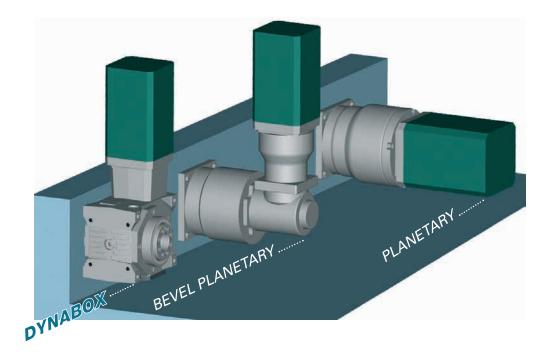


SERVO GEARHEADS



DYNABOX® Provides:

 To machine designers a convenient option of turning servomotor drive systems through 90 degrees.



 To OEMs with the ideal solution to reduce costs in servomotor applications by replacing bevel planetary gearheads



 Hollow output with shrink disc (designer's favorite), for easy integration



Robot flange output, for tilting stiffness and compactness



Solid output (single or dual), a classical solution



RIGHT ANGLE SERVO GEARHEADS:

Introduction
Selection
Ratings and technical specifications
DYNABOX° with output robot flange8-9
DYNABOX ° with output hollow shaft (smooth with shrink disc or with keyway)10-11
DYNABOX ° with output solid shaft (single and double)
Input servo couplings14
Input servo flanges
"How to order" guide16

DYNASET

HIGH PRECISION GEAR SET:

Introduction	.17
Dimensions	.18
Backlash adjustment device for DYNASET	.19

DYNABOX DYNABOX

Preloaded input taper bearings:

provides higher stiffness.

2 bearings mounted on same side insure constant preload while temperature raises.

It maximizes bearing life.

On the opposite side, an axial-free ball bearing.

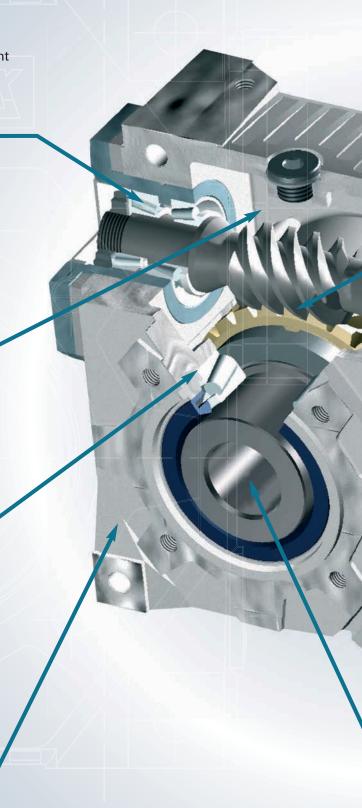
size 35 = angular contact ball bearing

Maintenance free:

life-lubricated unit with high performance synthetic lubricant

Oversized taper roller bearings, providing unmatched radial loads (size 25 = ball bearings)

Single piece housing, made of cast and heat treated aluminium-magnesium alloy. Offering superior rigidity and low weight



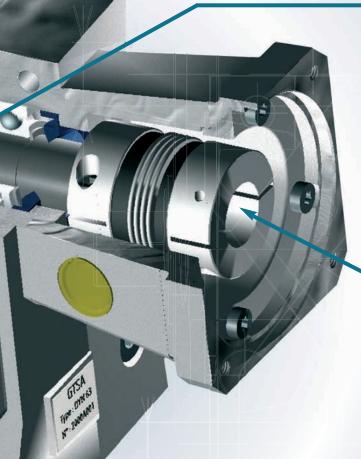
HIGHLIGHTS

Optimized contact pattern: a unique process to cut gears, combined to a state of the art assembly lead to a nearly 90% pattern surface, reducing drastically the contact pressure.



Special bronze alloy: developped by ourselves, it provides an unmatched wear resistance. Combined with 90% contact pattern, lowest backlash is maintained throughout the working life of the gearhead.

Thanks to that, *DYNABOX*° gearheads can run up to 6000RPM Apparently similar products available on the market do not offer such performance



Servomotor mounted within 5 minutes:

a high stiffness below coupling eliminates shaft alignement problems.

A mating flange to *your* servomotor can always be supplied from our stock.

Output torsional backlash available in 3 ranges :

EXPERT: 1 arcminute for the most demanding applications **MEDIUM**: 5 arcminutes, a good compromise price/quality

BASIC: 10 arcminutes, a budget gearhead to cut servo system costs

DYNABOX° SELECTION

START/STOP SERVICE S5

CONTINUOUS SERVICE S1

- Calculate acceleration torque on gearbox output :

C2acc = C1accxix η xF1xF2



F1 and **F2**: correction factors as per following chart.

0	GEARBOX RUNNING TIME DURING 1 FULL CYCLE										
	10 %	30 %	50 %	70 %	90 %						
F1	0,7	0,85	1	1,11	1,2						

NUMBER OF STARTS PER HOUR										
1000 to 2000 2000 to 3000 3000 to 5000 5000 to 10										
F2	1 to 1,35	1,35 to 1,45	1,45 to 1,6	1,6 to 1,9						

Intermediates values

To be interpolated

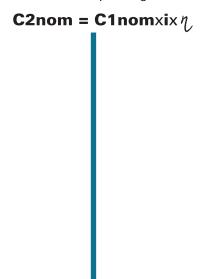


- Select the gearbox size in the column **Torque S5**:



Torque S5 > C2acc

- Calculate nominal torque on gearbox output



- Select the gearbox size in the column **Torque S1**:

Torque S1 > C2nom

LEGEND

C1acc (N.m): motor acceleration torque **C1nom** (N.m): nominal motor torque

C2acc (N.m): gearbox output acceleration torque **C2nom** (N.m): Gearbox output nominal torque

E-stop (N.m): gearbox output emergency torque (2 seconds duration maximum, applied a maximum of 25000 times over the gearbox life)

C1f (N.m): starting input friction torque (without any load on output)

