

Our Production Program



ZZ Bevel Gear Units
up to 7000 Nm nominal torque
or 500 kW power. ZZ Servoline® series
for high-dynamic drives



ZZ Screw Jack Units
with trapezoidal or
ball screw spindle
for loading up to 1000 kN



ZZ Indexing Units
as globoid, cylinder- or
radial cam gear units
with pendular or stepping function



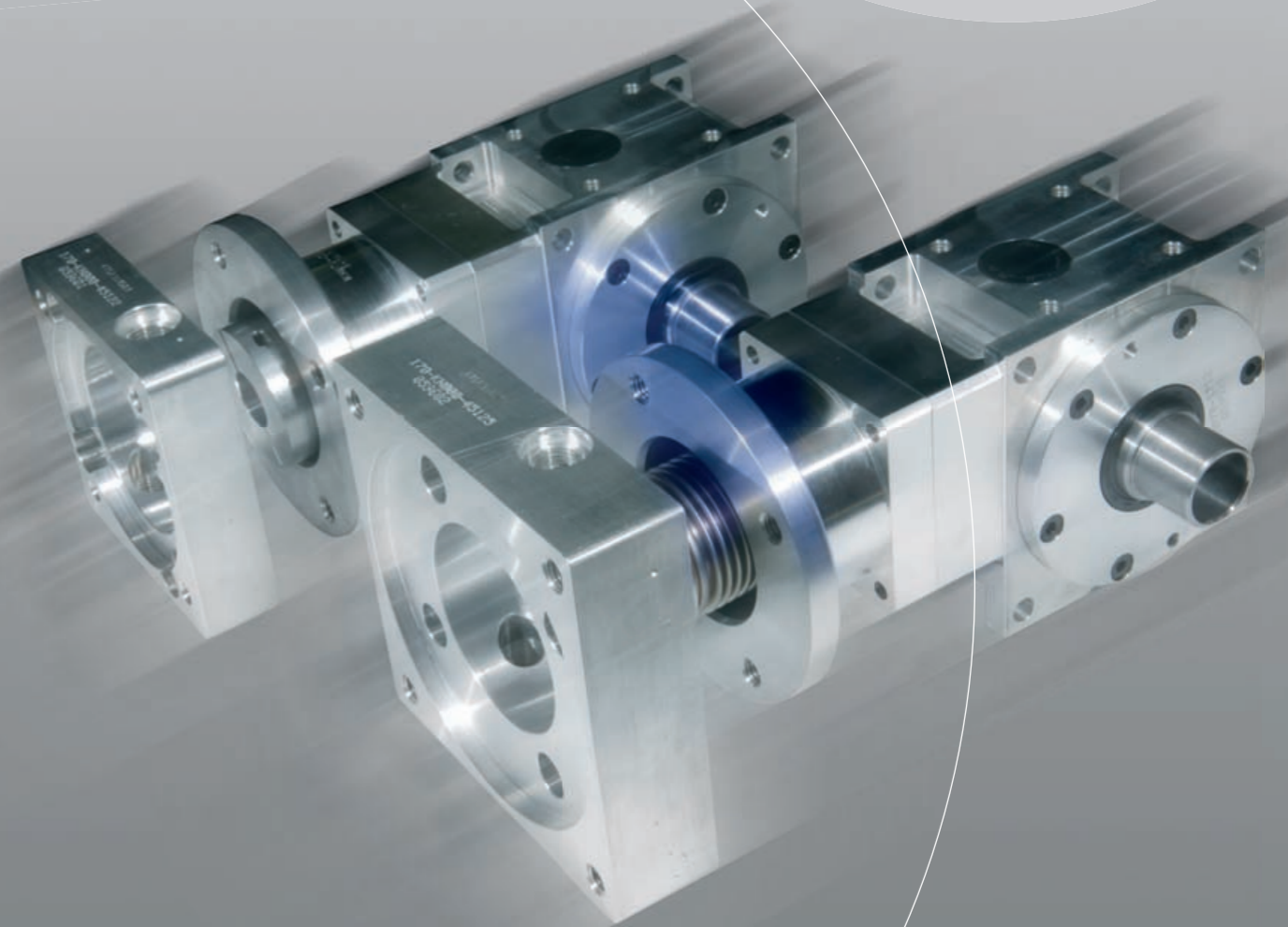
ZZ Spiral Bevel Gears
with - palloid gear tooth system
- Cyclo-palloid gear tooth system
- HPG-S gear tooth system

