

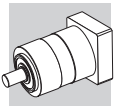
RESUMEN

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Revisiones

El índice de revisión del catálogo está indicado en la Pág. 36.

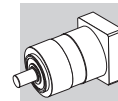
En la dirección www.tecnoingranaggi.it se encuentran disponibles los catálogos con las revisiones actualizadas.



1 INFORMACIONES GENERALES

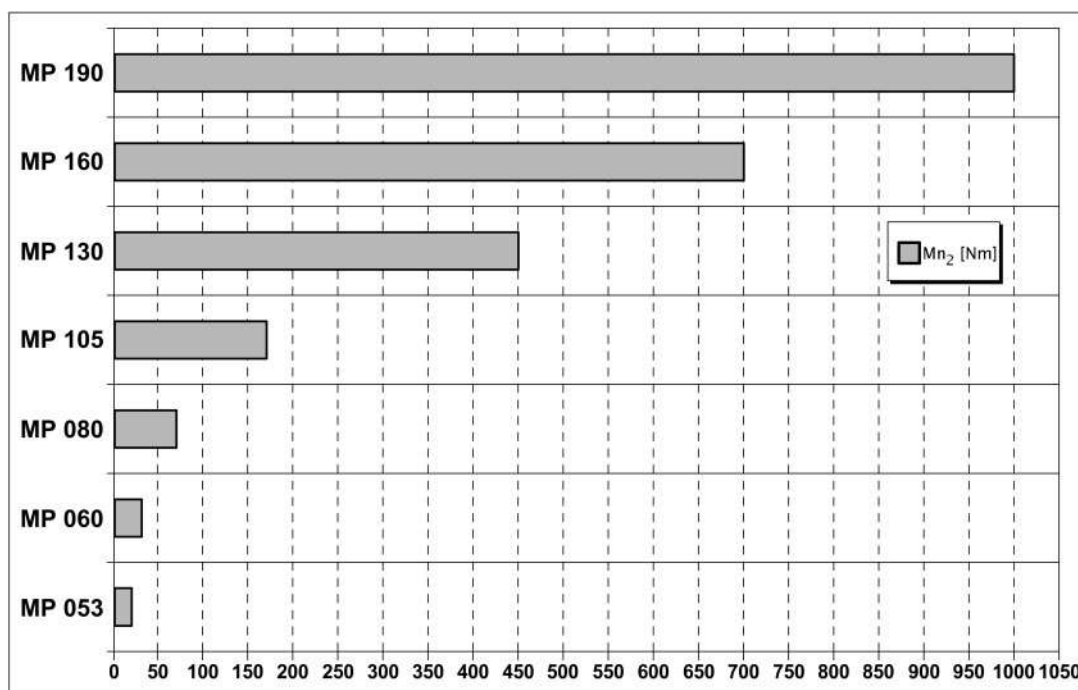
1.1 SIMBOLOGÍA Y UNIDADES DE MEDIDA

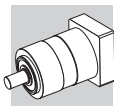
A_n	[N]	Carga axial admisible representa la fuerza máxima que puede aplicarse axialmente al eje del reductor conjuntamente con la carga radial nominal. El valor suministrado está referido a la velocidad $n_2 = 100 \text{ min}^{-1}$
C_t	[Nm/arcmin]	Rigidez torsional
i	-	Relación de transmisión , expresa la relación entre la velocidad del eje de entrada y el eje de salida del reductor: $i = \frac{n_1}{n_2}$
l	-	Relación de intermitencia se define como la relación entre el tiempo de funcionamiento y el tiempo del ciclo
f_c	-	Factor de utilización. Factor correctivo que interviene en el dimensionado del reductor funcionando con servicio S1
f_z	-	Factor de servicio
M_{a2}	[Nm]	Par máximo de aceleración , admisible durante el ciclo de trabajo con $l < 60\%$
M_{n2}	[Nm]	Par nominal transmisible , referido al eje de salida del reductor
M_{p2}	[Nm]	Par de paro de emergencia. Este valor no puede aplicarse más de 1000 veces durante la vida del reductor y no debe emplearse regularmente en el ciclo del reductor
M_r	[Nm]	Par de reversibilidad. Par mínimo que ha de aplicarse al eje de salida para lograr la inversión del movimiento
J	[Kgc ² cm ²]	Momento de inercia referido al eje de entrada
L₁₀	[h]	Duración media de los rodamientos
n₁	[min ⁻¹]	Velocidad nominal en la entrada (servicio continuo S1). Constituye la referencia que debe utilizarse para ciclos caracterizados por una relación de intermitencia $\geq 60\%$ y/o funcionamiento ≥ 20 mtos
n_{1max}	[min ⁻¹]	Velocidad máxima instantánea. Puede alcanzarse ocasionalmente en condiciones no repetitivas. Para servicio de tipo S5 no puede aplicarse continuamente por un tiempo superior a los 30 segundos
R_n	[N]	Carga radial admisible: siempre deberá ser igual, o superior, a la carga radial de cálculo. El valor punta está referido a mitad de la longitud del eje, con velocidad $n_2 = 100 \text{ min}^{-1}$
T_c	[°C]	Temperatura en la carcasa. No se debe superar nunca la temperatura de 90°C en ninguna de las condiciones de funcionamiento
φ_S	[arcmin]	Juego angular estándar está calculado en condiciones estáticas y aplicando un par de aproximadamente el 2% del par nominal del reductor
φ_R	[arcmin]	Juego angular reducido está calculado en condiciones estáticas y aplicando un par de aproximadamente el 2% del par nominal del reductor
η	[%]	Rendimiento dinámico está expresado por la relación entre el par medido en el eje de salida y el aplicado en el eje de entrada en condiciones nominales: $\eta_d = \frac{M_2}{M_1 \times i} \times 100$
Z	-	Número de aceleraciones/arranques hora



1.2 CARACTERÍSTICAS SERIE MP

- Disponible con dos clases de juego angular: estándar y reducido
- Rodamientos para una duración media de aproximadamente 20.000 horas, en condiciones nominales de funcionamiento.
Montaje estándar con rodamientos rígidos de bolas para los tamaños 053, 060, 080 y 105. Rodamientos cónicos de rodillos para los tamaños 130, 160 y 190; bajo pedido pueden suministrarse en los tamaños 080 y 105 (Opción **CR**)
- Llenado en fábrica con lubricante sintético con viscosidad ISO VG 220, idóneo para su instalación en cualquier posición de montaje.
No se precisa sustituir periódicamente el lubricante a no ser que existan contaminaciones externas
- Grado de protección IP65
- Rumorosidad máxima $LP \leq 70$ dB (A) – $n_1 = 3000$ min⁻¹
- Amplia posibilidad de configuraciones para el acoplamiento del motor
- Ejecuciones con un sólo tren, disponibles hasta la relación $i = 10$ ($i = 9$ para el tamaño 053)





1.3 VERSIONES



-

Reductor coaxial

053...190



IS

Reductor con eje de entrada cilíndrico

053...160



G

Reductor angular

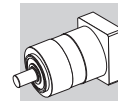
053...160



MB

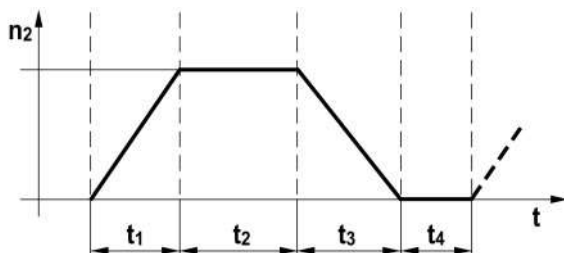
Reductor angular con eje hueco pasante

080...160



1.4 DIMENSIONADO REDUCTOR

- Calcular la relación de intermitencia **I**:



$$I [\%] = \frac{t_1 + t_2 + t_3}{t_1 + t_2 + t_3 + t_4}$$

t_1 = tiempo de aceleración

t_2 = tiempo de funcionamiento a velocidad constante

t_3 = tiempo de desaceleración

t_4 = tiempo de pausa

- 1) Precisar el tipo de servicio correspondiente a la aplicación:

	$Z \leq 1000$	$Z > 1000$
$I < 60\%$	S5	S1
$I \geq 60\%$	S1	S1

S5 servicio intermitente

S1 servicio continuo

- 2) Determinar el factor de servicio f_z :

Z	f_z
$Z \leq 1000$	1.00
$1000 < Z \leq 1500$	1.25
$1500 < Z \leq 2000$	1.50
$2000 < Z \leq 2500$	1.75
$2500 < Z \leq 3000$	2.00
$Z > 3000$	Consultar

- 3) Determinar el factor de utilización f_c :

I	20%...60%	80%	100%
f_c	1.0	1.20	1.40

- 2) Seleccionar el reductor que cumpla la condición:

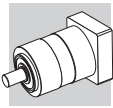
$$M_{a2} \geq M_{1max} \times i \times \eta$$

M_{1max} = Par máximo de aceleración del motor

! Si, en función de las condiciones de funcionamiento el reductor ha de funcionar con una temperatura ambiente más alta de lo normal, se aconseja pedir las juntas de estanqueidad con mezcla de Viton® indicando la opción **S1**. En ningún caso es aconsejable superar la velocidad máxima $[n_{1max}]$ admitida por el reductor. Si se observan temperaturas superiores de 90 °C en la carcasa, es aconsejable reducir la velocidad de funcionamiento o instalar un sistema de refrigeración auxiliar.

- 4) Seleccionar el reductor que cumpla la condición:

$$M_{n2} \geq M_{1max} \times i \times \eta \times f_z \times f_c$$

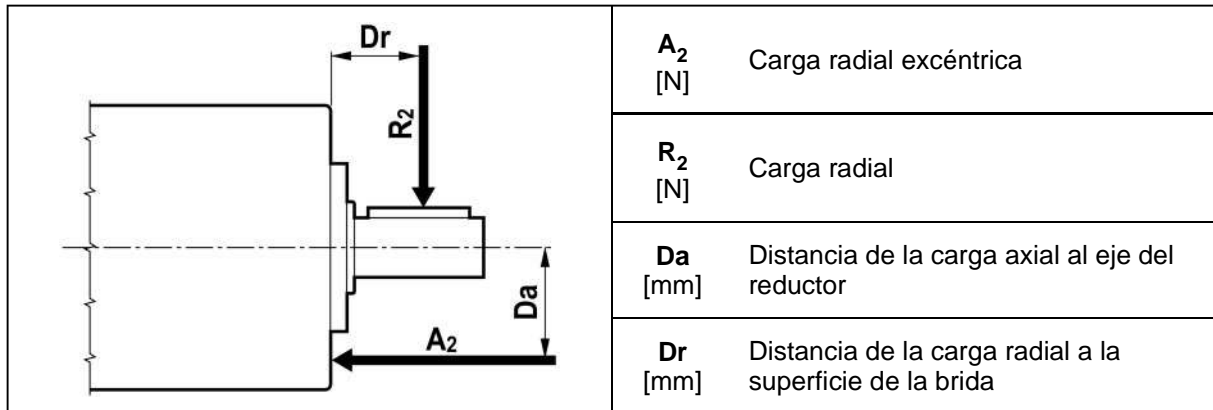


1.5 CÁLCULO DE LA VELOCIDAD DE LOS RODAMIENTOS DEL EJE DE SALIDA

La duración de los rodamientos de salida, puede calcularse con la fórmula que tenga en cuenta las cargas radiales y axiales aplicadas cuando se utilizan rodamientos rígidos de bolas (**CS**) o cónicos de rodillos (**CR**).

MP 053	MP 060	MP 080	MP 105	MP 130	MP 160	MP 190
CS	CS	CS(*)	CS(*)	CR	CR	CR

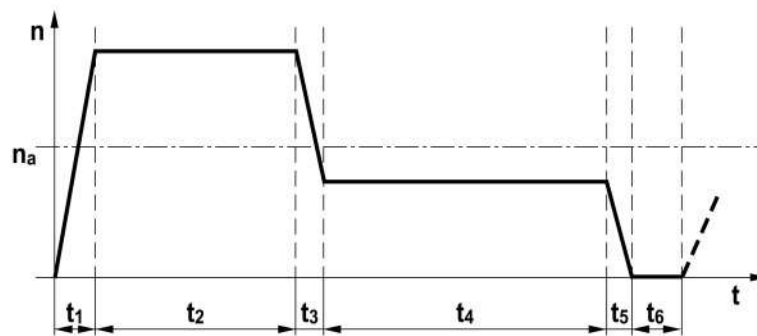
(*) Disponible en opción **CR**



CÁLCULO DE LA VIDA TEÓRICA DE LOS RODAMIENTOS RÍGIDOS DE BOLAS (CS)

$$F_{eq} = \frac{A_2 \times D_a + R_2 \times (D_r + b)}{a}$$

$$n_a = \frac{n_1 \times t_1 + n_2 \times t_2 + \dots + n_5 \times t_5}{t_1 + t_2 + t_3 + t_4 + t_5 + t_6}$$



$$L_{10}(h) = \frac{16666}{n_a} \times \left(\frac{c}{F_{eq}} \right)^3$$

Constantes	MP 053	MP 060	MP 080	MP 105
a	15.5	14.4	21.5	24.5
b	17	17.4	32.3	36
c	5600	9550	14000	25700

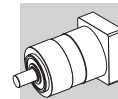
F_{eq} = Fuerza equivalente resultante del efecto de fuerzas radiales y axiales actuando simultáneamente.

n_a = Velocidad media del eje de salida

$L_{10}(h)$ = Duración teórica de los rodamientos

Calcular el parámetro $e = A_2/F_{eq}$ y verificar que se cumple la condición $e \leq 0.19$.

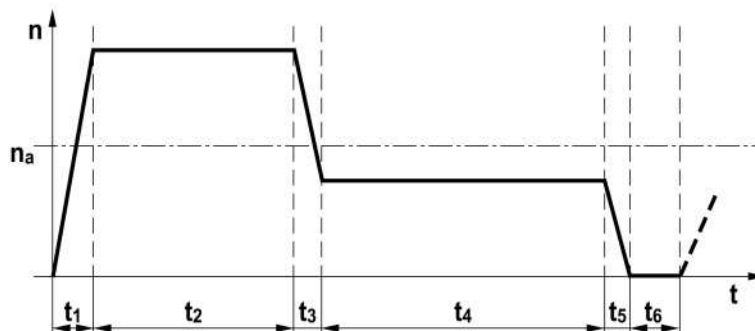
Si $e > 0.19$ consultar con nuestro Servicio Técnico.