N1: maximum input RPM to be achieved during a full cycle (S5 service) or input nominal RPM (S1 service)

i: exact gear ratio

Et (N.m/minute): Torsional stifness on output

ig (kg.m²): polar moment of inertia on input (to be added to coupling inertia, see page 10)

 $\mathcal{N}(\%)$: gearbox efficiency at considered input RPM

Fr (N): permissible radial load on output shaft (applied at the middle of the shaft)

Fa (N): permissible axial load on output shaft

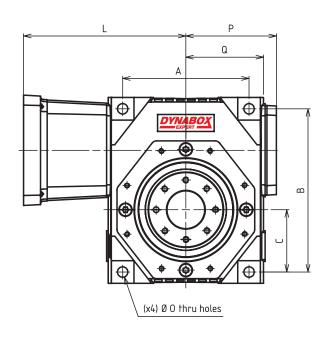
	REVERSIBILITY CLASSES
1	Total reversibility
2	Uncertain reversibility
3	Self-locking at N₁=0

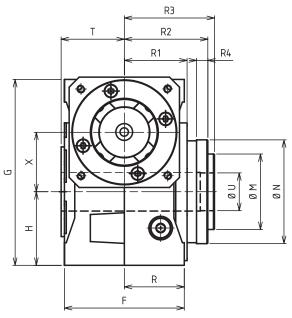
Note: Static self-locking only. Units can become reversible under vibrations.. For safety applications we advise to use a brake. Efficiency values given for reference only and achieved after 24h hours full load operation.

