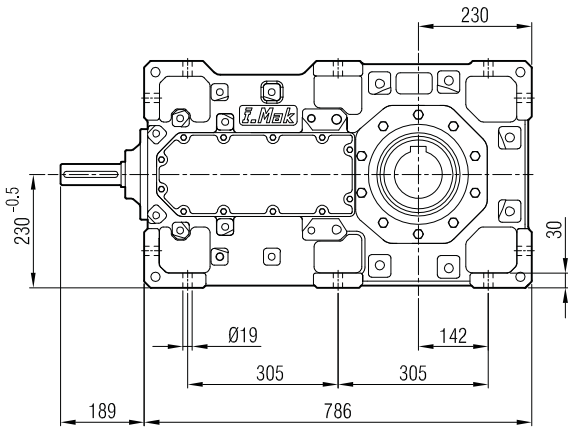
**MK 603 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





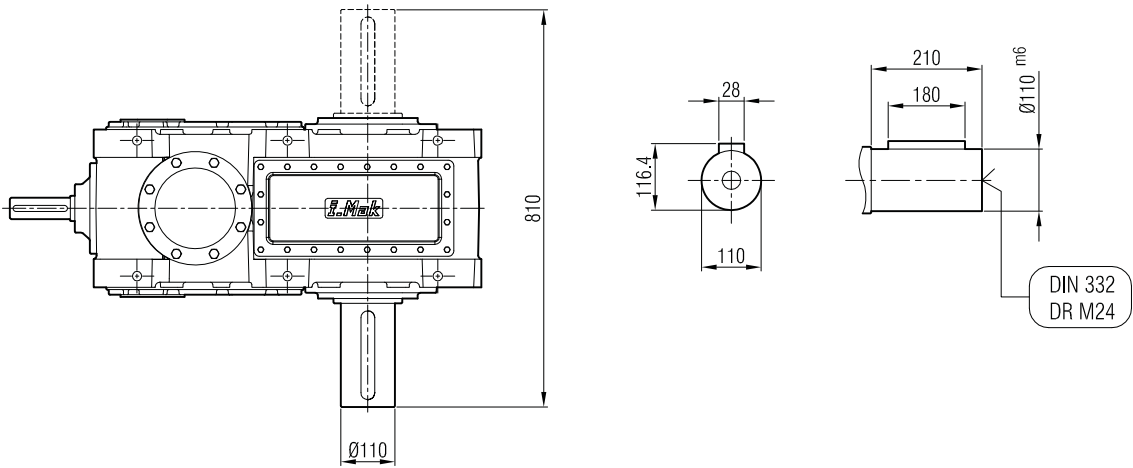
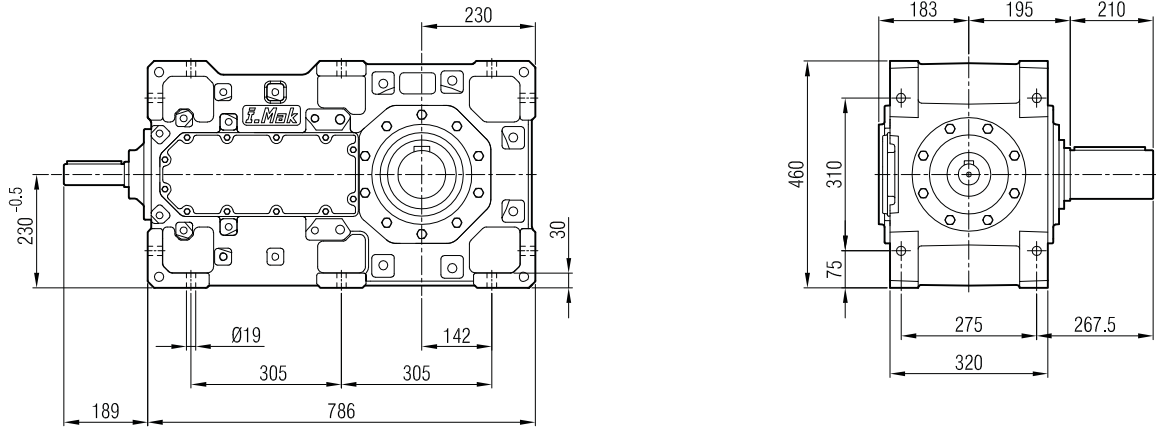
**MK 604 / G07**





**MK 604 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)

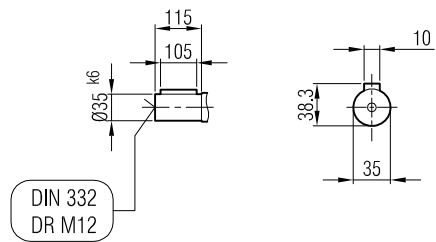
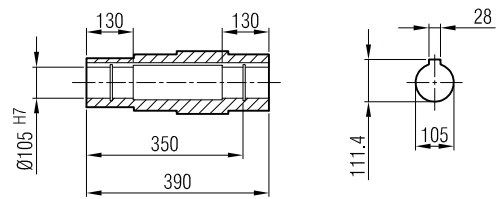
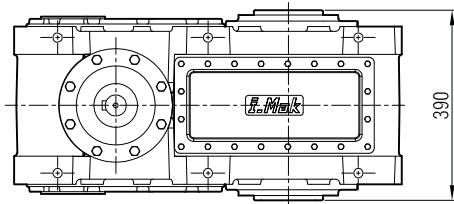
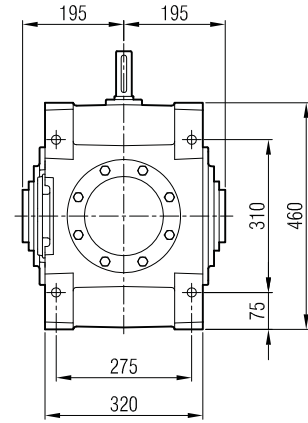
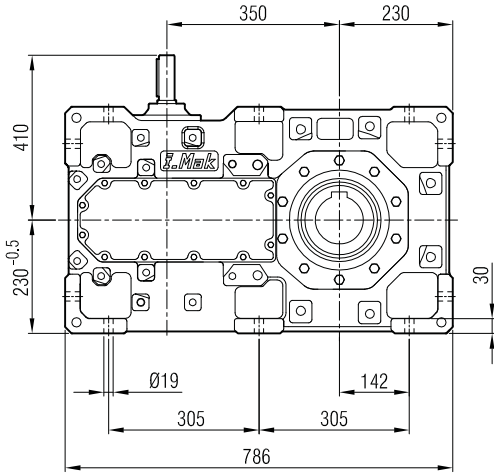


DIN 332  
DR M24

DIN 332  
DR M10



**MK 603 / G08**

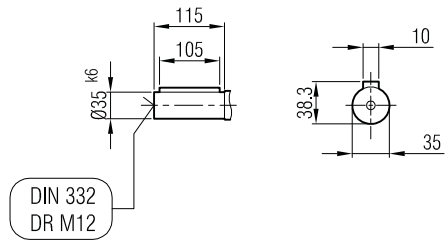
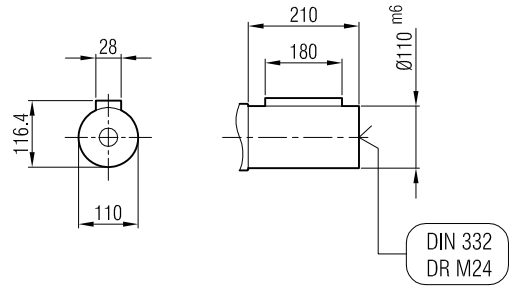
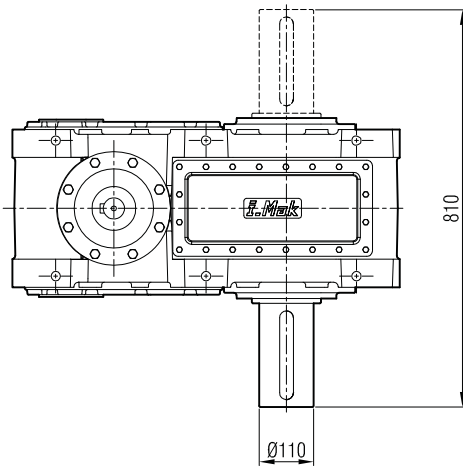
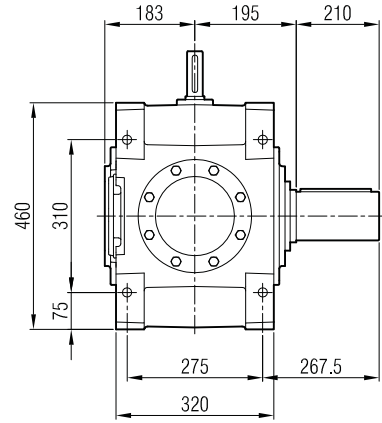
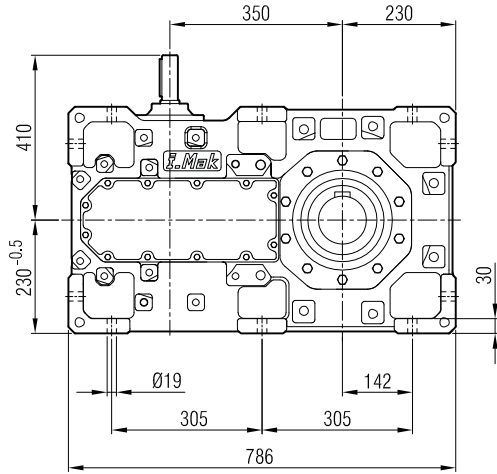