CÁLCULO DE LA VIDA TEÓRICA DE LOS RODAMIENTOS CÓNICOS DE RODILLOS (CR)

$$F_{eq} = \frac{A_2 \times D_a + R_2 \times (D_r + b)}{a}$$

$$n_a = \frac{n_1 \times t_1 + n_2 \times t_2 + \dots + n_5 \times t_5}{t_1 + t_2 + t_3 + t_4 + t_5 + t_6}$$



$$L_{10}(h) = \frac{16666}{n_a} \times \left(\frac{c}{F_{eq}} \right)^{10/3}$$

Constantes	MP 080	MP 105	MP 130	MP 160	MP 190
a	28	35	45	52	62
b	35.55	41.25	51.75	56.75	64.25
c	30800	51200	76500	99000	14000

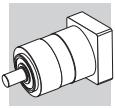
F_{eq} = Fuerza equivalente resultante del efecto de fuerzas radiales y axiales actuando simultáneamente.

n_a = Velocidad media del eje de salida

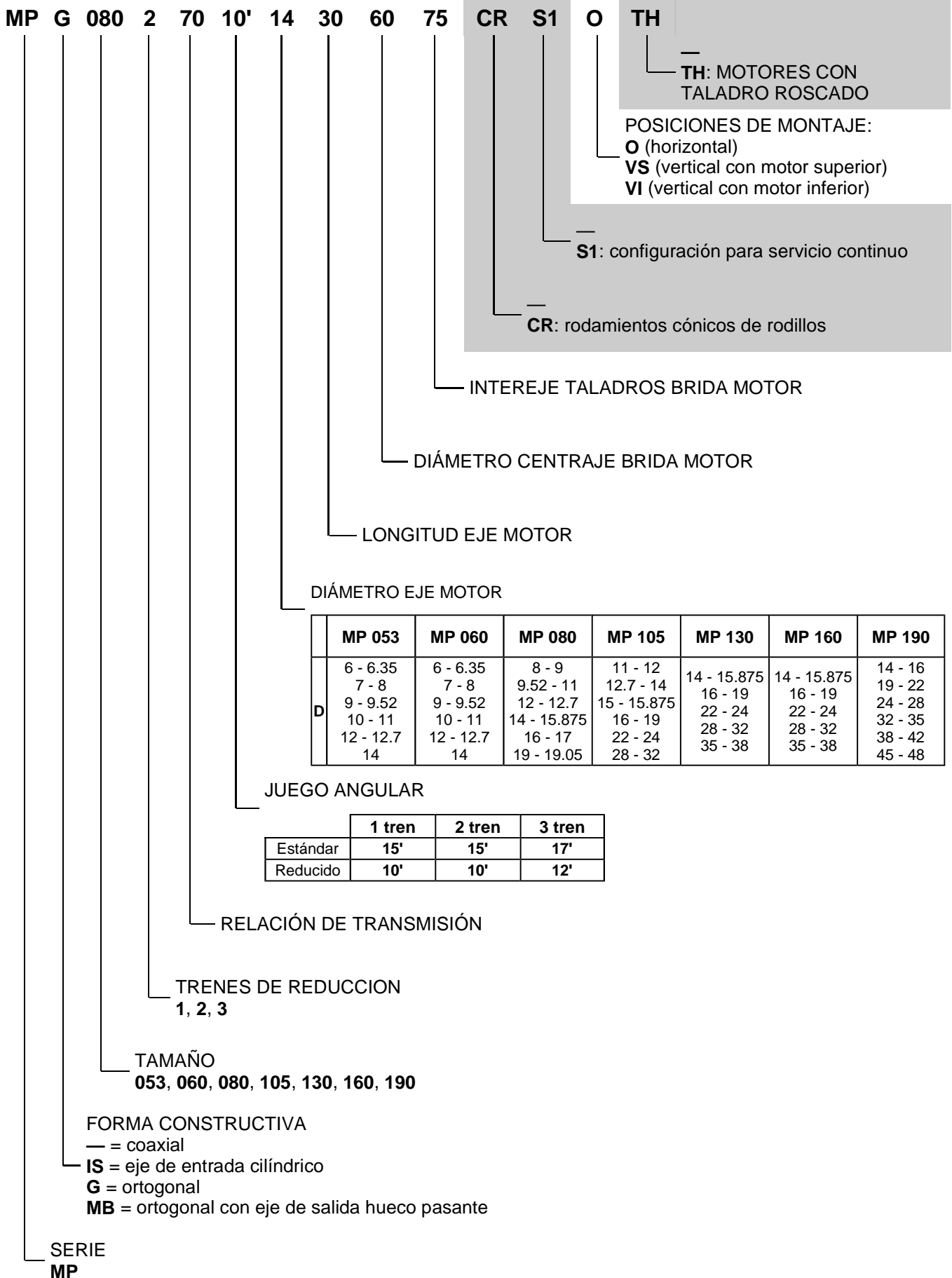
$L_{10}(h)$ = Duración teórica de los rodamientos

Calcular el parámetro $e = A_2/F_{eq}$ y verificar que se cumple la condición $e \leq 0.4$.

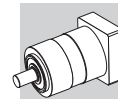
Si $e > 0.4$ consultar con nuestro Servicio Técnico.



1.6 CÓDIGOS PARA REALIZAR LOS PEDIDOS



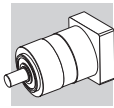
Variante opcional



2 DATOS TÉCNICOS REDUCTORES

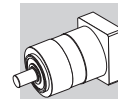
2.1 MP 053

MP 053													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 053 1_ 3	12	22	40	0.3	3300	4000	15'	10'	1.0	200	500	600	97
MP 053 1_ 4	15	28	45	0.3	3500	5000	15'	10'	1.0	200	500	600	97
MP 053 1_ 5	15	28	45	0.3	3500	5000	15'	10'	1.0	200	500	600	97
MP 053 1_ 6	15	28	45	0.3	3500	5000	15'	10'	1.0	200	500	600	97
MP 053 1_ 7	15	28	45	0.3	4000	6000	15'	10'	1.0	200	500	600	97
MP 053 1_ 9	12	22	40	0.3	4000	6000	15'	10'	1.0	200	500	600	97
MP 053 2_ 12	20	30	60	0.5	3300	4000	15'	10'	0.9	200	500	600	94
MP 053 2_ 15	20	30	60	0.5	3300	4000	15'	10'	0.9	200	500	600	94
MP 053 2_ 16	20	30	60	0.5	3500	5000	15'	10'	0.9	200	500	600	94
MP 053 2_ 20	20	30	60	0.5	3500	5000	15'	10'	0.9	200	500	600	94
MP 053 2_ 25	20	30	60	0.5	3500	5000	15'	10'	0.9	200	500	600	94
MP 053 2_ 28	20	30	60	0.5	4000	6000	15'	10'	0.9	200	500	600	94
MP 053 2_ 35	20	30	60	0.5	4000	6000	15'	10'	0.9	200	500	600	94
MP 053 2_ 36	15	28	45	0.5	4000	6000	15'	10'	0.9	200	500	600	94
MP 053 2_ 45	20	30	60	0.5	4000	6000	15'	10'	0.9	200	500	600	94
MP 053 3_ 60	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 2_ 81	12	22	40	0.5	4000	6000	15'	10'	0.9	200	500	600	94
MP 053 3_ 48	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 64	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 75	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 80	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 84	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 100	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 112	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 125	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 140	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 144	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 175	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 180	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 216	20	30	60	3	3500	5000	17'	12'	0.7	200	500	600	90
MP 053 3_ 225	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 245	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 252	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 324	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 405	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 567	20	30	60	3	4000	6000	17'	12'	0.7	200	500	600	90
MP 053 3_ 729	12	22	40	3	4000	6000	17'	12'	0.7	200	500	600	90



2.2 MP 060

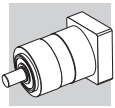
MP 060													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 060 1_ 3	18	35	70	0.4	3300	4000	15'	10'	3.0	200	600	700	97
MP 060 1_ 4	25	40	90	0.4	3500	5000	15'	10'	3.0	200	600	700	97
MP 060 1_ 5	25	40	90	0.4	3500	5000	15'	10'	3.0	200	600	700	97
MP 060 1_ 6	25	40	90	0.4	3500	5000	15'	10'	3.0	200	600	700	97
MP 060 1_ 7	25	40	90	0.4	4000	6000	15'	10'	3.0	200	600	700	97
MP 060 1_ 10	18	35	70	0.4	4000	6000	15'	10'	3.0	200	600	700	97
MP 060 2_ 9	18	35	70	0.6	3300	4000	15'	10'	2.5	200	600	700	94
MP 060 2_ 12	30	45	100	0.6	3300	4000	15'	10'	2.5	200	600	700	94
MP 060 2_ 15	30	45	100	0.6	3300	4000	15'	10'	2.5	200	600	700	94
MP 060 2_ 16	30	45	100	0.6	3500	5000	15'	10'	2.5	200	600	700	94
MP 060 2_ 20	30	45	100	0.6	3500	5000	15'	10'	2.5	200	600	700	94
MP 060 2_ 25	30	45	100	0.6	3500	5000	15'	10'	2.5	200	600	700	94
MP 060 2_ 28	30	45	100	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 30	18	35	70	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 35	30	45	100	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 36	25	40	90	0.6	3500	5000	15'	10'	2.5	200	600	700	94
MP 060 2_ 40	30	45	100	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 50	30	45	100	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 70	30	45	100	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 2_ 100	18	35	70	0.6	4000	6000	15'	10'	2.5	200	600	700	94
MP 060 3_ 48	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 64	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 75	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 80	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 84	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 90	18	35	70	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 120	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 125	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 140	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 150	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 160	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 175	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 200	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 210	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 216	30	45	100	3.5	3500	5000	17'	12'	1.8	200	600	700	90
MP 060 3_ 250	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 280	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 350	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 400	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 500	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 700	30	45	100	3.5	4000	6000	17'	12'	1.8	200	600	700	90
MP 060 3_ 1000	18	35	70	3.5	4000	6000	17'	12'	1.8	200	600	700	90



2.3 MP 080

MP 080													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 080 1_ 3	40	80	180	0.5	2900	3500	15'	10'	7.0	400	1300	1400	97
MP 080 1_ 4	50	80	200	0.5	3100	4500	15'	10'	7.0	400	1300	1400	97
MP 080 1_ 5	50	80	200	0.5	3200	4500	15'	10'	7.0	400	1300	1400	97
MP 080 1_ 6	50	80	200	0.5	3200	4500	15'	10'	7.0	400	1300	1400	97
MP 080 1_ 7	50	80	200	0.5	4000	6000	15'	10'	7.0	400	1300	1400	97
MP 080 1_ 10	40	80	180	0.5	4000	6000	15'	10'	7.0	400	1300	1400	97
MP 080 2_ 9	40	80	180	0.8	2900	3500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 12	70	100	250	0.8	2900	3500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 15	70	100	250	0.8	2900	3500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 16	70	100	250	0.8	3100	4500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 20	70	100	250	0.8	3200	4500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 25	70	100	250	0.8	3200	4500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 28	70	100	250	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 30	40	80	180	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 35	70	100	250	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 36	50	80	200	0.8	3200	4500	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 40	70	100	250	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 50	70	100	250	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 70	70	100	250	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 2_ 100	40	80	180	0.8	4000	6000	15'	10'	5.9	400	1300	1400	94
MP 080 3_ 48	70	100	250	5	3100	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 64	70	100	250	5	3100	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 75	70	100	250	5	3200	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 80	70	100	250	5	3100	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 84	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 90	40	80	180	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 120	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 125	70	100	250	5	3200	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 140	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 150	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 160	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 175	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 200	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 210	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 216	70	100	250	5	3200	4500	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 250	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 280	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 350	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 400	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 500	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 700	70	100	250	5	4000	6000	17'	12'	5.4	400	1300	1400	90
MP 080 3_ 1000	40	80	180	5	4000	6000	17'	12'	5.4	400	1300	1400	90

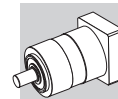
Especificando en el pedido la opción **CR** (versión con rodamientos cónicos con rodillos), **R_{n2} = 2500 Nm** y **A_{n2} = 3000 Nm**.



2.4 MP 105

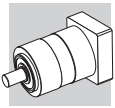
MP 105													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 105 1_ 3	100	180	360	0.90	2500	3500	15'	10'	22.0	600	1500	1600	97
MP 105 1_ 4	140	210	450	0.90	2800	4500	15'	10'	22.0	600	1500	1600	97
MP 105 1_ 5	140	210	450	0.90	3000	4500	15'	10'	22.0	600	1500	1600	97
MP 105 1_ 6	140	210	450	0.90	3000	4500	15'	10'	22.0	600	1500	1600	97
MP 105 1_ 7	140	210	450	0.90	3500	5000	15'	10'	22.0	600	1500	1600	97
MP 105 1_ 10	100	180	360	0.90	3500	5000	15'	10'	22.0	600	1500	1600	97
MP 105 2_ 9	100	180	360	2.5	2500	3500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 12	170	250	600	2.5	2500	3500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 15	170	250	600	2.5	2500	3500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 16	170	250	600	2.5	2800	4500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 20	170	250	600	2.5	3000	4500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 25	170	250	600	2.5	3000	4500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 28	170	250	600	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 30	100	180	360	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 35	170	250	600	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 36	140	210	450	2.5	3000	4500	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 40	170	250	600	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 50	170	250	600	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 70	170	250	600	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 2_ 100	100	180	360	2.5	3500	5000	15'	10'	20.5	600	1500	1600	94
MP 105 3_ 48	170	250	600	10	2800	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 64	170	250	600	10	2800	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 75	170	250	600	10	3000	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 80	170	250	600	10	2800	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 84	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 90	100	180	360	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 120	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 125	170	250	600	10	3000	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 140	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 150	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 160	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 175	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 200	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 210	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 216	170	250	600	10	3000	4500	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 250	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 280	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 350	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 400	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 500	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 700	170	250	600	10	3500	5000	17'	12'	17.5	600	1500	1600	90
MP 105 3_ 1000	100	180	360	10	3500	5000	17'	12'	17.5	600	1500	1600	90

Especificando en el pedido la opción **CR** (versión con rodamientos cónicos con rodillos), **R_{n2} = 3800 Nm** y **A_{n2} = 3000 Nm**.