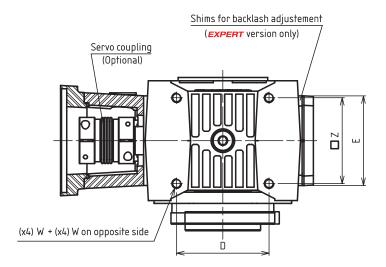
TECHNICAL SPECIFICATIONS

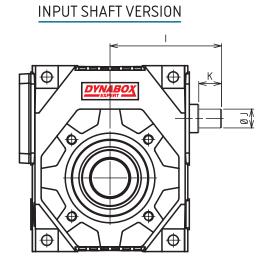
		60	00		4000			3000			2000			1000								
		Torque	r	Torque	Torque	r	Torque	Torque	r	Torque	Torque	r	Torque	Torque	r	E-stop	041		F.	Reversibility	-	
	5.2:1	\$5 11	89	\$1	\$5 13	88	\$1 9	\$5 15	87	\$1 11	\$5 18	86	\$1 14	\$5 23	84	46	0,03	ig 2,2 X 10-6	Et 2	class 1	Fr 1500	Fa 500
-	7.25:1	11	88	8	14	87	9	15	86	11	18	85	14	24	82	46	0,03	1,51 X 10 ⁻⁶	2	1	1500	500
DINADOA	10.25:1	11	87	8	13	86	8	14	85	11	18	84	14	23	81	46			2	1	1500	500
75	14.5:1 19.5:1	13	82 80	9	15 15	81 78	11	18 18	79 76	12 12	20 20	77 74	16 16	26 26	74 70	46 46		9,58 X 10 ⁻⁷ 8,67 X 10 ⁻⁷	2	2	1500 1500	500 500
	30:1	15	73	11	18	70	12	20	68	14	23	65	17	29	60	46	0,03	8 X 10 ⁻⁷	2	3	1500	500
	45:1	15	67	11	18	64	11	19	62	14	23	59	17	28	53	42		7,77 X 10 ⁻⁷	2	3	1500	500
	60:1	14	62	10	16	59	11	19	56	13	21	53	15	25	48	35	0,03	7,6 X 10 ⁻⁷	2	3	1500	500
-	5.2:1	23	94	16	27	93	18	31	92	22	36	91	29	48	89	96	0,3	7,4 X 10⁻ ⁶	5	1	3800	2800
	7.25:1 10.25:1	23	92 90	17 17	28 29	91	19 20	32 34	90	23	37 39	89 87	30	48 51	86 81	96 96	0,3	5,6 X 10 ⁻⁶ 5 X 10 ⁻⁶	5 5	1	3800	2800 2800
	14.5:1	27	87	19	31	85	22	35	83	26	41	81	33	52	77	96	0,3	4,4 X 10 ⁻⁶	5	2	3800	2800
35	19.5:1	28	84	20	32	82	22	35	80	26	42	78	33	50	73	96	0,2	4,2 X 10 ⁻⁶	5	2	3800	2800
	30:1 45:1	30	77 71	23	37 36	74 68	25 25	40	72 65	29 28	46 45	69 61	36 35	58 56	63 56	96 87	0,2	4 X 10 ⁻⁶ 3,9 X 10 ⁻⁶	5 5	3	3800	2800 2800
-	60:1	30	65	22	34	62	24	37	59	27	41	55	34	50	50	73	0,2	3,3 X 10 ⁻⁶	5	3	3800	2800
	90:1	28	57	21	32	53	23	35	50	26	39	46	32	46	41	72	0,1	2,31 X 10 ⁻⁶	5	3	3800	2800
	3.125:1			30	48	95	38	60	94	44	70	93	50	81	92	214	0,4	4,7 X 10 ⁻⁵	9	1	5800	4000
	5.2:1	54	95	36	62	94	41	70	93	50	83	92	67	109	91	214	0,4	2,9 X 10⁵	9	1	5800	4000
	7.25:1 10.25:1	59	94	42	71	93	48	80	92	57	93	91	76	121	89	214	0,4	2,2 X 10 ⁻⁵	9	1	5800	4000
	10.25:1	68 69	93 90	46 52	80	92 88	53 59	88 94	91 87	62 68	98 109	90 86	80 88	128 141	88 82	214 214	0,4	1,5 X 10⁵ 1,4 X 10⁵	9	2	5800 5800	4000
DINADUA	19.5:1	66	89	50	80	87	55	88	86	64	102	84	81	129	80	214	0,3	1 X 10⁵	9	2	5800	4000
	30:1 45:1	74	83	55 54	88 86	80 75	61 59	98 94	78	70 68	112 109	76	88	141	71 64	214 185	0,3	1 X 10 ⁻⁵	9	2	5800 5800	4000 4000
-	45:1 60:1	74 69	77 73	50	78	70	55	94 86	72 68	62	97	69 64	83 75	133 116	59	170	0,3	8,2 X 10 ⁻⁶ 7,3 X 10 ⁻⁶	9	3	5800	4000
-	90:1	63	66	46	71	62	50	76	59	57	86	56	68	99	50	154	0,2	4,6 X 10 ⁻⁶	9	3	5800	4000
	3.125:1			52	83	94	56	89	94	74	118	93	95	152	92	307	0,6	1,1 X 10⁴	20	1	7000	4800
	5.2:1	85	95	60	103	94	68	116	94	82	137	93	111	181	91	307	0,6	7,5 X 10⁻⁵	20	1	7000	4800
	7.25:1	88	94	65	111	93	74	125	92	90	147	91	118	188	89	307	0,6	5,3 X 10 ⁻⁵	20	1	7000	4800
	10.25:1 14.5:1	102 96	92 90	76 71	132 115	90	87 82	145 133	89 87	103 96	165 155	88 85	133 123	206 190	85 82	307 307	0,6	4,5 X 10 ⁻⁵ 3,8 X 10 ⁻⁵	20	1 2	7000	4800 4800
DINADOA	19.5:1	101	88	77	123	87	87	139	85	101	162	83	128	205	80	307	0,4	3,1 X 10 ⁻⁵	20	2	7000	4800
	30:1	107	82	83	130	80	94	148	78	109	169	75	136	202	70	307	0,4	3,4 X 10 ⁻⁵	20	2	7000	4800
	45:1 60:1	110	77 73	83 82	130 128	74 69	93	145 141	72 67	106 103	163 158	69 63	131 126	202 194	63 58	307 286	0,4	2,8 X 10 ⁻⁵ 2,6 X 10 ⁻⁵	20	3	7000	4800 4800
-	90:1	102	65	76	117	62	82	125	59	94	142	55	113	164	49	263	0,3	1,2 X 10 ⁻⁵	20	3	7000	4800
	5.2:1	128	95	90	153	95	105	179	94	126	210	93	169	275	91	497	0,8	1,6 X 10⁴	36	1	8800	8500
	7.25:1	123	95	91	155	94	103	174	93	125	206	92	165	264	90	497	0,8	9 X 10⁵	36	1	8800	8500
	10.25:1	134	94	103	169	93	118	194	92	141	231	91	181	290	89	497	0,8	8 X 10 ⁻⁵	36	1	8800	8500
DINABOA	14.5:1 19.5:1	146 155	91	110 119	179 190	90	128 135	207	89 87	149 156	240 250	87 85	191 199	293 318	84 82	497 497	0,8	6,9 X 10 ⁻⁵ 5,5 X 10 ⁻⁵	36 36	2	8800 8800	8500 8500
hš		179	84	138	218	82	155	245	80	179	281	78	223	335	73	497	0,5	5,9 X 10 ⁻⁵	36	2	8800	8500
	45:1	163	80	123	193	77	137	214	75	156	239	72	193	287	67	403	0,5	5 X 10 ⁻⁵	36	3	8800	8500
	60:1 90:1	162 149	76 68	121 110	189 169	73 65	134 121	205 184	71 63	151 137	233	67 59	186 166	288 241	62 53	404 368	0,4	4,7 X 10 ⁻⁵ 3,2 X 10 ⁻⁵	36 36	3	8800 8800	8500 8500
									94													
		213 190	96 95	147 139	252 236	95 94	174 161	296 270	93	209 196	349 321	94 92	282 256	459 409	92 90	834 834	1	3,7 X 10 ⁻⁴ 2,5 X 10 ⁻⁴	50 50	1	10500 10500	10500
	10.25:1	187	94	146	234	93	168	269	92	204	326	91	261	418	88	834	1	2,2 X 10 ⁻⁴	50	1	10500	10500
	14.5:1 19.5:1	237	91 89	170 168	276 270	90 88	195 194	315	88 87	234 227	376 362	87 85	298 288	460 434	84 81	834 834	1 0,6	1,9 X 10 ⁻⁴ 1,5 X 10 ⁻⁴	50 50	2		10500
73	30:1	252	86	186	294	84	212	334	82	248	386	80	309	460	75	834	0,6	1,6 X 10 ⁻⁴	50	2	10500	10500
		243 225	79 75	190 175	299 272	76 72	212 195	331 300	74 69	244 221	383 334	71 66	301 272	472 395	65 60	718 657	0,6 0,5	1,4 X 10⁴ 1,3 X 10⁴	50 50	3		10500
		218	68		257	64	184	280	62	209	316	57	255	370	52	625	0,5	8 X 10 ⁻⁵	50	3		10500
			00			05						0.4			00				75			
		332 376		227 263	387 460	95 95	271 306	460 490	95 95	327 373	546 597	94 94	445 490	725 784	92 92	1543 1543	1,5 1,5	8,5 X 10 ⁻⁴ 6 X 10 ⁻⁴	75 75	1	15800 15800	
		391		273	478	94	314	528	93	383	627	92	488	781	90	1543	1,5	3,8 X 10 ⁻⁴	75	1	15800	
DYNABOX	14.5:1	379	92	272	444	91	314	504	90	380	612	88	486	748	85	1543	1,5	3,2 X 10 ⁻⁴	75	2	15800	
90		429 433	91 86	318 316	506 500	90 84	367 362	584 572	88 82	431 424	685 661	87 80	544 531	865 792	84 75	1543 1543	0,8	2,5 X 10 ⁻⁴ 2,6 X 10 ⁻⁴	75 75	2	15800 15800	
		454	83	343	538	80	385	599	79	441	674	76	546	811	71	1255	0,8	2,6 X 10 ⁻⁴	75	3	15800	
	60:1	432	80	328	512	77	364	559	75	412	622	72	507	761	67	1230	0,5	1,7 X 10 ⁻⁴	75	3	15800	13000
	90:1	394	74	298	459	70	332	505	68	372	562	64	460	667	59	1114	0,5	1 X 10⁴	75	3	15800	13000
		567	96	390	666	95	458	779	95	561	937	94	760	1239	92	2289	2	1,85 X 10 ⁻³	120	1		16000
	7.25:1 10.25:1	579 650	95 95	417 449	680 786	95 94	488 522	795 878	95 93	599 638	976 1047	94	802 827	1307 1323	92 90	2289 2289	2	1,3 X 10 ⁻³ 8,5 X 10 ⁻⁴	120 120	1	21500 21500	
		630		450	720	92	519	830	91	630	1047	90	810	1247	87	2289	2	6,3 X 10 ⁻⁴	120	2	21500	
110	19.5:1	670	92	510	815	91	589	943	90	705	1121	88	893	1349	85	2289	1	4,6 X 10⁴	120	2	21500	16000
-10		790	88 85	597 583	955 915	87 82		1100 1037	85 80	812 765	1299 1168	83 78	1015 947	1512 1411	79 73	2289 2152	1	3,5 X 10 ⁻⁴ 3,3 X 10 ⁻⁴	120 120	2	21500 21500	
	15.1						11111	103/	00	700	1100	10	54/	1411	13	2102		3,3 A 10'	120	3	Z 1000	10000
	45:1 60:1	776 683		522	815	79	588	905	77	669	1030	73	826	1239	68	2094	0,8	3 X 10 ⁻⁴	120	3	21500	16000