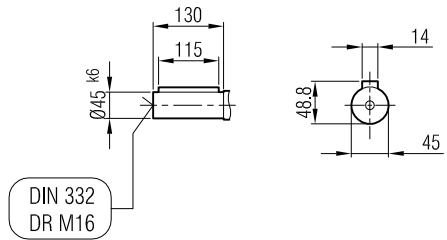
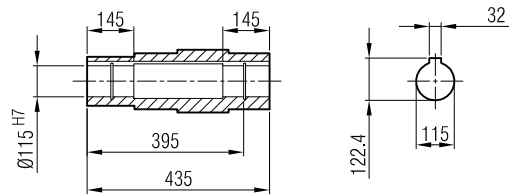
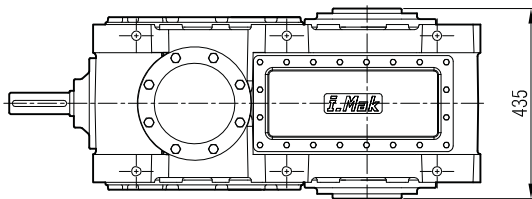
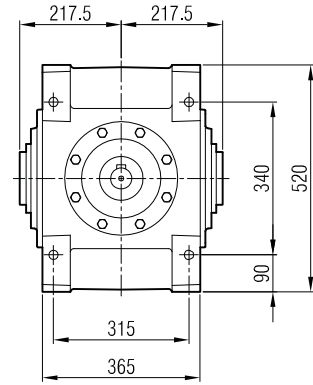
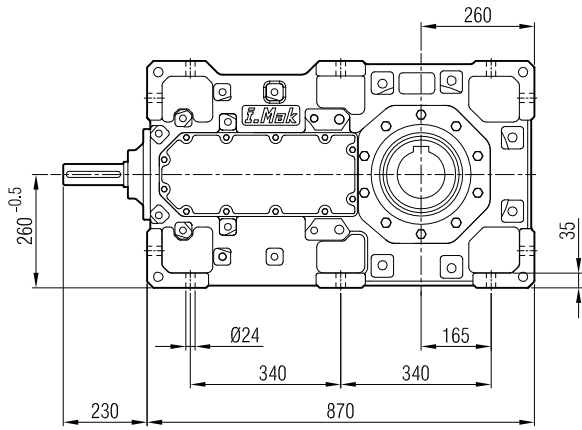
**MK 603 / G08**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





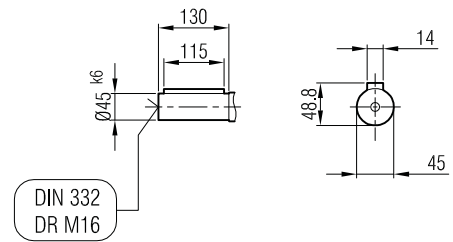
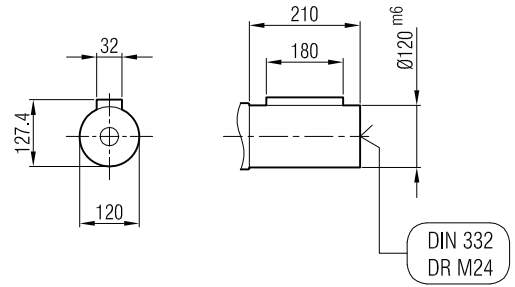
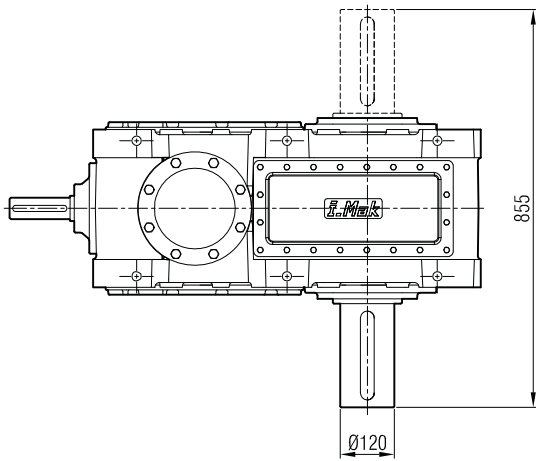
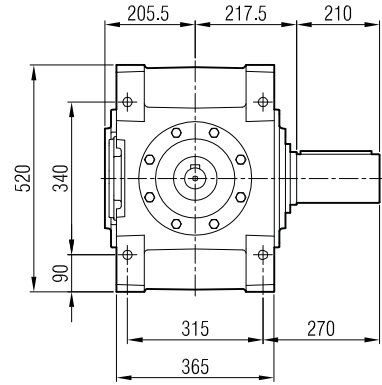
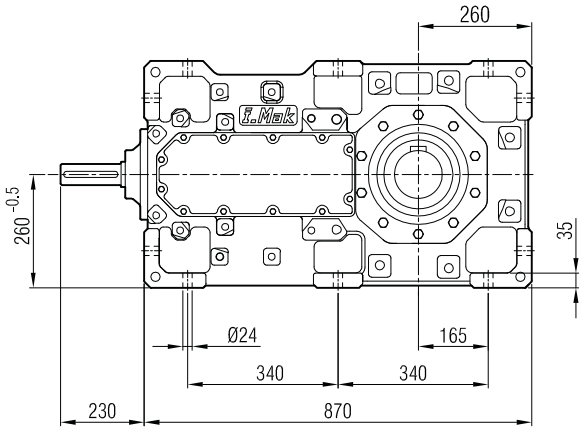
**MK 703 / G07**





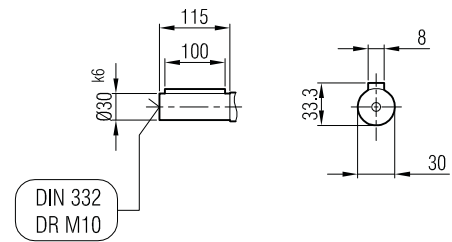
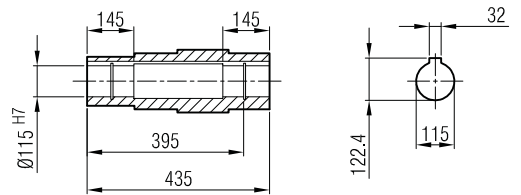
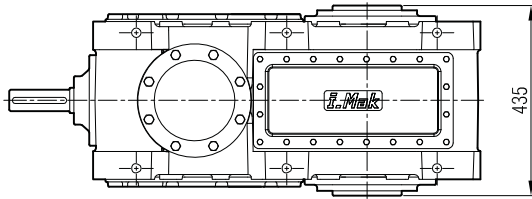
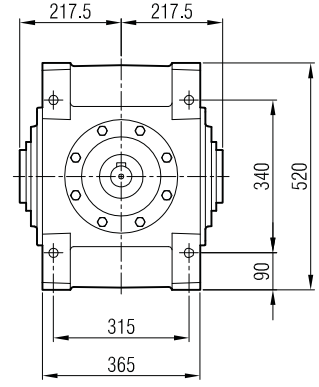
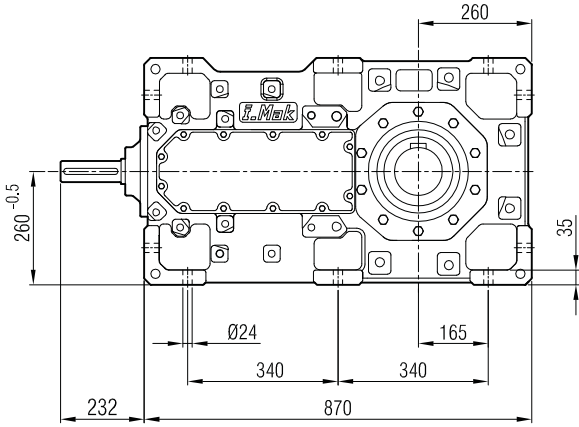
**MK 703 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