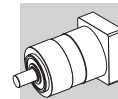
2.5 MP 130

MP 130													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 130 1_ 3	215	400	800	1.2	2100	3000	15'	10'	43.0	800	5500	6500	97
MP 130 1_ 4	380	600	1100	1.2	2400	3500	15'	10'	43.0	800	5500	6500	97
MP 130 1_ 5	380	600	1100	1.2	2900	3500	15'	10'	43.0	800	5500	6500	97
MP 130 1_ 6	380	600	1100	1.2	2900	3500	15'	10'	43.0	800	5500	6500	97
MP 130 1_ 7	380	600	1100	1.2	3200	4000	15'	10'	43.0	800	5500	6500	97
MP 130 1_ 10	215	400	800	1.2	3200	4000	15'	10'	43.0	800	5500	6500	97
MP 130 2_ 9	215	400	800	5	2100	3000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 12	450	700	1300	5	2100	3000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 15	450	700	1300	5	2100	3000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 16	450	700	1300	5	2400	3500	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 20	450	700	1300	5	2900	3500	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 25	450	700	1300	5	2900	3500	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 28	450	700	1300	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 30	215	400	800	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 35	450	700	1300	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 36	380	600	1100	5	2900	3500	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 40	450	700	1300	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 50	450	700	1300	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 70	450	700	1300	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 2_ 100	215	400	800	5	3200	4000	15'	10'	37.5	800	5500	6500	94
MP 130 3_ 48	450	700	1300	20	2400	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 64	450	700	1300	20	2400	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 75	450	700	1300	20	2900	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 80	450	700	1300	20	2400	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 84	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 90	215	400	800	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 120	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 125	450	700	1300	20	2900	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 140	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 150	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 160	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 175	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 200	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 210	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 216	450	700	1300	20	2900	3500	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 250	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 280	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 350	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 400	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 500	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 700	450	700	1300	20	3200	4000	17'	12'	29.5	800	5500	6500	90
MP 130 3_ 1000	215	400	800	20	3200	4000	17'	12'	29.5	800	5500	6500	90



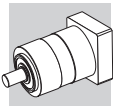
2.6 MP 160

MP 160													
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n1} [N]	R _{n2} [N]	A _{n2} [N]	η %
MP 160 1_ 3	350	660	1200	1.3	1900	3000	15'	10'	90	1200	6500	7500	97
MP 160 1_ 4	500	750	1400	1.3	2200	3500	15'	10'	90	1200	6500	7500	97
MP 160 1_ 5	500	750	1400	1.3	2500	3500	15'	10'	90	1200	6500	7500	97
MP 160 1_ 6	500	750	1400	1.3	2500	3500	15'	10'	90	1200	6500	7500	97
MP 160 1_ 7	500	750	1400	1.3	3000	4000	15'	10'	90	1200	6500	7500	97
MP 160 1_ 10	350	660	1200	1.3	3000	4000	15'	10'	90	1200	6500	7500	97
MP 160 2_ 9	350	660	1200	6	1900	3000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 12	700	950	1800	6	1900	3000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 15	700	950	1800	6	1900	3000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 16	700	950	1800	6	2200	3500	15'	10'	83	1200	6500	7500	94
MP 160 2_ 20	700	950	1800	6	2500	3500	15'	10'	83	1200	6500	7500	94
MP 160 2_ 25	700	950	1800	6	2500	3500	15'	10'	83	1200	6500	7500	94
MP 160 2_ 28	700	950	1800	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 30	350	660	1200	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 35	700	950	1800	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 36	500	750	1400	6	2500	3500	15'	10'	83	1200	6500	7500	94
MP 160 2_ 40	700	950	1800	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 50	700	950	1800	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 70	700	950	1800	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 2_ 100	350	660	1200	6	3000	4000	15'	10'	83	1200	6500	7500	94
MP 160 3_ 48	700	950	1800	23	2200	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 64	700	950	1800	23	2200	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 75	700	950	1800	23	2500	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 80	700	950	1800	23	2200	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 84	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 90	350	660	1200	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 120	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 125	700	950	1800	23	2500	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 140	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 150	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 160	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 175	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 200	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 210	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 216	700	950	1800	23	2500	3500	17'	12'	60	1200	6500	7500	90
MP 160 3_ 250	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 280	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 350	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 400	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 500	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 700	700	950	1800	23	3000	4000	17'	12'	60	1200	6500	7500	90
MP 160 3_ 1000	350	660	1200	23	3000	4000	17'	12'	60	1200	6500	7500	90

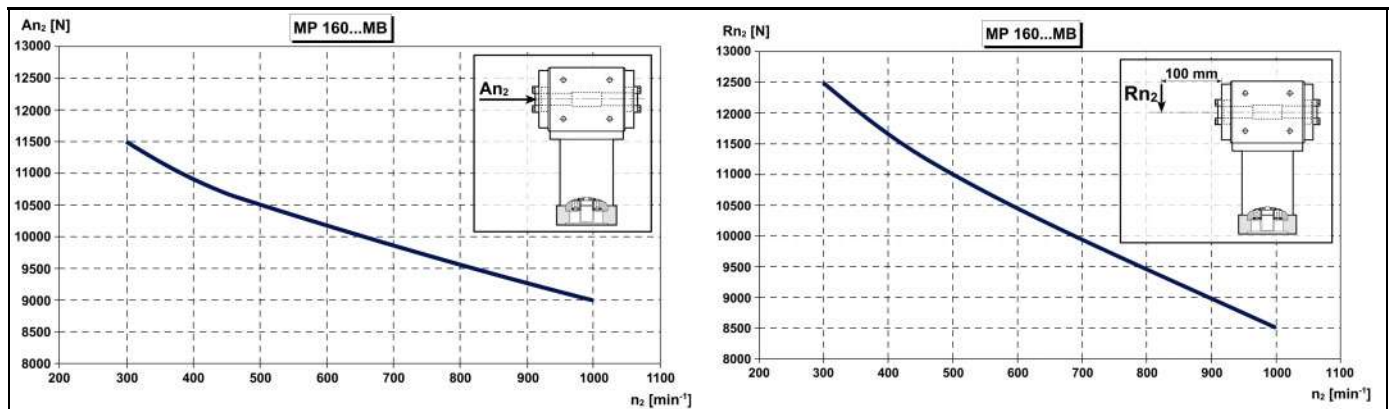
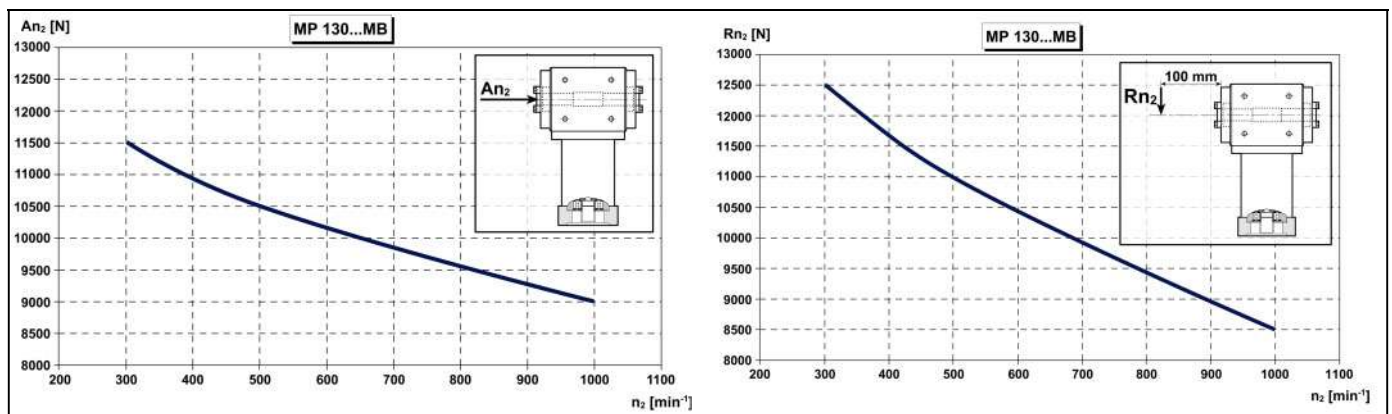
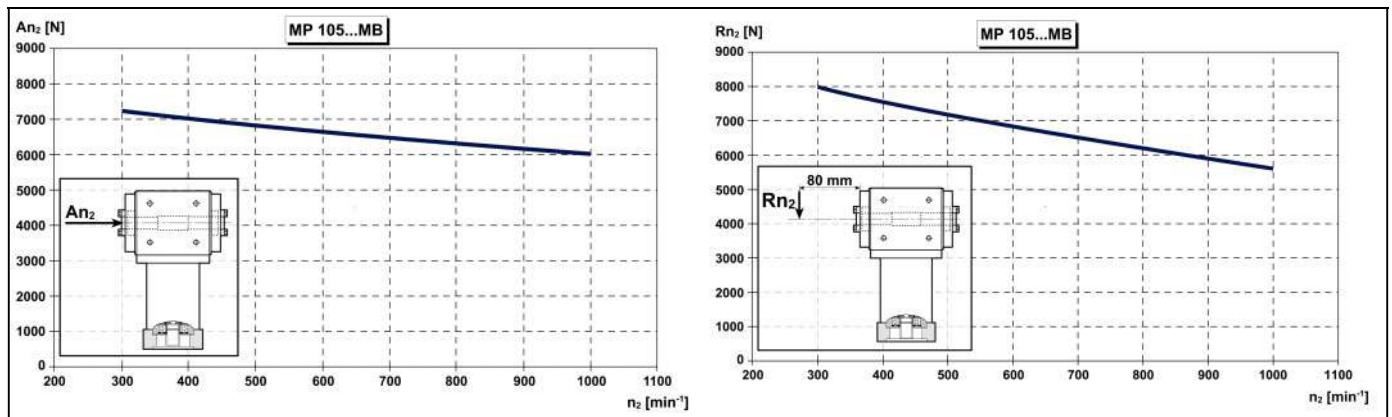
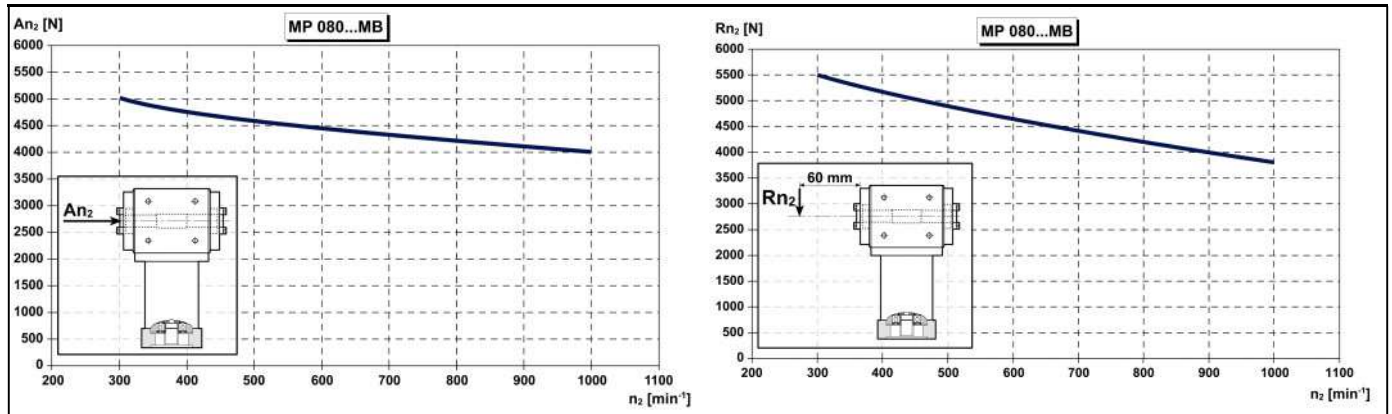


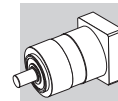
2.7 MP 190

MP 190												
i	M _{n2} [Nm]	M _{a2} [Nm]	M _{p2} [Nm]	M _r [Nm]	n ₁ [min ⁻¹]	n _{1max} [min ⁻¹]	φ _S [arcmin]	φ _R [arcmin]	C _t [Nm/arcmin]	R _{n2} [N]	A _{n2} [N]	η %
MP 190 1_ 3	500	800	1400	3	1500	2500	15'	10'	130	14000	15000	97
MP 190 1_ 4	700	950	1800	3	2100	3000	15'	10'	130	14000	15000	97
MP 190 1_ 5	700	950	1800	3	2300	3000	15'	10'	130	14000	15000	97
MP 190 1_ 6	700	950	1800	3	2300	3000	15'	10'	130	14000	15000	97
MP 190 1_ 7	700	950	1800	3	2900	3500	15'	10'	130	14000	15000	97
MP 190 1_ 10	500	800	1400	3	2900	3500	15'	10'	130	14000	15000	97
MP 190 2_ 9	500	800	1400	7.5	1500	2500	15'	10'	100	14000	15000	94
MP 190 2_ 12	1000	1200	2200	7.5	1500	2500	15'	10'	100	14000	15000	94
MP 190 2_ 15	1000	1200	2200	7.5	1500	2500	15'	10'	100	14000	15000	94
MP 190 2_ 16	1000	1200	2200	7.5	2100	3000	15'	10'	100	14000	15000	94
MP 190 2_ 20	1000	1200	2200	7.5	2300	3000	15'	10'	100	14000	15000	94
MP 190 2_ 25	1000	1200	2200	7.5	2300	3000	15'	10'	100	14000	15000	94
MP 190 2_ 28	1000	1200	2200	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 30	500	800	1400	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 35	1000	1200	2200	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 36	700	950	1800	7.5	2300	3000	15'	10'	100	14000	15000	94
MP 190 2_ 40	1000	1200	2200	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 50	1000	1200	2200	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 70	1000	1200	2200	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 2_ 100	500	800	1400	7.5	2900	3500	15'	10'	100	14000	15000	94
MP 190 3_ 48	1000	1200	2200	28	2100	3000	17'	12'	90	14000	15000	90
MP 190 3_ 64	1000	1200	2200	28	2100	3000	17'	12'	90	14000	15000	90
MP 190 3_ 75	1000	1200	2200	28	2300	3000	17'	12'	90	14000	15000	90
MP 190 3_ 80	1000	1200	2200	28	2100	3000	17'	12'	90	14000	15000	90
MP 190 3_ 84	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 90	500	800	1400	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 120	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 125	1000	1200	2200	28	2300	3000	17'	12'	90	14000	15000	90
MP 190 3_ 140	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 150	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 160	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 175	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 200	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 210	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 216	1000	1200	2200	28	2300	3000	17'	12'	90	14000	15000	90
MP 190 3_ 250	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 280	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 350	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 400	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 500	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 700	1000	1200	2200	28	2900	3500	17'	12'	90	14000	15000	90
MP 190 3_ 1000	500	800	1400	28	2900	3500	17'	12'	90	14000	15000	90