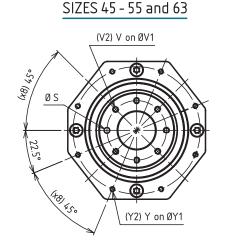
DYNABOX® ROBOT FLANGE

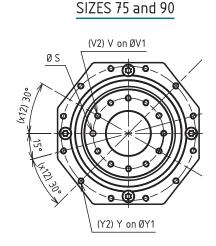


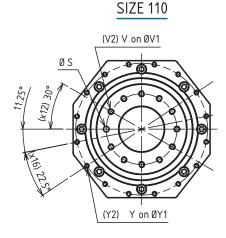






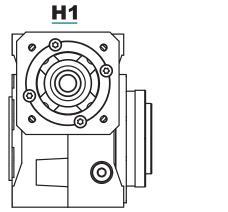


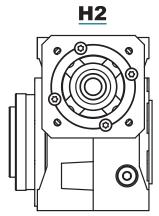




DYNABOX	45	55	63	75	90	110
А	108	120	134	172	186	220
В	135	155	173	208	234	276
С	53	61	66	82	91	108
D	81	90	98	136	141	175
Е	68	78	91	110	130	140
F	100	112	127	148	170	182
G	153	175	197	232	264	306
Н	62	71	78	94	106	123
I Maxi	105	116	126	151	165,5	189
I mini	97,5	108	116	140	153,5	177
J (j6)	15	18	20	24	28	32
K	20	22	24	28	28	36
L			see page 15			
M (h7)	50	63	80	100	125	160
N (h7)	80	90	110	140	165	200
0	9	9	11	11	13	13
P (Maxi)	83,5	91	101	124	136,5	152
Q	67,5	75	84	104	114,5	132
R	50	56	63,5	74	85	91
R1	54	59	66,5	79	93	100
R2	74	82	88,5	110	129	140
R3	80	89	95,5	117	138	150
R4	10	12	12	15	18	22
S (H7)	6	6	6	8	8	10
Т	53	59,5	67	78	89	96
U (H7)	25	31,5	40	50	63	80
V - DEPTH	M6-11	M6-11	M6-11	M8-15	M8-15	M10-15
V1	40	50	63	80	100	125
V2	7	7	7	11	11	11
W	M8	M8	M10	M10	M12	M12
X	45	55	63	75	90	110
Y - DEPTH	M5-12	M5-12	M5-12	M6-15	M8-18	M8-19
Y1	100	109	135	168	190	233
Y2	8	8	8	12	12	16
Z	75	75	85	95	115	115
WEIGHT (kg)	7,6	10,5	15,2	22,5	36,15	51,7
Max. tilting torque (Nm)	250	450	780	1200	2150	3900
Tilting rigidity (Nm/arcmin)	330	520	580	800	1550	3050

MOUNTING POSITIONS



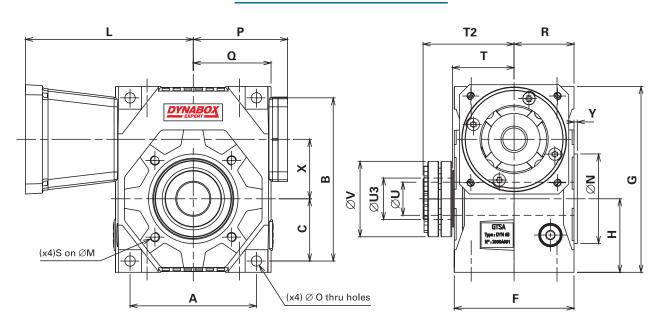


All mounting positions on the machine are accepted with the factory lubricated **DYNABOX**.

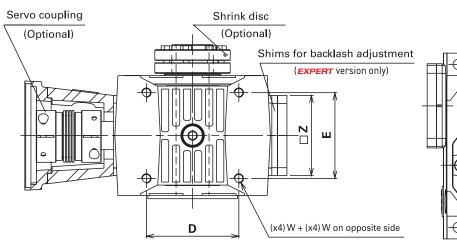
However, applications which use less than 360° of the output require a higher oil level. It should be specified when ordering.