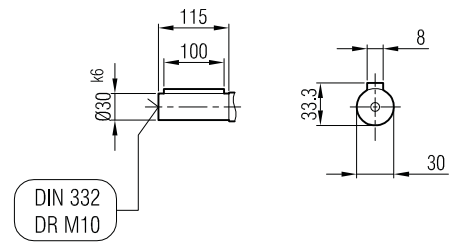
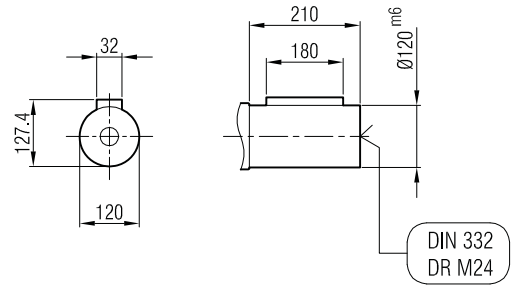
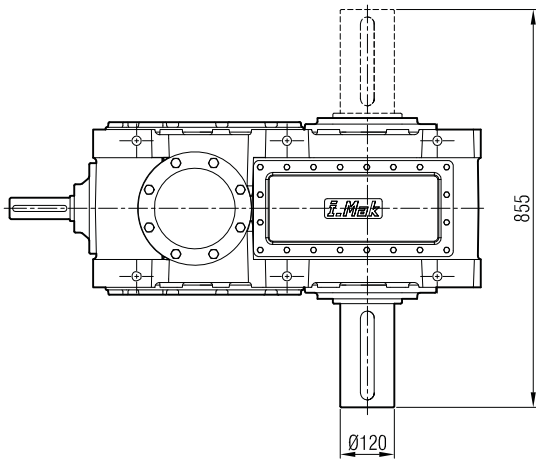
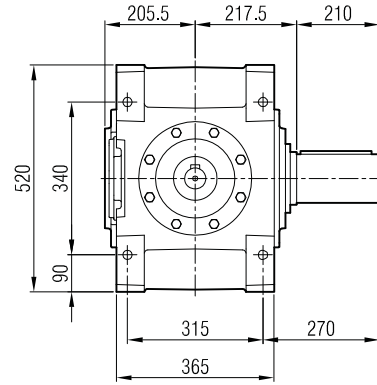
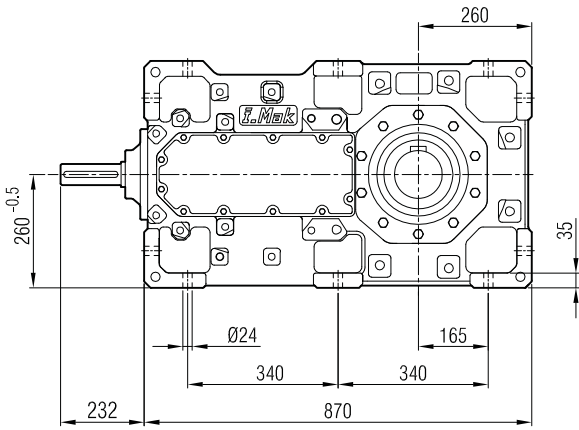
**MK 704 / G07**





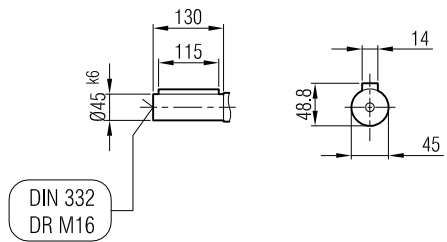
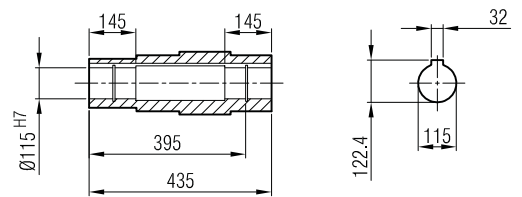
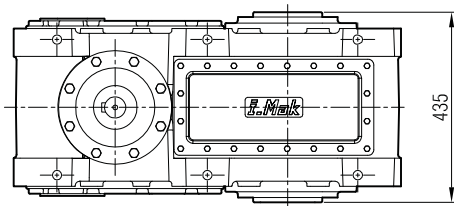
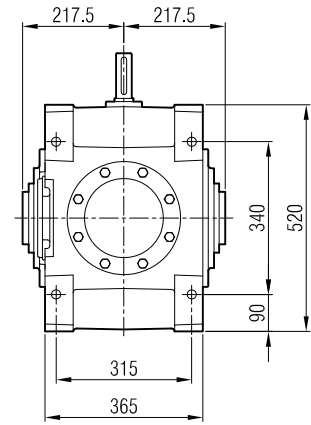
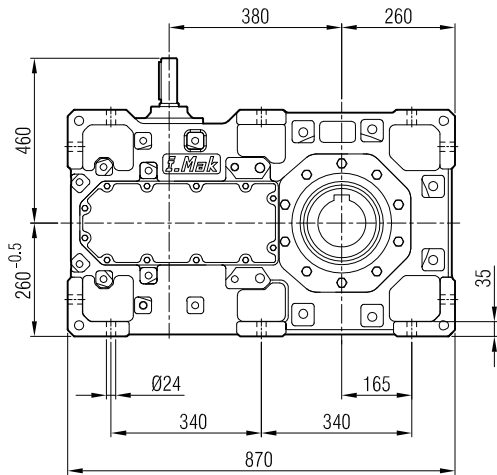
**MK 704 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





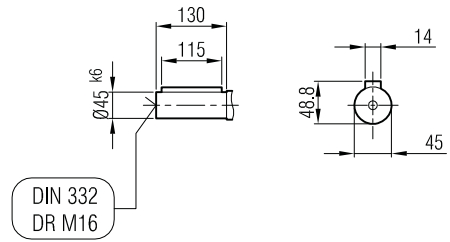
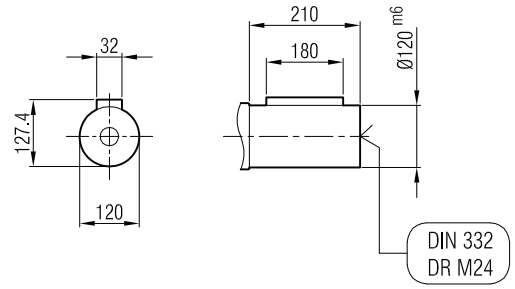
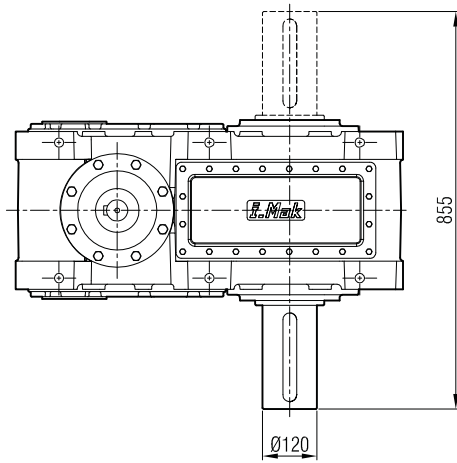
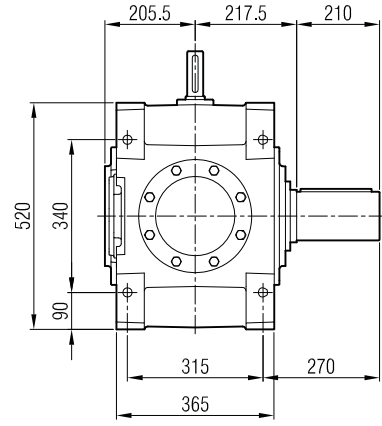
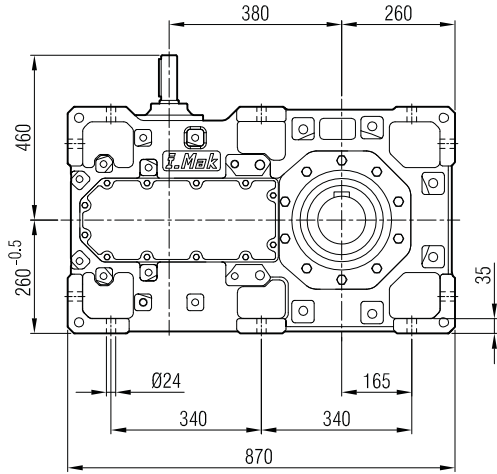
**MK 703 / G08**





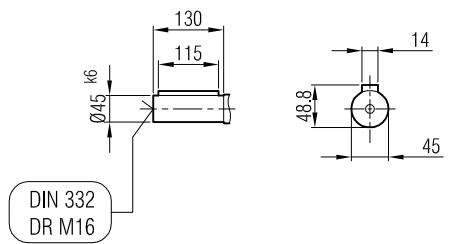
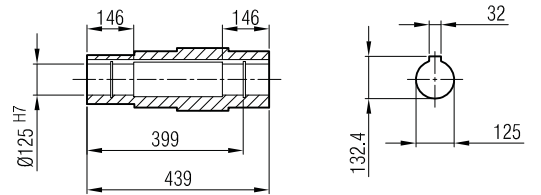
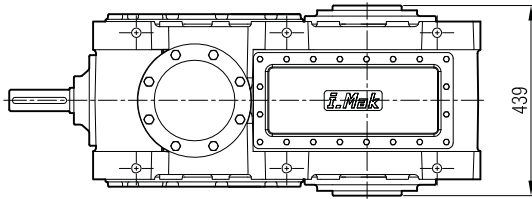
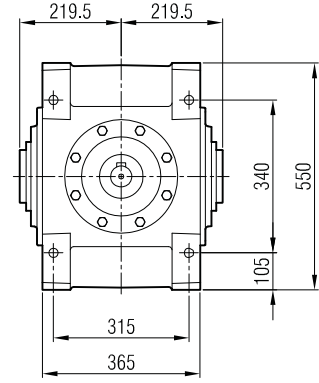
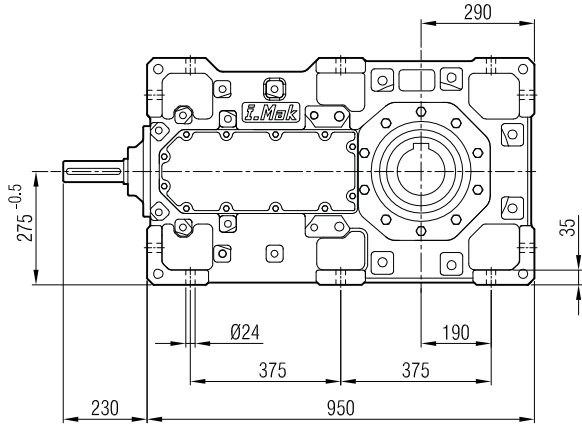
**MK 703 / G08**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