2.8 CARGAS AXIALES Y RADIALES MP ... MB

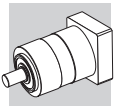




2.9 MOMENTO DE INERCIA

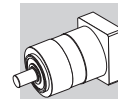
2.9.1 MP 053

MP 053		
i	J [kgcm ²]	
	D = Ø6...Ø9.52	D = Ø11...Ø14
MP 053 1_ 3	0.06	0.08
MP 053 1_ 4	0.05	0.06
MP 053 1_ 5	0.04	0.06
MP 053 1_ 6	0.03	0.05
MP 053 1_ 7	0.03	0.05
MP 053 1_ 9	0.03	0.05
MP 053 2_ 12	0.06	0.08
MP 053 2_ 15	0.06	0.08
MP 053 2_ 16	0.05	0.06
MP 053 2_ 20	0.04	0.06
MP 053 2_ 25	0.04	0.06
MP 053 2_ 28	0.03	0.05
MP 053 2_ 35	0.03	0.05
MP 053 2_ 36	0.03	0.05
MP 053 2_ 45	0.03	0.05
MP 053 2_ 81	0.03	0.05
MP 053 3_ 48	0.05	0.07
MP 053 3_ 60	0.05	0.07
MP 053 3_ 64	0.05	0.06
MP 053 3_ 75	0.04	0.06
MP 053 3_ 80	0.05	0.06
MP 053 3_ 84	0.03	0.05
MP 053 3_ 100	0.04	0.06
MP 053 3_ 112	0.03	0.05
MP 053 3_ 125	0.04	0.06
MP 053 3_ 140	0.03	0.05
MP 053 3_ 144	0.03	0.05
MP 053 3_ 175	0.03	0.05
MP 053 3_ 180	0.03	0.05
MP 053 3_ 216	0.03	0.05
MP 053 3_ 225	0.03	0.05
MP 053 3_ 245	0.03	0.05
MP 053 3_ 252	0.05	0.06
MP 053 3_ 324	0.03	0.05
MP 053 3_ 405	0.03	0.05
MP 053 3_ 567	0.03	0.05
MP 053 3_ 729	0.03	0.05



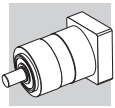
2.9.2 MP 060

MP 060		
i	J [kgcm ²]	
	D = Ø6...Ø9.52	D= Ø11...Ø14
MP 060 1_ 3	0.10	0.11
MP 060 1_ 4	0.06	0.08
MP 060 1_ 5	0.05	0.07
MP 060 1_ 6	0.04	0.06
MP 060 1_ 7	0.04	0.06
MP 060 1_ 10	0.03	0.05
MP 060 2_ 9	0.10	0.12
MP 060 2_ 12	0.10	0.11
MP 060 2_ 15	0.09	0.11
MP 060 2_ 16	0.06	0.08
MP 060 2_ 20	0.05	0.07
MP 060 2_ 25	0.05	0.06
MP 060 2_ 28	0.04	0.06
MP 060 2_ 30	0.03	0.05
MP 060 2_ 35	0.04	0.06
MP 060 2_ 36	0.04	0.06
MP 060 2_ 40	0.03	0.05
MP 060 2_ 50	0.03	0.05
MP 060 2_ 70	0.03	0.05
MP 060 2_ 100	0.03	0.05
MP 060 3_ 48	0.06	0.08
MP 060 3_ 64	0.06	0.08
MP 060 3_ 75	0.05	0.07
MP 060 3_ 80	0.06	0.08
MP 060 3_ 84	0.04	0.06
MP 060 3_ 90	0.03	0.05
MP 060 3_ 120	0.03	0.05
MP 060 3_ 125	0.05	0.07
MP 060 3_ 140	0.04	0.06
MP 060 3_ 150	0.03	0.05
MP 060 3_ 160	0.03	0.05
MP 060 3_ 175	0.04	0.06
MP 060 3_ 200	0.03	0.05
MP 060 3_ 210	0.03	0.05
MP 060 3_ 216	0.04	0.06
MP 060 3_ 250	0.03	0.05
MP 060 3_ 280	0.03	0.05
MP 060 3_ 350	0.03	0.05
MP 060 3_ 400	0.03	0.05
MP 060 3_ 500	0.03	0.05
MP 060 3_ 700	0.03	0.05
MP 060 3_ 1000	0.03	0.05



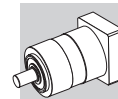
2.9.3 MP 080

MP 080		
i	J [kgcm ²]	
	D = Ø8...Ø12.7	D = Ø14...Ø19
MP 080 1_ 3	0.50	0.59
MP 080 1_ 4	0.34	0.43
MP 080 1_ 5	0.28	0.37
MP 080 1_ 6	0.21	0.30
MP 080 1_ 7	0.23	0.32
MP 080 1_ 10	0.20	0.29
MP 080 2_ 9	0.49	0.58
MP 080 2_ 12	0.47	0.56
MP 080 2_ 15	0.46	0.55
MP 080 2_ 16	0.32	0.41
MP 080 2_ 20	0.27	0.36
MP 080 2_ 25	0.27	0.36
MP 080 2_ 28	0.22	0.31
MP 080 2_ 30	0.20	0.29
MP 080 2_ 35	0.22	0.31
MP 080 2_ 36	0.20	0.29
MP 080 2_ 40	0.20	0.29
MP 080 2_ 50	0.19	0.28
MP 080 2_ 70	0.19	0.28
MP 080 2_ 100	0.19	0.28
MP 080 3_ 48	0.33	0.42
MP 080 3_ 64	0.32	0.41
MP 080 3_ 75	0.27	0.36
MP 080 3_ 80	0.32	0.41
MP 080 3_ 84	0.23	0.32
MP 080 3_ 90	0.20	0.29
MP 080 3_ 120	0.20	0.29
MP 080 3_ 125	0.27	0.36
MP 080 3_ 140	0.22	0.31
MP 080 3_ 150	0.20	0.29
MP 080 3_ 160	0.20	0.29
MP 080 3_ 175	0.22	0.31
MP 080 3_ 200	0.20	0.29
MP 080 3_ 210	0.20	0.29
MP 080 3_ 216	0.20	0.29
MP 080 3_ 250	0.19	0.28
MP 080 3_ 280	0.19	0.28
MP 080 3_ 350	0.19	0.28
MP 080 3_ 400	0.19	0.28
MP 080 3_ 500	0.19	0.28
MP 080 3_ 700	0.19	0.28
MP 080 3_ 1000	0.19	0.28



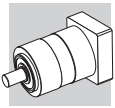
2.9.4 MP 105

MP 105				
i	J [kgcm ²]			
	D = Ø11...Ø12.7	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32
MP 105 1_ 3	1.7	1.8	2.2	2.6
MP 105 1_ 4	0.99	1.1	1.5	1.9
MP 105 1_ 5	0.72	0.79	1.23	1.6
MP 105 1_ 6	0.36	0.43	0.88	1.2
MP 105 1_ 7	0.47	0.55	0.99	1.4
MP 105 1_ 10	0.33	0.41	0.85	1.2
MP 105 2_ 9	1.6	1.6	2.1	2.4
MP 105 2_ 12	1.5	1.6	2.0	2.4
MP 105 2_ 15	1.5	1.5	2.0	2.4
MP 105 2_ 16	0.87	0.95	1.4	1.8
MP 105 2_ 20	0.86	0.93	1.4	1.7
MP 105 2_ 25	0.63	0.71	1.1	1.5
MP 105 2_ 28	0.43	0.51	0.95	1.3
MP 105 2_ 30	0.32	0.40	0.84	1.2
MP 105 2_ 35	0.43	0.50	0.95	1.3
MP 105 2_ 36	0.32	0.39	0.84	1.2
MP 105 2_ 40	0.31	0.39	0.83	1.2
MP 105 2_ 50	0.31	0.39	0.83	1.2
MP 105 2_ 70	0.31	0.38	0.83	1.2
MP 105 2_ 100	0.31	0.38	0.83	1.2
MP 105 3_ 48	0.91	0.98	1.4	1.8
MP 105 3_ 64	0.87	0.94	1.4	1.7
MP 105 3_ 75	0.66	0.74	1.2	1.5
MP 105 3_ 80	0.86	0.94	1.4	1.7
MP 105 3_ 84	0.44	0.52	0.96	1.3
MP 105 3_ 90	0.32	0.39	0.84	1.2
MP 105 3_ 120	0.32	0.39	0.84	1.2
MP 105 3_ 125	0.63	0.70	1.1	1.5
MP 105 3_ 140	0.43	0.51	0.95	1.3
MP 105 3_ 150	0.32	0.39	0.84	1.2
MP 105 3_ 160	0.31	0.39	0.83	1.2
MP 105 3_ 175	0.43	0.50	0.95	1.3
MP 105 3_ 200	0.31	0.39	0.83	1.2
MP 105 3_ 210	0.32	0.39	0.84	1.2
MP 105 3_ 216	0.31	0.39	0.83	1.2
MP 105 3_ 250	0.31	0.39	0.83	1.2
MP 105 3_ 280	0.31	0.38	0.83	1.2
MP 105 3_ 350	0.31	0.38	0.83	1.2
MP 105 3_ 400	0.31	0.38	0.83	1.2
MP 105 3_ 500	0.31	0.38	0.83	1.2
MP 105 3_ 700	0.31	0.38	0.83	1.2
MP 105 3_ 1000	0.31	0.38	0.83	1.2



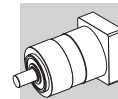
2.9.5 MP 130

MP 130				
i	J [kgcm ²]			
	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32	D = Ø35...Ø38
MP 130 1_ 3	5.3	5.5	5.8	7.2
MP 130 1_ 4	3.1	3.3	3.6	5.0
MP 130 1_ 5	2.2	2.4	2.8	4.1
MP 130 1_ 6	1.2	1.4	1.7	3.1
MP 130 1_ 7	1.5	1.7	2.0	3.4
MP 130 1_ 10	1.0	1.2	1.6	3.0
MP 130 2_ 9	4.8	5.0	5.4	6.7
MP 130 2_ 12	4.6	4.8	5.1	6.5
MP 130 2_ 15	4.5	4.7	5.0	6.4
MP 130 2_ 16	2.7	2.9	3.2	4.6
MP 130 2_ 20	2.0	2.2	2.5	3.9
MP 130 2_ 25	1.9	2.1	2.5	3.8
MP 130 2_ 28	1.3	1.6	1.9	3.3
MP 130 2_ 30	1.0	1.2	1.6	2.9
MP 130 2_ 35	1.3	1.5	1.9	3.2
MP 130 2_ 36	1.1	1.3	1.6	3.0
MP 130 2_ 40	0.98	1.2	1.5	2.9
MP 130 2_ 50	0.97	1.2	1.5	2.9
MP 130 2_ 70	0.96	1.2	1.5	2.9
MP 130 2_ 100	0.96	1.2	1.5	2.9
MP 130 3_ 48	2.8	3.0	3.3	4.7
MP 130 3_ 64	2.6	2.9	3.2	4.6
MP 130 3_ 75	2.0	2.2	2.6	3.9
MP 130 3_ 80	2.6	2.9	3.2	4.6
MP 130 3_ 84	1.4	1.6	1.9	3.3
MP 130 3_ 90	1.0	1.2	1.6	2.9
MP 130 3_ 120	0.99	1.20	1.55	2.90
MP 130 3_ 125	1.9	2.1	2.5	3.8
MP 130 3_ 140	1.3	1.5	1.9	3.2
MP 130 3_ 150	0.99	1.2	1.6	2.9
MP 130 3_ 160	0.98	1.2	1.5	2.9
MP 130 3_ 175	1.3	1.5	1.9	3.2
MP 130 3_ 200	0.97	1.2	1.5	2.9
MP 130 3_ 210	0.99	1.2	1.6	2.9
MP 130 3_ 216	1.0	1.3	1.6	3.0
MP 130 3_ 250	0.97	1.2	1.5	2.9
MP 130 3_ 280	0.96	1.2	1.5	2.9
MP 130 3_ 350	0.96	1.2	1.5	2.9
MP 130 3_ 400	0.96	1.2	1.5	2.9
MP 130 3_ 500	0.96	1.2	1.5	2.9
MP 130 3_ 700	0.96	1.2	1.5	2.9
MP 130 3_ 1000	0.96	1.2	1.5	2.9



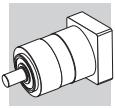
2.9.6 MP 160

MP 160				
i	J [kgcm ²]			
	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32	D = Ø35...Ø38
MP 160 1_ 3	8.4	8.6	8.9	10.3
MP 160 1_ 4	4.7	4.9	5.2	6.6
MP 160 1_ 5	3.3	3.5	3.8	5.2
MP 160 1_ 6	1.3	1.5	1.9	3.2
MP 160 1_ 7	2.0	2.2	2.6	3.9
MP 160 1_ 10	1.3	1.5	1.9	3.2
MP 160 2_ 9	7.5	7.7	8.1	9.4
MP 160 2_ 12	7.1	7.3	7.7	9.0
MP 160 2_ 15	6.9	7.1	7.5	8.9
MP 160 2_ 16	4.0	4.2	4.5	5.9
MP 160 2_ 20	2.8	3.0	3.4	4.7
MP 160 2_ 25	2.8	3.0	3.3	4.7
MP 160 2_ 28	1.8	2.0	2.4	3.7
MP 160 2_ 30	1.2	1.5	1.8	3.2
MP 160 2_ 35	1.8	2.0	2.3	3.7
MP 160 2_ 36	1.1	1.3	1.6	3.0
MP 160 2_ 40	1.2	1.4	1.8	3.1
MP 160 2_ 50	1.2	1.4	1.8	3.1
MP 160 2_ 70	1.2	1.4	1.7	3.1
MP 160 2_ 100	1.2	1.4	1.7	3.1
MP 160 3_ 48	4.1	4.3	4.7	6.0
MP 160 3_ 64	3.9	4.1	4.5	5.8
MP 160 3_ 75	2.9	3.1	3.5	4.8
MP 160 3_ 80	3.9	4.1	4.5	5.8
MP 160 3_ 84	1.8	2.1	2.4	3.8
MP 160 3_ 90	1.2	1.4	1.8	3.1
MP 160 3_ 120	1.2	1.4	1.8	3.1
MP 160 3_ 125	2.7	2.9	3.3	4.6
MP 160 3_ 140	1.8	2.0	2.3	3.7
MP 160 3_ 150	1.2	1.4	1.8	3.1
MP 160 3_ 160	1.2	1.4	1.8	3.1
MP 160 3_ 175	1.8	2.0	2.3	3.7
MP 160 3_ 200	1.2	1.4	1.8	3.1
MP 160 3_ 210	1.2	1.4	1.8	3.1
MP 160 3_ 216	1.1	1.3	1.6	3.0
MP 160 3_ 250	1.2	1.4	1.7	3.1
MP 160 3_ 280	1.2	1.4	1.7	3.1
MP 160 3_ 350	1.2	1.4	1.7	3.1
MP 160 3_ 400	1.2	1.4	1.7	3.1
MP 160 3_ 500	1.2	1.4	1.7	3.1
MP 160 3_ 700	1.2	1.4	1.7	3.1
MP 160 3_ 1000	1.2	1.4	1.7	3.1