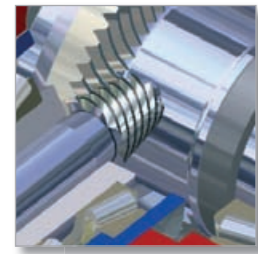


ZZ Cams
as - Globoid cams
- Axial cams
- Radial cams



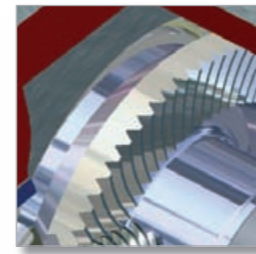
ZZ Special Gear Units
for versatile use in many
different types of application





GEAR RATIOS

- $i = 3:1$
- $i = 4:1$
- $i = 5:1$
- $i = 6:1$
- $i = 8:1$
- $i = 10:1$
- $i = 12:1$
- $i = 15:1$



SPIRAL BEVEL GEAR

- Hypoid gear set
- Klingelnberg Palloid tooth system
- Low noise
- Smooth running
- Torsional backlash < 4 arcmin

CHARACTERISTIC VALUES

- 6 Sizes of model
- 8 Gear ratios
- 5 Different drive shafts
- 240 Standard versions

MATERIALS

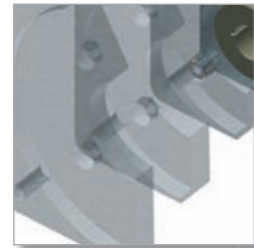
- Housing and flange of aluminium
- Shafts of tempered steel
- Low gear weight

EXPLOSION PROTECTION

- Suitable for use in areas where there is a danger of explosion
- ATEX (upon request)
- Ex II 2 G/D c, k T4/120°C

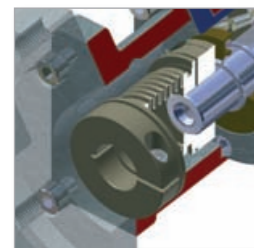
VARIANTS

- Gear with motor flange (M1...M5)
- Gear without motor flange (K1...K5)
- Solid shaft, hollow shaft, Taper lock assembly (optional)



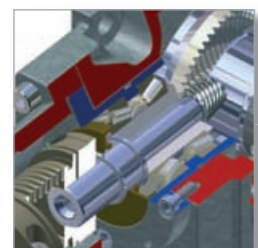
MODULARITY

- Exchangeable flange plates
- Highly flexible
- Suitable for all currently available servo motors
- More than 120 different motor flange plates available



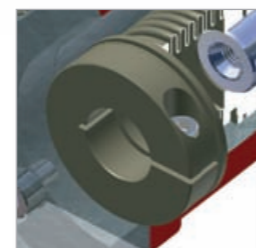
SERVOMOTOR CONNECTION

- Flange dome, coupling and exchangeable flange plate are prepared to an optimum for fitting to more than 3.000 motor variants



SPEED RANGE

- Nominal input speed up to 6000 r.p.m.
- Maximum input speed up to 8000 r.p.m.



COUPLING

- Torsionally rigid
- High degree of smooth running accuracy
- Matched for all currently available servo motors

SIZES / VARIANTS / OUTPUT TORQUE

	K1	K2	K3	K4	K5
Without motor flange					
With motor flange					
6 Sizes					

SIZES AND OUTPUT TORQUE

- KN035 35 Nm
- KN070 70 Nm
- KN140 140 Nm
- KN260 260 Nm
- KN700 700 Nm
- KN1400 1400 Nm

LUBRICATION

- Lifetime lubrication, Factory filled
- Suitable for any optional mounting position

The ZZ-SERVOLINE® series of bevel gear boxes has been conceived as compact drive units specially designed for highly dynamic applications in automation engineering. The requirements of operating with servomotors have been taken into consideration in their construction and allow variety and flexibility in their application with drive speeds up to 8000 r.p.m. and output torque up to 1400 Nm.