**MK 803 / G07**

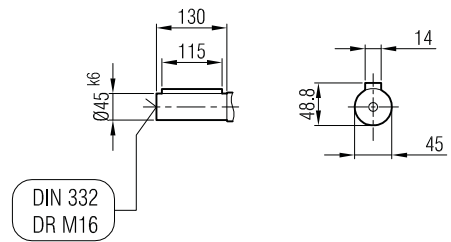
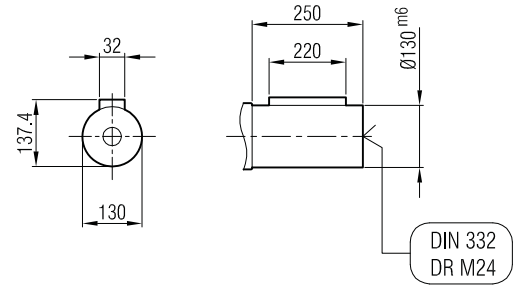
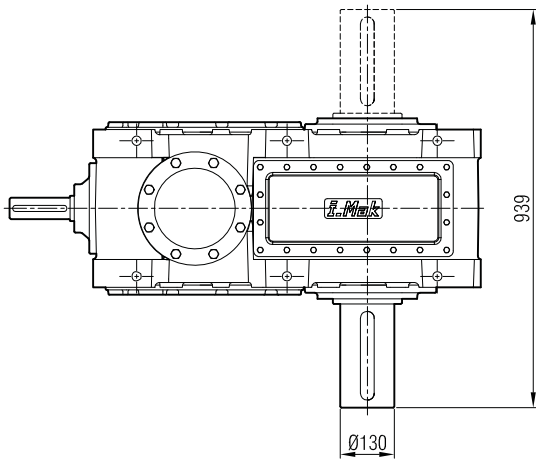
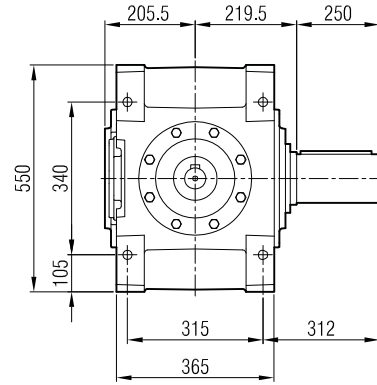
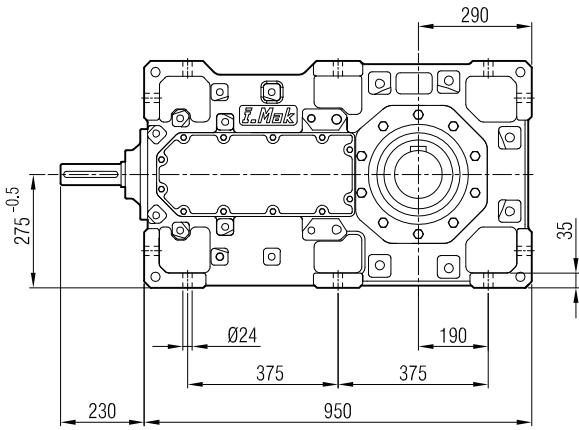






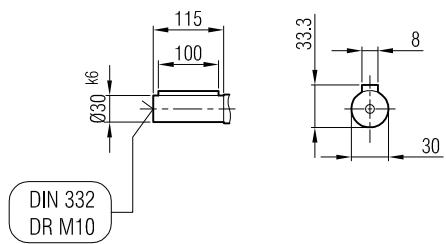
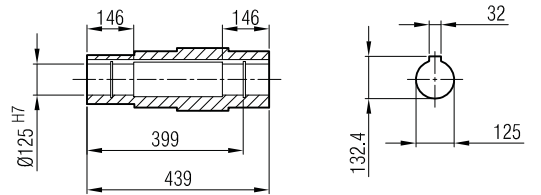
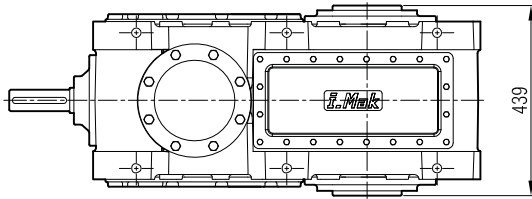
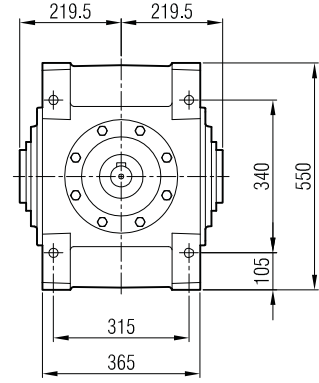
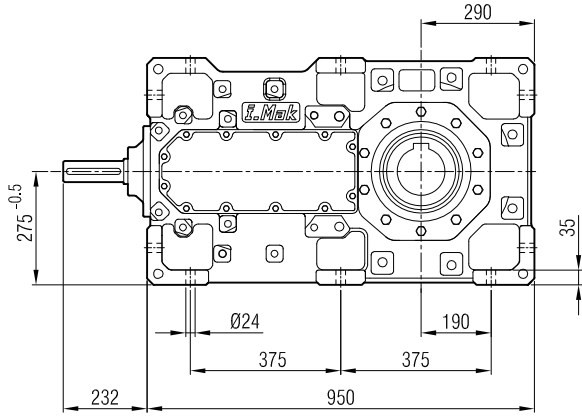
**MK 803 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





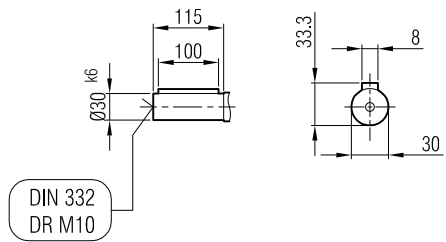
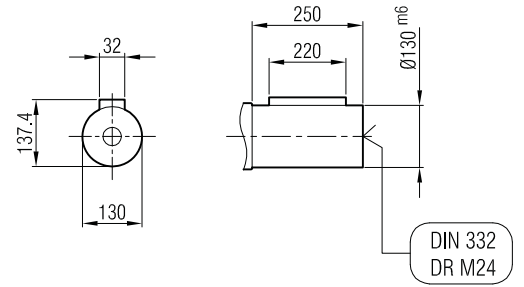
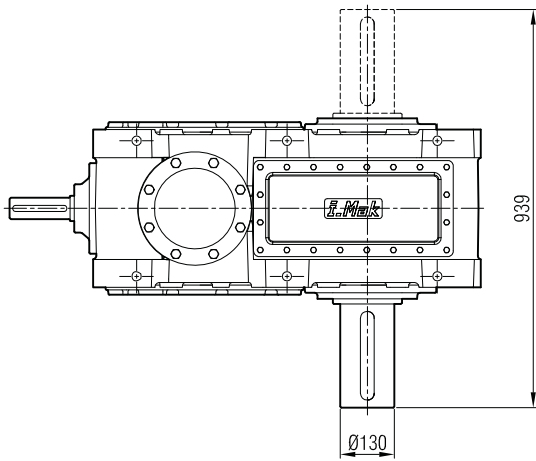
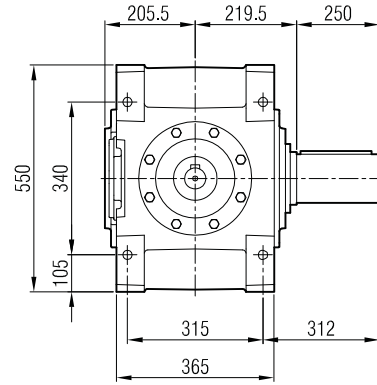
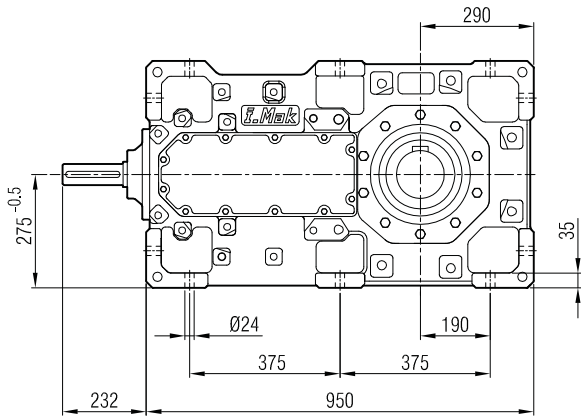
**MK 804 / G07**