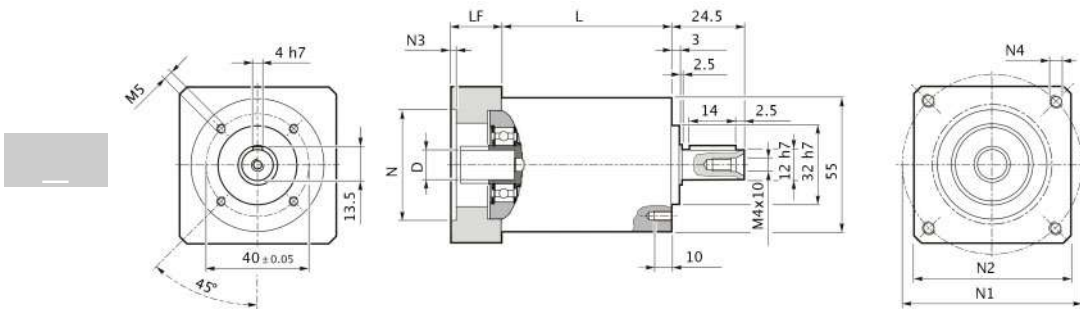
2.9.7 MP 190

MP 190					
i	J [kgcm ²]				
	D = Ø14...Ø24	D = Ø28...Ø32	D = Ø35...Ø38	Ø42	D = Ø45...Ø48
MP 190 1_ 3	24.2	24.9	25.6	29.3	29.9
MP 190 1_ 4	13.4	14.1	14.9	18.5	19.1
MP 190 1_ 5	9.3	10.0	10.8	14.4	15.0
MP 190 1_ 6	2.9	3.6	4.3	8.0	8.6
MP 190 1_ 7	5.7	6.4	7.1	10.8	11.4
MP 190 1_ 10	3.6	4.2	5.0	8.7	9.3
MP 190 2_ 9	23.2	23.9	24.7	28.3	28.9
MP 190 2_ 12	22.0	22.7	23.5	27.1	27.7
MP 190 2_ 15	21.6	22.3	23.0	26.7	27.3
MP 190 2_ 16	12.2	12.9	13.6	17.3	17.9
MP 190 2_ 20	8.5	9.2	10.0	13.6	14.2
MP 190 2_ 25	8.4	9.1	9.8	13.5	14.1
MP 190 2_ 28	5.3	6.0	6.7	10.4	11.0
MP 190 2_ 30	3.5	4.2	4.9	8.6	9.2
MP 190 2_ 35	5.2	5.9	6.6	10.3	10.9
MP 190 2_ 36	2.2	2.9	3.6	7.3	7.9
MP 190 2_ 40	3.4	4.1	4.8	8.5	9.1
MP 190 2_ 50	3.3	4.0	4.8	8.4	9.0
MP 190 2_ 70	3.3	4.0	4.7	8.4	9.0
MP 190 2_ 100	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 48	12.7	13.4	14.2	17.8	18.4
MP 190 3_ 64	12.1	12.8	13.5	17.2	17.8
MP 190 3_ 75	8.9	9.5	10.3	14.0	14.6
MP 190 3_ 80	12.1	12.8	13.5	17.2	17.8
MP 190 3_ 84	5.5	6.1	6.9	10.6	11.2
MP 190 3_ 90	3.5	4.1	4.9	8.6	9.2
MP 190 3_ 120	3.5	4.1	4.9	8.6	9.2
MP 190 3_ 125	8.3	9.0	9.8	13.4	14.0
MP 190 3_ 140	5.2	5.9	6.7	10.3	10.9
MP 190 3_ 150	3.5	4.1	4.9	8.6	9.2
MP 190 3_ 160	3.4	4.0	4.8	8.5	9.1
MP 190 3_ 175	5.2	5.9	6.6	10.3	10.9
MP 190 3_ 200	3.4	4.0	4.8	8.5	9.1
MP 190 3_ 210	3.5	4.1	4.9	8.6	9.2
MP 190 3_ 216	2.2	2.8	3.6	7.3	7.9
MP 190 3_ 250	3.3	4.0	4.8	8.4	9.0
MP 190 3_ 280	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 350	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 400	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 500	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 700	3.3	4.0	4.7	8.4	9.0
MP 190 3_ 1000	3.3	4.0	4.7	8.4	9.0

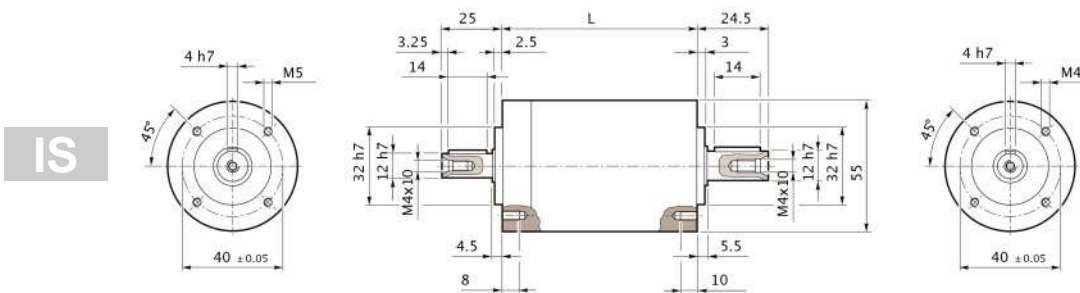
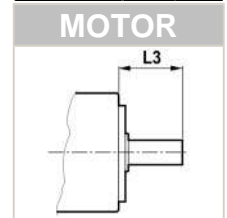


3 DIMENSIONES

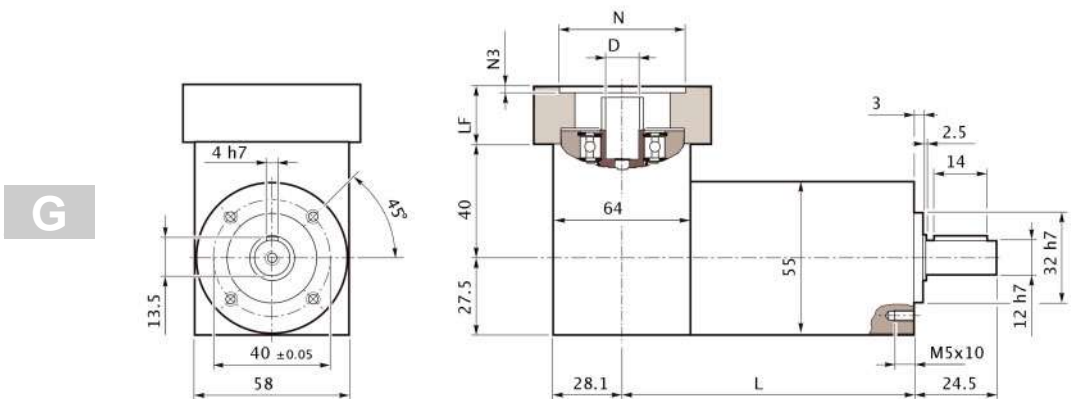
3.1 MP 053



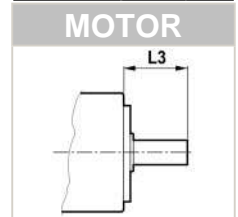
	L	Kg
MP 053 1	53	0.8
MP 053 2	66.8	1.0
MP 053 3	80.6	1.3



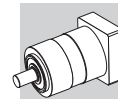
	L	Kg
MP 053 1	58.2	0.8
MP 053 2	72	1.0
MP 053 3	85.8	1.3



	L	Kg
MP 053 1	88.9	1.3
MP 053 2	102.7	1.5
MP 053 3	116.5	1.8

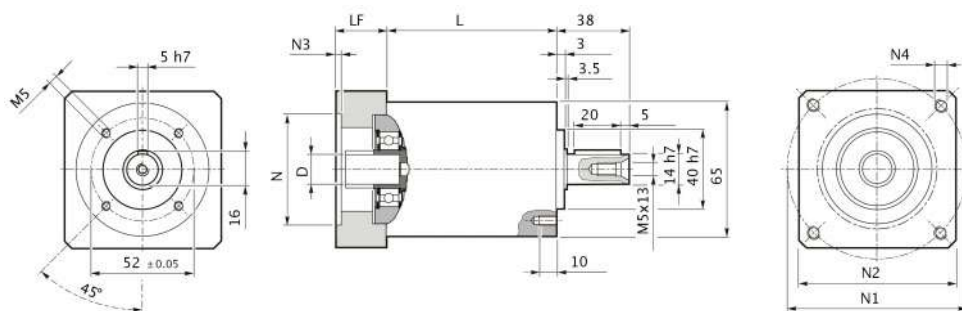


	D	N	N1	N2	N3	N4	LF	L3
MP 053_ 6...9 25 25...40 36...48	≦ 9 mm	25...40	36...48	55	4	4.5	25	25
MP 053_ 6...12 25 38.1 66.6	≦ 12 mm	38.1	66.6	60	3	M4x10	18	25
MP 053_ 6...12 25 40 63		40	63	60	3	M4x10	18	25
MP 053_ 6...12 25 50 60		50	60	60	3	M4x10	18	25
MP 053_ 6...12 25 60 75		60	75	63	3	M5x12	18	25
MP 053_ 6...14 30 50 65	≦ 14 mm	50	65	60	3	M5x12	23	30
MP 053_ 6...14 30 50 70		50	70	60	3	M4x10	23	30
MP 053_ 6...14 30 60 75		60	75	63	3	M5x12	23	30
MP 053_ 6...14 30 60 90		60	90	75	3	M5x12	23	30
MP 053_ 6...14 30 70 85		70	85	75	3	M6x15	23	30
MP 053_ 6...14 30 70 90		70	90	75	3	M5x12	23	30
MP 053_ 6...14 32 73 98.4		73	98.4	85	3	M5x12	25	32
MP 053_ 6...14 30 80 100		80	100	85	3	M6x15	23	30

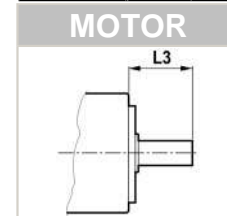


3.2 MP 060

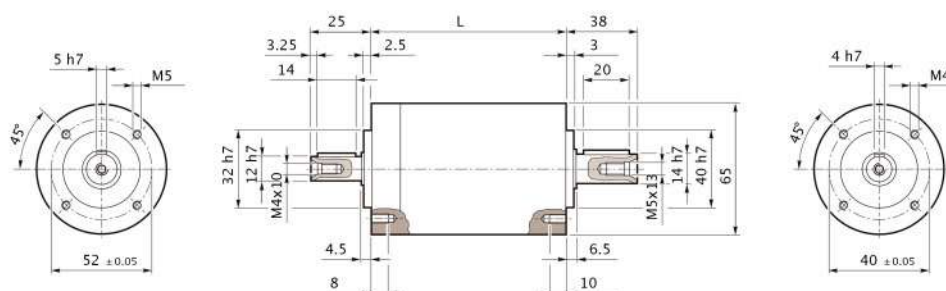
I



	L	Kg
MP 060 1	57.55	1.2
MP 060 2	74.25	1.7
MP 060 3	90.95	2.0

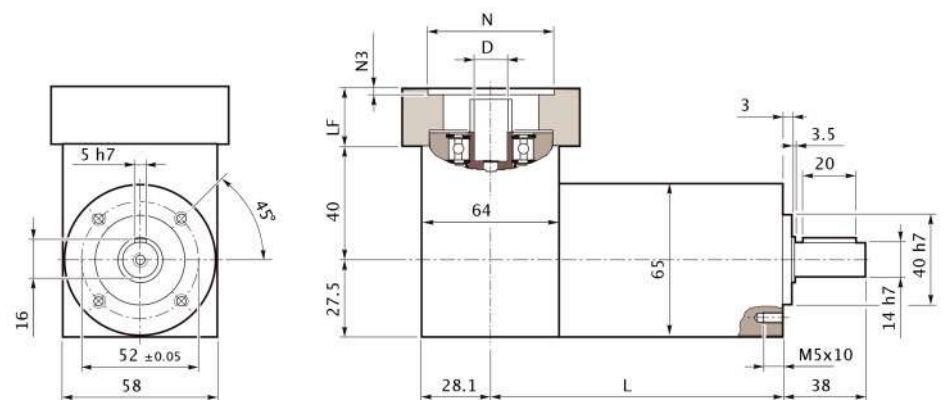


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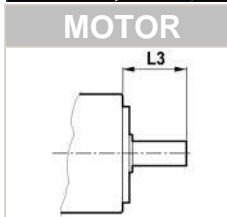


	L	Kg
MP 060 1	62.75	1.2
MP 060 2	79.45	1.7
MP 060 3	96.15	2.0

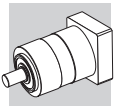
G



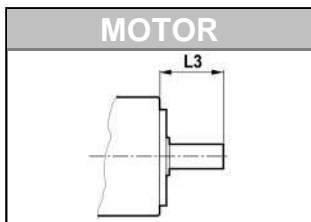
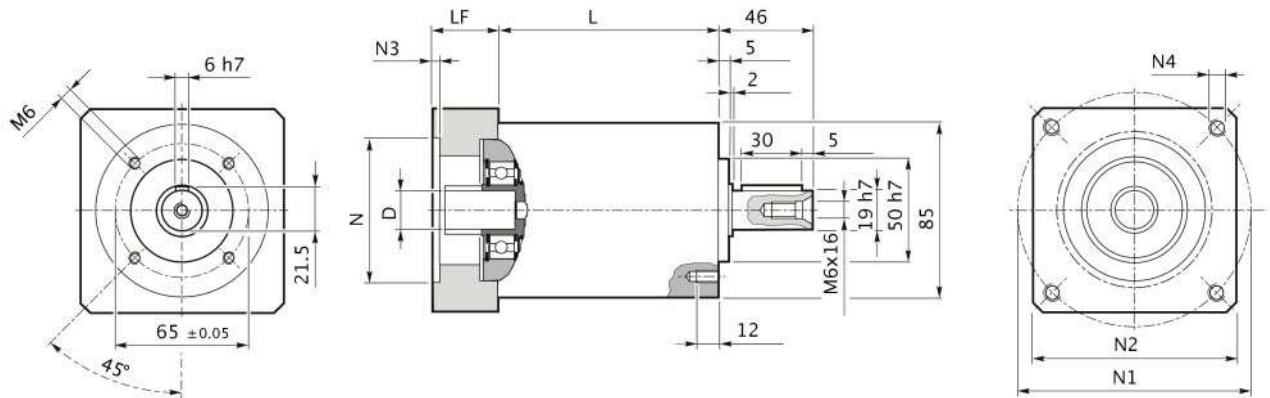
	L	Kg
MP 060 1	93.45	1.7
MP 060 2	110.15	2.2
MP 060 3	126.85	2.5



