Planetroll®
the driving power

speed variators


Planet Jupiter

planomaster®

...by far the greatest one

The unique variable-speed ATEX drive

ATmosphere EXplosive ATEX

The Jupiter

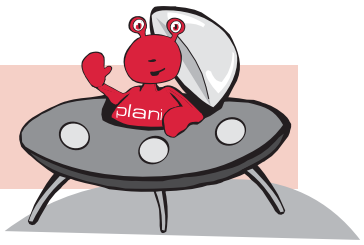
Jupiter is the king of gods in mythology. It is the largest planet of our solar system and regarded from the sun it is the fifth of it. Jupiter is a so-called gas giant – an enormous "drop" consisting of compressed hydrogen and helium. Jupiter is surrounded by 39 satellites and also a ring system, which is not to be recognized from the earth.

Jupiter is an immense giant. Its mass is 318 times as large as of our earth. Also its equatorial diameter is enormous. The diameter of the planet is about 143,000 km. This corresponds to 11 earth diameters.

Interesting facts:
Equator diameter: 142,984 km; mass: 318 times earth's mass; 1 Saturn year: 4,332.71 days
density: 1.33 g/ccm; orbit speed: 13.1 km/s; average temperature of cloud: -121 °C

page

My name is plani. It's a great honour to welcome you here and I'm pleased to accompany you through the planomaster® catalog. I am a lucky charm and also your mascot.
See how many times we will meet.



The leading speed variator – not only regarding explosion protection.

ATmosphere EXplosive ATEX

The deciding advantages

- highest output torque from speed zero
- speed variator cannot slip through
- the ATEX variable-speed drive most interesting in price for explosion-proof zones 1 and 21, as combination with motor "explosion-proof" is sufficient – motor with flameproof enclosure not necessary
- expensive and complex external ATEX control for zones 1 and 21 not necessary
- execution conform to GMP, FDA and USDA-H1 standards
- can also be supplied as silicone-free drive unit
- applicable for low temperatures (special execution)
- manual or electric remote control
- compatible for field bus systems

The outstanding technology

Torque-proportional power transmission – through that high service life and reliability. No friction at all inside the gear, torque transmission thanks to the "elastohydrodynamic effect".

The special capabilities

Speed variator with speed adjustment to speed zero, i.e. adjustable from output speed n_2 = zero as well as down to output speed n_2 = zero speed, adjustable at rest, linear setting characteristic, low-noise and low-vibration running of the speed variators.

planomaster®

- 7 sizes: MRV, MR1, MR3, MR5, MR7, MR9, MR11
- power range: 0.027 up to 7.5 kW
- high service life
- conform to ATEX for zones 1 and 21 according to Directive 94/9/EC (ATEX 95)
- expensive and complex external ATEX control for zones 1 and 21 not necessary
- zero speed variator, i.e. n_1 = motor → n_2 = 0
- highest starting and break-away torques can be realized
- conform to GMP, FDA and USDA-H1
- silicone-free execution available
- applicable for low temperature ranges
- precise speed setting – exactly reproducible
- linear setting characteristic
- no slippage of speed variator transmission parts
- mechanical and electrical control elements
- low-noise and low-vibration running
- speed setting is possible during standstill of speed variator
- in and output shaft are coaxial and have the same direction of rotation
- anti-clockwise as well as clockwise running of speed variator is possible
- internal and external speed limitation can be realized
- configured for all mounting positions
- with reduction gearboxes up to 50,000 Nm output torque

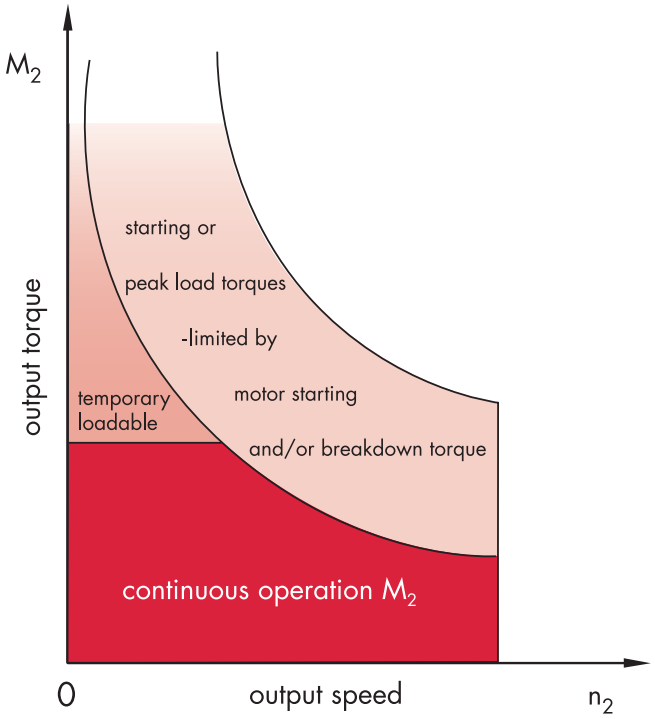


diagram 1

The special characteristic of the planomaster® speed variators is the capability to transmit highest torques even with lowest output speeds. Many applications need hihgest output torque from speed zero.

Contrary to the complete range of common friction gears, the extremely dangerous "slippage" of transmission parts respectively of speed variator is exluded by using the planetroll® speed variator planomaster®. This is extremely important for a perfect technical application. Particularly, the planetroll® speed variator is an essential partner in case of applications with continually increasing or swelling and often not defined torque. This is exactly the advantage of the planomaster® to be qualified as the perfect ATEX speed variator.

The power range of the planomaster® speed variators is from 0.027 up to 7.5 kW with a total of 7 sizes.

Ball transmission systems rotate within a fluid-bath inside the planetroll® speed variator and produce output torque by means of a traction fluid in connection with the conditions of the elastohydrodynamic power transmission.

planomaster®

particularly suitable areas of application/ branches of industry

- fabrication of agitators and mixers
- fabrication of laboratory apparatus
- pump industry
- chemical industry
- petrochemical industry
- food industry
- general engineering
- conveying machinery
- pharmaceutical industry
- plastics industry
- agricultural machinery industry
- packaging equipment industry
- extruder construction

particularly suitable processes

- agitating
- mixing
- dosing
- driving of pumps
- transporting
- dispersing
- winding/stranding
- crushing
- grinding
- feeding
- cutting
- packing
- centrifugating

comparison speed variators – previous and NEW product range

The new speed variator product range planomaster® has been strictly developed according to the regulations of the European explosion-proof Directive 94/9/EC (ATEX 95).

