REDUCTORES Y MOTORREDUCTORES DE TORNILLO SIN FIN COMBINADOS
COMBINED WORM GEARBOXES
REDUCTEURS ET MOTOREDUCTEURS A ROUE ET VIS SANS FIN COMBINES

8.1 INFORMACIÓN GENERAL

La combinación de dos reductores de tornillo sin fin comporta un rendimiento muy bajo. La elevada velocidad de reducción, obtenida en un espacio muy limitado, los convierten en una opción muy interesante, y a veces indispensable, para un gran número de aplicaciones.
Entre la gran variedad de opciones en tamaño y relaciones, hemos escogido las mas interesantes en cuanto a rendimiento y relación.
Para facilitar las indicaciones de cómo deben ser montados dichos reductores, hemos expuesto todas las combinaciones posibles.
Es importante conocer que las versiones del reductor de salida y el tipo de brida de ataque del motor en el reductor de entrada pueden, algunas veces, provocar interferencias, por lo que no todas las combinaciones son posibles.

8.1 GENERAL INFORMATION

Using two combined worm screw reduction gears provides very low efficiency; however, their ability to provide high-ratio speed reduction in limited space makes them an interesting - and at times indispensable - solution for a number of applications.
Among the complex variety of size and ratio combinations, we have selected and highlighted the most interesting combinations in terms of speed and performance.
All possible combinations are shown to facilitate understanding of how to assemble the two reduction gears. Please note that not all combinations are feasible, as the face design of the reduction gear at the output end and the motor coupling flange of the reduction gear at the input end may sometimes cause interference.

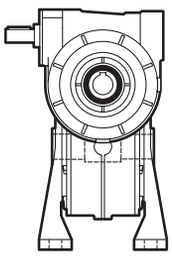
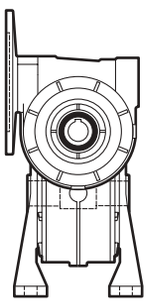
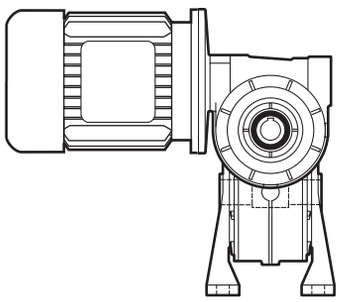
8.1 INFORMATIONS GENERALES

L'utilisation combinée de deux réducteurs à roue et vis sans fin n'offre qu'un très bas rendement. Cependant leur capacité à obtenir un grand rapport de réduction dans un encombrement limité fait de ces réducteurs une solution intéressante (et parfois indispensable) pour un grand nombre d'applications.
Parmi la grande diversité de tailles et de rapports de réduction, nous avons ainsi sélectionné et mis en avant les meilleures combinaisons en termes de vitesse et de performance.
Toutes les combinaisons sont indiquées afin de faciliter la compréhension de l'assemblage des deux réducteurs entre eux. Il convient de noter que toutes les combinaisons ne sont pas possibles car la bride de sortie du réducteur et la bride de fixation du moteur peuvent être incompatibles.