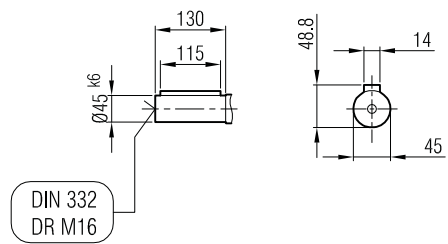
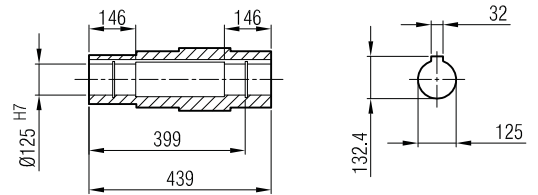
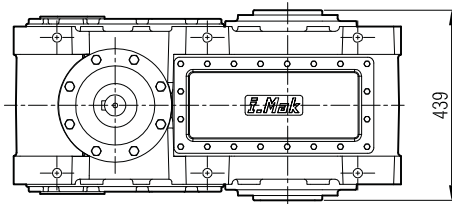
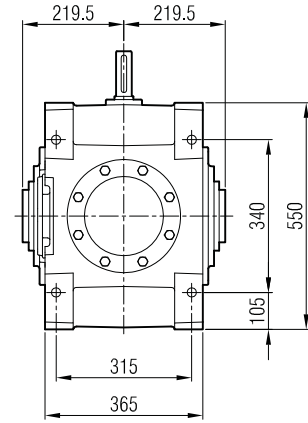
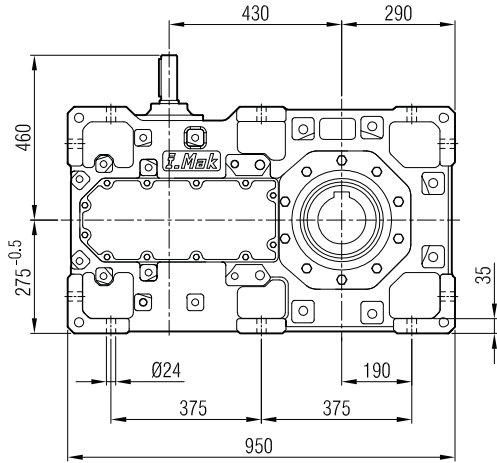
**MK 804 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





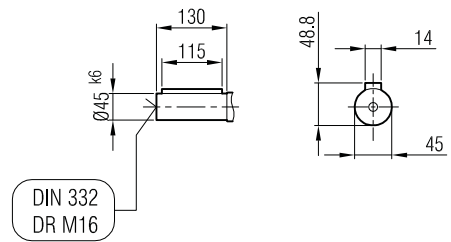
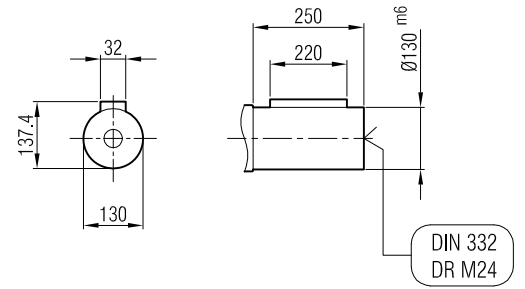
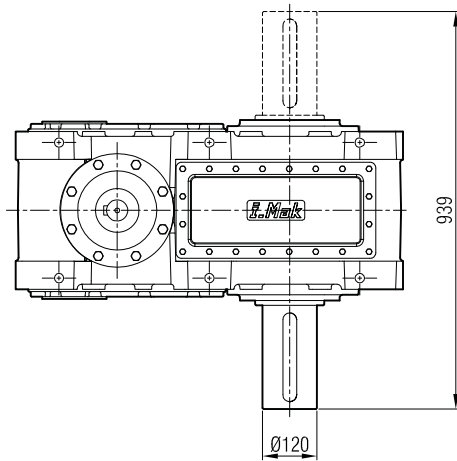
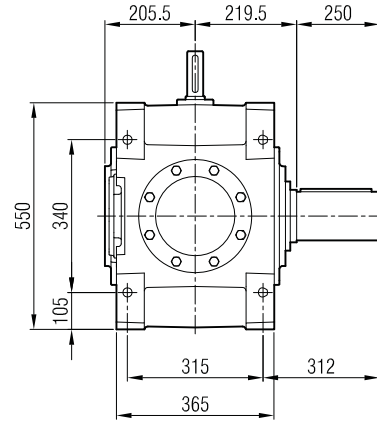
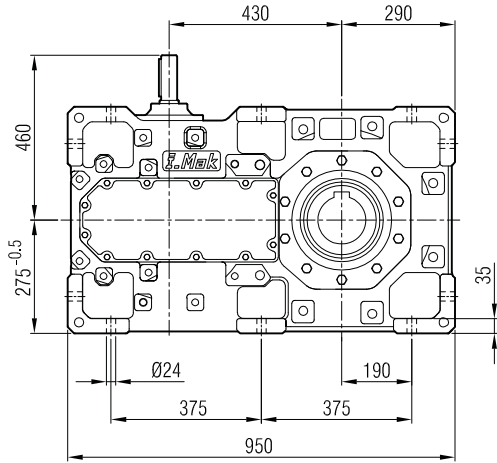
**MK 803 / G08**





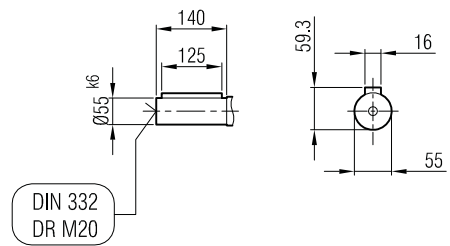
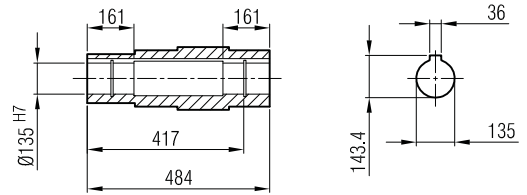
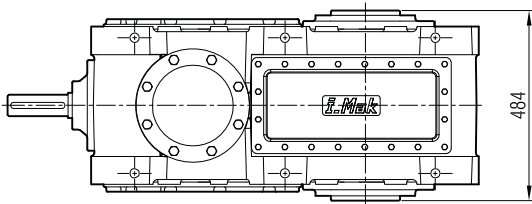
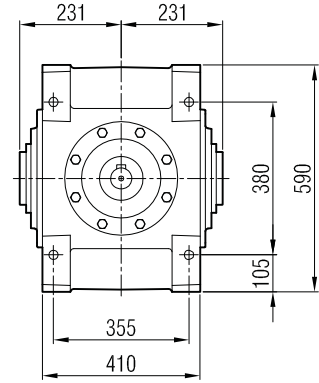
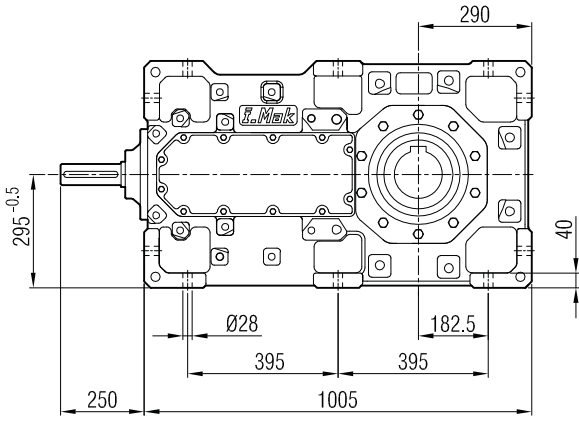
**MK 803 / G08**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





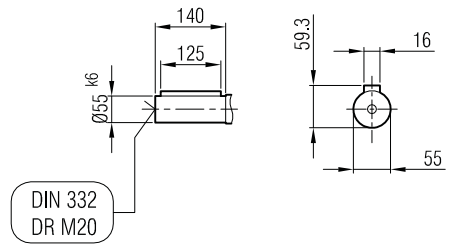
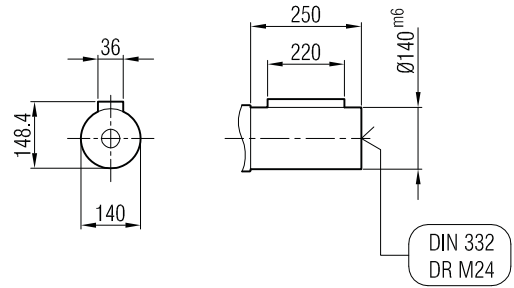
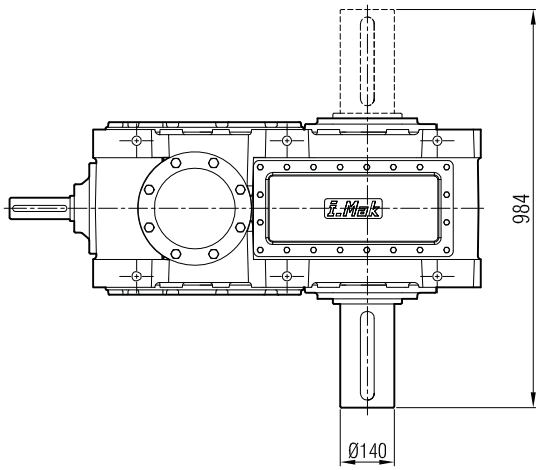
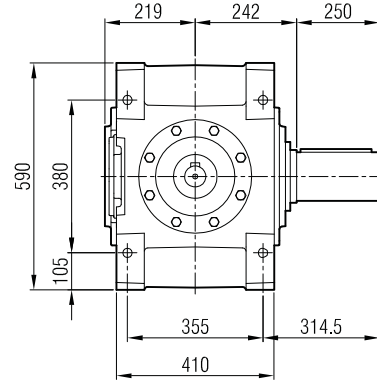
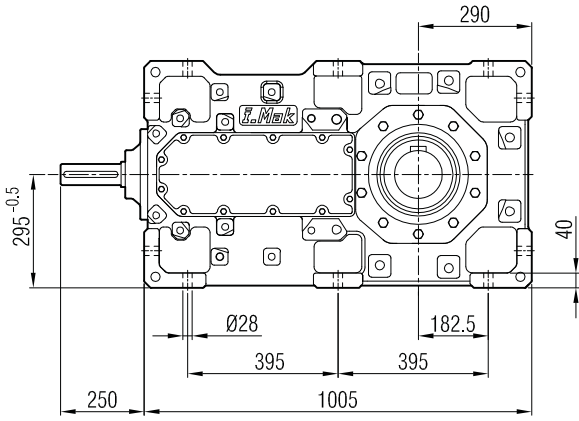
**MK 903 / G07**