The replaceability of the previous speed variator product range (system AR and A) against the NEW product range planomaster® is guaranteed to the full extent regarding all main and connecting dimensions.

table 1 ◂

	previous product range	NEW product range acc. to ATEX 95 effective from July 1st, 2003
product name	no	planomaster®
outer differentiating factor	speed variator with cooling ribs	speed variator with smooth surface
system	AR	**MR**
	A	**MA***
	speed range	
input speed [rpm]	**output speed range [rpm]**	
n_1 = 900	0 - 360	**n_2 = 0 - 390**
n_1 = 1.400	0 - 550	**n_2 = 0 - 600**
n_1 = 2.800	0 - 1.150	**n_2 = 0 - 1.200**
	comparison of sizes	
description	AR0/A0	**MRV/MAV**
	AR1/A1	**MR1/MA1**
	AR2/A2	**MR3/MA3**
	AR3/A3	
	AR4/A4	**MR5/MA5**
	AR5/A5	
	AR6/A6	**MR7/MA7**
	AR7/A7	
	AR8/A8	**MR9/MA9**
	AR9/A9	
	AR10/A10	**MR11/MA11**
	AR11/A11	
number of sizes	12	**7**

* The speed variator system MA is a special execution (non-standard series to system MR), especially used for suitable applications.

See page 70 – speed variator technology

planomaster® with motor 2-pole (n_1 = 2,800 rpm)

table 2 ◂

power – speed – torque							
P_1 [kW]	n_1 [rpm]	n_2 [rpm]	$M_{2\ max.}$ with n_2 [Nm]	[rpm]	M_2 with $n_{2\ max.}$ [Nm]	[rpm]	planomaster® with motor
0,067	2.600	0 - 1.100	**0,8**	1 - 300	0,4	1.100	0,067 D2 MRV
0,09	2.800	0 - 1.200	**3**	1 - 180	0,53	1.200	0,09 D2 MR
0,12	2.800	0 - 1.200	**3**	1 - 275	0,7	1.200	0,12 D2 MR1
0,18	2.800	0 - 1.200	**3**	1 - 400	1,05	1.200	0,18 D2 MR1
0,18	2.800	0 - 1.200	**6**	1 - 180	1,5	1.200	0,18 D2 MR3
0,25	2.800	0 - 1.200	**3**	1 - 600	1,55	1.200	0,25 D2 MR1
0,25	2.800	0 - 1.200	**6**	1 - 280	1,5	1.200	0,25 D2 MR3
0,37	2.800	0 - 1.200	**6**	1 - 430	2,25	1.200	0,37 D2 MR3
0,55	2.800	0 - 1.200	**6**	1 - 650	3,3	1.200	0,55 D2 MR3
0,55	2.800	0 - 1.200	**12**	1 - 290	3,3	1.200	0,55 D2 MR5
0,75	2.800	0 - 1.200	**12**	1 - 405	4,5	1.200	0,75 D2 MR5
1,1	2.800	0 - 1.200	**12**	1 - 600	6,5	1.200	1,1 D2 MR5
1,5	2.800	0 - 1.200	**12**	1 - 820	8,8	1.200	1,5 D2 MR5
1,5	2.800	0 - 1.200	**20**	1 - 475	8,8	1.200	1,5 D2 MR7
1,85	2.800	0 - 1.200	**12**	1 - 1.020	11	1.200	1,85 D2 MR5
1,85	2.800	0 - 1.200	**20**	1 - 600	11	1.200	1,85 D2 MR7
2,2	2.800	0 - 1.200	**12**	1 - 1.200	12	1.200	2,2 D2 MR5*
2,2	2.800	0 - 1.200	**20**	1 - 715	13	1.200	2,2 D2 MR7
3,0	2.800	0 - 1.200	**45**	1 - 400	17	1.200	3,0 D2 MR9
3,3	2.800	0 - 1.200	**45**	1 - 450	19	1.200	3,3 D2 MR9
4,0	2.800	0 - 1.200	**45**	1 - 550	23	1.200	4,0 D2 MR9

* not permitted for mode of operation S1

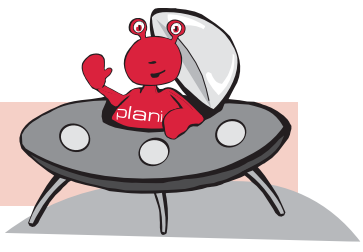
P_1 motor power
n_1 input speed
n_2 output speed
M_2 output torque speed variator
D2 motor 2-pole (n_1 = 2,800 rpm)

See diagram 2, page 10

Speed range n_2 of the speed variator can be internally limited within each range ex factory or by using the mechanical speed limitation device (DBM) as mounted part on the speed variators. A later mounting of the DBM onto the speed variator is always possible without problems.

All motors can be supplied in execution "electrically according to NEMA ".

The planetroll® speed variators of the series LVZ are available for the power range between 7.5 kW and 15 kW. With these gears n_2 = 0 is not possible.



planomaster® with motor 4-pole (n_1 = 1,400 rpm)

table 3 ◂

power – speed – torque							
P_1 [kW]	n_1 [rpm]	n_2 [rpm]	$M_{2\ max.}$ with n_2 [Nm]	[rpm]	M_2 with $n_{2\ max.}$ [Nm]	[rpm]	planomaster® with motor
0,027	1.100	0 - 470	**0,8**	1 - 160	0,45	470	0,027 D4 MRV
0,09	1.400	0 - 600	**3,5**	1 - 180	1,2	600	0,09 D4 MR1
0,12	1.400	0 - 600	**3,5**	1 - 250	1,6	600	0,12 D4 MR1
0,12	1.400	0 - 600	**7**	1 - 100	1,6	600	0,12 D4 MR3
0,18	1.400	0 - 600	**3,5**	1 - 400	2,2	600	0,18 D4 MR1
0,18	1.400	0 - 600	**7**	1 - 150	2,2	600	0,18 D4 MR3
0,25	1.400	0 - 600	**7**	1 - 220	3,1	600	0,25 D4 MR3
0,37	1.400	0 - 600	**7**	1 - 350	4,4	600	0,37 D4 MR3
0,37	1.400	0 - 600	**14**	1 - 160	4,4	600	0,37 D4 MR5
0,55	1.400	0 - 600	**14**	1 - 250	6,5	600	0,55 D4 MR5
0,75	1.400	0 - 600	**14**	1 - 350	8,9	600	0,75 D4 MR5
1,1	1.400	0 - 600	**14**	1 - 470	13	600	1,1 D4 MR5
1,1	1.400	0 - 600	**25**	1 - 270	13	600	1,1 D4 MR7
1,5	1.400	0 - 600	**25**	1 - 410	18	600	1,5 D4 MR7
2,2	1.400	0 - 600	**50**	1 - 260	25	600	2,2 D4 MR9
2,5	1.400	0 - 600	**50**	1 - 310	29	600	2,5 D4 MR9
3,0	1.400	0 - 600	**50**	1 - 415	36	600	3,0 D4 MR9
4,0	1.400	0 - 600	**110**	1 - 225	47	600	4,0 D4 MR11
5,5	1.400	0 - 600	**110**	1 - 325	66	600	5,5 D4 MR11
7,5	1.400	0 - 600	**110**	1 - 500	93	600	7,5 D4 MR11