8.2 VERSIÓN

8.2 VERSION

8.2 VERSION

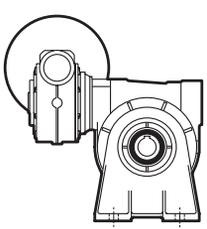
CR	CF	CM
		

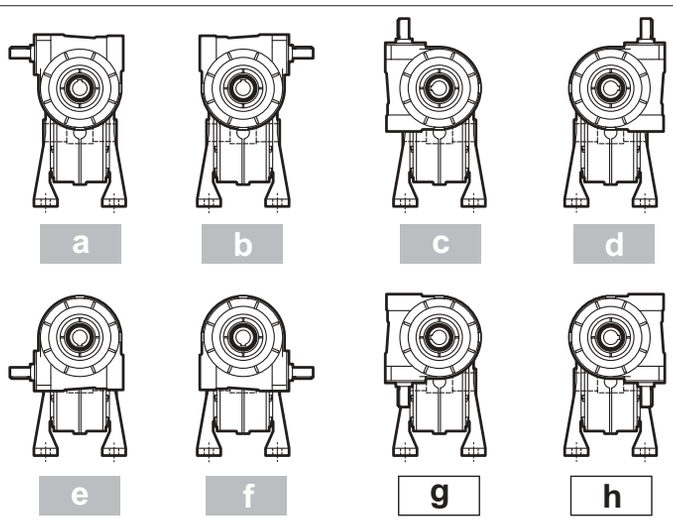
8.3 FORMAS CONSTRUCTIVAS

8.3 VERSIONS

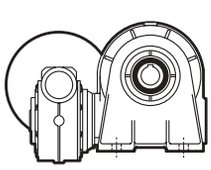
8.3 FORME DE CONSTRUCTION

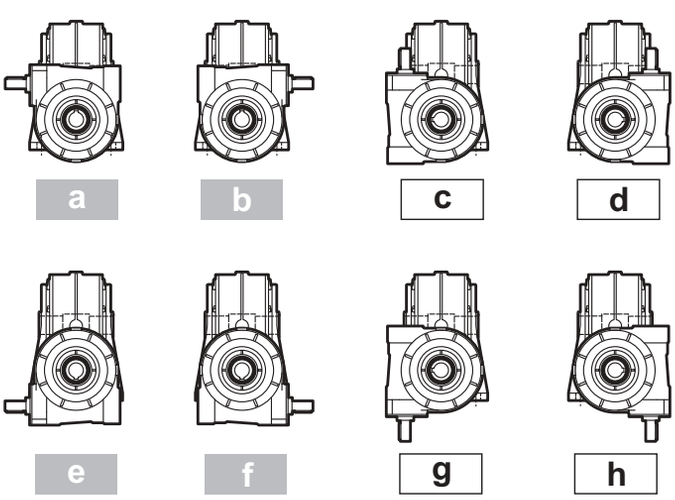
A



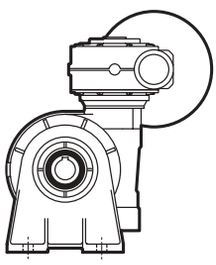


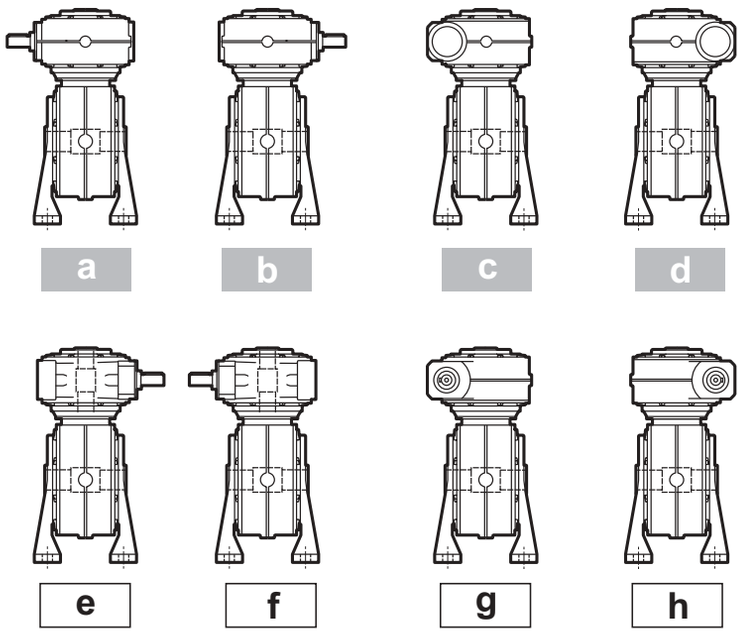
B



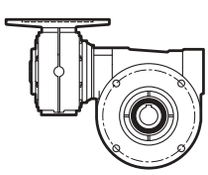


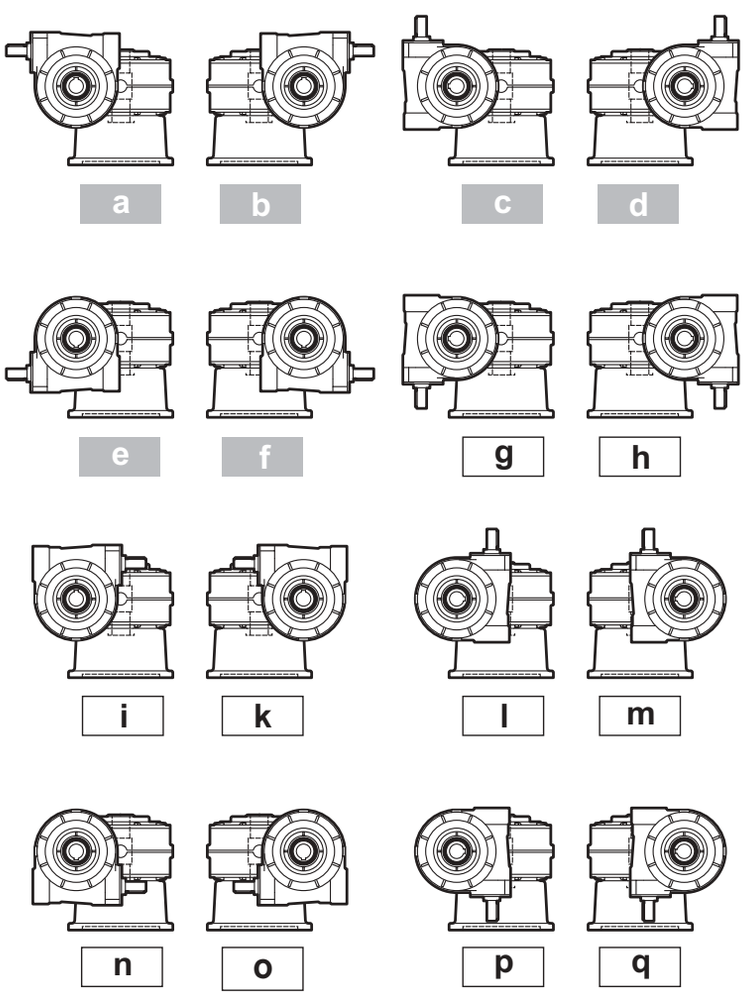
V





F





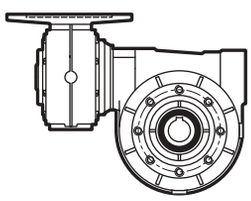
Versiones recomendadas / *Recommended versions* / Versions recommandées