With 6 sizes of gear, 8 gear ratio's and 5 types of output shaft, the series offers 240 standardised model variants. Extreme flexibility is achieved by the modular concept of the motor flange at the input side, whereby exchangeable and standardised motor flange plates at the gear-side dome can be selected and fixed, according to requirements. The system construction kit includes more than 120 different types of motor flange plates that allows almost any of the servomotors available on the market, to be fitted to the ZZ-SERVOLINE® system.

The gear box can be operated with or without motor flange. A balanced design of the spiral bevel gear and amply dimensioned bearing assemblies, form the basis for a high degree of operational safety. The single-stage type of gear with a range of gear ratio's from $i = 3:1$ to $i = 15:1$, is achieved with a special hypoid gearing. For the drive side, single- and double-ended solid and hollow shafts, are available.

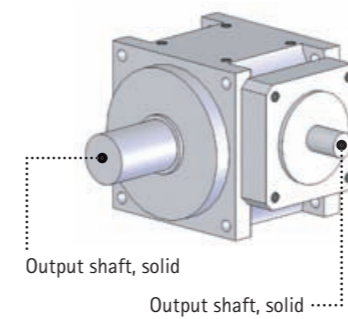
The ZZ-SERVOLINE® series takes into account all demands that are made of modern gearing concepts. The series exhibit minimum torsional backlash, high degree of rigidity, low overall weight, reduced mass inertia, high efficiency with a universal fitting position, and offers an almost maintenance-free operation.