	D	N	N1	N2	N3	N4	LF	L3
MP 060_ 6...9 25 25...40 39...56	≤ 9 mm	25...40	39...56	65	4	4.5	25	25
MP 060_ 6...12 25 38.1 66.6	≤ 12 mm	38.1	66.6	60	3	M4x10	18	25
MP 060_ 6...12 25 40 63		40	63	60	3	M4x10	18	25
MP 060_ 6...12 25 50 60		50	60	60	3	M4x10	18	25
MP 060_ 6...12 25 60 75		60	75	63	3	M5x12	18	25
MP 060_ 6...14 30 50 65	≤ 14 mm	50	65	60	3	M5x12	23	30
MP 060_ 6...14 30 50 65 TH		50	65	60	3	5	25	30
MP 060_ 6...14 30 50 70		50	70	60	3	M4x10	23	30
MP 060_ 6...14 30 60 75		60	75	63	3	M5x12	23	30
MP 060_ 6...14 30 60 90		60	90	75	3	M5x12	23	30
MP 060_ 6...14 30 70 85		70	85	75	3	M5x12	23	30
MP 060_ 6...14 30 70 90		70	90	75	3	M5x12	23	30
MP 060_ 6...14 32 73 98.4		73	98.4	85	3	M5x12	25	32
MP 060_ 6...14 30 80 100		80	100	85	3	M6x15	23	30

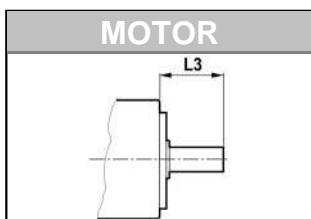
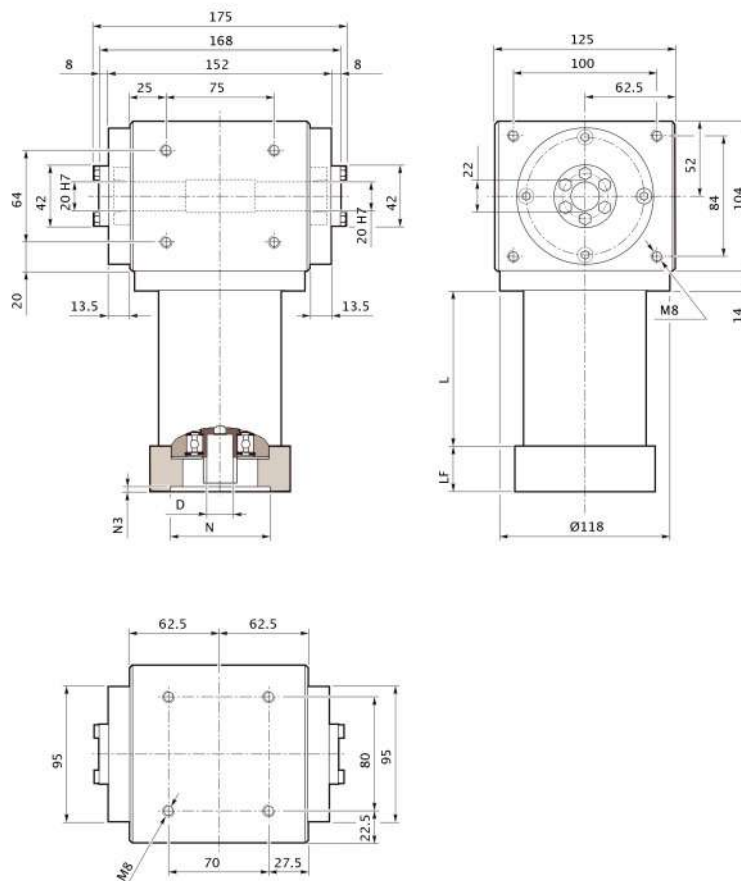


3.3 MP 080

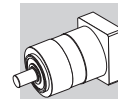


	L	Kg
MP 080 1	83.5	4.0
MP 080 2	108.0	4.6
MP 080 3	132.5	5.2

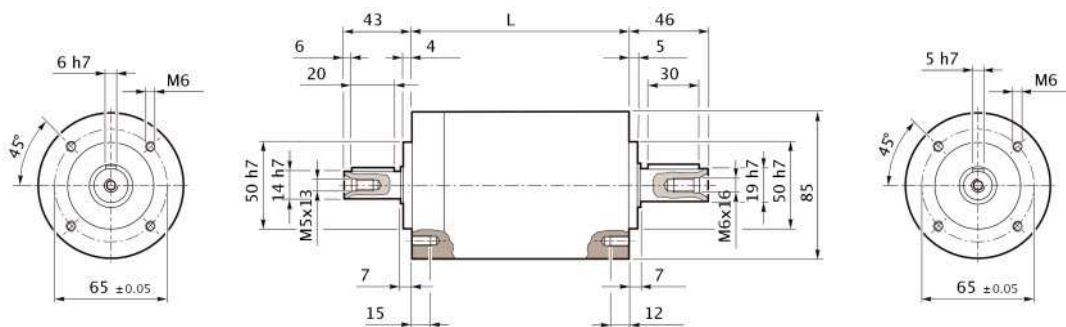
MB



	L	Kg
MP 080 1	83.5	14
MP 080 2	108	15
MP 080 3	132.5	16

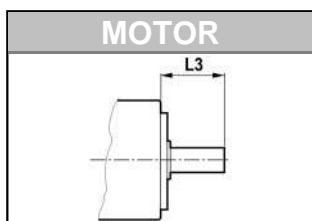
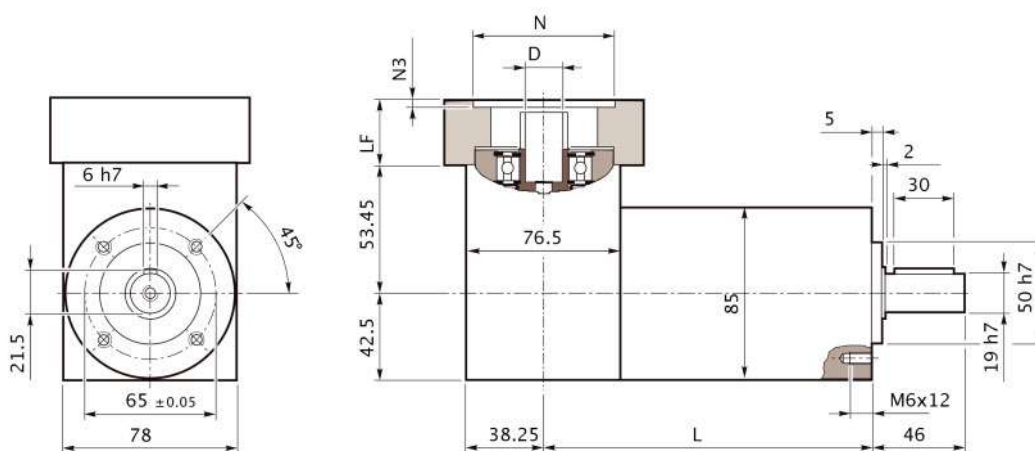


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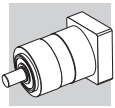
	L	Kg
MP 080 1	105.3	4
MP 080 2	129.8	4.6
MP 080 3	154.3	5.2

G

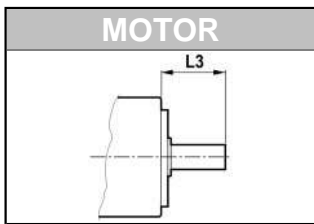
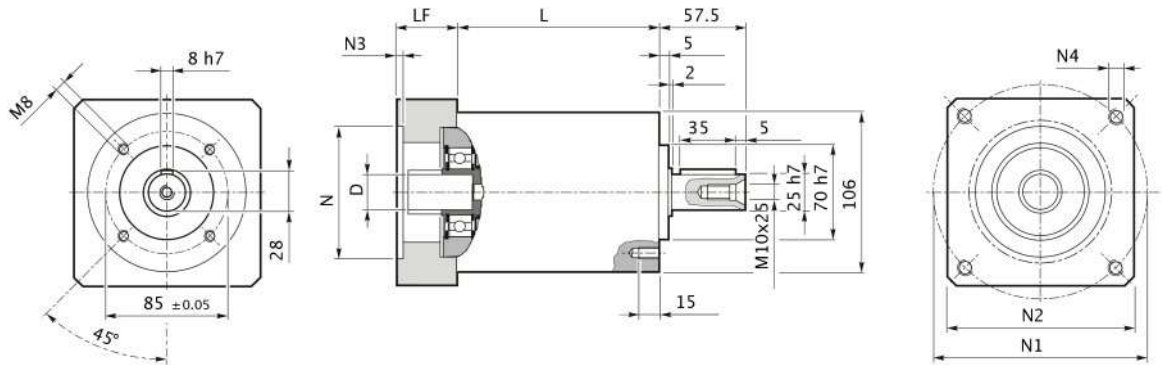


	L	Kg
MP 080 1	143.55	5.2
MP 080 2	168.05	5.8
MP 080 3	192.55	6.4

	D	N	N1	N2	N3	N4	LF	L3
MP 080_ 8...14 40 50 65	≤ 14 mm	50	65	80	4	M5x16	34	40
MP 080_ 8...14 40 50 65 TH		50	65	80	4	5	34	40
MP 080_ 8...14 40 50 70		50	70	80	4	M4x10	34	40
MP 080_ 8...14 40 50 95		50	95	80	4	M6x10	34	40
MP 080_ 8...14 40 60 75		60	75	65	4	M5x16	34	40
MP 080_ 8...14 40 60 75 TH		60	75	65	4	5	34	40
MP 080_ 8...14 40 73 98.4		73	98.4	85	4	M5x16	34	40
MP 080_ 8...14 40 78 63.5		78	63.5	90	4	Ø6.5	34	40
MP 080_ 8...16 40 60 90	≤ 16 mm	60	90	80	4	M5x16	34	40
MP 080_ 8...19 40 55.5 125.7	≤ 19 mm	55.5	125.7	105	4	M6x16	34	40
MP 080_ 8...19 40 70 85		70	85	80	4	M6x20	34	40
MP 080_ 8...19 40 70 85 TH		70	85	80	4	6	34	40
MP 080_ 8...19 40 70 90		70	90	80	4	M5x16	34	40
MP 080_ 8...19 40 80 100		80	100	90	4	M6x16	34	40
MP 080_ 8...19 40 95 115		95	115	100	4	M8x20	34	40
MP 080_ 8...19 40 95 130		95	130	115	4	M8x20	34	40
MP 080_ 8...19 40 110 130		110	130	115	4	M8x20	34	40
MP 080_ 8...19 50 110 145	110	145	120	6.5	M8x20	44	50	
MP 080_ 8...19 60 110 145	110	145	120	6.5	M8x20	54	60	

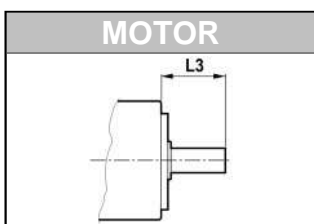
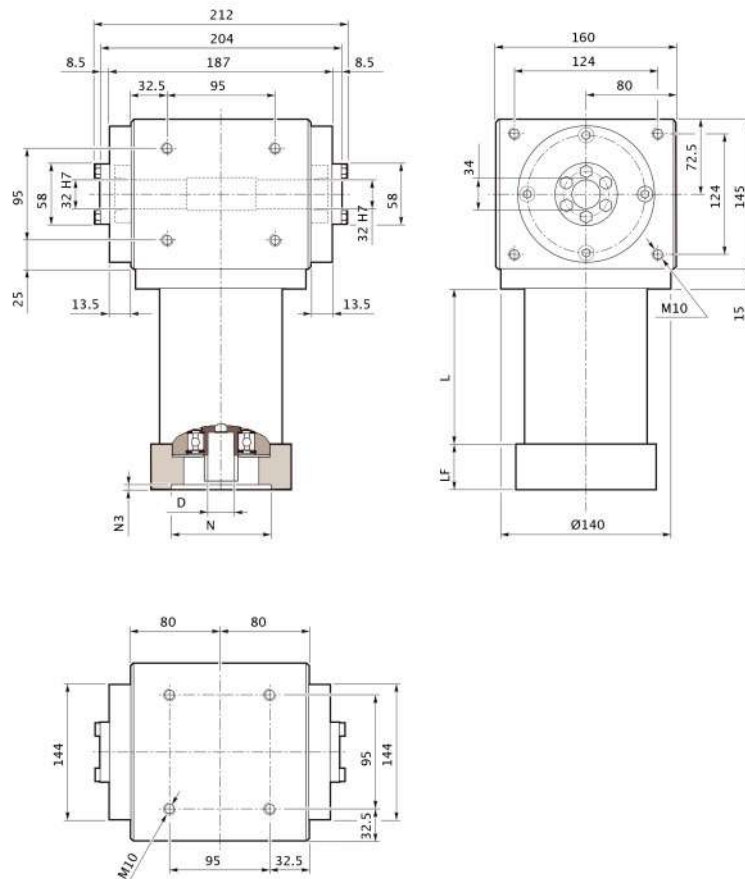


3.4 MP 105

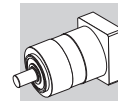


	L	Kg
MP 105 1	107.5	6.5
MP 105 2	140	8.5
MP 105 3	172.5	10.5

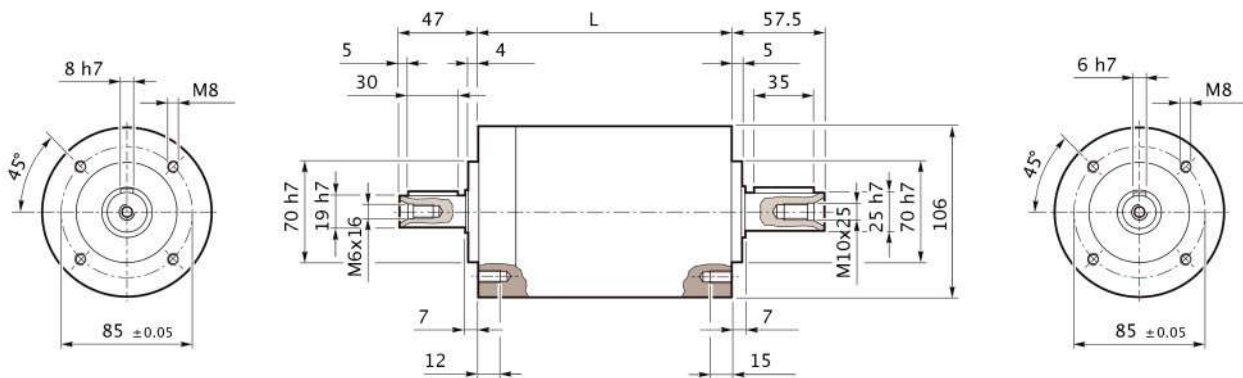
MB



	L	Kg
MP 105 1	107.5	32
MP 105 2	140	34
MP 105 3	172.5	36

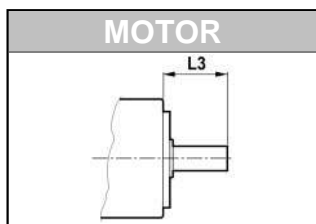
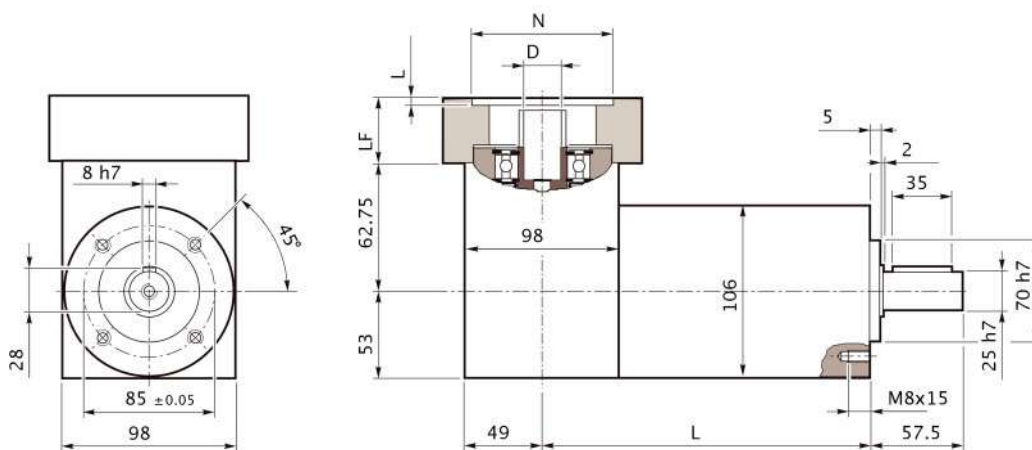