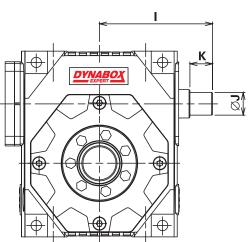
DYNABOX° HOLLOW SHAFT

SMOOTH SHAFT FOR SHRINK DISC

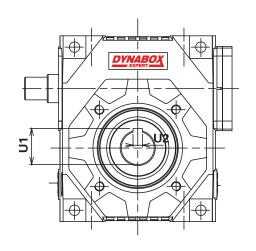


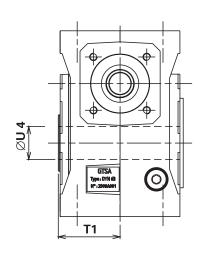
INPUT SHAFT VERSION





KEYED HOLLOW SHAFT



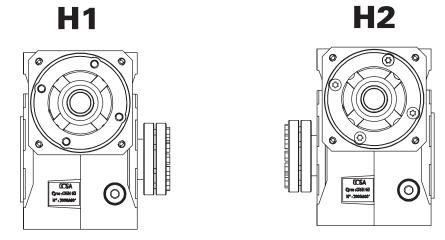


DYNABOX	25	35	45	55	63	75	90	110
Α	66	86	108	120	134	172	186	220
В	84	110	135	155	173	208	234	276
С	33	44,5	53	61	66	82	91	108
D	49,5	62	81	90	98	136	141	175
E	44	56	68	78	91	110	130	140
F	64	86	100	112	127	148	170	182
G	96	126	153	175	197	232	264	306
Н	39	52,5	62	71	78	94	106	123
I Maxi	53	84	105	116	126	151	165,5	189
I mini	_	77,5	97,5	108	116	140	153,5	177
J (j6)	9	12	15	18	20	24	28	32
K	10	17	20	22	24	28	28	36
L				SEE PAGE	15			
M *	65	65	85	100	115	130	165	200
N (j7) *	55	50	70	80	95	110	130	165
0	6,2	7	9	9	11	11	13	13
P (Maxi)	49	70	83,5	91	101	124	136,5	152
Q	42	55	67,5	75	84	104	114,5	132
R	32	43	50	56	63,5	74	85	91
S*	M5	M6	M8	M8	M10	M10	M12	M12 (x8)
Т	_	45	52	58	65,5	76	87	93
T1	34,5	45	52	58	65,5	76	87	93
T2	_	69	78	87	96,5	110	124	133
U (H7)	_	20	25	30	35	40	50	60
U1	16,3	18,3	28,3	33,3	38,3	43,3	53,8	64,4
U2	5	5	8	8	10	12	14	18
U3	_	24	30	36	44	50	68	80
U4	14	16	25	30	35	40	50	60
V	_	50	60	72	80	90	115	145
W	M5	M6	M8	M8	M10	M10	M12	M12
X	25	35	45	55	63	75	90	110
Υ*	3	3	3	3,5	3,5	4	4	5
Z	50	58	75	75	85	95	115	115
WEIGHT (kg)	1,4	3,4	6,2	8,5	13,9	20,5	32,5	46,5

Note: size 25 only available with keyed hollow shaft

(*) Flange on both sides.

MOUNTING POSITIONS

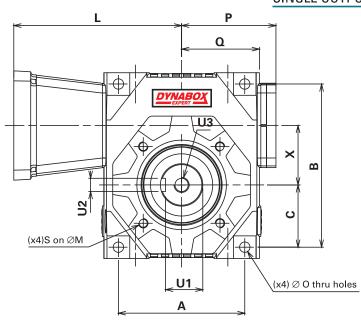


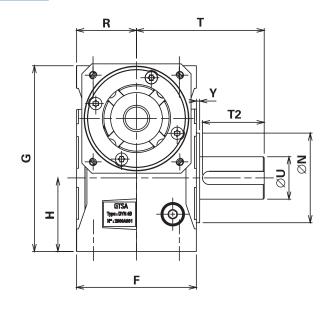
All mounting positions on the machine are accepted with the factory lubricated **DYNABOX**.

However, applications which use less than 360° of the output require a higher oil level. It should be specified when ordering.