KN035 to KN1400 Performance Summary

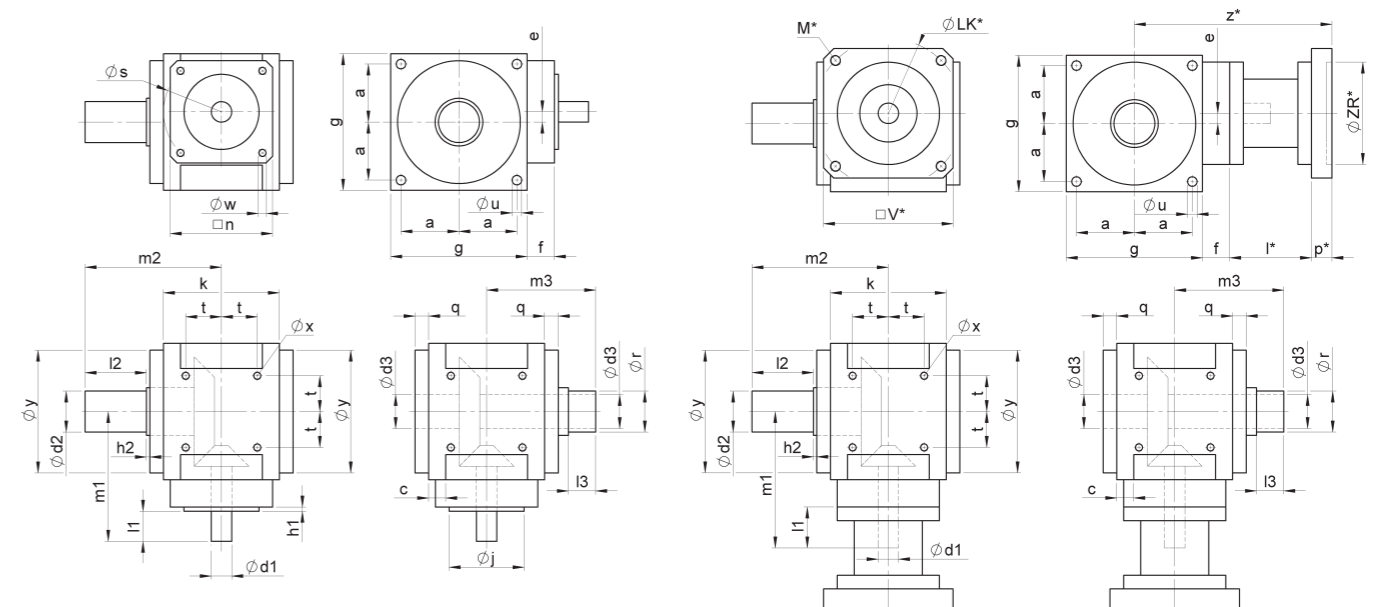
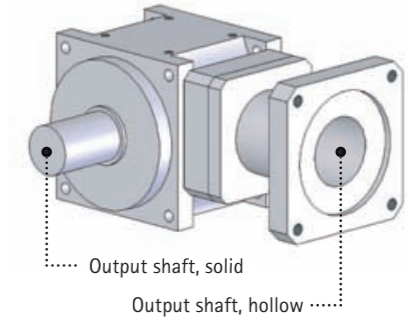
Feature / Size	Units	i	KN035	KN070	KN140	KN260	KN700	KN1400
Nominal output torque ¹⁾	Nm	3:1	35	70	140	260	700	1400
		4:1	34	68	136	255	690	1350
		5:1	33	65	131	250	660	1280
		6:1	32	61	124	240	620	1200
		8:1	30	56	115	220	570	1100
		10:1	28	51	105	200	500	980
		15:1	20	40	80	160	350	700
max. Acceleration torque ²⁾	Nm	-	= 1,5 * Nominal output torque					
Emergency Off torque ³⁾	Nm	3-6	60	120	240	480	1200	2500
		8-10	50	100	200	400	900	2000
		12-15	40	80	150	300	700	1500
max. Drive speed	rpm	-	8000	8000	7000	6000	5000	3000
Nominal drive speed	rpm	-	6000	6000	5000	4000	3000	2500
Torsional backlash	arcmin	-	< 6	< 6	< 5	< 5	< 4	< 4
	arcmin	-	reduced torsional backlash, by request					
Efficiency ⁴⁾	%	3-8	> 94	> 94	> 94	> 94	> 94	> 94
		10-15	> 91	> 91	> 91	> 91	> 91	> 91
Mass moment of inertia referred to the input shaft (without coupling)	kgcm ²	3:1	0,584	1,32	3,41	8,49	29,7	91,3
		4:1	0,439	0,993	2,46	6,03	20,0	61,2
		5:1	0,357	0,834	1,98	4,79	14,7	45,1
		6:1	0,258	0,747	1,24	4,04	11,7	34,9
		8:1	0,214	0,654	0,958	3,36	9,08	25,8
		10:1	0,192	0,612	0,842	3,04	7,85	21,8
		15:1	0,170	0,568	0,715	2,72	6,55	19,5
Weight	kg	-	3	6	10	17	39	55
Lubrication	-	Synthetic hypoid oil, CLP conform to DIN 51517						
Surface protection	-	Housing primed (Aluminum), shafts with corrosion protection						
Mounting position	-	optional						
Permissible gear temperature	°C	-10°C to +90 °C						
Protection class	-	IP54						
Service life	hrs	> 25.000						
ATEX conformity	-	Ex II 2 G / D c, k T4 / 120°C (on request)						

1) Cyclic operating, S5; 2) max 1000 cycles per hour; 3) max 1000 x during service life of gear; 4) at the nominal torque

ZZ-Servoline® without motor flange
Construction K1...K5

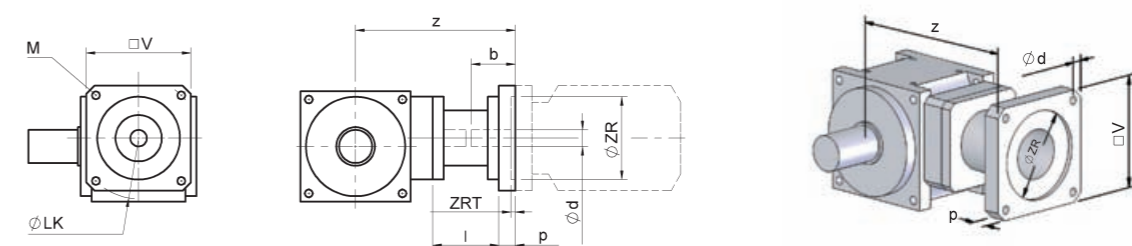


ZZ-Servoline® with motor flange
(Motor dome, motor flange plate, coupling)
Construction M1...M5