P_1 motor power
n_1 input speed
n_2 output speed
M_2 output torque speed variator
D2 motor 4-pole (n_1 = 1,400 rpm)

See diagram 3, page 11

Speed range n_2 of the speed variator can be internally limited within each range ex factory or by using the mechanical speed limitation device (DBM) as mounted part on the speed variators. A later mounting of the DBM onto the speed variator is always possible without problems.

All motors can be supplied in execution "electrically according to NEMA ".

The planetroll® speed variators of the series LVZ are available for the power range between 7.5 kW and 15 kW.
With these gears n_2 = 0 is not possible.

planomaster® with motor 6-pole (n_1 = 900 rpm)

table 4 ◂

power – speed – torque							
P_1 [kW]	n_1 [rpm]	n_2 [rpm]	$M_{2\,max.}$ with n_2 [Nm]	[rpm]	M_2 with $n_{2\,max.}$ [Nm]	[rpm]	planomaster® with motor
0,06	900	0-390	**4**	1-100	1,3	390	0,06 D6 MR1
0,09	900	0-390	**4**	1-150	1,9	390	0,09 D6 MR1
0,09	900	0-390	**10**	1-60	1,9	390	0,09 D6 MR3
0,12	900	0-390	**4**	1-200	2,55	390	0,12 D6 MR1
0,12	900	0-390	**10**	1-80	2,55	390	0,12 D6 MR3
0,18	900	0-390	**10**	1-120	3,6	390	0,18 D6 MR3
0,25	900	0-390	**10**	1-170	5	390	0,25 D6 MR3
0,25	900	0-390	**16**	1-100	5	390	0,25 D6 MR5
0,37	900	0-390	**16**	1-150	7,4	390	0,37 D6 MR5
0,55	900	0-390	**16**	1-220	11	390	0,55 D6 MR5
0,75	900	0-390	**16**	1-300	14,7	390	0,75 D6 MR5
0,75	900	0-390	**35**	1-135	14,2	390	0,75 D6 MR7
1,1	900	0-390	**35**	1-200	21	390	1,1 D6 MR7
1,5	900	0-390	**55**	1-175	28	390	1,5 D6 MR9
2,2	900	0-390	**55**	1-260	42	390	2,2 D6 MR9
3,0	900	0-390	**110**	1-170	56	390	3,0 D6 MR11
4,0	900	0-390	**110**	1-270	80	390	4,0 D6 MR11

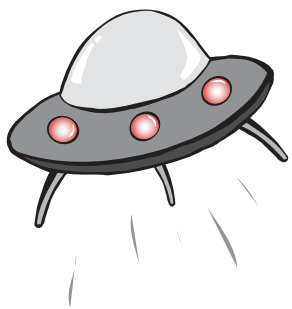
P_1 motor power
n_1 input speed
n_2 output speed
M_2 output torque speed variator
D2 motor 6-pole (n_1 = 900 rpm)

See diagram 4, page 12

Speed range n_2 of the speed variator can be internally limited within each range ex factory or by using the mechanical speed limitation device (DBM) as mounted part on the speed variators. A later mounting of the DBM onto the speed variator is always possible without problems.

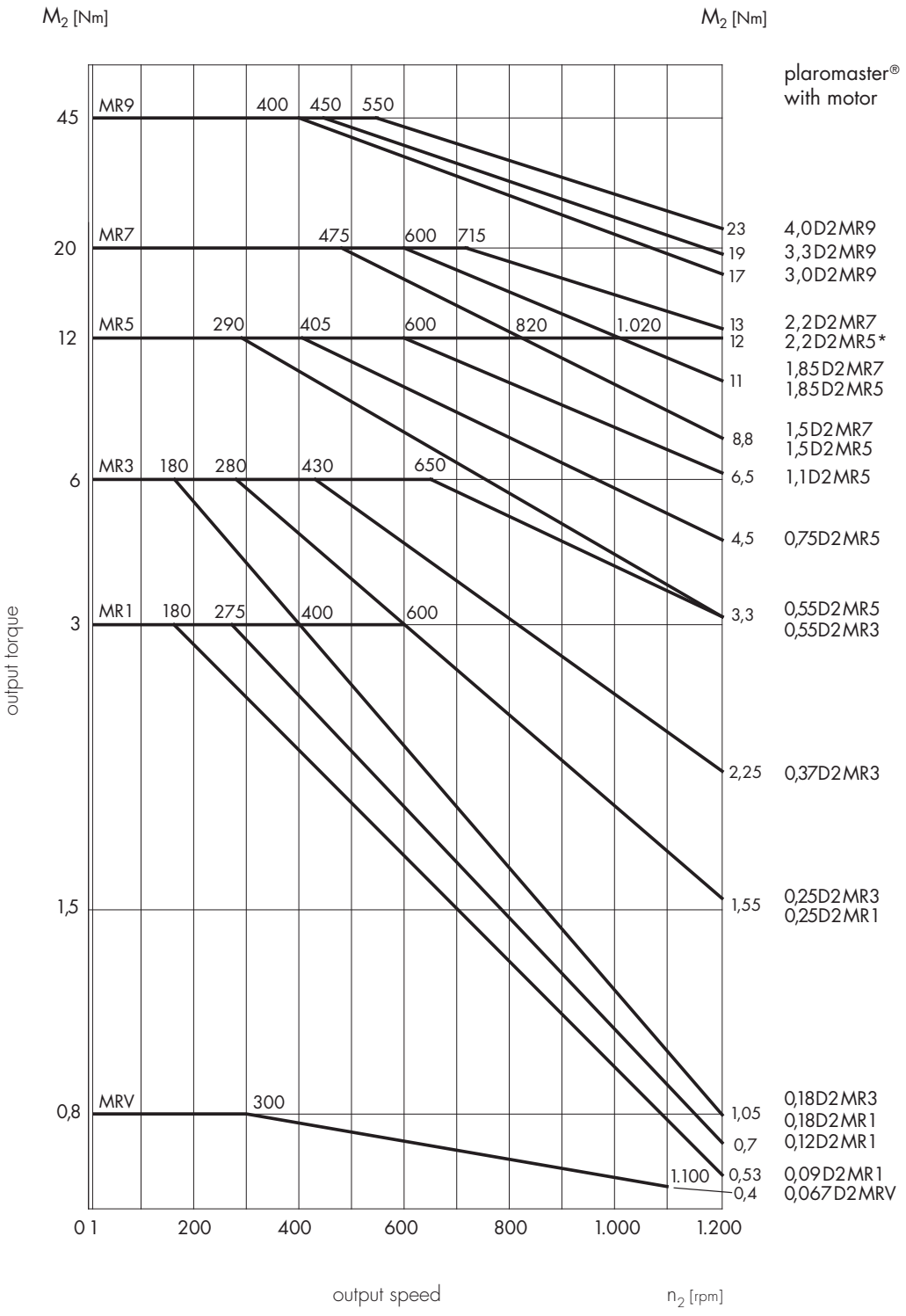
All motors can be supplied in execution "electrically according to NEMA ".