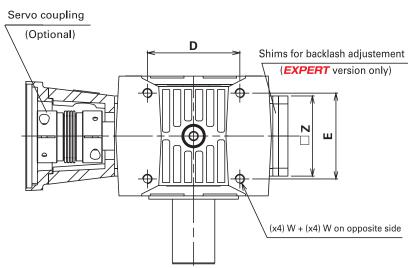
DYNABOX° OUTPUT SHAFT

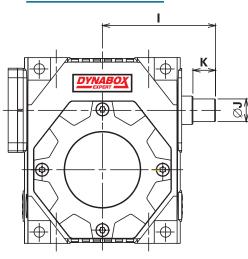
SINGLE OUTPUT SHAFT



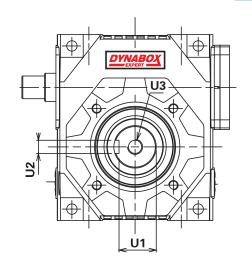


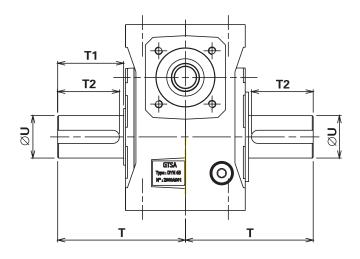
INPUT SHAFT VERSION





DUAL OUTPUT SHAFT

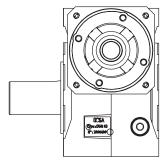




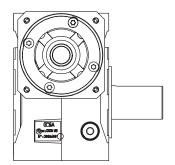
DYNABOX	35	45	55	63	75	90	110
Α	86	108	120	134	172	186	220
В	110	135	155	173	208	234	276
С	44,5	53	61	66	82	91	108
D	62	81	90	98	136	141	175
Е	56	68	78	91	110	130	140
F	86	100	112	127	148	170	182
G	126	153	175	197	232	264	306
Н	52,5	62	71	78	94	106	123
I Maxi	84	105	116	126	151	168,5	189
l mini	77,5	97,5	108	116	140	153,5	177
J (j6)	12	15	18	20	24	28	32
K	17	20	22	24	28	28	36
L				see page 15			
M	65	85	100	115	130	165	200
N (j7)	50	70	80	95	110	130	165
0	7	9	9	11	11	13	13
P (Maxi)	70	83,5	91	101	124	136,5	152
Q	55	67,5	75	84	104	114,5	132
R	43	50	56	63,5	74	85	91
S	M6	M8	M8	M10	M10	M12	M12 (x8)
Т	83	107	118	135,5	151	187	208
T1	38(*)	55(*)	60(*)	70	75	100	115
T2	35	50	55	65	70	95,5	110
U (h6)	25	35	40	45	50	65	75
U1	21	30	35	39,5	44,5	58	67,5
U2	8	10	12	14	14	18	20
U3	M10	M12	M16	M16	M16	M20	M20
W	M6	M8	M8	M10	M10	M12	M12
X	35	45	55	63	75	90	110
Υ	3	3	3,5	3,5	4	4	5
Z	58	75	75	85	95	115	115
WEIGHT (kg)	3,6	6,8	9,2	15,2	22,2	35,1	50,3
	(*): No should	er on shaft					

MOUNTING POSITIONS





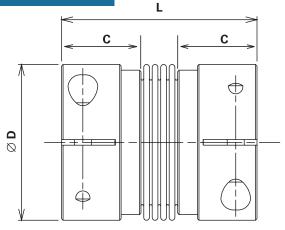
H2

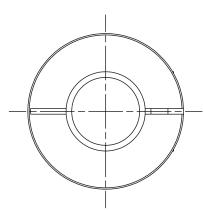


CONNECTING KIT DYNABOX®

TORSION STIFF COUPLINGS

-SERVOMOTOR





Coupling reference		AM N° 5	AM N° 10	AM N° 15	AM N° 30	AM N° 60	AM N° 80
∅ servo shaft and DYNABOX shaft	mm	<∅16	<∅ 24	<∅28	<Ø32	<Ø35	<∅42
Servo nominal torque	Nm	5	10	15	30	60	80
Servo peak torque	Nm	7,5	15	22,5	45	90	120
Ø D	mm	32	40	49	55	66	82
L	mm	42	46	60	70	81	94
C Mounting length	mm	13	13	21,5	26	28	32,5
Polar moment of inertia	10 ⁻³ kgm²	0,01	0,02	0,05	0,09	0,18	0,54
Torsional stiffness	Nm/arcmin	2	2,6	6	11	22	37
Tightening torque of campling screws	Nm	4	4,5	9	14	35	70

Above table not valid for size 25 (contact us).

Specify the coupling reference and the servo shaft \varnothing when ordering.

Exemple : AM n° 15 \varnothing 14

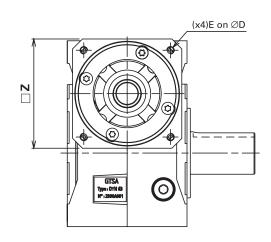
To calculate the input total inertia, add the coupling iner-

CONNECTING FLANGE

Select the required flange on page 15.

C DYNABOX

If no flange can be found in the list, supply the dimensions from A to Z, or supply the servo reference when ordering.