Gear size	Housing dimensions																										
	a	c	d1 _{f6}	d2 _{k6}	d3 ^{H7}	e	f	g	h1	h2	j _{g7}	k	l1	l2	l3	m1	m2	m3	n	q	r _{f7}	s	t	u	w	x	y _{g6}
KN035	39	8,5	14	20	20	9	36	90	4,5	1,5	46	60	15	35	23	101	80	71,5	59	13,5	24	67,2	22	6,6	M6	M6	89
KN070	49	10	18	24	25	14	28,5	115	10,5	1,5	73	80	25	40	25	123	90	79,5	78	8,5	30	90	27	9	M6	M8	105
KN140	59	11	22	32	30	18	26	140	12	2	85	100	30	50	27	139	110	93	92	8	36	103	33	11	M8	M10	125
KN260	72	13	28	40	40	23	27	170	12	2	95	120	35	60	32	160	130	107	100	8	50	115	40	14	M8	M12	150
KN700	91	15,5	32	55	55	32	37,5	215	12	2	119	146	38	90	36	197	175	127	132	10	68	150	50	17,5	M10	M16	195
KN1400	112	17	40	70	70	42	47	260	13	2	137	196	45	110	40	236	220	159	160	10	80	185	70	17,5	M12	M16	245

^{*)} Dimensions l', LK', M', p', V', ZR', z' to the motor flange, see Flange Dimensions



Note: In its short form, the order code refers to the ZZ-Servoline® without motor; the complete coding includes the basic gear, plus the motor dome, motor flange plate and coupling.

Order Code Flange Dimensions KN035 and KN070



Flange Dimensions KN140 to KN1400



Order Code

KN - - - - -

Sizes	Code
KN035	0035
KN070	0070
KN140	0140
KN260	0260
KN700	0700
KN1400	1400

Torsional backlash	Ratio	
	Standard	ATEX
standard	S	X
reduced	R	Y

Ratio	Code
3:1	03
4:1	04
5:1	05
6:1	06
8:1	08
10:1	10
12:1	12
15:1	15

Variants	Code
K1, M1	1
K2, M2	2
K3, M3	3
K4, M4	4
K5, M5	5

Example: diameter of motor shaft	Code
metrical d= 24mm	024
US d= 19.05mm	3/4

Flange type	Code
Example: A4	A4
C8	C8
Y5	Y5

Accordant to flange table

Basis gear (without motor flange) →

Basis gear + flange combinations (gear with motor flange, dome and coupling) →

Example ordering code:
 KN1400X084 KN, Size 1400 ATEX, Standard torsional backlash Ratio i= 8:1 Variant K4
 KN0035R103-014A3 KN, Size 035 Reduced Torsional backlash Ratio i= 10:1 Variant M3 Motor shaft d=14mm Flange code A3

ZZ-Servoline® KN035										
ZR	LK	M	Motorshaft		ZRT	V	l	p	z	Flange Code
[mm]	[mm]	[mm]	b _{min} ...d _{max} [mm]	d _{min} ...d _{max} [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
30	46	M4	18...38	3...24	4	65	40	19	140	A1*
36	70,7	M4	18...38	3...24	4	65	40	19	140	A2*
40	63	M4	18...38	3...24	3,5	65	40	19	140	A3*
40	63	M4	20...47	3...19	4,3	80	42	26	149	W1
40	63	M5	18...38	3...24	3,5	65	40	19	140	A4*
40	70	M4	18...38	3...24	3,5	65	40	19	140	A5*
50	60	M4	18...38	3...24	3,5	65	40	19	140	A6*
50	70	M4	18...38	3...24	3,5	65	40	19	140	A7*
50	70	M4	20...47	3...19	4,3	80	42	26	149	W2
50	70	M5	18...38	3...24	3,5	65	40	19	140	A8
50	70	M5	20...47	3...19	4,3	80	42	26	149	W3
50	95	M6	18...38	3...24	4	80	40	19	140	A9
50	95	M6	20...47	3...19	4,3	80	42	26	149	W4
50	100	M6	18...38	3...24	3,5	110	40	19	140	B1
50	100	M6	20...47	3...19	4,3	90	42	26	149	W5
60	75	M5	18...38	3...24	3,5	80	40	19	140	B2
60	75	M5	20...47	3...19	4,3	80	42	26	149	W6
60	90	M5	18...38	3...24	4	80	40	19	140	B3
70	90	M5	20...47	3...19	4,3	80	42	26	149	W7
70	90	M6	20...47	3...19	4,3	80	42	26	149	W8
80	100	M6	20...47	3...19	4,3	90	42	26	149	W9
80	100	M6	27...54	3...19	4,3	90	42	33	156	X1
80	100	M6	38...65	3...19	4,3	90	42	44	167	X2
95	115	M8	20...47	3...19	4,3	110	42	26	149	X3
95	115	M8	24...51	3...19	4,3	110	42	30	153	X4
95	115	M8	38...65	3...19	4,3	110	42	44	167	X5
95	130	M8	20...47	3...19	4,3	110	42	26	149	X6
95	130	M8	31...58	3...19	4,3	110	42	37	160	X7
110	130	M8	20...47	3...19	4,3	130	42	26	149	X8
110	130	M8	31...58	3...19	4,3	130	42	37	160	X9
110	145	M8	20...47	3...19	4,3	140	42	26	149	Y1
110	145	M8	31...58	3...19	4,3	140	42	37	160	Y2
110	145	M8	38...65	3...19	11	130	42	44	167	Y3
110	165	M10	31...58	3...19	4,3	140	42	37	160	Y4