IS



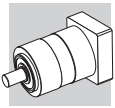
	L	Kg
MP 105 1	121.3	6.5
MP 105 2	153.8	8.5
MP 105 3	186.3	10.5

G

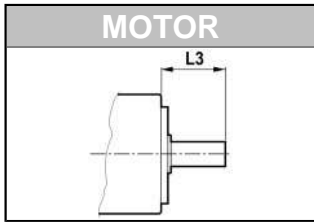
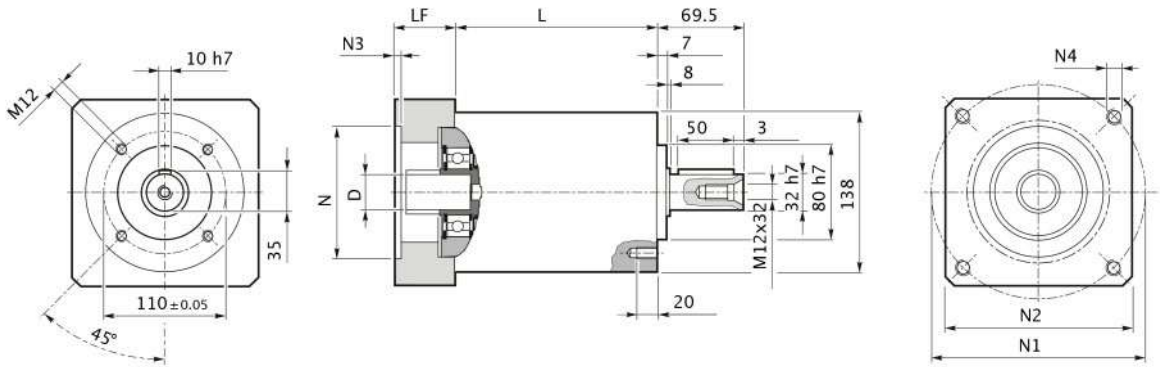


	L	Kg
MP 105 1	170.3	8.5
MP 105 2	202.8	10.5
MP 105 3	235.3	12.5

	D	N	N1	N2	N3	N4	LF	L3
MP 105_ 11...19 40 50 95	$\leq 19 \text{ mm}$	50	95	100	5	M6x14	28	40
MP 105_ 11...19 40 55.5 125.7		55.5	125.7	105	5	M6x16	28	40
MP 105_ 11...19 40 60 75		60	75	100	5	M5x14	28	40
MP 105_ 11...19 40 60 75 TH		60	75	100	5	5	33	40
MP 105_ 11...19 40 70 85		70	85	100	5	M6x14	28	40
MP 105_ 11...19 40 70 85 TH		70	85	100	5	6	33	40
MP 105_ 11...19 40 70 90		70	90	100	5	M5x12	28	40
MP 105_ 11...19 40 80 100		80	100	100	5	M6x16	28	40
MP 105_ 11...19 40 95 115		95	115	100	5	M8x18	28	40
MP 105_ 11...19 40 95 130		95	130	115	5	M8x18	28	40
MP 105_ 11...19 40 110 130		110	130	115	5	M8x18	28	40
MP 105_ 11...24 50 95 115	$\leq 24 \text{ mm}$	95	115	100	5	M8x18	38	50
MP 105_ 11...24 50 110 130		110	130	115	6.5	M8x20	38	50
MP 105_ 11...24 50 110 145		110	145	120	6.5	M8x20	38	50
MP 105_ 11...24 60 110 145		110	145	120	6.5	M8x20	48	60
MP 105_ 11...24 50 130 165		130	165	140	6.5	M10x20	38	50
MP 105_ 11...32 60 130 165	$\leq 32 \text{ mm}$	130	165	140	6.5	M10x25	48	60

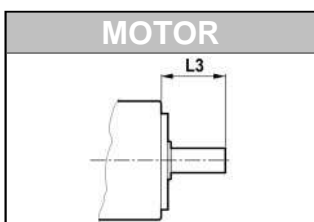
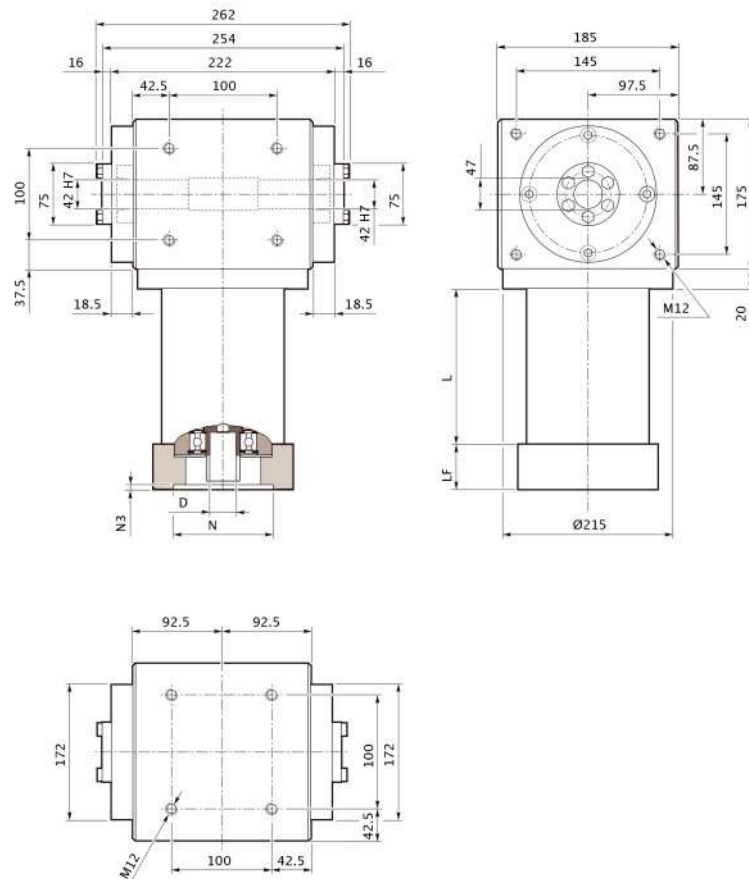


3.5 MP 130

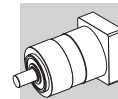


	L	Kg
MP 130 1	126	12
MP 130 2	165.5	15.5
MP 130 3	205	18.5

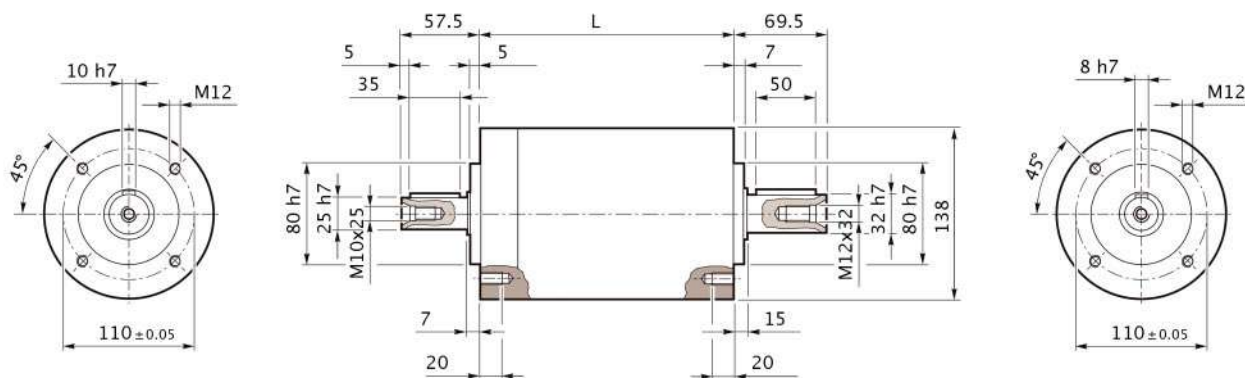
MB



	L	Kg
MP 130 1	126	54
MP 130 2	165.5	58
MP 130 3	205	61

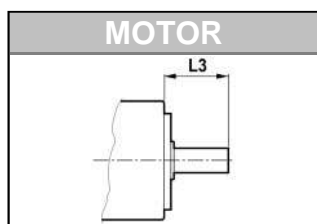
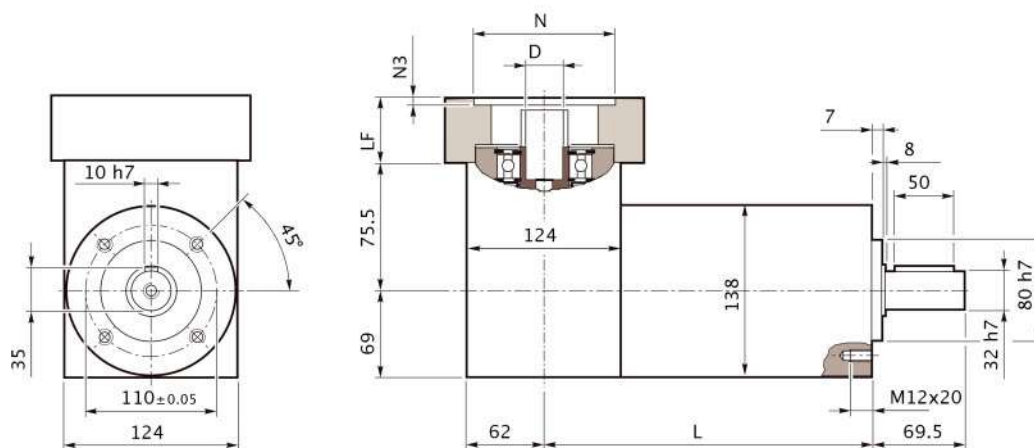


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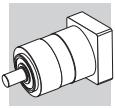
	L	Kg
MP 130 1	151.2	12
MP 130 2	190.7	15.5
MP 130 3	230.2	18.5

G

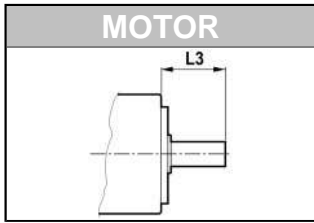
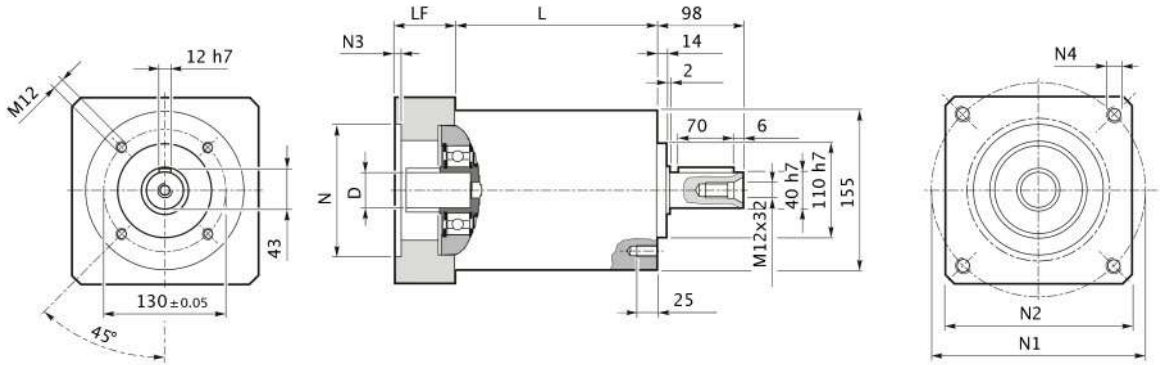


	L	Kg
MP 130 1	213.2	16
MP 130 2	252.7	19.5
MP 130 3	292.2	22.5

	D	N	N1	N2	N3	N4	LF	L3
MP 130_ 14...19 50 55.5 125.7	≡ 19 mm	55.5	125.7	130	4	M6x15	39.5	50
MP 130_ 14...19 50 80 100		80	100	130	4	M6x15	39.5	50
MP 130_ 14...24 50 95 115		95	115	130	4	M8x20	39.5	50
MP 130_ 14...24 50 110 130	≡ 24 mm	110	130	130	4	M8x20	39.5	50
MP 130_ 14...24 60 110 145		110	145	130	6.5	M8x20	49.5	60
MP 130_ 14...24 50 130 165		130	165	140	4	M10x20	39.5	50
MP 130_ 14...32 60 130 165	≡ 32 mm	130	165	140	4	M10x20	49.5	60
MP 130_ 14...32 60 180 215		180	215	190	5.5	M14x25	49.5	60
MP 130_ 14...38 80 114.3 200	≡ 38 mm	114.3	200	170	5.5	M12x25	69.5	80
MP 130_ 14...38 80 180 215		180	215	190	5.5	M14x25	69.5	80