The planetroll® speed variators of the series LVZ are available for the power range between 7.5 kW and 15 kW.
With these gears n_2 = 0 is not possible.



speed and torque characteristic line n_1 = 2,800 rpm

diagram 2 ◂

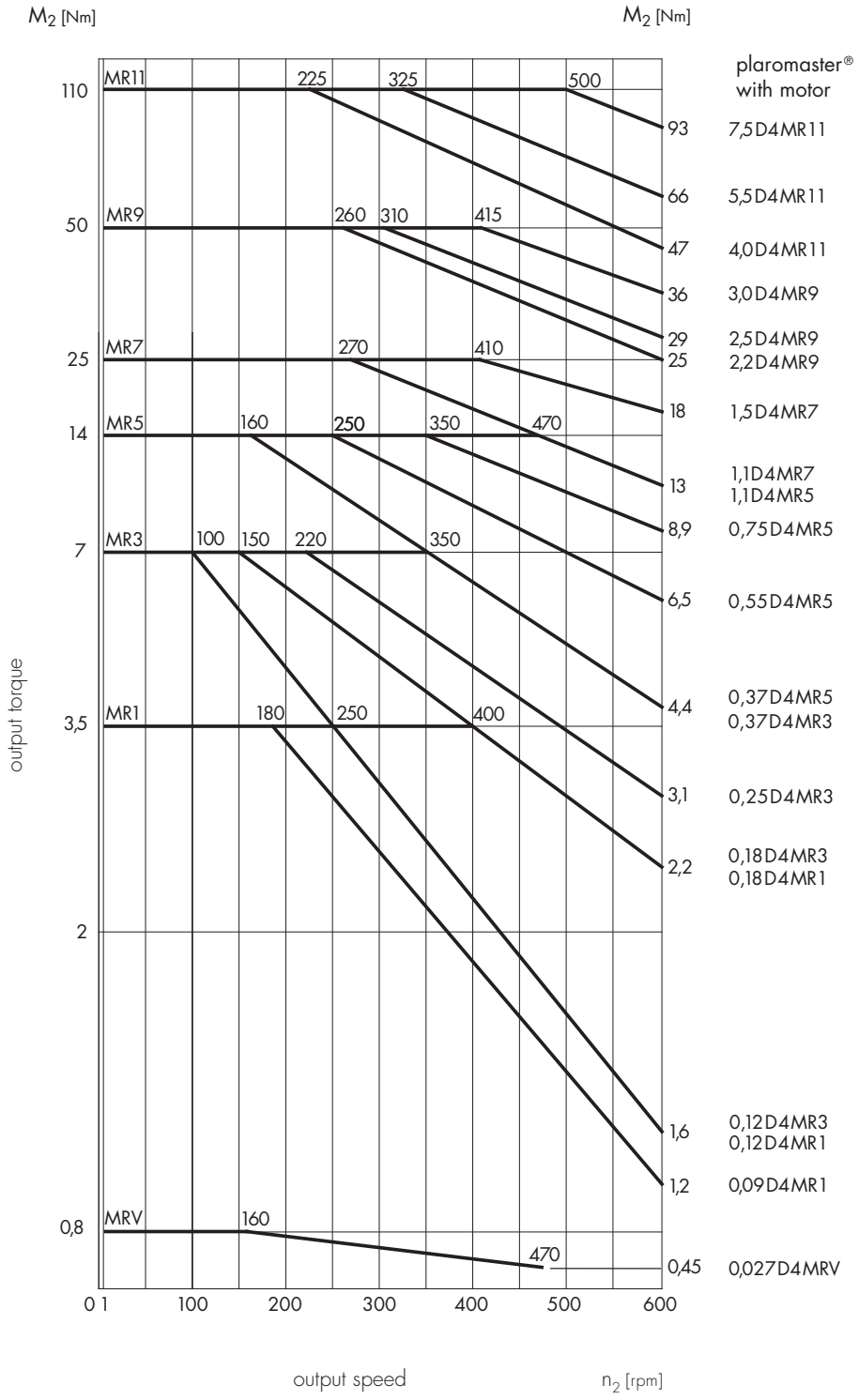


* not permitted for mode of operation S1

See table 2, page 7

speed and torque characteristic line n_1=1,400 rpm

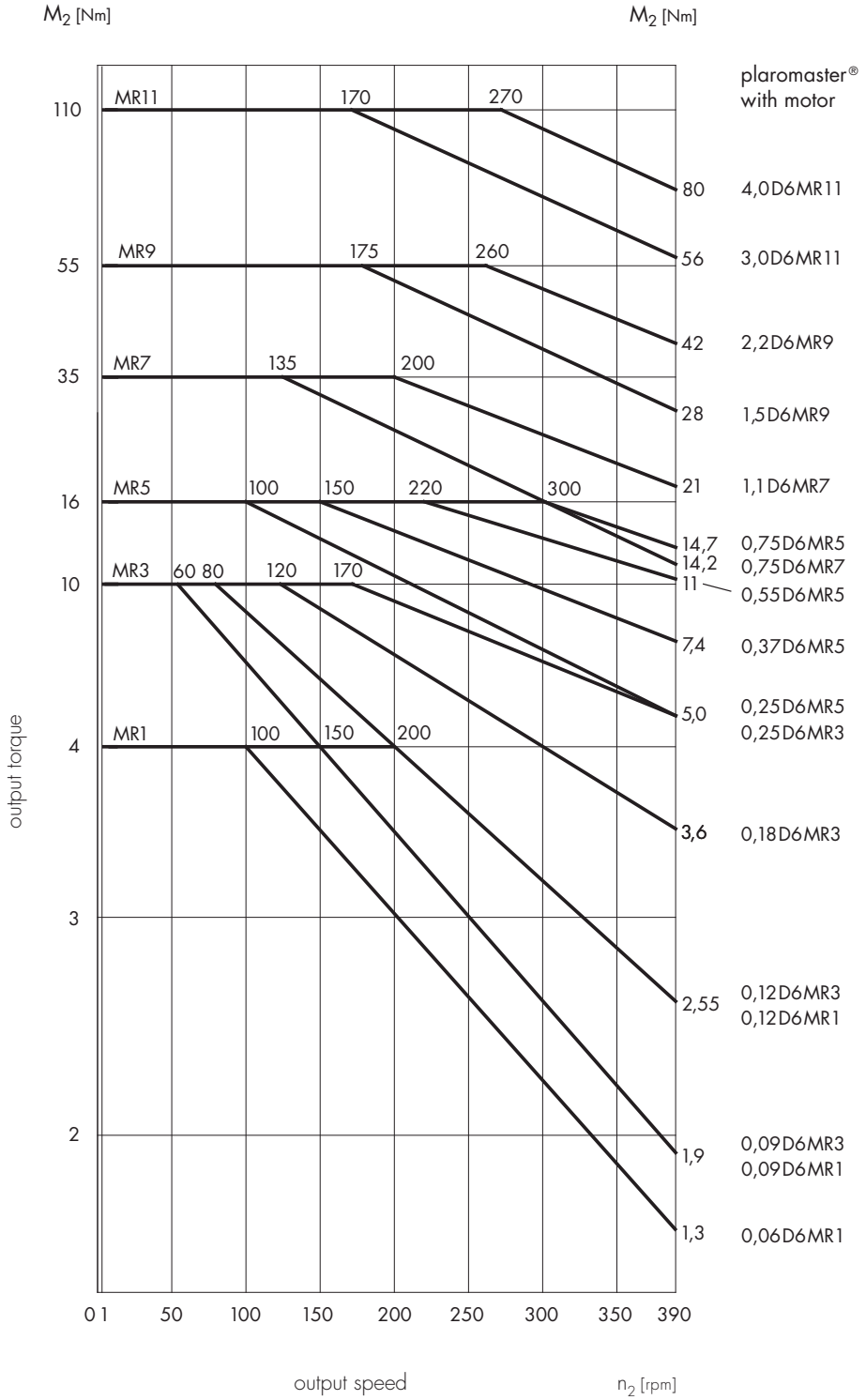
diagram 3



See table 3, page 8

speed and torque characteristic line n_1 = 900 rpm

diagram 4 ◂



See table 4, page 9