ZZ-Servoline® KN070										
ZR	LK	M	Motorshaft		ZRT	V	l	p	z	Flange Code
[mm]	[mm]	[mm]	b _{min} ...d _{max} [mm]	d _{min} ...d _{max} [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
40	63	M4	23...53	6...28	4,3	80	65,5	26	177,5	A1
50	70	M4	23...53	6...28	4,3	80	65,5	26	177,5	A2
50	70	M5	23...53	6...28	4,3	80	65,5	26	177,5	A3
50	95	M6	23...53	6...28	4,3	80	65,5	26	177,5	A4
50	95	M6	25...60	8...30	5	110	70	28,5	184,5	W1
50	100	M6	23...53	6...28	4,3	90	65,5	26	177,5	A5
60	75	M5	23...53	6...28	4,3	80	65,5	26	177,5	A6
70	90	M5	23...53	6...28	4,3	80	65,5	26	177,5	A7
70	90	M6	23...53	6...28	4,3	80	65,5	26	177,5	A8
70	90	M6	25...60	8...30	5,5	110	70	28,5	184,5	W2
80	100	M6	23...53	6...28	4,3	90	65,5	26	177,5	A9
80	100	M6	25...60	8...30	5,5	110	70	28,5	184,5	W3
80	100	M6	30...60	6...28	4,3	90	65,5	33	184,5	B1
80	100	M6	35...70	8...30	5,5	110	70	38,5	194,5	W4
80	100	M6	41...71	6...28	4,3	90	65,5	44	195,5	B2
95	115	M8	23...53	6...28	4,3	110	65,5	26	177,5	B3
95	115	M8	25...60	8...30	5,5	110	70	28,5	184,5	W5
95	115	M8	27...57	6...28	4,3	110	65,5	30	181,5	B4
95	115	M8	41...71	6...28	4,3	110	65,5	44	195,5	B5
95	130	M8	23...53	6...28	4,3	110	65,5	26	177,5	B7
95	130	M8	25...60	8...30	5,5	120	70	28,5	184,5	W6
95	130	M8	34...64	6...28	4,3	110	65,5	37	188,5	B6
110	130	M8	23...53	6...28	4,3	130	65,5	26	177,5	B8
110	130	M8	25...60	8...30	5,5	130	70	28,5	184,5	W7
110	130	M8	34...64	6...28	4,3	130	65,5	37	188,5	B9
110	145	M8	23...53	6...28	4,3	140	65,5	26	177,5	C1
110	145	M8	25...60	8...30	6,5	130	70	28,5	184,5	W8
110	145	M8	34...64	6...28	6,5	120	65,5	37	188,5	C2
110	145	M8	34...69	8...30	6,5	130	70	37,5	193,5	W9
110	145	M8	35...70	8...30	6,5	130	70	38,5	194,5	X1
110	145	M8	40...75	8...30	6,5	130	70	43,5	199,5	X2
110	145	M8	41...71	6...28	11	130	65,5	44	195,5	C3
110	145	M8	47...82	8...30	6,5	130	70	51	207	X3
110	165	M10	25...60	8...30	6,5	140	70	28,5	184,5	X4
110	165	M10	34...64	6...28	4,3	140	65,5	37	188,5	C4
130	165	M10	35...70	8...30	6,5	140	70	38,5	194,5	X5
130	215	M12	35...70	8...30	5	200	70	38,5	194,5	X6
180	215	M12	35...70	8...30	5,5	200	70	38,5	194,5	X7