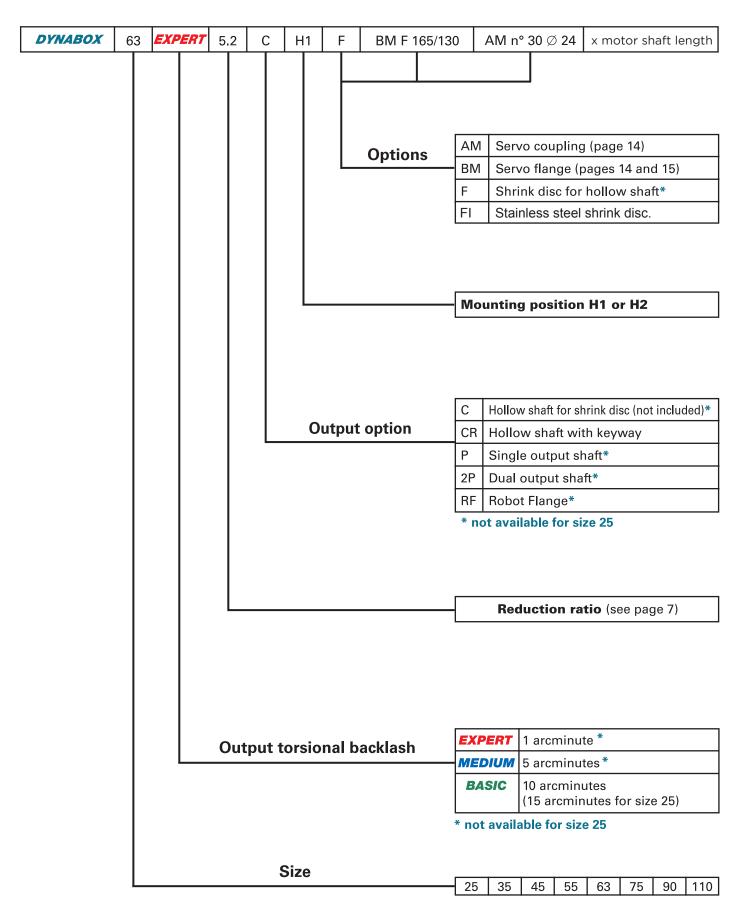


35	BM-F46/30 BM-F63/40 BM-F70/50 BM-F75/60 BM-F90/70 BM-F95/70	30 40 50 60	4 4 4	27 27	46 63	M3 M4	80 80	58 65
35	BM-F70/50 BM-F75/60 BM-F90/70 BM-F95/70	50					80	65
35	BM-F75/60 BM-F90/70 BM-F95/70		Δ					
35	BM-F90/70 BM-F95/70	60		32	70	M4	85	65
35	BM-F95/70		4	32	75	M5	85	65
35		70	4	32	90	M5	85	90
35		70	4	32	95	M6	85	90
35	BM-F100/80	80	5	42	100	M6	95	90
35	BM-F115/95	95	5	52	115	M8	105	105
	BM-F63/40	40	4	32	63	M4	111	65
	BM-F70/50	50	4	35	70	M4	114	65
	BM-F75/60	60	4	35	75	M5	114	65
	BM-F90/70	70	4	45	90	M5	124	90
	BM-F95/50	50	4	35	95	M6	114	90
	BM-F100/80	80	5	45	100	M6	124	90
	BM-F115/95	95	5	45	115	M8	124	118
	BM-F130/95	95	5	55	130	M8	134	118
	BM-F130/110	110	5	55	130	M8	134	118
	BM-F145/110	110	6,5	65	145	M8	144	118
45	BM-F70/50	50	4	35	70	M4	135	81
	BM-F75/60	60	4	35	75	M5	135	81
	BM-F90/70	70	4	45	90	M5	145	91
	BM-F95/50	50	4	35	95	M6	135	91
	BM-F100/80	80	5	45	100	M6	145	91
	BM-F115/95	95	5	45	115	M8	145	115
	BM-F130/95	95	5	55	130	M8	155	115
	BM-F130/95	110	5	55	130	M8	155	115
	BM-F145/110	110	6,5	65	145	M8	165	140
	BM-F165/110	110	6,5	55	165	M10	155	140
	BM-F165/130	130	6,5	55	165	M10	155	140
55	BM-F70/50	50	6,5	35	70	M4	146	81
55	BM-F75/60			35				
	BM-F90/70	60 70	4	45	75 90	M5 M5	146 156	81 91
	BM-F95/50	50	4	35	95	M6	146	91
	BM-F100/80	80	5	45	100	M6	156	91
	BM-F115/95	95	5	45	115	M8	156	115
	BM-F130/95	95	5	55	130	M8	166	115
	BM-F130/110	110	5	55	130	M8	166	115
	BM-F145/110	110	6,5	65	145	M8	176	140
	BM-F165/110	110	6,5	55	165	M10	166	140
	BM-F165/130	130	6,5	55	165	M10	166	140
63	BM-F70/50	50	4	40	70	M4	160	102
	BM-F75/60	60	4	40	75	M5	160	102
	BM-F90/70	70	4	46	90	M5	166	102
	BM-F100/80	80	5	46	100	M6	166	102
	BM-F115/95	95	5	46	115	M8	166	115
	BM-F130/95	95	5	56	130	M8	176	115
	BM-F130/110	110	5	56	130	M8	176	115
	BM-F145/110	110	6,5	66	145	M8	186	140
	BM-F165/110	110	6,5	56	165	M10	176	140
	BM-F165/130	130	6,5	56	165	M10	176	140
	BM-F200/114,3	114,3	6,5	86	200	M10	206	185
	BM-F215/130	130	6,5	66	215	M12	186	185
	BM-F215/180	180	6,5	66	215	M12	186	185
75	BM-F70/50	50	4	40	70	M4	185	102
	BM-F75/60	60	4	40	75	M5	185	102
	BM-F90/70	70	4	46	90	M5	191	102
	BM-F100/80	80	5	46	100	M6	191	102
	BM-F115/95	95	5	46	115	M8	191	115
	BM-F130/95	95	5	56	130	M8	201	115
	BM-F130/110	110	5	56	130	M8	201	115
	BM-F145/110	110	6,5	66	145	M8	211	140
	BM-F165/110	110	6,5	56	165	M10	201	140
	BM-F165/130	130	6,5	56	165	M10	201	140
	BM-F200/114,3	114,3	6,5	86	200	M10	231	185
	BM-F215/130	130	6,5	66	215	M12	211	185
	BM-F215/180	180	6,5	66	215	M12	211	185
90	BM-F100/80	80	4	46	100	M6	205,5	123
-	BM-F115/95	95	5	46	115	M8	205,5	123
	BM-F130/95	95	5	56	130	M8	215,5	123
	BM-F130/99	110	5	56	130	M8	215,5	123
	BM-F145/110	110	6,5	66	145	M8	225,5	140
	BM-F165/110	110	6,5	56	165	M10	225,5	140
	BM-F165/130	130	6,5	56	165	M10	215,5	140
	BM-F200/114,3	114,3	6,5	86	200	M10	245,5	185
	BM-F215/130	130	6,5	66	215	M12	225,5	185
	BM-F215/180	180	6,5	66	215	M12	225,5	185
440	BM-F300/250	250	6,5	88	300	M14	247,5	260
110	BM-F100/80	80	4	46	100	M6	229	123
	BM-F115/95	95	5	46	115	M8	229	123
	BM-F130/95	95	5	56	130	M8	239	123
	BM-F130/110	110	5	56	130	M8	239	123
	BM-F145/110	110	6,5	66	145	M8	249	140
	BM-F165/110	110	6,5	56	165	M10	239	140
	BM-F165/130	130	6,5	56	165	M10	239	140
	BM-F200/114,3	114,3	6,5	86	200	M10	269	185
	BM-F215/130	130	6,5	66	215	M12	249	185
	BM-F215/180	180	6,5	66	215	M12	249	185

^{*} A spacer can be supplied if motor shaft length is longer than C dimension (specify it when ordering)

HOW TO ORDER

Use following codification to order your DYNABOX.



SERVO GEARSETS **DYNASET** WITH ADJUSTABLE BACKLASH

When **DYNABOX** servo gearheads cannot be used, the **DYNASET** servo gearsets, to be mounted in customed housing, are an interesting alternative.

Their performance are comparable to complete reducers, assuming following recommendations:

MOUNTING

Wormshaft: housing and bearing design should allow an axial shifting, necessary for backlash adjustment. The total adjustment range is obtained with a permissible displacement equal to W, as per page 18.

It is recommended, whenever possible, to use our backlash adjustment device, which is delivered preset (see page 19).

The front ball bearing (see page 19) must be engaged on the shaft after the complete gear assembly, and before the backlash adjustment operation.

Wheel ring: Arrows shown on wormshaft and wheel ring must be lined up during assembly (see page 18). As the bore \emptyset A tolerance is H6, it is recommended to grind the shaft with a tolerance k5. This will eliminate any runnout between the wheel ring and the shaft. In order to facilitate the connection between the 2 parts, heat the wheel ring up to 50°C.

