

## 6.3.10 Type V 160 – Standard bevel gearboxes



### Characteristics

Characteristic	Standard	Option
<b>Toothing</b>	Spiral toothed bevel gear set	See chapter 6.2.1
<b>Gear ratio</b>	1:1 to 6:1	
<b>Housing / Flanges</b>	Grey cast iron; steel	
<b>Threaded mounting hole</b>	On all housing surfaces without flange and on all flanges.	See chapter 6.2.3
<b>Shaft</b>	Material 1 C45, shaft ends greased Fit with ISO 6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
<b>Hollow shaft</b>	Material 1 C45, shafts greased Fit with ISO 7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
<b>Radial shaft seal ring</b>	NBR, form A	See chapter 4.8
<b>Ambient temperature</b>	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
<b>Circumferential backlash</b>	< 30 arcmin	See chapter 6.2.10
<b>Protection class</b>	IP 54	See chapter 4.5
<b>Corrosion protection</b>	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
<b>Bearing life L10h</b>	more than 15,000h	See chapter 4.9.1
<b>Oil change intervals</b>	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 6.2.8
<b>Lubricant</b>	Synthetic lubricants	See chapter 6.2.8

## Performance data

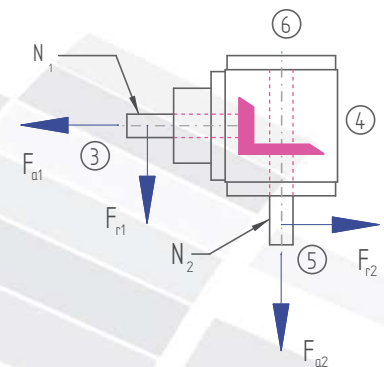
$n_1$ [rpm]	1:1		1.5:1			2:1			3:1			4:1			5:1			6:1			
	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]	$n_2$ [rpm]	$P_{1N}$ [kW]	$T_{2N}$ [Nm]
3000				2000	40.78	185	1500	28.11	170	1000	20.94	190	750	14.88	180	600	11.90	180	500	7.09	129
2400	2400	57.67	218	1600	36.15	205	1200	25.53	193	800	17.81	202	600	13.23	200	480	10.48	198	400	5.98	136
1500	1500	42.99	260	1000	27.78	252	750	20.25	245	500	12.68	230	375	9.09	220	300	7.11	215	250	3.95	143
1000	1000	31.96	290	667	20.59	280	500	14.88	270	333	8.99	245	250	6.61	240	200	4.96	225	167	3.01	164
750	750	25.63	310	500	16.26	295	375	11.57	280	250	6.89	250	188	5.17	250	150	3.97	240	125	2.43	176
500	500	18.19	330	333	11.56	315	250	8.27	300	167	4.79	260	125	3.58	260	100	2.76	250	83	1.72	187
250	250	9.64	350	167	6.07	330	125	4.41	320	83	2.56	280	63	1.86	270	50	1.49	270	42	0.92	199
50	50	2.09	380	33	1.29	355	25	0.98	355	17	0.57	305	13	0.39	280	10	0.32	290	8	0.18	197
$P_{1Nt}$ [kW]	15.0			15.0			15.0			15.0			15.0			15.0			15.0		
$T_{2max}$ [Nm]	660			650			650			457			422			420			350		

## Permissible radial force $F_{r1}$ and axial force $F_{a1}$ on shaft $N_1$

$n_1$ [rpm]	3000		1000		500		250		100		50	
$T_2$ [Nm]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]
< 220	1200	600	1600	800	1900	950	2200	1100	2850	1425	3300	1650
> 220	1000	500	1340	670	1590	795	1840	920	2380	1190	2750	1375

## Permissible radial force $F_{r2}$ and axial force $F_{a2}$ on shaft $N_2$

$n_2$ [rpm]	3000		1000		500		250		100		50	
$T_2$ [Nm]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]	$F_r$ [N]	$F_a$ [N]
< 220	2000	1000	2800	1400	3300	1650	4000	2000	5000	2500	6500	3250
> 220	1670	835	2340	1170	2750	1375	3340	1670	4170	2085	5420	2710