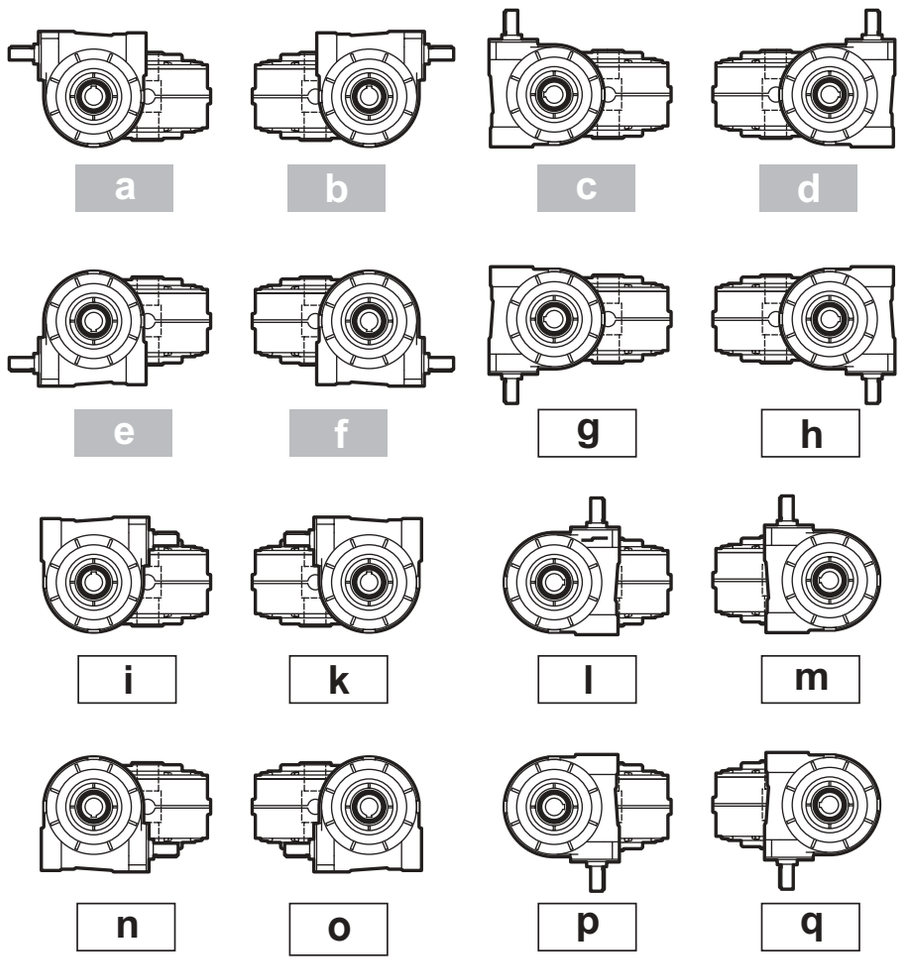
8.3 FORMAS CONSTRUCTIVAS

8.3 VERSIONS

8.3 FORME DE CONSTRUCTION

P



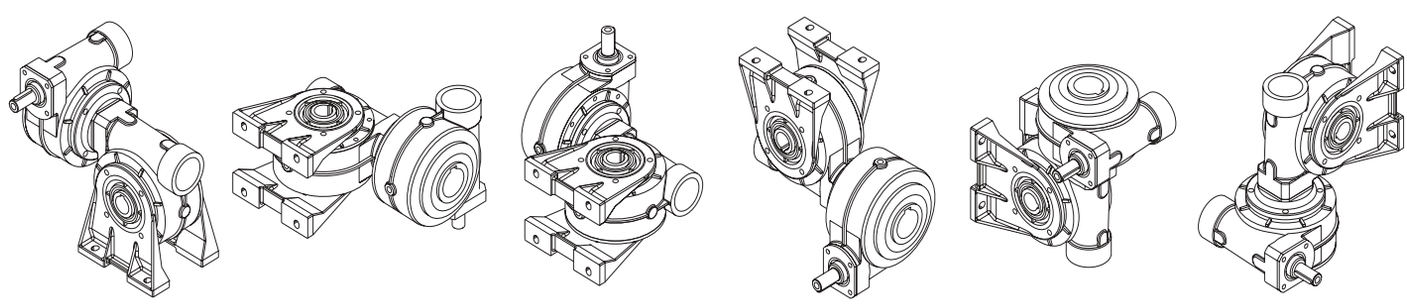


Versiones recomendadas / *Recommended versions* / Versions recommandées

8.4 POSICIONES DE MONTAJE

8.4 MOUNTING POSITIONS

8.4 POSITION DE MONTAGE



B3	B6	B7	B8	V5	V6

Cantidad aceite / *Oil quantity* / Quantité d'huile 11

8.5 PRESTACIONES DE LOS REDUCTORES

8.5 PERFORMANCE OF REDUCTION GEAR

8.5 PERFORMANCES DU REDUCTEUR

i_1xi_2	i	n_1 = 1400 min^{-1}					
		n_2 [min^{-1}]	Tipo *Type* Type	T_{2M} [Nm]	P [kW]	P [HP]	Rd
10x15	**150**	9.33	**30/30**	33	0.07	0.09	0.49
			30/40	66	0.12	0.17	0.52
			30/50	122	0.24	0.32	0.50
			40/63	203	0.37	0.50	0.54
			50/70	266	0.48	0.65	0.54
			50/85	444	0.80	1.09	0.54
10x20	**200**	7.0	**30/30**	30	0.05	0.06	0.47
			30/40	57	0.09	0.12	0.49
			30/50	125	0.19	0.26	0.47
			40/63	218	0.30	0.41	0.52
			50/70	272	0.38	0.52	0.52
			50/85	431	0.60	0.81	0.53
10x30	**300**	4.67	**30/30**	35	0.04	0.05	0.42
			30/40	72	0.08	0.11	0.45
			30/50	144	0.16	0.21	0.45
			40/63	237	0.24	0.33	0.48
			40/70	296	0.30	0.41	0.48
			50/70	296	0.30	0.41	0.48
			50/85	528	0.53	0.72	0.49
15x30	**450**	3.11	**30/30**	35	0.03	0.04	0.39
			30/40	72	0.06	0.08	0.42
			30/50	144	0.11	0.15	0.42
			30/63	237	0.17	0.24	0.44
			40/63	237	0.17	0.22	0.47
			40/70	296	0.21	0.28	0.47
			40/85	528	0.36	0.49	0.47
			50/85	528	0.37	0.51	0.46
20x30	**600**	2.33	**30/30**	35	0.02	0.03	0.37
			30/40	72	0.04	0.06	0.40
			30/50	144	0.09	0.12	0.40
			30/63	237	0.14	0.19	0.42
			40/63	237	0.13	0.18	0.44
			40/70	296	0.16	0.22	0.44
			40/85	528	0.29	0.39	0.45
			50/85	528	0.30	0.41	0.43
30x30	**900**	1.56	**30/30**	35	0.02	0.02	0.34
			30/40	72	0.03	0.04	0.36
			30/50	144	0.06	0.09	0.36
			30/63	237	0.10	0.14	0.38
			40/70	296	0.12	0.16	0.41
			40/85	528	0.21	0.28	0.42
40x30	**1200**	1.17	**30/30**	38	0.01	0.02	0.35
			30/40	72	0.02	0.03	0.38
			30/50	144	0.05	0.06	0.38
			30/63	237	0.07	0.10	0.40
			40/70	296	0.10	0.13	0.37
			40/85	528	0.17	0.23	0.38

i_1xi_2	i	n_1 = 1400 min^{-1}					
		n_2 [min^{-1}]	Tipo *Type* Type	T_{2M} [Nm]	P [kW]	P [HP]	Rd
50x30	**1500**	0.93	**30/30**	35	0.01	0.01	0.33
			30/40	72	0.02	0.03	0.35
			30/50	144	0.04	0.05	0.35
			30/63	237	0.06	0.09	0.37
			40/70	296	0.08	0.11	0.34
			40/85	528	0.15	0.20	0.35
60x30	**1800**	0.78	**30/30**	35	0.01	0.02	0.25
			30/40	72	0.02	0.03	0.27
			30/50	144	0.04	0.06	0.27
			30/63	237	0.07	0.09	0.29
			40/70	296	0.07	0.10	0.33
			40/85	528	0.13	0.17	0.33
70x30	**2100**	0.67	**30/30**	35	0.01	0.01	0.25
			30/40	72	0.02	0.03	0.26
			30/50	144	0.04	0.05	0.26
			30/63	237	0.06	0.08	0.28
			40/70	296	0.07	0.10	0.29
			40/85	528	0.13	0.17	0.29
50x50	**2500**	0.56	**30/30**	35	0.01	0.01	0.32
			30/40	69	0.01	0.02	0.29
			30/50	123	0.02	0.03	0.30
			30/63	188	0.04	0.05	0.31
			40/70	254	0.05	0.07	0.30
			40/85	441	0.08	0.11	0.31
60x50	**3000**	0.47	**30/30**	35	0.01	0.01	0.24
			30/40	69	0.01	0.02	0.23
			30/50	123	0.03	0.04	0.23
			30/63	188	0.04	0.05	0.24
			40/70	254	0.04	0.06	0.29
			40/85	441	0.07	0.10	0.30
80x50	**4000**	0.35	**30/30**	35	0.005	0.01	0.25
			30/40	69	0.01	0.01	0.23
			30/50	123	0.02	0.03	0.24
			30/63	188	0.03	0.04	0.25
			40/70	254	0.04	0.05	0.24
			40/85	441	0.07	0.09	0.25
100x50	**5000**	0.28	**30/30**	35	0.005	0.01	0.23
			30/40	69	0.01	0.01	0.22
			30/50	123	0.02	0.02	0.22
			30/63	188	0.02	0.03	0.23
			40/70	254	0.03	0.05	0.22
			40/85	441	0.06	0.08	0.23

8.6 POSIBLES PREDISPOSICIONES

8.6 POSSIBLE SET-UPS

8.6 POSSIBILITES DE MONTAGE

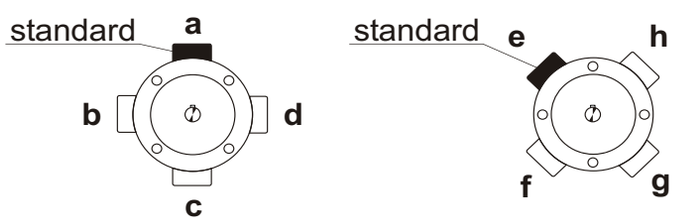
		PAM B5 - B14						
	i	56	63	71	80	90	100	112
CF 30/30 - 40 - 50 - 63	150 - 1200							
	1500 - 5000							
CF 40/63 - 70 - 85	150 - 1200							
	1500 - 3000							
	4000 - 5000	*						
CF 50/70 - 85	150 - 1200							
	1200 - 5000		*					

* La brida B14 tiene los taladros de acople al motor dispuestos en axis. Verificar las dimensiones de montaje para el correcto posicionamiento de la caja de bornes del motor.

** B14 flanges have the motor mounting holes arranged along the axes; check overall dimensions to determine correct position of motor terminal box.*

* Les brides B 14 ont les trous de fixation du moteur le long des axes. Vérifier les encombrements pour déterminer la position correcte de la boîte à bornes du moteur.