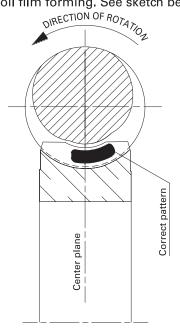
After cooling, check that the wheel ring is no buckled, by applying a dial indicator on its face, while rotating the shaft.

Then, finish the pins bores ((xY) \emptyset S, see page 18) of the 2 assembled parts, as they are delivered pre-bored only. Otherwise, screws can be also used.

LUBRICATION

The best gear performances in terms of efficiency, life, temperature, will be achieved with a polyglycol lubricant such as MOBIL GLYGOYLE 30 or equivalent. The ratings shown on page 7 can be considered only if this kind of

It is recommended to use tapper roller bearings on output shaft, in order to allow an axial displacement of the wheel, during the mounting operations, to center the gear correctly. The contact pattern can be checked with Prussian blue or any similar product. A good pattern should be located slightly on the right side of the wheel tooth flanks (on both sides). It is normal to have no contact on the left side of the flanks. This gap is necessary for a good oil film forming. See sketch below.



lubricant is used.

Before use, check that the inner paint of the housing is compatible (Epoxy paints can be used).

Otherwise, use MOBIL SHC 634 or equivalent.

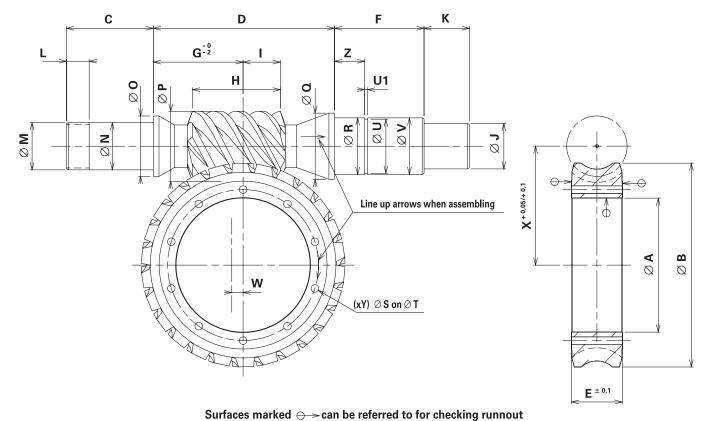
BACKLASH ADJUSTMENT

The accuracy of our servo gearsets **DYNASET** allows them to be set to less than 1 arcminute of backlash, without any efficiency or torque capacity losses (it is assumed than custom machined parts and mounting are correct).

If our backlash adjustment device is used, simply remove some shims (delivered) between the bearing bush and the housing, until the desired backlash value is obtained. For high speed applications, a backlash between 0,5 to 1 arcminute is recommended.

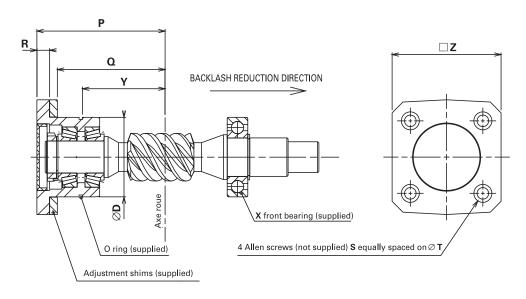
For very intermittent applications (rotary tables or milling heads of CNC machines for ex.), a backlash down to zero is tolerated, as soon as the no load input torque does not vary more than \pm 30 % around the average value.

SERVO GEARSET



DYNASET	35	45	55	63	75	90	110
A (H6)	32	47	52	71	82	103	136
B Maxi	55	78	92	108	124,5	157,4	191,4
С	33	38	43	46	52	57	60
D	63,5	80	85	97	126,5	144	173
Е	14	19	28	27	32	38	40
F	30,5	40	46	46,5	53,5	57,5	56
G	32	40	42	47,5	63	70	82
H Maxi	31	37,6	43,7	49,7	54,7	67,5	75,5
I Maxi	13,5	17,3	20,5	23,4	26,3	33,2	36,1
J (j6)	12	15	18	20	24	28	32
K	17	20	22	24	28	28	36
L	8	9	10	11	13	14	15
M	M15 x 1,00	M17 x 1,00	M20 x 1,00	M25 x 1,50	M 30 x 1,50	M35 x 1,50	M40 x 1,50
N (k6)	15	17	20	25	30	35	40
0	20	24	26	32	37	42	47
P Maxi	24,7	26,5	32,5	37,1	44,2	50,8	56,5
Q	24	30	30	35	42	42	47
R (k6)	20	25	25	30	35	35	40
S	3,5	4	4	4	5	6	8
Т	38	54,5	60	79	91	113	148
U	19	23,9	23,9	28,6	33	33	37,5
U1	1,3	1,3	1,3	1,6	1,6	1,6	1,85
V (h11)	20	25	25	30	35	35	40
W	5	5	5	6	6	6	6
X	35	45	55	63	75	90	110
Υ	4	6	8	10	10	10	10
Z	8	12	15	16	17	17	18

BACKLASH ADJUSTMENT DEVICE FOR **DYNASET**



DYNASET	35	45	55	63	75	90	110
D	42	47	52	62	72	72	80
Y Maxi	43,5	54	58	65	84	94	110
Y Mini	38,5	49	53	59	78	88	104
P Maxi	69	83	91	100	121	131,5	150
P Mini	64	78	86	94	115	125,5	144
Q	55	67,5	75	84	104	114,5	132
R	9	10,5	10	10	11	11	12
S	M6	M6	M8	M8	M10	M10	M10
Т	55	65	66	80	90	100	100
Z	58	75	75	95	95	115	115
X	16004	6005	6205	6206	6207	6207	6208

The backlash adjustment device is delivered mounted and preset.

Bearings are factory preloaded.

Backlash adjustment is operated with shims located between the housing and the bearing bush.

HOW TO ORDER

Use following codification to order your **DYNASET.**