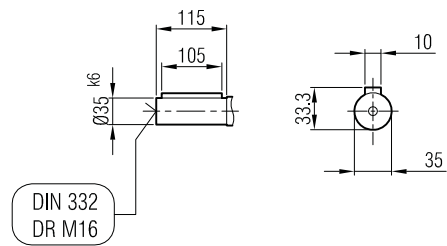
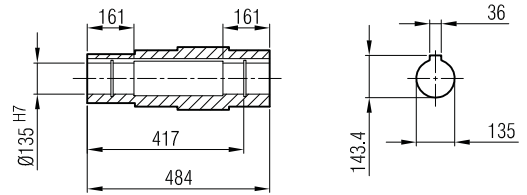
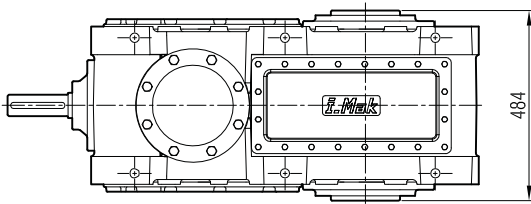
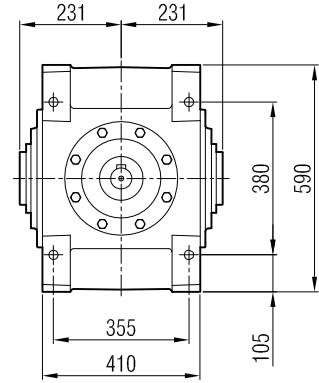
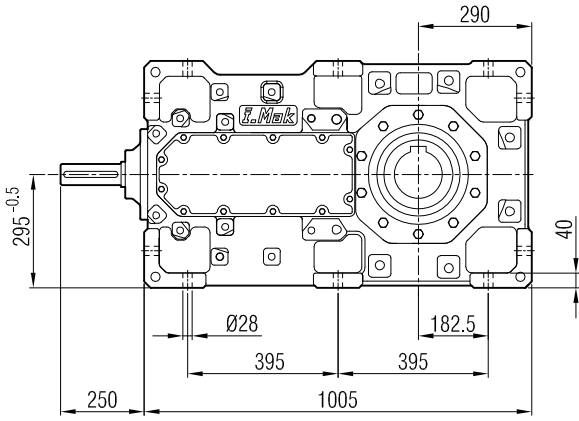
**MK 903 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





**MK 904 / G07**

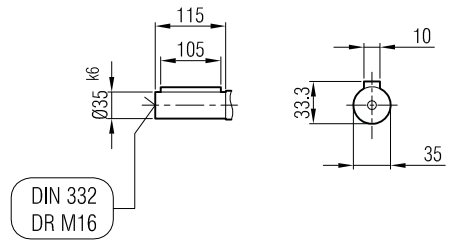
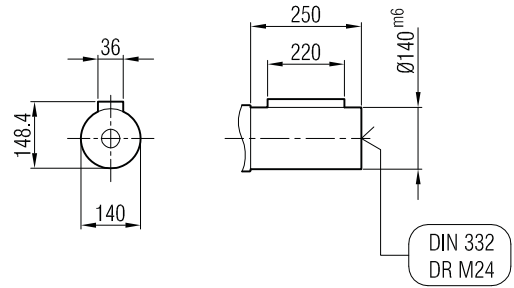
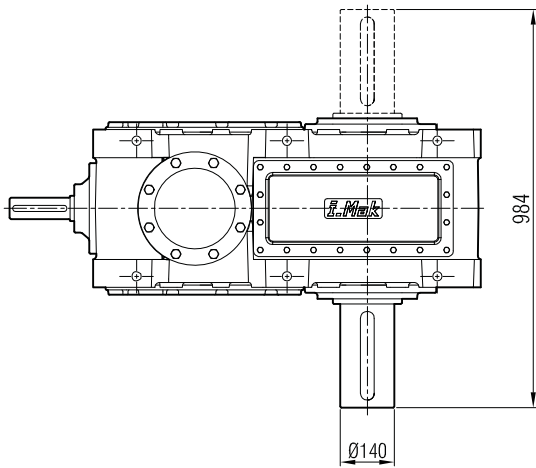
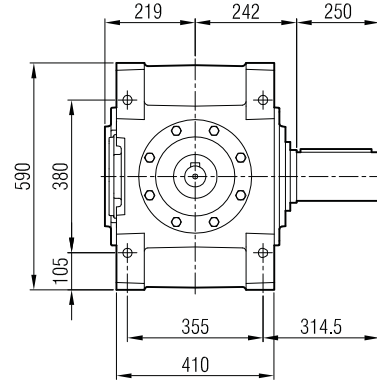
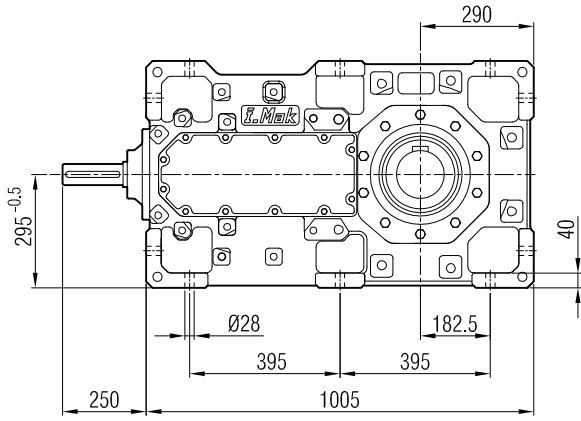






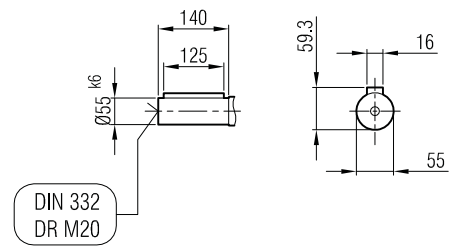
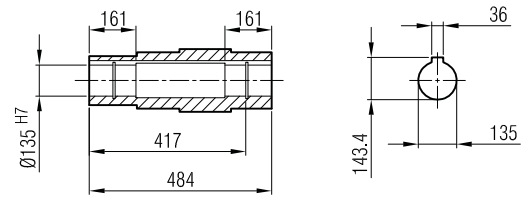
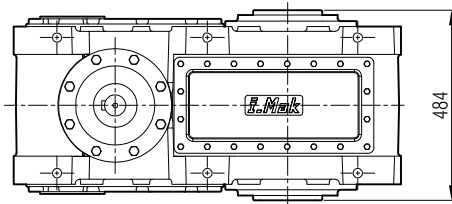
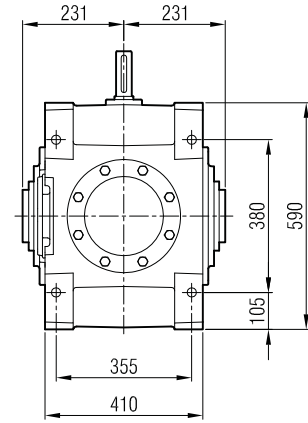
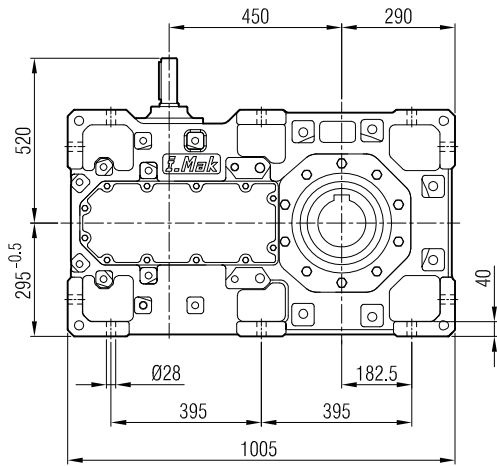
**MK 904 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