Posición caja de bornes
Terminal board position
Position de la boîte à bornes



8.7 PRESTACIONES DE LOS MOTORREDUCTORES

8.7 PERFORMANCE OF MOTOR REDUCTION GEAR

8.7 PERFORMANCES DU MOTO REDUCTEUR

		n_1 = 1400 min^{-1}													
	i	**150**	**200**	**300**	**450**	**600**	**900**	**1200**	**1500**	**1800**	**2100**	**2500**	**3000**	**4000**	**5000**
	i1xi2	**10x15**	**10x20**	**10x30**	**15x30**	**20x30**	**30x30**	**40x30**	**50x30**	**60x30**	**70x30**	**50x50**	**60x50**	**80x50**	**100x50**
	n2	9.3	7.0	4.7	3.1	2.3	1.6	1.2	0.9	0.8	0.7	0.6	0.5	0.4	0.3
30/30	**P_1** [kW]	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	T_2 [Nm]	45	57*	78*	108*	137*	186*	259*	301*	278*	317*	486*	449*	623*	718*
	Fs	0.73	0.5	0.4	0.3	0.25	0.2	0.1	0.1	0.1	0.1	0.07	0.08	0.06	0.05
	PAM	**56**													
30/40	**P_1** [kW]	0.13	0.13	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	T_2 [Nm]	69	87	84	116*	147*	200*	279*	323*	298*	341*	449*	414*	575*	663*
	Fs	1.0	0.7	0.9	0.6	0.5	0.35	0.25	0.2	0.2	0.2	0.15	0.15	0.1	0.1
	PAM	**63**			**56**										
30/50	**P_1** [kW]	0.18	0.18	0.18	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	T_2 [Nm]	93	116	167	116	147	200	279*	323*	298*	341*	464*	428*	594*	685*
	Fs	1.3	1.1	0.9	1.2	1.0	0.7	0.5	0.45	0.45	0.4	0.25	0.25	0.2	0.15
	PAM	**63**			**56**										
30/63	**P_1** [kW]				0.18	0.18	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	T_2 [Nm]				246	311	211	294	341	315	360	471*	428*	603*	696*
	Fs				1.0	0.8	1.1	0.8	0.7	0.8	0.7	0.4	0.3	0.3	0.25
	PAM				**63**		**56**								
40/63	**P_1** [kW]	0.37	0.37	0.25	0.18	0.18									
	T_2 [Nm]	205	264	248	258	328									
	Fs	1.0	0.8	1.0	0.9	0.7									
	PAM	**71**													
40/70	**P_1** [Nm]			0.37	0.25	0.18	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.09	0.09
	T_2 [Nm]			367	359	328	328	394	455	528*	531*	658*	764*	584*	684*
	Fs			0.8	0.8	0.9	0.9	0.8	0.7	0.55	0.55	0.4	0.3	0.4	0.35
	PAM	**71**			**63**									**56**	
50/70	**P_1** [kW]	0.55	0.37	0.25											
	T_2 [Nm]	305	264	245											
	Fs	0.9	1.0	1.2											
	PAM	80	71												
40/85	**P_1** [kW]				0.37	0.25	0.25	0.18	0.18	0.13	0.13	0.13	0.13	0.09	0.09
	T_2 [Nm]				538	461	638	553	638	535	538	688*	799*	610*	715*
	Fs				1.0	1.2	0.8	1.0	0.8	1.0	1.0	0.6	0.55	0.7	0.6
	PAM				**71**			**63**						**56**	
50/85	**P_1** [kW]	0.75	0.55	0.55	0.37	0.37									
	T_2 [Nm]	416	397	546	525	656									
	Fs	1.1	1.1	1.0	1.0	0.8									
	PAM	**80**			**71**										

*** Atención el par máximo permitido [T_{2M}] se tiene que calcular utilizando el factor de servicio $T_{2M} = T_2 \times F_s$**

**** WARNING: Maximum allowable torque [T_{2M}] must be calculated using the following service factor: $T_{2M} = T_2 \times F_S$***

*** ATTENTION : le couple maximum admissible [T_{2M}] se calcule en utilisant le facteur de service suivant : $T_{2M} = T_2 \times F_S$**

Notas

REDUCTORES COMBINADOS DE TORNILLO SIN FIN
COMBINED DOUBLE WORM REDUCTION GEARS
REDUCTEURS COMBINES A DOUBLE REDUCTION

S

9.1 SIMBOLOGIA Y NOMENCLATURA

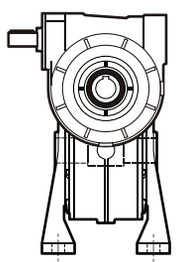
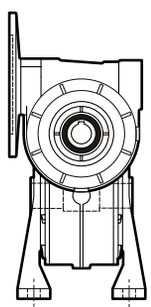
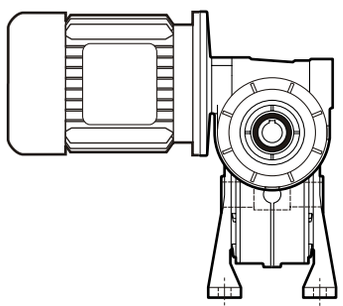
Versiones

9.1 SYMBOLS AND DESIGNATION

Versions

9.1 SYMBOLES ET DESIGNATION

Versions

SCR	SCF	SCM
		

Designación

Designation

Désignation

SCF	30/50	A a	1:300	PAM 63 B14	B3	....

Versión *Version* Version	**SCR - SCF - SCM**
Tamaño *Frame size* Taille	**30/30 - 30/40 - 30/50**
Forma constructiva *Design* Forme de construction	**A - B - V - F - P**
Relación *Ratio* Rapports de réduction	**150 ÷ 5000**
Ataque a motor *Motor coupling* Accouplement moteur	52
Posición de montaje *Mounting position* Position de montage	50

Opciones / ***Options*** / **Options**

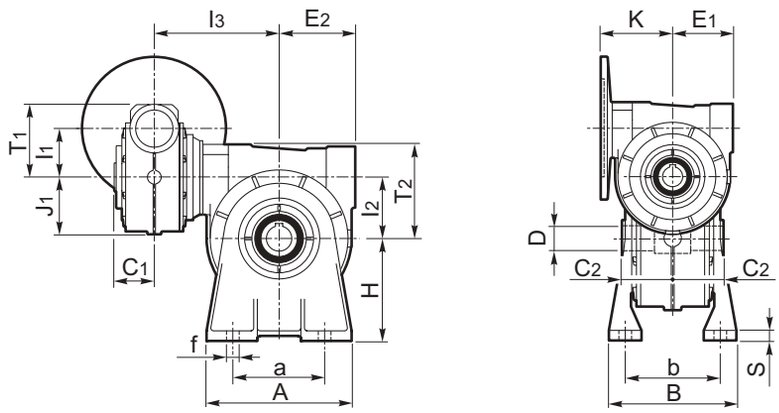
- Montaje brida de salida opuesto al montaje de catálogo (S)
  Flange installed at opposite end as catalogue position (S)
  Montage de la bride de sortie contraire au catalogue (S)
- Rodamientos cónicos en la corona
  Worm wheel taper bearings
  Roulements coniques sur la roue
- Sin fin prolongado
  Double ended worm shaft
  Vis avec deux arbres dépassants