MRV-B3 with input hollow shaft

picture 1 ◂

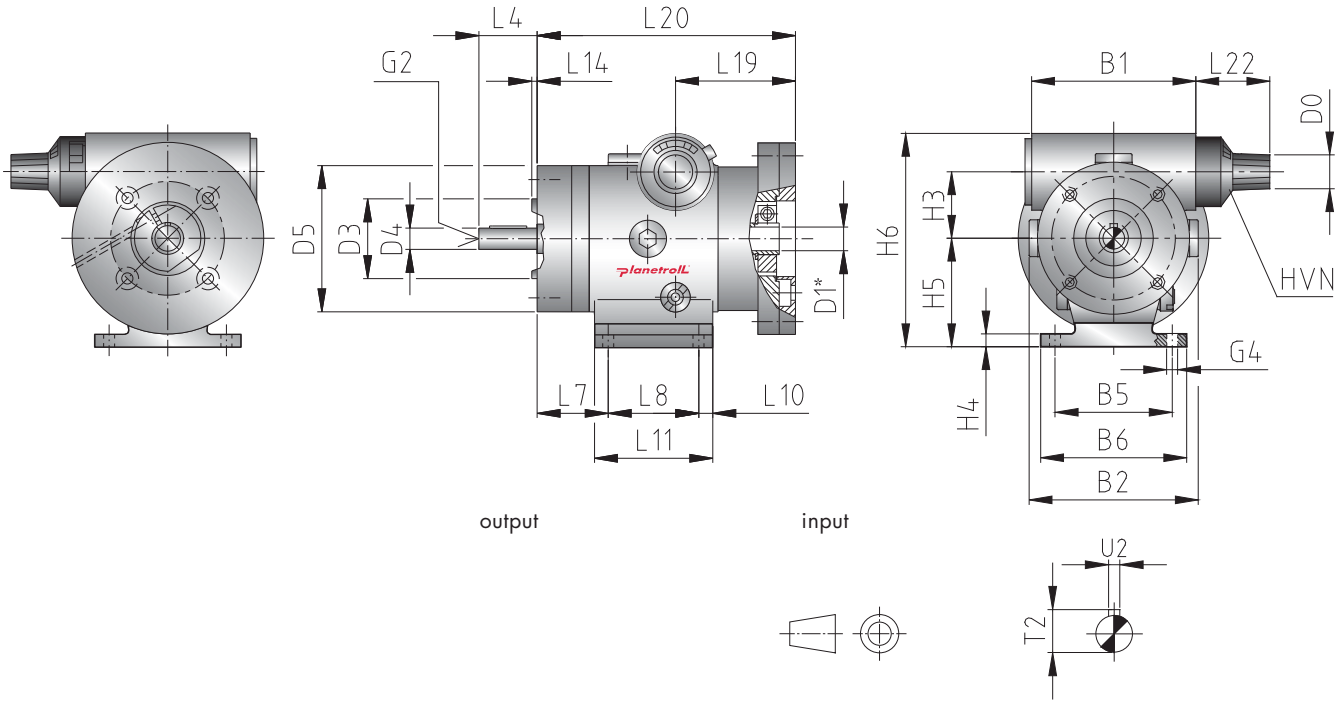


table 5 ◂

size	dimensions [mm]														
MRV-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62	64			45	55	13	*		30j6	8h6	55			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M3		4,5					25	5
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	42	82				22		26	35		5	45			2
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					45	97		28		8,8			2		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll the driving power