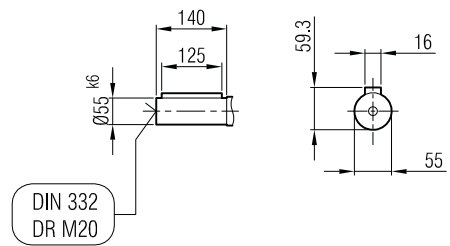
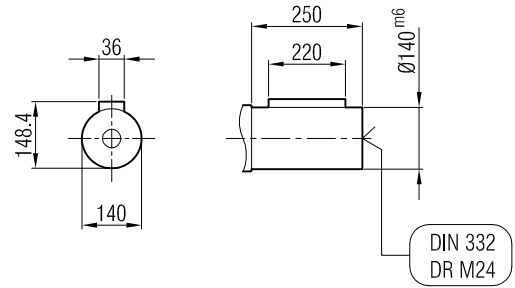
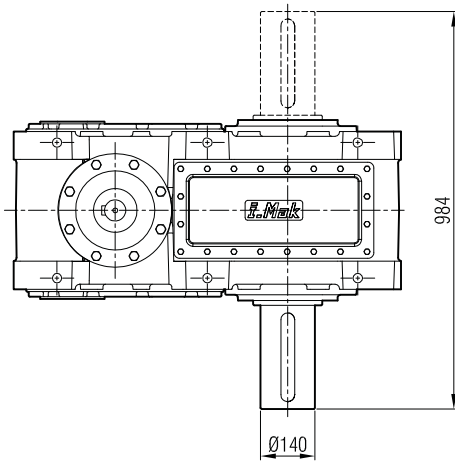
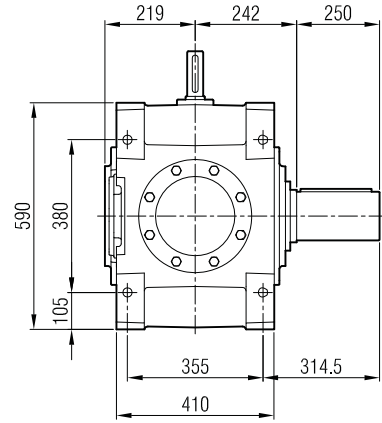
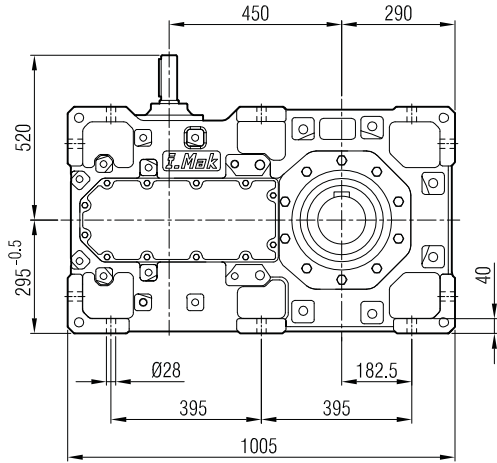
**MK 903 / G08**





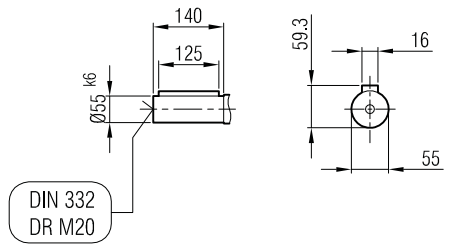
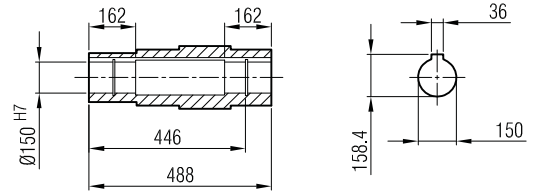
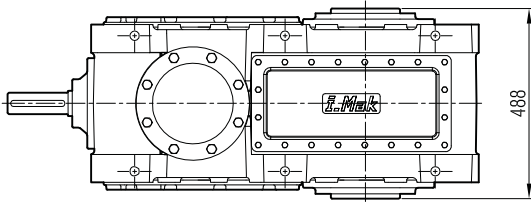
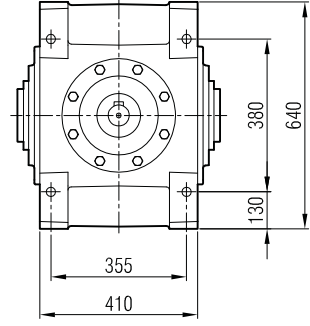
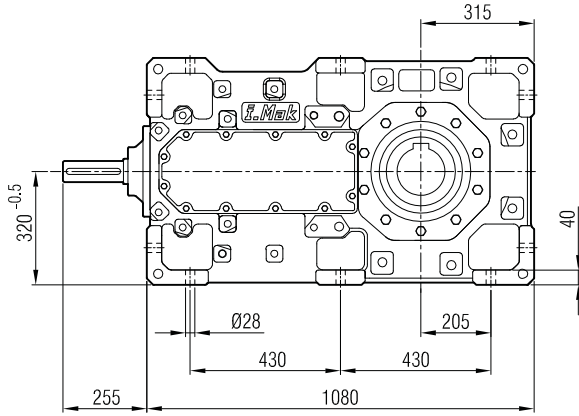
**MK 903 / G08**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





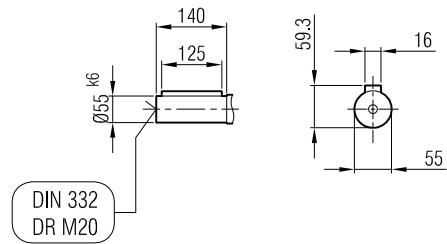
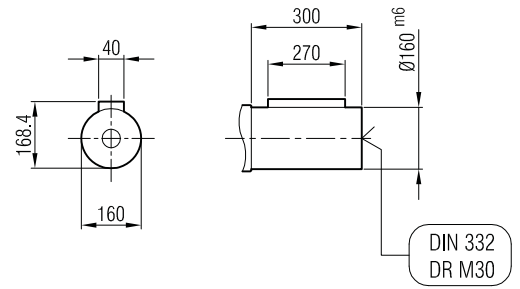
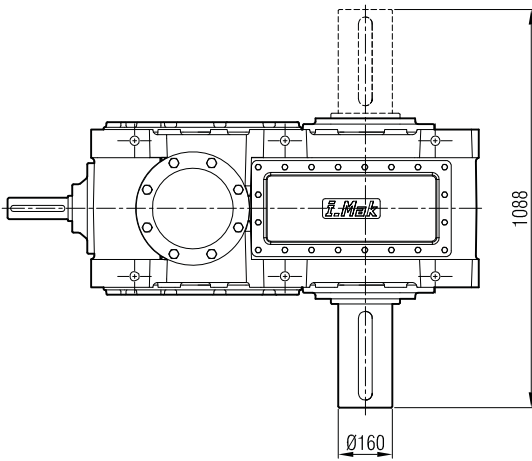
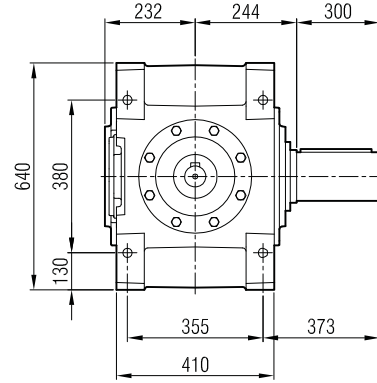
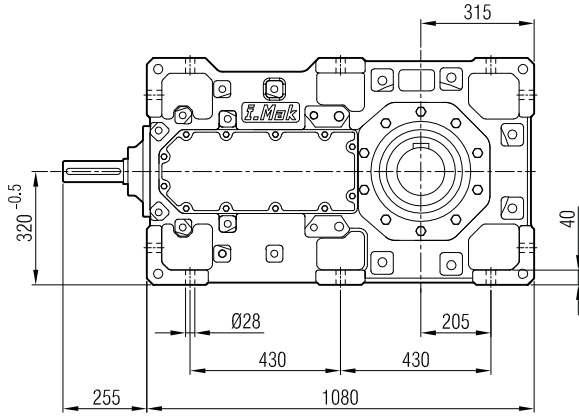
**MK 1003 / G07**





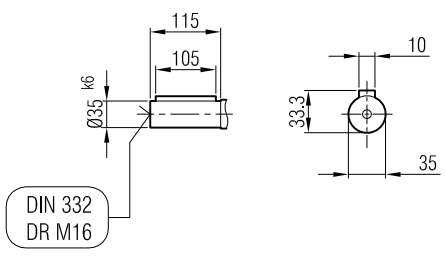
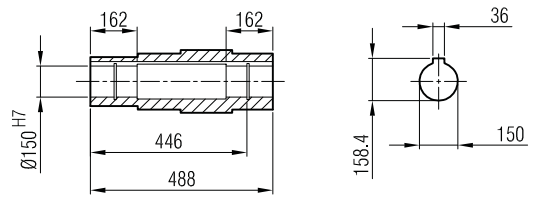
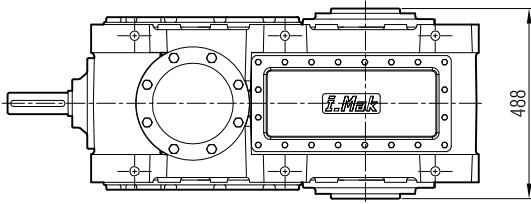
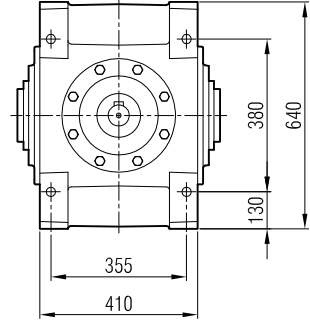
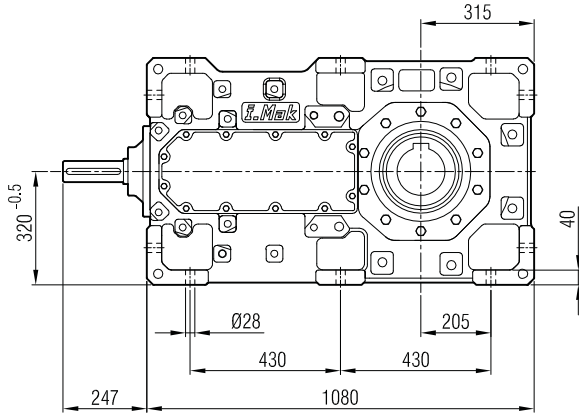
**MK 1003 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