ZZ-Servoline® KN140										
ZR	LK	M	Motorshaft		ZRT	V	l	p	z	Flange Code
[mm]	[mm]	[mm]	b _{min} ...d _{max} [mm]	d _{min} ...d _{max} [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
50	95	M6	28...60	8...38	5	110	75,5	28,5	200	A1
70	90	M6	28...60	8...38	5,5	110	75,5	28,5	200	A2
80	100	M6	28...60	8...38	5,5	110	75,5	28,5	200	A3
80	100	M6	38...70	8...38	5,5	110	75,5	38,5	210	A4
95	115	M8	27...60	8...38	5,3	150	75,5	29	200,5	W1
95	115	M8	28...60	8...38	5,5	110	75,5	28,5	200	A5
95	130	M8	27...60	8...38	5,3	150	75,5	29	200,5	W2
95	130	M8	28...60	8...38	5,5	120	75,5	28,5	200	A6
110	130	M8	27...60	8...38	5,3	150	75,5	29	200,5	W3
110	130	M8	28...60	8...38	5,5	130	75,5	28,5	200	A7
110	145	M8	27...60	8...38	6,5	150	75,5	29	200,5	W4
110	145	M8	28...60	8...38	6,5	130	75,5	28,5	200	A8
110	145	M8	33...66	8...38	6,3	150	75,5	35	206,5	W5
110	145	M8	37...69	8...38	6,5	130	75,5	37,5	209	A9
110	145	M8	38...70	8...38	6,5	130	75,5	38,5	210	B1
110	145	M8	42...75	8...38	6,5	150	75,5	44	215,5	W6
110	145	M8	43...75	8...38	6,5	130	75,5	43,5	215	B2
110	145	M8	50...82	8...38	6,5	130	75,5	51	222,5	B3
110	165	M10	27...60	8...38	5,3	150	75,5	29	200,5	W7
110	165	M10	28...60	8...38	6,5	140	75,5	28,5	200	B4
114,3	200	M12	27...60	8...38	5,3	180	75,5	29	200,5	W8
114,3	200	M12	47...80	8...38	7,5	180	75,5	49	220,5	W9
130	165	M10	27...60	8...38	5,3	150	75,5	29	200,5	X1
130	165	M10	33...66	8...38	6,3	150	75,5	35	206,5	X2
130	165	M10	38...70	8...38	6,5	140	75,5	38,5	210	B5
130	215	M12	27...60	8...38	5,3	200	75,5	29	200,5	X3
130	215	M12	38...70	8...38	5	200	75,5	38,5	210	B7
180	215	M12	27...60	8...38	5,3	200	75,5	29	200,5	X4
180	215	M12	38...70	8...38	5,5	200	75,5	38,5	210	B6
180	215	M12	47...80	8...38	5,3	200	75,5	49	220,5	X5

ZZ-Servoline® KN700										
ZR	LK	M	Motorshaft		ZRT	V	l	p	z	Flansch Code
[mm]	[mm]	[mm]	b _{min} ...d _{max} [mm]	d _{min} ...d _{max} [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
114,3	200	M12	34...82	12...45	8	200	103	32,5	280,5	A1
114,3	200	M12	42...82	12...60	8	242	103	43,5	291,5	W1
114,3	200	M12	65...113	12...45	8	200	103	63,5	311,5	A2
130	165	M10	34...82	12...45	8	200	103	32,5	280,5	A3
130	215	M12	34...82	12...45	8	200	103	32,5	280,5	A4
180	215	M12	34...82	12...45	8	200	103	32,5	280,5	A5
180	215	M12	62...110	12...45	8					