9.2 DIMENSIONES SERIE S

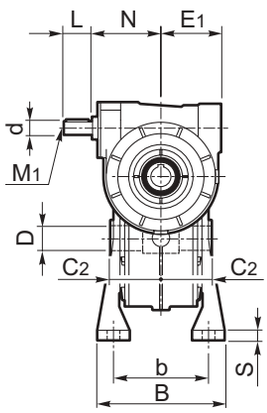
9.2 DIMENSIONS S SERIES

9.2 DIMENSIONS SERIE S

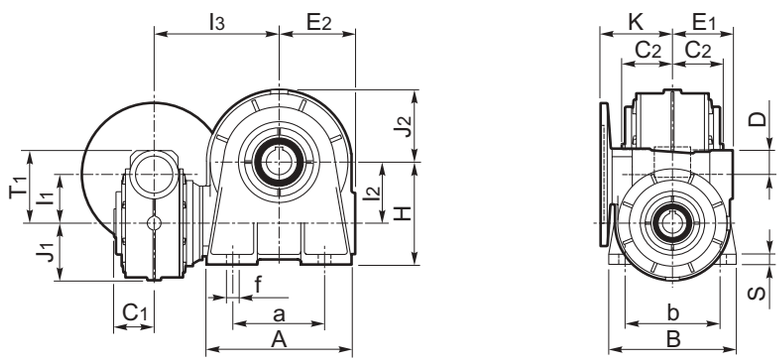
SCF.../A



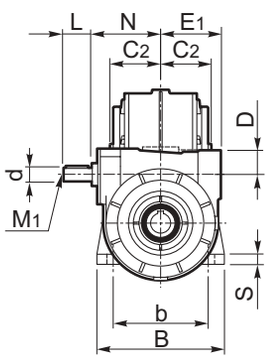
SCR.../A



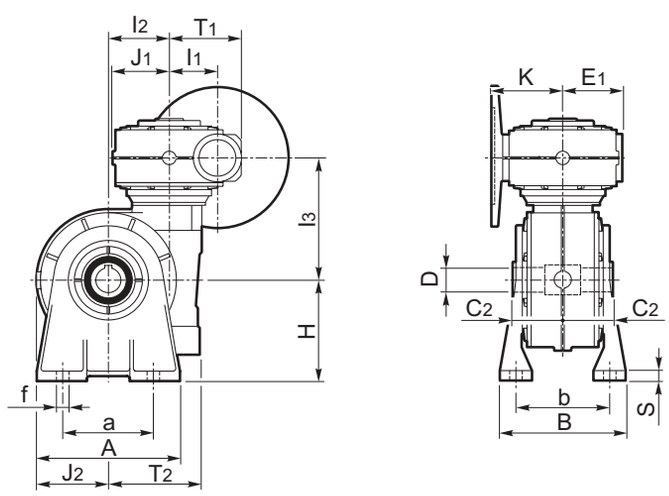
SCF.../B



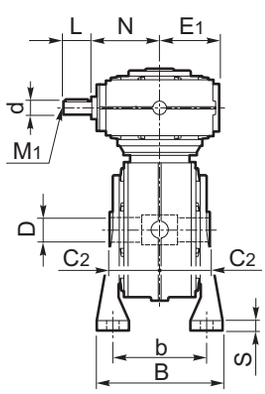
SCR.../B



SCF.../V



SCR.../V



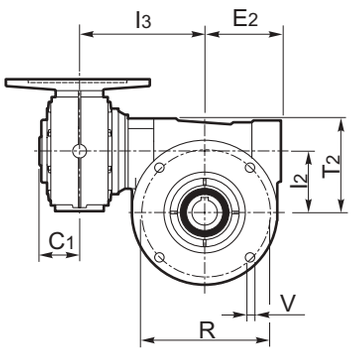
SC	A	a	B	b	C_1	C_2	D (H7)	d	E_1	E_2	F ∅	f ∅	F_P ∅	G (H8)	G_P	H	I_1	I_2	I_3	J_1	J_2	K	L	M_1	M_2	N	P	P_p	R ∅	R_p ∅	S	T_1	T_2	U	V ∅	X	Z
30/30	78	52	80	66	27.5	31	14	9	46	46	80	6.5	74	40	42 (H8)	52	31.5	31.5	84	39	39	54	20	M4	n°4 M6x8	48	50	36	56	56	6.5	51	51	3	6	5.5	6
30/40	106	70	102	84	31	41	19	9	46	60	140	7	100	95	60 (h8)	71	31.5	40	120	39	53	54	20	M4	n°4 M6x8	48	82	38	115	83	8	51	70	5	9	2	10
30/50	126	85	115	96/99	31	49	24	9	46	70	160	9	120	110	70 (h8)	85	31.5	50	131	39	64	54	20	M4	n°4 M8x10	48	92	46	130	85	12	51	81	5	9	2	10

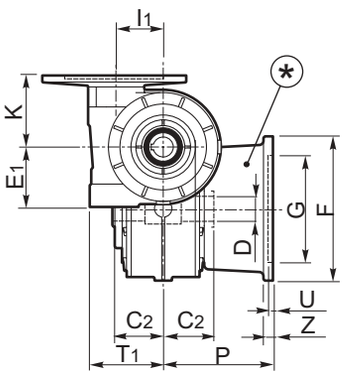
9.2 **DIMENSIONES SERIE S**

9.2 ***DIMENSIONS S SERIES***

9.2 **DIMENSIONS SERIE S**

SCF.../F





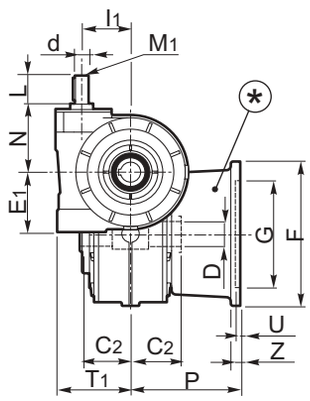
* **NOTA:** A partir del tamaño SC 30/50 la brida de salida F es modular, siendo ésta montada sobre la brida pendular S50P

* ***NOTE:*** *Frame size SC 30/50 uses a modular output flange F mounted to the shaft-mounted flange S 50P.*

Ver bridas especiales en Pág. 20

See special flanges page 20

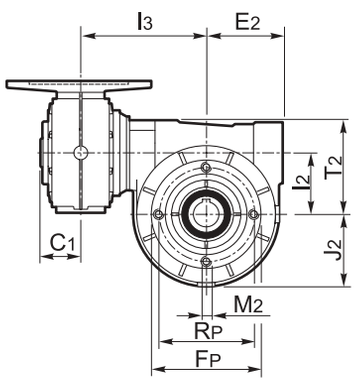
SCR.../F

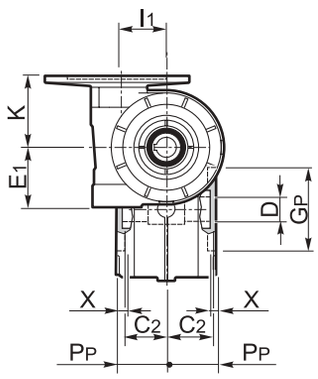


* **NOTE :** la taille SC 30/50 utilise une bride de sortie F modulable montée sur la bride pendulaire S 50 P.