MRV-B5 with input hollow shaft

picture 2

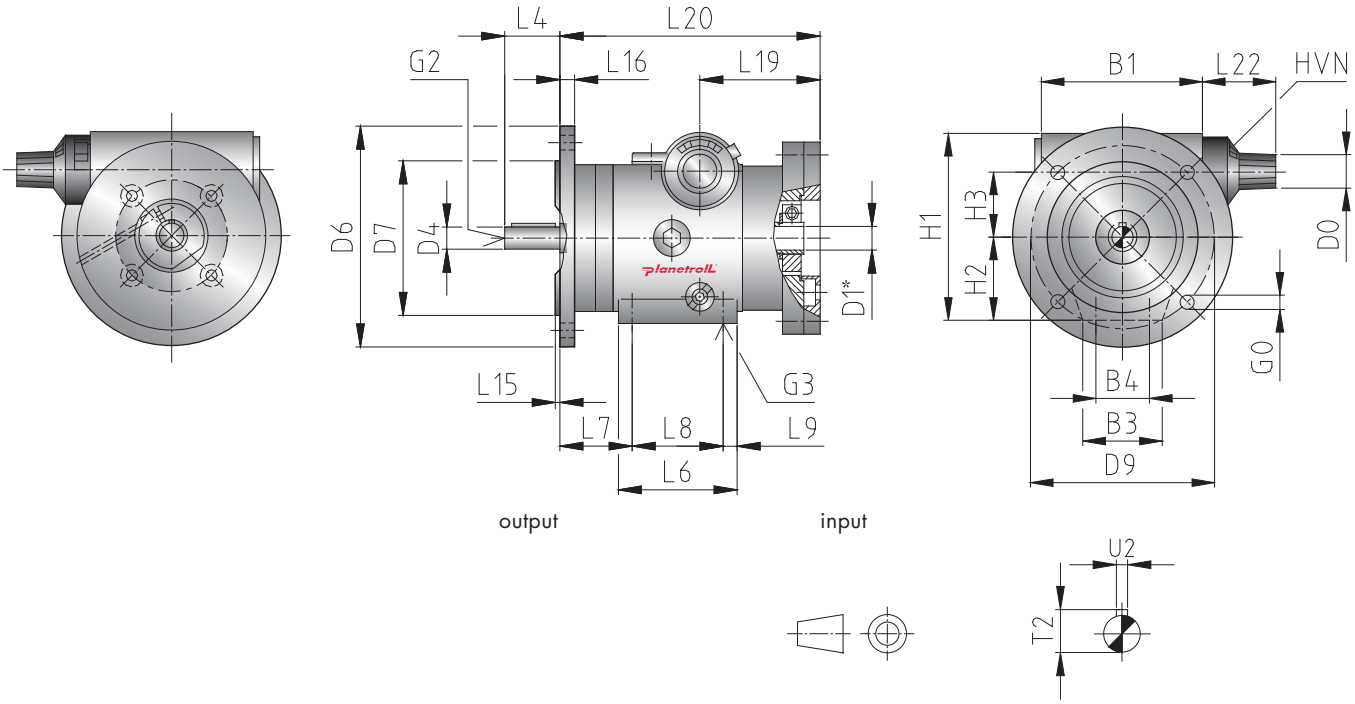


table 6

size	dimensions [mm]														
MRV-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62		30	20			13	*			8h6		90	60j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	75				5,5		D M3	M4x8				72	32	25	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						22	45	26	35	5					
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	2,5	8			45	97		28		8,8			2		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MRV-B14 with input hollow shaft

picture 3 ◂

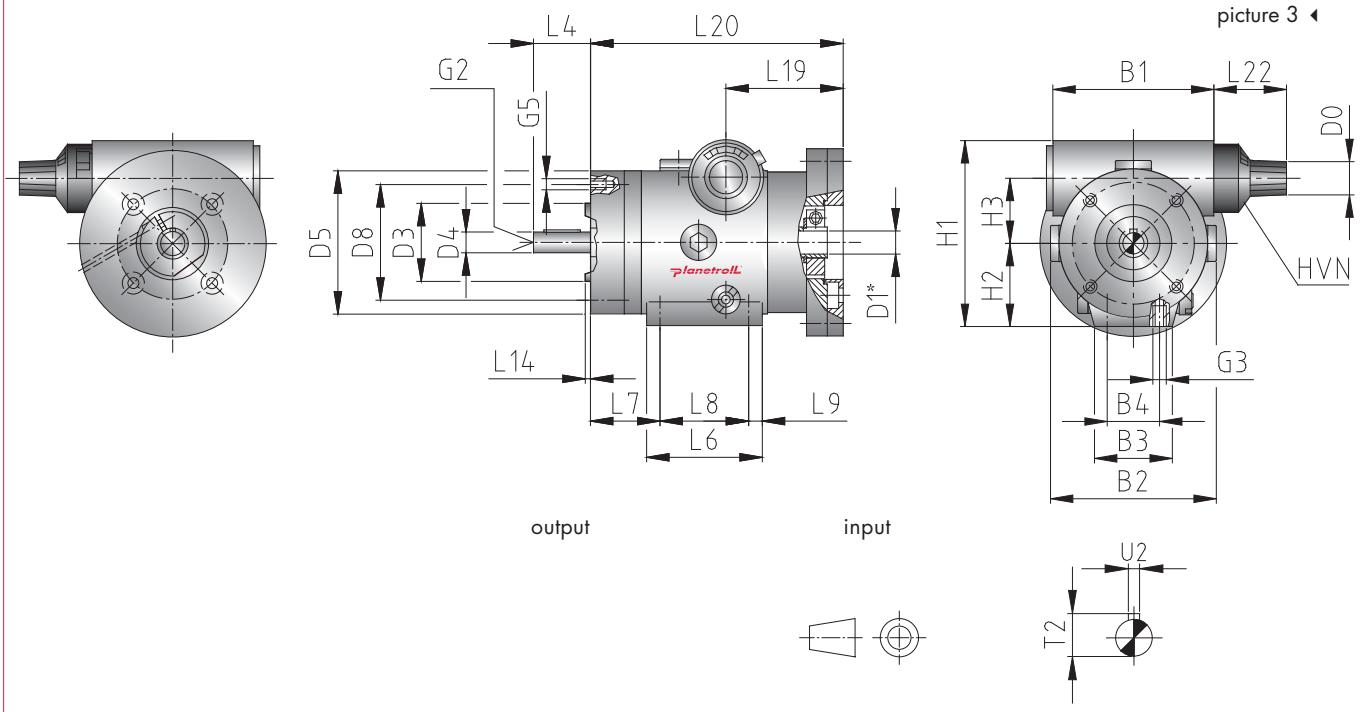


table 7 ◂

size	dimensions [mm]														
MRV-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62	64	30	20			13	*		30j6	8h6	55			47
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M3	M4x8		M3x6		72	32	25	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						22	45	26	35	5					2
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					45	97		28		8,8			2		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR1-B3 with input hollow shaft