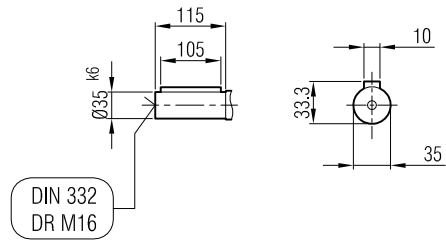
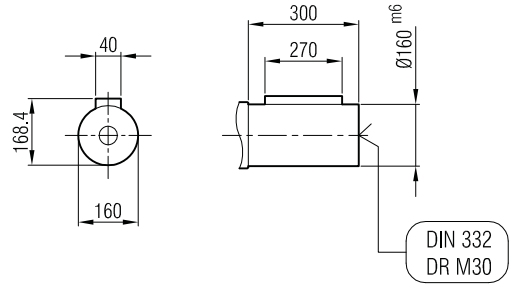
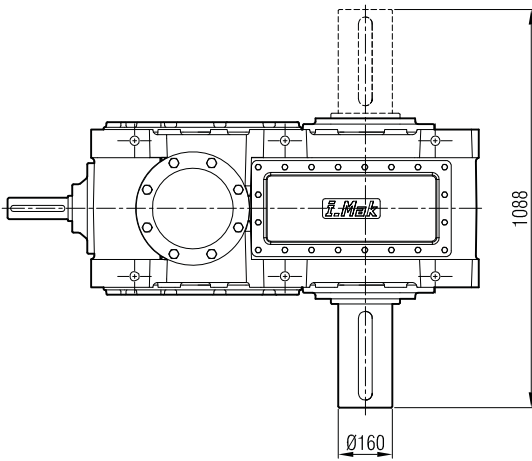
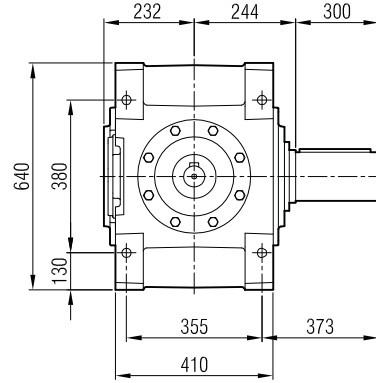
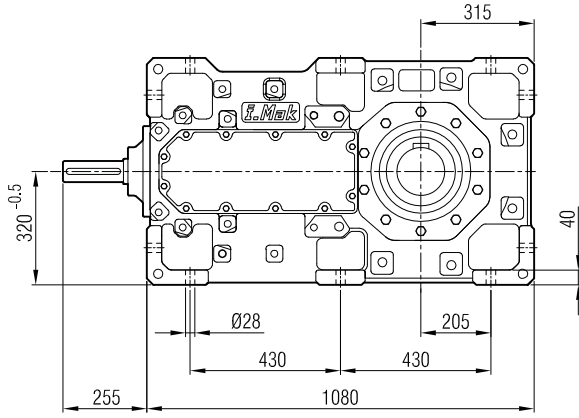
**MK 1004 / G07**





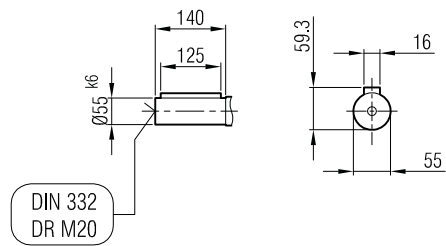
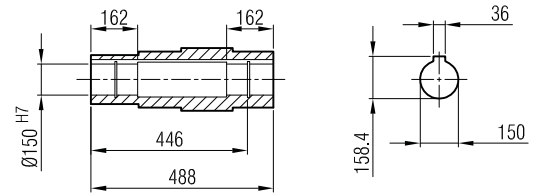
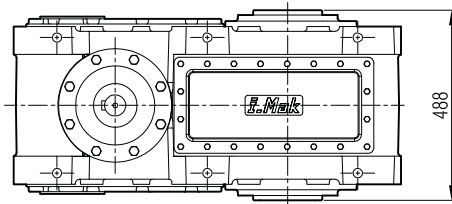
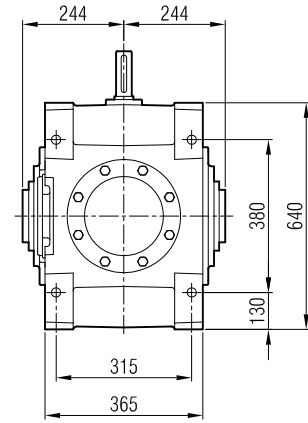
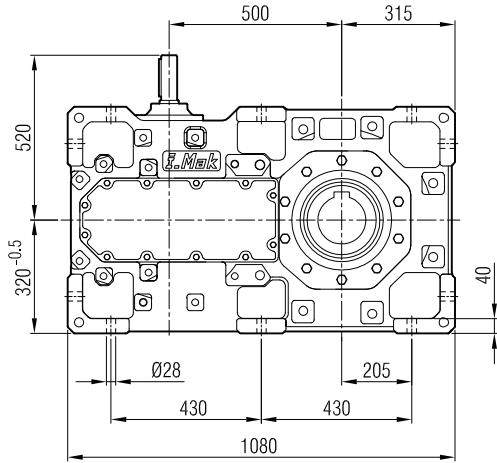
**MK 1004 / G07**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)





**MK 1003 / G08**

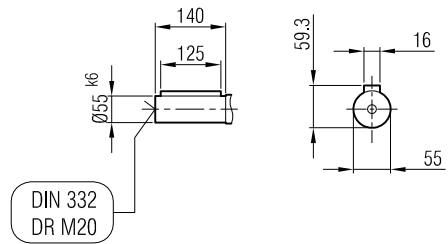
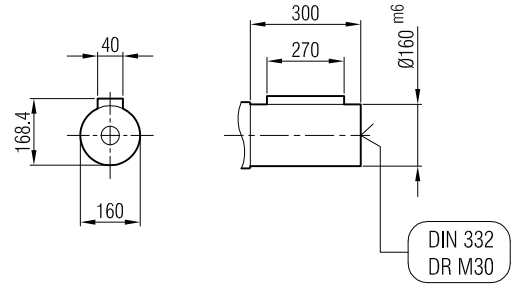
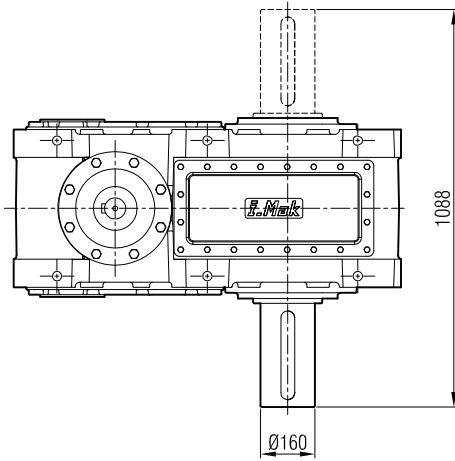
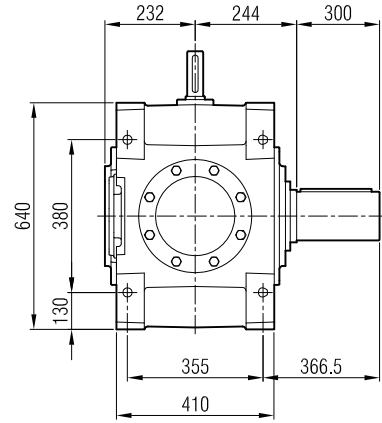
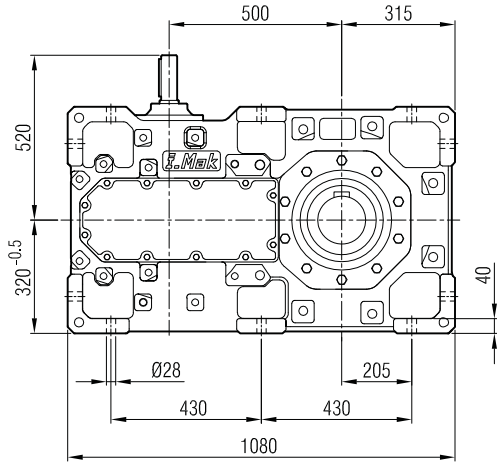






**MK 1003 / G08**

(Çıkış Milli / Output Shaft / Avec arbre de sortie)



**Notlar**  
Notes

**Notlar**  
Notes

**Notlar**  
Notes



**I-MAK Turkey (Factory-Head Office):**  
Seyhli Mahallesi, Sanayi Caddesi No:1, 34906 Pendik / İstanbul –  
Turkey Tel: +90 216 378 03 26 - Fax: +90 216 378 06 86  
Web: [www.imakreduktor.com](http://www.imakreduktor.com) / E-mail: [imak@imakreduktor.com](mailto:imak@imakreduktor.com)

**I-MAK USA :**  
12610 Galveston Road, Webster, 77598 Texas, USA.  
Tel: 281 480 8711 ext 200 / Fax: 281 480 8656  
E-mail: [sales@sipco-mls.com](mailto:sales@sipco-mls.com)

[www.imakreduktor.com](http://www.imakreduktor.com)



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