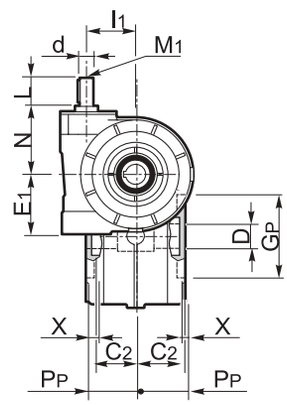
Voir brides spéciales en page 20

SCF 30/30/P

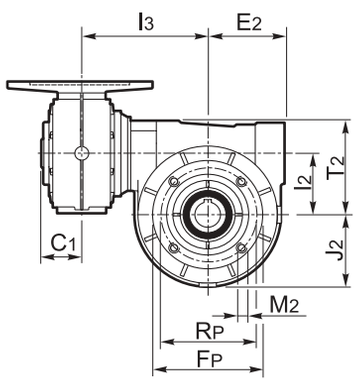


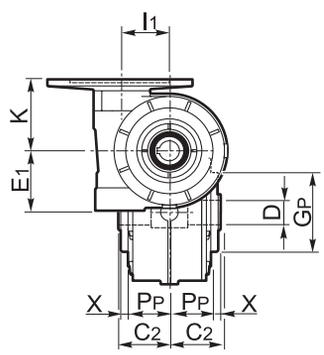


SCR 30/30/P

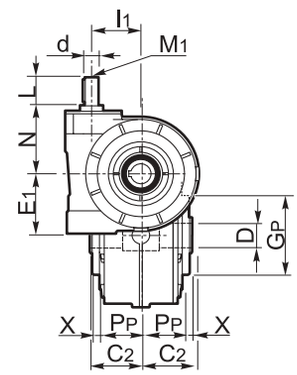


SCF 30/40/P - SCF 30/50/P





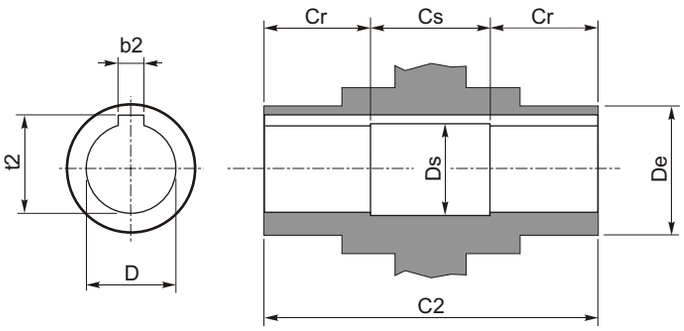
SCR 30/40/P - SCR 30/50/P



9.3 EJE HUECO

9.3 HOLLOW SHAFT

9.3 ARBRE CREUX

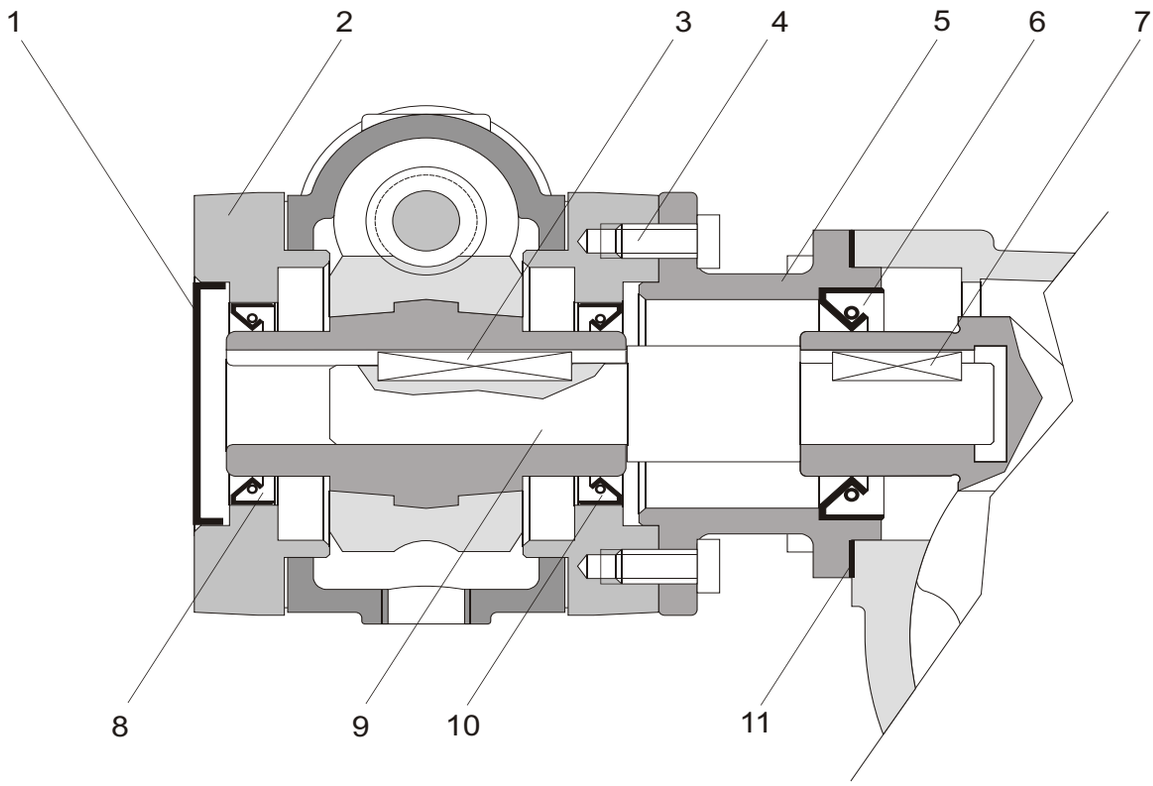


S	b_2 (H8)	D (H7)	D_e	D_s	t_2	C_2	C_r	C_s
30/30	5	14	25	14.5	16.3	62	22	18
30/40	6	19	30	19.5	21.8	82	30	22
30/50	8	24	40	24.5	27.3	98	35	28

9.4 LISTA DE REPUESTOS

9.4 SPARE PARTS LIST

9.4 LISTE DES PIECES DETACHEES



	SCR - SCF - SCM			
Pz. n. Part nb. Numéro de pièce	**1**	**6**	**8**	**10**
30/30	42/7	15/24/7	25/35/7	25/35/7
30/40	42/7	25/40/7	25/35/7	25/35/7
30/50				

REDUCTORES COMBINADOS DE TORNILLO SIN FIN
COMBINED DOUBLE WORM REDUCTION GEARS
REDUCTEURS COMBINES A DOUBLE REDUCTION

B

10.1 SIMBOLOGÍA Y NOMENCLATURA

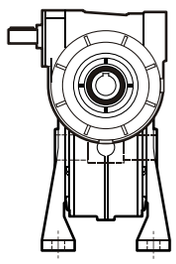
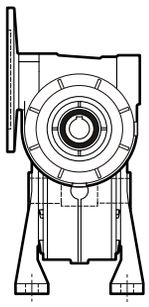
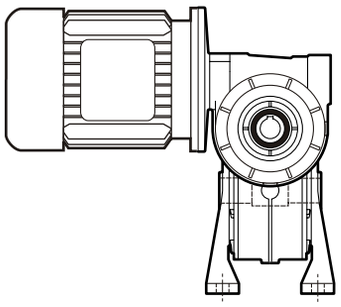
10.1 SYMBOLS AND DESIGNATION

10.1 SYMBOLES ET DESIGNATION

Versiones

Versions

Version

BCR	BCF	BCM
		

Designación

Designation

Désignation

BCF	30/50	A a	1:300	PAM	63	B14	B3	....

Versión *Version* Version	**BCR - BCF - BCM**
Tamaño *Frame size* Taille	**30/30 - 30/40 - 30/50** **30/63 - 40/63 - 40/70** **40/85 - 50/70 - 50/85**
Forma constructiva *Design* Forme de construction	**A - B - V - F - P**
Relación *Ratio* Rapports de réduction	**150 ÷ 5000**
Ataque a motor *Motor coupling* Assemblage moteur	52
Posición de montaje *Mounting position* Position de montage	50

Opciones / ***Options*** / **Options**

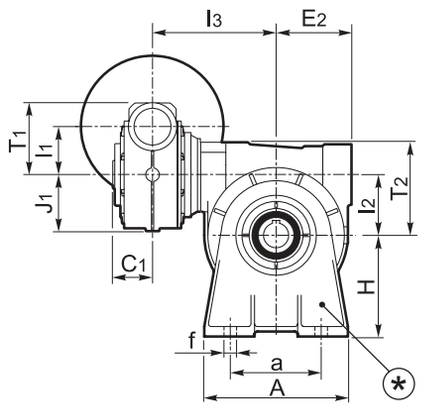
- Montaje brida de salida opuesto al montaje de catálogo (S)
  Flange installed at opposite end as catalogue position (S)
  Montage de la bride de sortie contraire au catalogue (S)
- Rodamientos cónicos en la corona
  Worm wheel taper bearings
  Roulements coniques sur la roue
- Sin fin prolongado
  Double ended worm shaft
  Vis avec deux arbres dépassants