picture 4

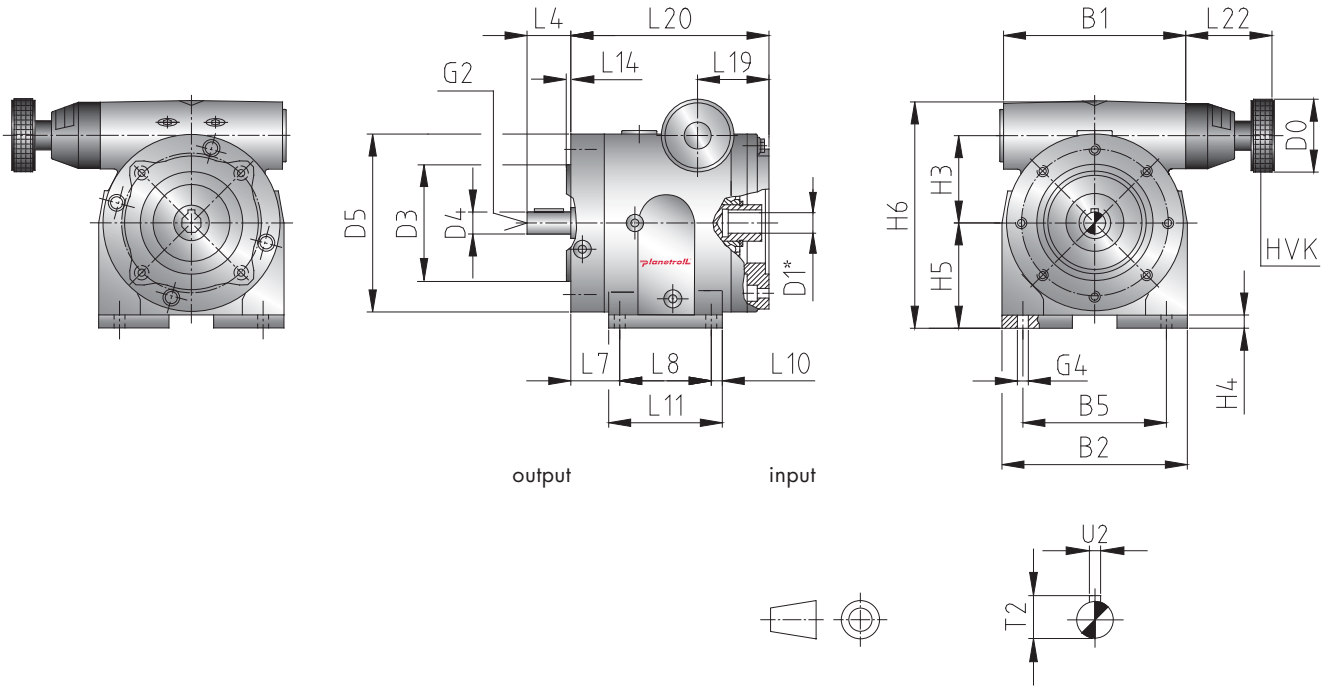


table 8

size	dimensions [mm]														
MR1-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87			70		40	*		50j6	9h6	85			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M4		5,5					39	6
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	56	114				20		22	60		7,5	75			2,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					42	116		57		10,2			3		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR1-B5 with input hollow shaft

picture 5 ◂

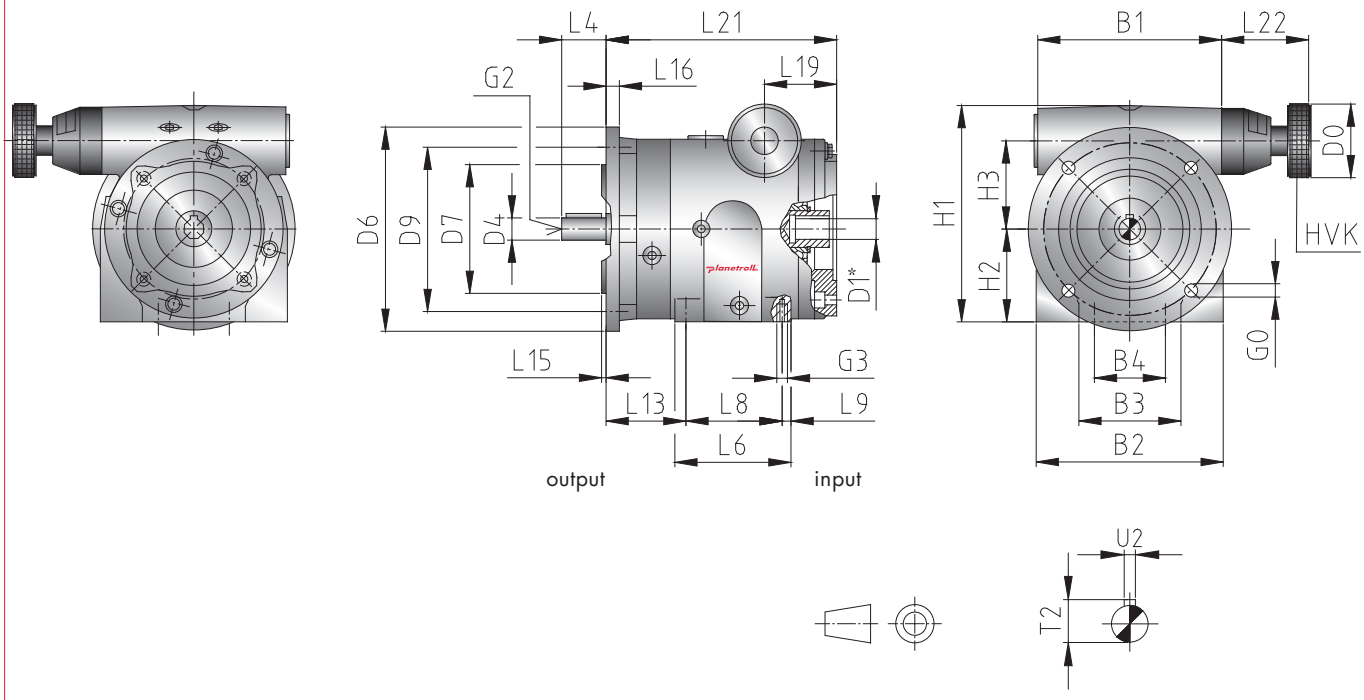


table 9 ◂

size	dimensions [mm]														
MR1-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87	48	38			40	*			9h6		120	80j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	100				6,6		D M4	M5x10				108	50	39	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						20	73		60	7				37	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3	10			42		131	57		10,2			3		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR1-B14 with input hollow shaft