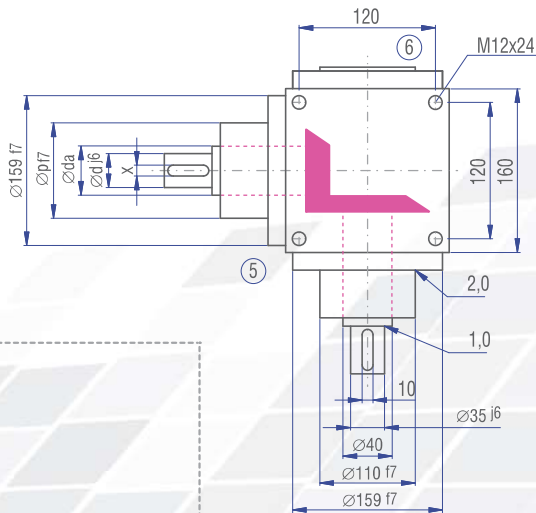
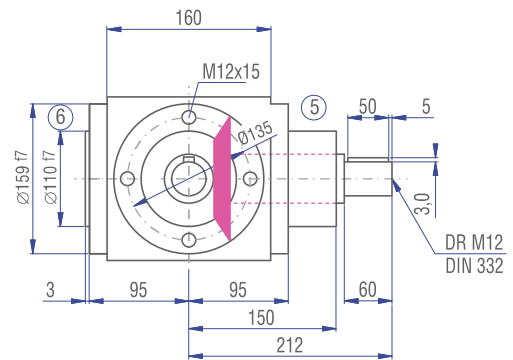
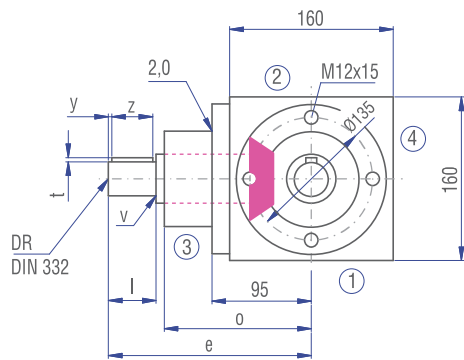
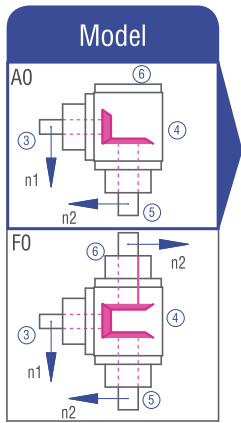


## Inertia moments/mass

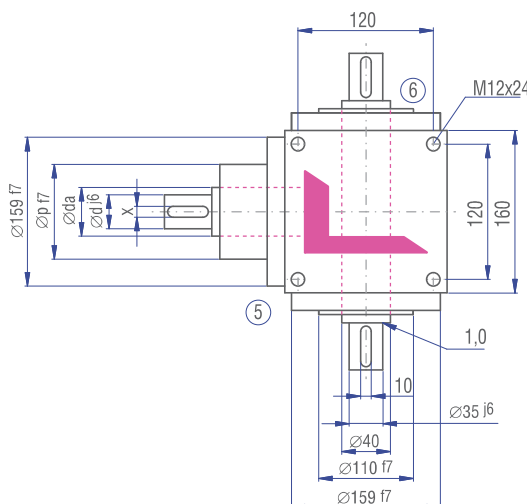
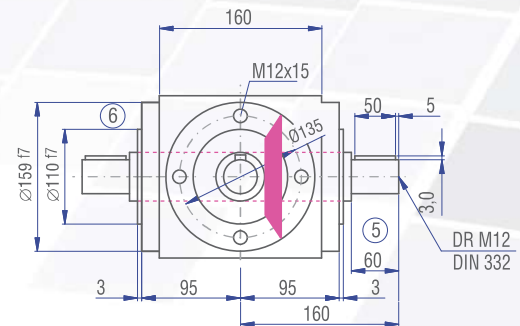
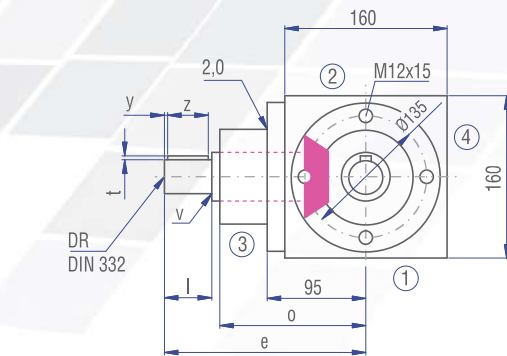
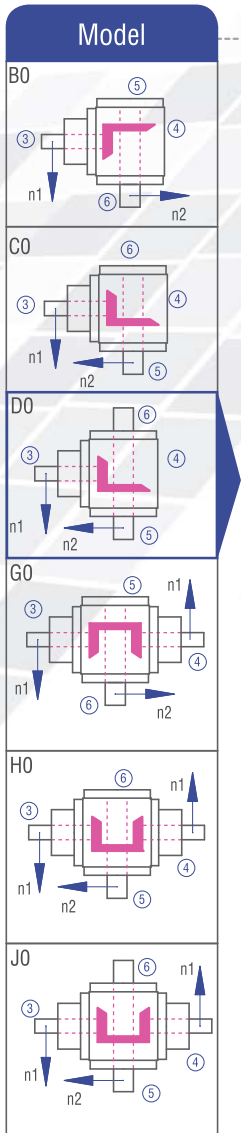
Inertia moment  $J_1$  related to the fast-rotating shaft ( $N_1$ )