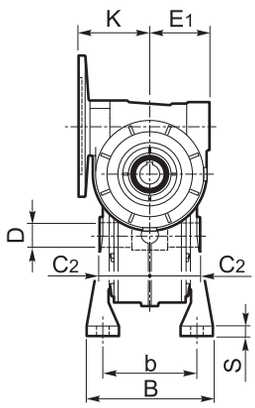
10.2 DIMENSIONES SERIE B

10.2 DIMENSIONS B SERIES

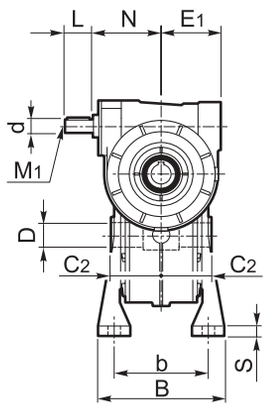
10.2 DIMENSIONS SERIE B

BCF.../A

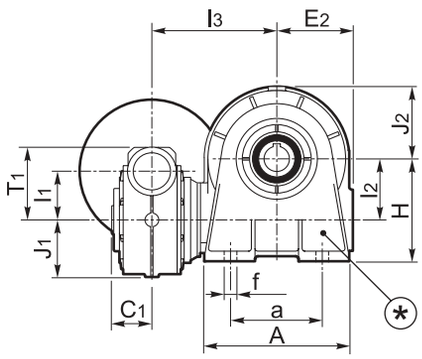


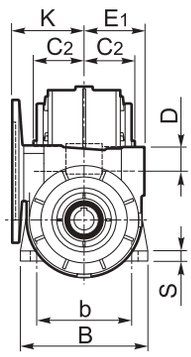


BCR.../A

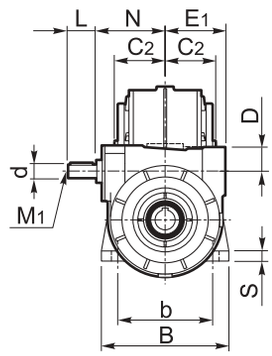


BCF.../B

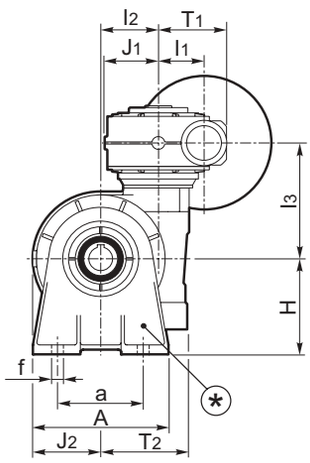


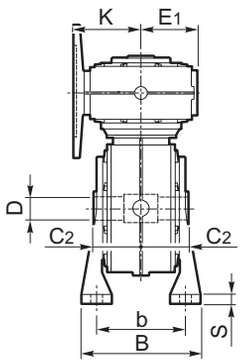


BCR.../B

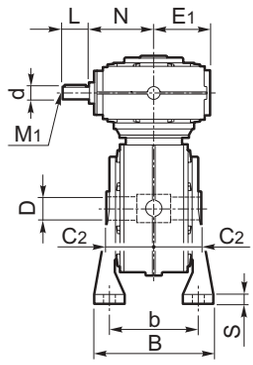


BCF.../V





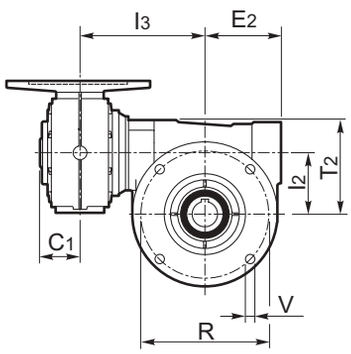
BCR.../V

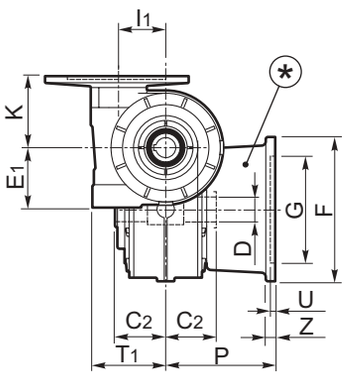


BC	A	a	B	b	C_1	C_2	D (H7)	d	E_1	E_2	F ∅	f ∅	F_P ∅	G (H8)	G_P (h8)	H	I_1	I_2	I_3	J_1	J_2	K	L	M_1	M_2	N	P	P_p	R ∅	R_p ∅	S	T_1	T_2	U	V ∅	X	Z
30/30	78	50	80	66	27.5	27.5	14	9	46	46	80	6.5	74	50	50	55	31.5	31.5	84	39	39	54	20	M4	n°4 M6x7	48	50.5	30	68	65	7.5	51	51	3	6	1.5	6.5
30/40	106	52	99	81	31	32	18	9	46	60	110	8.5	100	60	50	72	31.5	40	120	39	53	54	20	M4	n°4 M6x8	48	60	38	87	65	9	51	70	5	9	1.5	8
30/50	126	63	115	98.5	31	41	25	9	46	70	125	9	120	70	68	82	31.5	50	131	39	64	54	20	M4	n°4 M6x8	48	85	44	90	94	10	51	81	4.5	10	2	11
30/63	136	95	136	111	31	60	25	9	46	80	180	11	106	115	75	100	31.5	63	167	39	75	54	20	M4	n°8 M8x12	48	116	45	150	90	12	51	98	7	11	12	11
40/63	136	95	136	111	32	60	25	11	60	80	180	11	106	115	75	100	40	63	146	53	75	67	22	M5	n°8 M8x12	62	116	45	150	90	12	70	98	7	11	12	11
40/70	156	120	144	116	32	60	28	11	60	85	200	11	128	130	90	115	40	70	155	53	85	67	22	M5	n°8 M8x12	62	111	50	165	110	12	70	112	5	12	7	12
40/85	200	140	176	140 147	32	70	35	11	60	105	200	12	150	152	110	142	40	85	185	53	100	67	22	M5	n°8 M10x14	62	151	56.5	176	130	14	70	129	6	13	10	13
50/70	156	120	144	116	41	60	28	14	70	85	200	11	128	130	90	115	50	70	184	64	85	79	30	M6	n°8 M8x12	75	111	50	165	110	12	81	112	5	12	7	12
50/85	200	140	176	140 147	41	70	35	14	70	105	200	12	150	152	110	142	50	85	206	64	100	79	30	M6	n°8 M10x14	75	151	56.5	176	130	14	81	129	6	13	10	13

10.2 **DIMENSIONES SERIE B** *10.2* ***DIMENSIONS B SERIES*** 10.2 **DIMENSIONS SERIE B**

BCF.../F

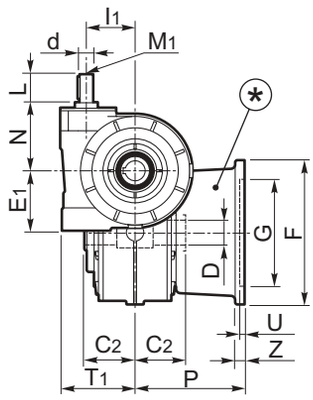




Ver bridas especiales en Pág. 28

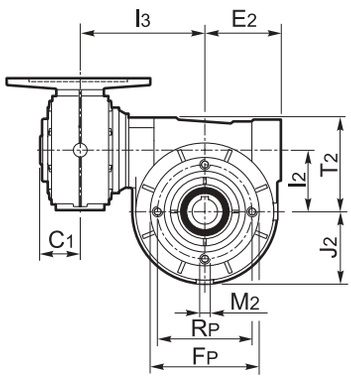
See special flanges page 28

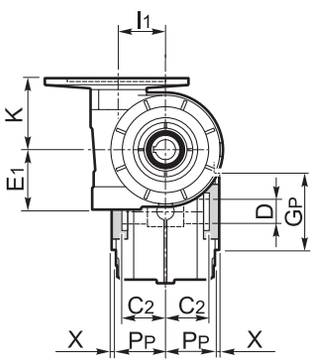
BCR.../F



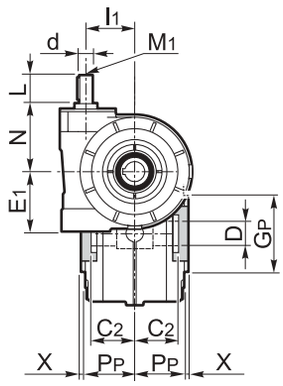
Voir brides spéciales en page 28

BCF.../P (30/30 - 30/40 - 30/50)