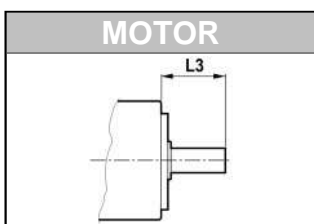
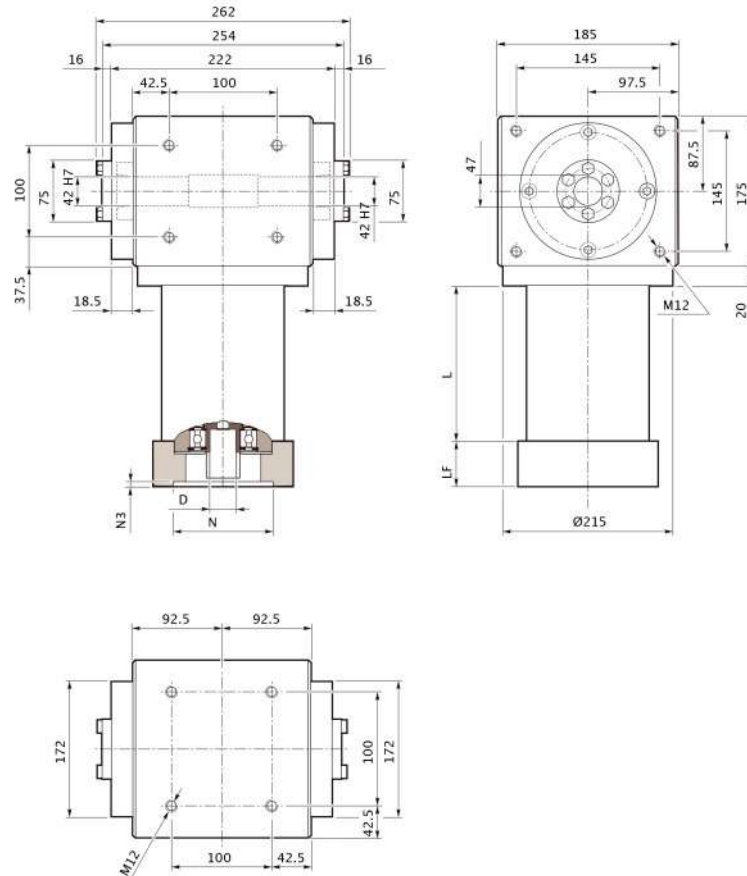


3.6 MP 160

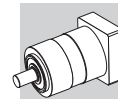


	L	Kg
MP 160 1	130	17
MP 160 2	169.5	21
MP 160 3	209	28

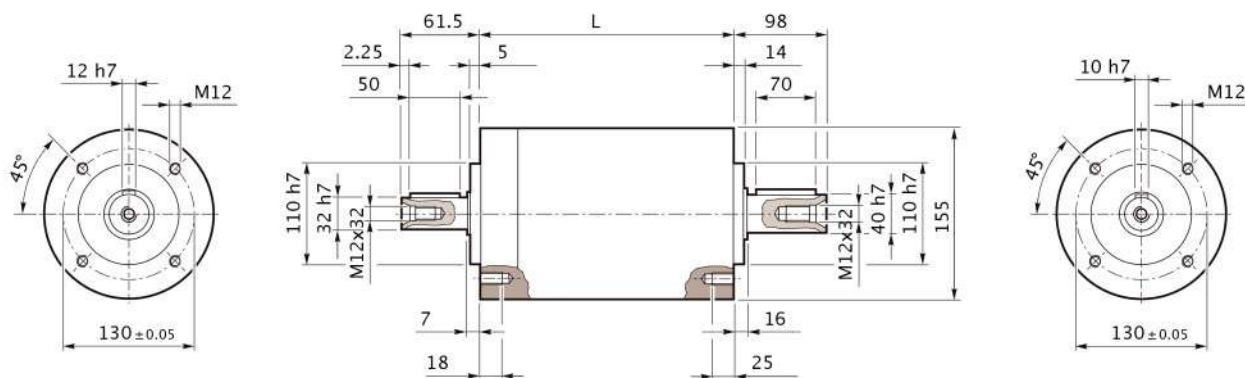
MB



	L	Kg
MP 160 1	130	54
MP 160 2	169.5	58
MP 160 3	209	61

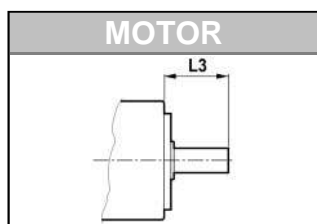
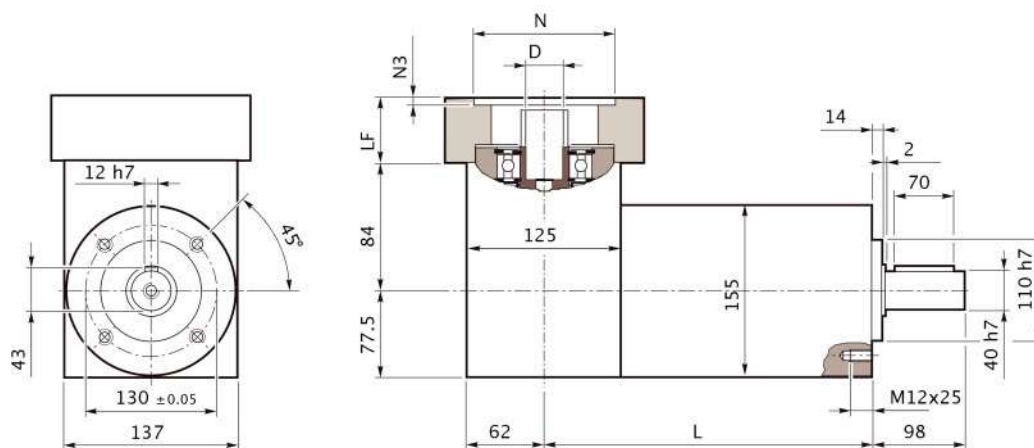


IS



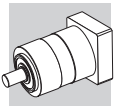
	L	Kg
MP 160 1	155.2	17
MP 160 2	194.7	21
MP 160 3	234.2	28

G

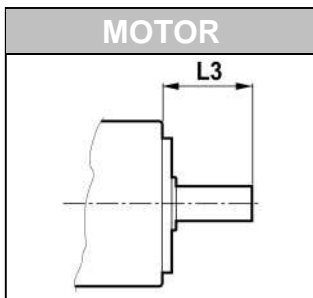
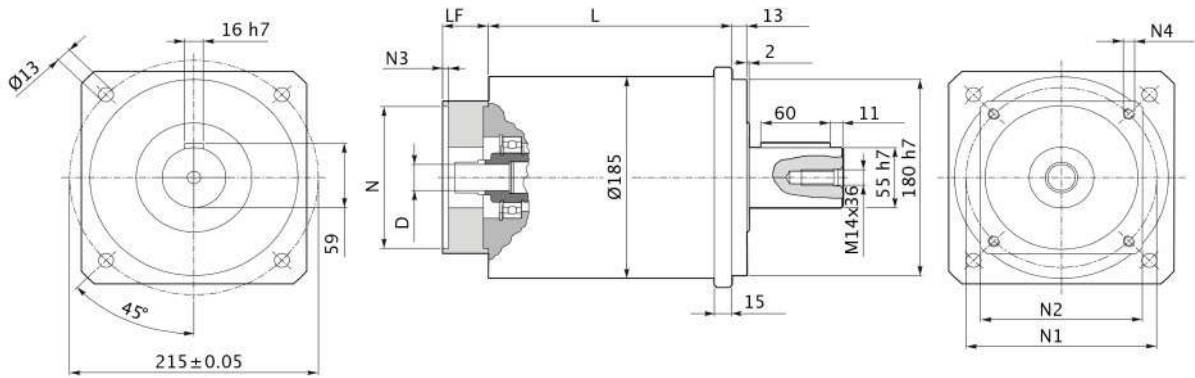


	L	Kg
MP 160 1	218.2	24
MP 160 2	257.7	28
MP 160 3	297.2	34

	D	N	N1	N2	N3	N4	LF	L3
MP 160_ 14...19 50 55.5 125.7	≅ 19	55.5	125.7	140	5	M6x15	39.5	50
MP 160_ 14...19 50 80 100		80	100	140	5	M6x15	39.5	50
MP 160_ 14...24 50 95 115	≅ 24	95	115	140	5	M8x20	39.5	50
MP 160_ 14...24 50 110 130		110	130	140	5	M8x20	39.5	50
MP 160_ 14...24 60 110 145		110	145	140	6.5	M8x20	49.5	60
MP 160_ 14...24 50 130 165	≅ 32	130	165	140	5	M10x20	39.5	50
MP 160_ 14...32 60 130 165		130	165	140	5	M10x20	49.5	60
MP 160_ 14...32 60 180 215	≅ 38	180	215	190	5.5	M14x25	49.5	60
MP 160_ 14...38 80 114.3 200		114.3	200	170	6.5	M12x25	69.5	80
MP 160_ 14...38 80 180 215		180	215	190	6.5	M14x25	69.5	80

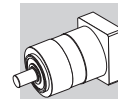


3.7 MP 190

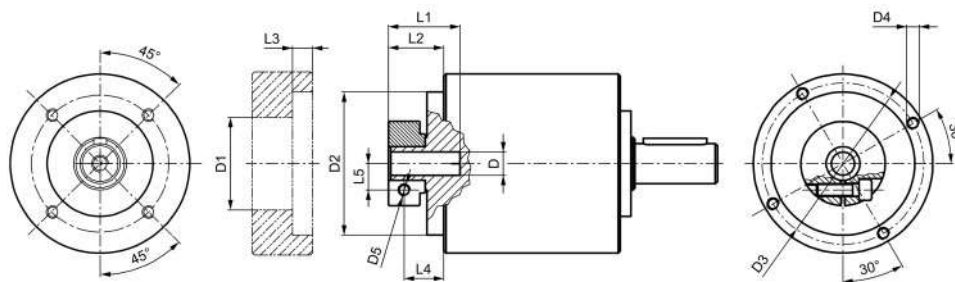


	L	Kg
MP 190 1	158.7	25
MP 190 2	210.4	29
MP 190 3	262.1	34

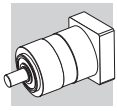
	D	N	N1	N2	N3	N4	LF	L3
MP 190_ 14...19 50 55.5 125.7	≅ 19	55.5	125.7	140	5	M6x15	39.5	50
MP 190_ 14...19 50 80 100		80	100	140	5	M6x15	39.5	50
MP 190_ 14...24 50 95 115	≅ 24	95	115	140	5	M8x20	39.5	50
MP 190_ 14...24 50 110 130		110	130	140	5	M8x20	39.5	50
MP 190_ 14...24 60 110 145		110	145	140	6.5	M8x20	49.5	60
MP 190_ 14...24 50 130 165	≅ 32	130	165	140	5	M10x20	39.5	50
MP 190_ 14...32 60 130 165		130	165	140	5	M10x20	49.5	60
MP 190_ 14...32 60 180 215	≅ 38	180	215	190	5.5	M14x25	49.5	60
MP 190_ 14...38 80 114.3 200		114.3	200	170	6.5	M12x25	69.5	80
MP 190_ 14...38 80 180 215		180	215	190	6.5	M14x25	69.5	80



3.8 REDUCTOR SIN BRIDA ATAQUE MOTOR



	D (F7)	D1	D2 (h7)	D3	D4	D5	L1	L2	L3 +0.1 +0.2	L4	L5
MP 053	6 - 6.35 - 7	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	8
	8 - 9 - 9.52 - 10	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	9
	11 - 12 - 12.7	35.5	50	42.5	M4x8	M4	22	13.5	3	8.5	11
	14	35.5	50	42.5	M4x8	M4	26.5	18	3	13	11.5
MP 060	6 - 6.35 - 7	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	8
	8 - 9 - 9.52 - 10	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	9
	11 - 12 - 12.7	35.5	50	42.5	M4x8	M4	22	13.5	3	8.5	11
	14	35.5	50	42.5	M4x8	M4	26.5	18	3	13	11.5
MP 080	8 - 9 - 9.52	38	68	76.5	M6x10	M6	34	26.3	9.5	18.8	10.5
	11 - 12 - 12.7	43	68	76.5	M6x10	M6	34	26.3	9.5	18.8	12.5
	14 - 15.875 - 16 - 17	48	68	76.5	M6x10	M6	34	26.3	9.5	18.8	14.5
	19 - 19.05	51	68	76.5	M6x10	M6	34	26.3	9.5	18.8	16.5
MP 105	11 - 12 - 12.7	43	90	98	M6x15	M6	33.5	20	7.6	12.5	12.5
	14 - 15 - 15.875 - 16	48	90	98	M6x15	M6	33.5	20	7.6	12.5	14.5
	19	51	90	98	M6x15	M6	33.5	20	7.6	12.5	16.5
	22 - 24	56.5	90	98	M6x15	M6	36.5	23	7.6	14	19
	28	67	90	98	M6x15	M8	36.5	23	7.6	14	22.5
MP 130	32	71	90	98	M6x15	M8	38	24.5	7.6	15.5	24.5
	14 - 15.875 - 16	48	113	125.5	M8x15	M6	40	27.5	6	20	14.5
	19	51	113	125.5	M8x15	M6	40	27.5	6	20	16.5
	22 - 24	56.5	113	125.5	M8x15	M6	41	28.5	6	19.5	19
	28	67	113	125.5	M8x15	M8	41	28.5	6	19.5	22.5
	32	71	113	125.5	M8x15	M8	40	27.5	6	18.5	24.5
MP 160	35	73	113	125.5	M8x15	M8	50	37.5	11.25	26	26
	38	77.5	113	125.5	M8x15	M8	50	37.5	11.25	26	28
	14 - 15.875 - 16	48	130	142.5	M8x16	M6	40	27.5	6	20	14.5
	19	51	130	142.5	M8x16	M6	40	27.5	6	20	16.5
	22 - 24	56.5	130	142.5	M8x16	M6	41	28.5	6	19.5	19
	28	67	130	142.5	M8x16	M8	41	28.5	6	19.5	22.5
MP 190	32	71	130	142.5	M8x16	M8	40	27.5	6	18.5	24.5
	35	73	130	142.5	M8x16	M8	50	37.5	11.25	26	26
	38	77.5	130	142.5	M8x16	M8	50	37.5	11.25	26	28
	14 - 16	48	130	142.5	M8x14	M6	45.5	27.5	6	20	14.5
	19	51	130	142.5	M8x14	M6	45.5	27.5	6	20	16.5
	22 - 24	56.5	130	142.5	M8x14	M6	47	29	6	20	19
	28	67	130	142.5	M8x14	M8	47	29	6	20	22.5
	32	71	130	142.5	M8x14	M8	47	29	6	20	24.5
	35	73	130	142.5	M8x14	M8	54.5	36.5	6	25	26
MP 190	38	77.5	130	142.5	M8x14	M8	54.5	36.5	6	25	28
	42	92	130	142.5	M8x14	M10	60.5	40	6	25	33
	45	95	130	142.5	M8x14	M10	60.5	40	6	25	33
	48	97	130	142.5	M8x14	M10	60.5	40	6	25	33



ÍNDICE DE REVISIONES **R0**

DOCUMENTO	SECCIÓN	DESCRIPCIÓN
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