Model	Inertia moment [kgcm <sup>2</sup> ]							Mass [kg]
	1:1	1.5:1	2:1	3:1	4:1	5:1	6:1	
A0	29.6710	19.6374	12.3589	8.9516	6.4348	2.2733	2.0901	28.5
B0	31.5527	32.0243	20.1006	12.0803	8.4198	3.6887	2.9407	28.0
C0	31.5527	32.0243	20.1006	12.0803	8.4198	3.6887	2.9407	28.0
D0	32.5820	32.4818	20.3579	12.1947	8.4841	3.7299	2.9693	28.5
E0N	34.3851	33.1416	20.6658	12.3315	8.5611	3.7791	3.0048	27.0
E0S	40.6750	35.9371	22.2382	13.0304	8.9542	4.0307	3.1795	27.5
F0	44.5065	26.2309	16.0678	10.6000	7.3620	2.8667	2.5022	35.0
G0	46.3882	45.0681	28.7506	19.3835	13.9274	5.3686	4.6187	34.5
H0	46.3882	45.0681	28.7506	19.3835	13.9274	5.3686	4.6187	34.5
J0	47.4175	45.5256	29.0079	19.4979	13.9917	5.4098	4.6473	35.0
K0N	49.2206	46.1854	29.3158	19.6347	14.0687	5.4590	4.6828	34.0
K0S	55.5105	48.9809	30.8882	20.3336	14.4618	5.7106	4.8575	34.5

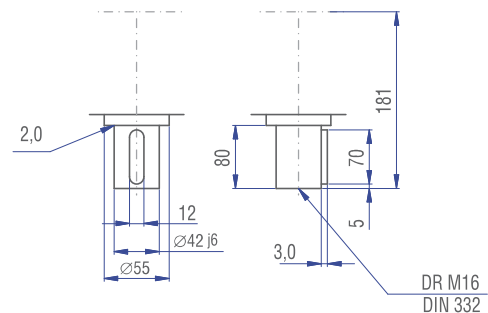
# 6.3.10 Type V 160 – Standard bevel gearboxes

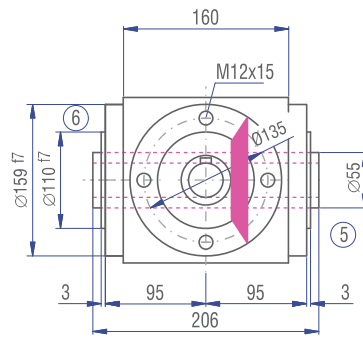
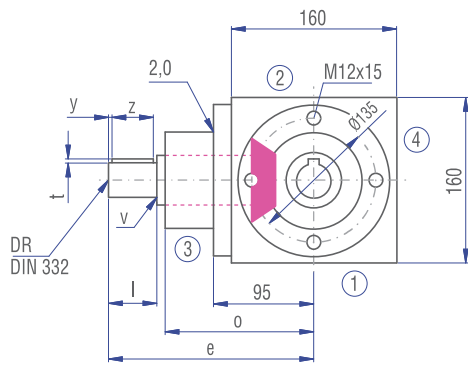


	Gear ratio						
	1:1	1.5:1	2:1	3:1	4:1	5:1	6:1
d [mm]	35	35	35	28	24	24	24
da [mm]	40	40	40	40	40	25	25
l [mm]	60	60	60	60	60	60	60
v [mm]	1.5	1.5	1.5	1	1	0.5	0.5
x [mm]	10	10	10	8	8	8	8
y [mm]	5	5	5	5	5	5	5
z [mm]	50	50	50	50	50	50	50
t [mm]	3	3	3	3	3	3	3
e [mm]	212	212	212	212	232	232	232
o [mm]	150	150	150	150	170	170	170
p [mm]	110	110	110	100	100	100	100
DR M	12	12	12	10	8	8	8



## Implementation VV





### Implementation