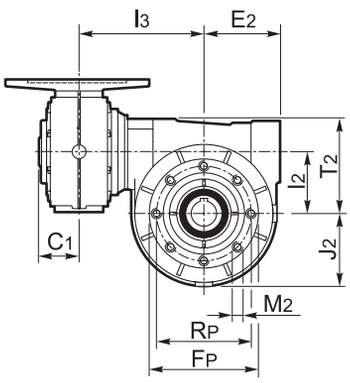


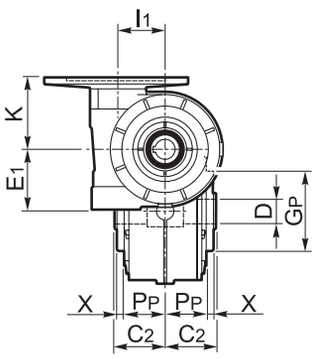


BCR.../P (30/30 - 30/40 - 30/50)

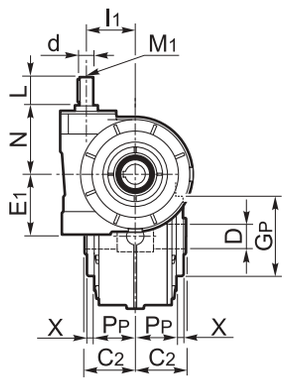


BCF.../P (30/63-40/63-40/70-50/70-40/85-50/85)





BCR.../P (30/63-40/63-40/70-50/70-40/85-50/85)



* **NOTA:** A partir del tamaño BC30/40 la brida de salida F es modular, siendo ésta montada sobre la brida pendular B40P.
En los tamaños 63-70-85 las patas y la brida de salida son siempre modulares por lo tanto siempre estarán montadas sobre la brida pendular B.P

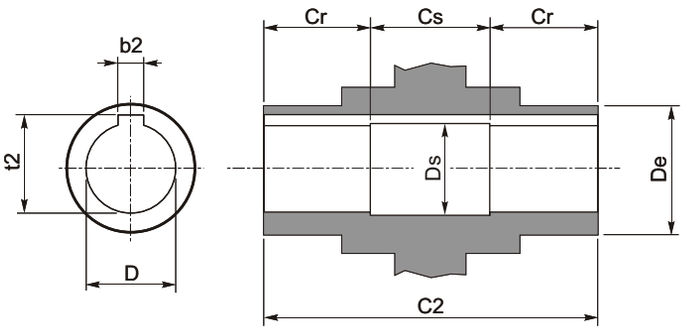
* ***NOTE:*** *Frame size BC 30/40 uses a modular output flange F mounted to the shaft-mounted flange B 40P.*
Frame sizes 63 - 70 - 85 come with modular feet and output flanges mounted to shaft-mounted flanges B.P. as standard.

* **NOTE :** la taille BC 30/40 utilise une bride de sortie modulable F montée sur la bride pendulaire B 40 P.
Les tailles 63-70-85 ont des pattes et des brides modulable appliquées sur des brides pendulaires B.P en standard.

10.3 EJE HUECO

10.3 *HOLLOW SHAFT*

10.3 ARBRE CREUX

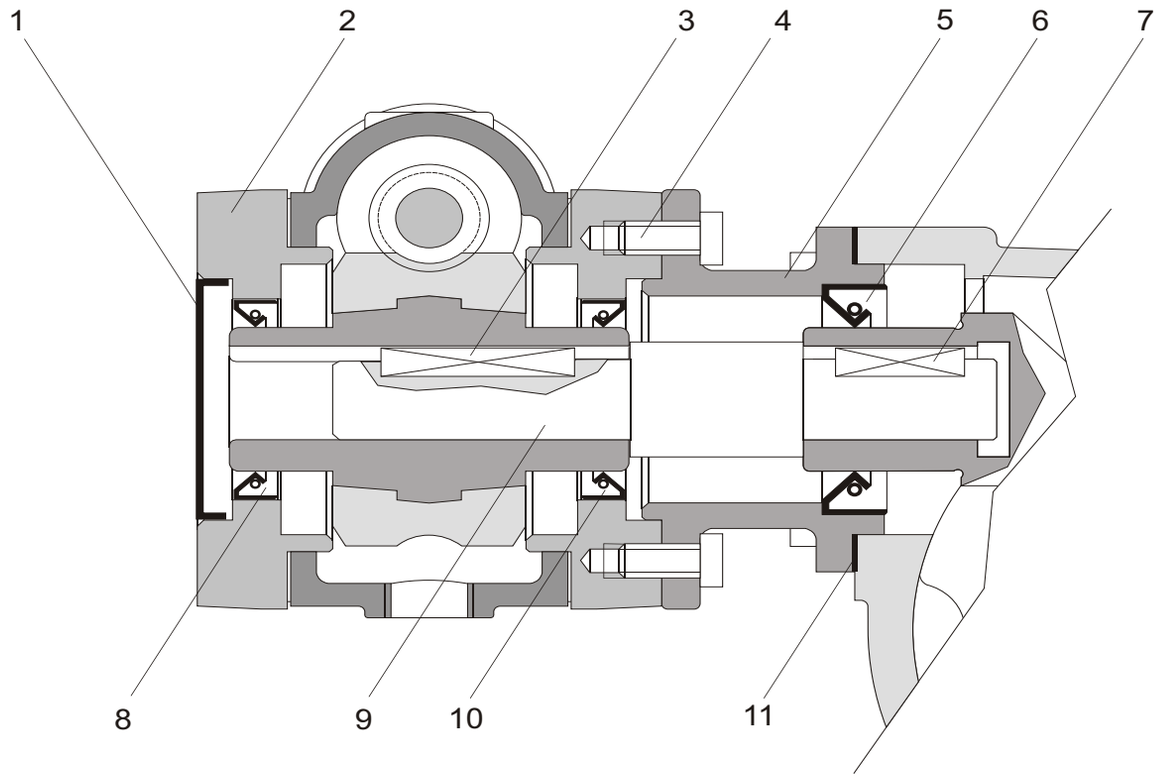


B	b_2 (H8)	D (H7)	D_e	D_s	t_2	C_2	C_r	C_s
30/30	5	14	25	14.5	16.3	55	20	15
30/40	6	18	30	18.5	20.8	64	22	20
30/50	8	25	40	25.5	28.3	82	30	22
30/63	8	25	40	25.5	28.3	120	45	30
40/63								
40/70	8	28	45	28.5	31.3	120	45	30
50/70								
40/85	10	35	50	35.5	38.3	140	45	50
50/85								

10.4 LISTA DE REPUESTOS

10.4 SPARE PARTS LIST

10.4 LISTE DES PIECES DETACHEES



Pz. n. Part nb. Numéro de pièce	BCR - BCF - BCM			
	1	**6**	**8**	**10**
30/30	42/7	15/24/7	25/35/7	25/35/7
30/40	42/7	25/40/7	25/35/7	25/35/7
30/50				
30/63	42/7	30/47/7	25/35/7	25/35/7
40/63	52/7	30/47/7	30/47/7	30/47/7
40/70	52/7	40/56/8	30/47/7	30/47/7
40/85				
50/70	62/7	40/56/8	40/56/8	40/52/7
50/85				