picture 6

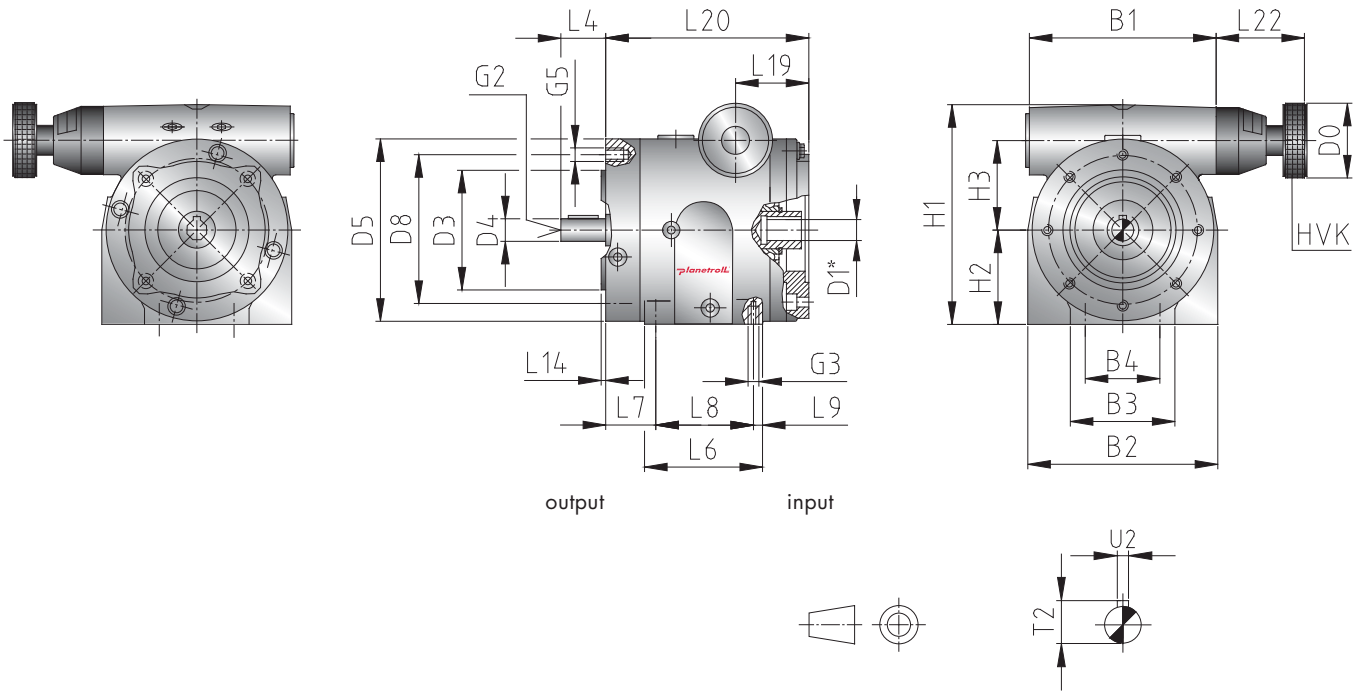


table 10

size	dimensions [mm]														
MR1-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87	48	38			40	*		50j6	9h6	85			65
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M4	M5x10		M5x10		108	50	39	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						20	73	22	60	7					2,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					42	116		57		10,2			3		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR3-B3 with input hollow shaft

picture 7 ◂

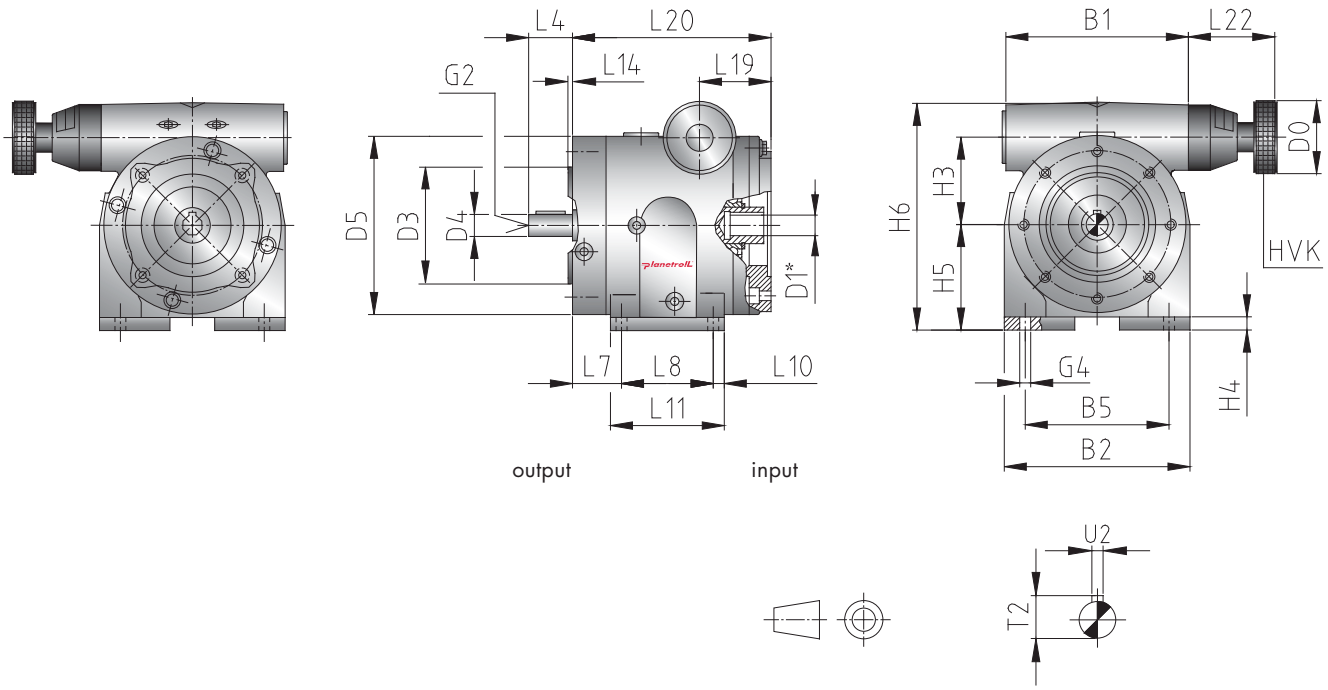


table 11 ◂

size	dimensions [mm]														
MR3-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127			90		50	*		80j6	14h6	122			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M5		6,6					60	8
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	71	156				30		30	65		10	85			3
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					49	136		64		16			5		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR3-B5 with input hollow shaft

picture 8

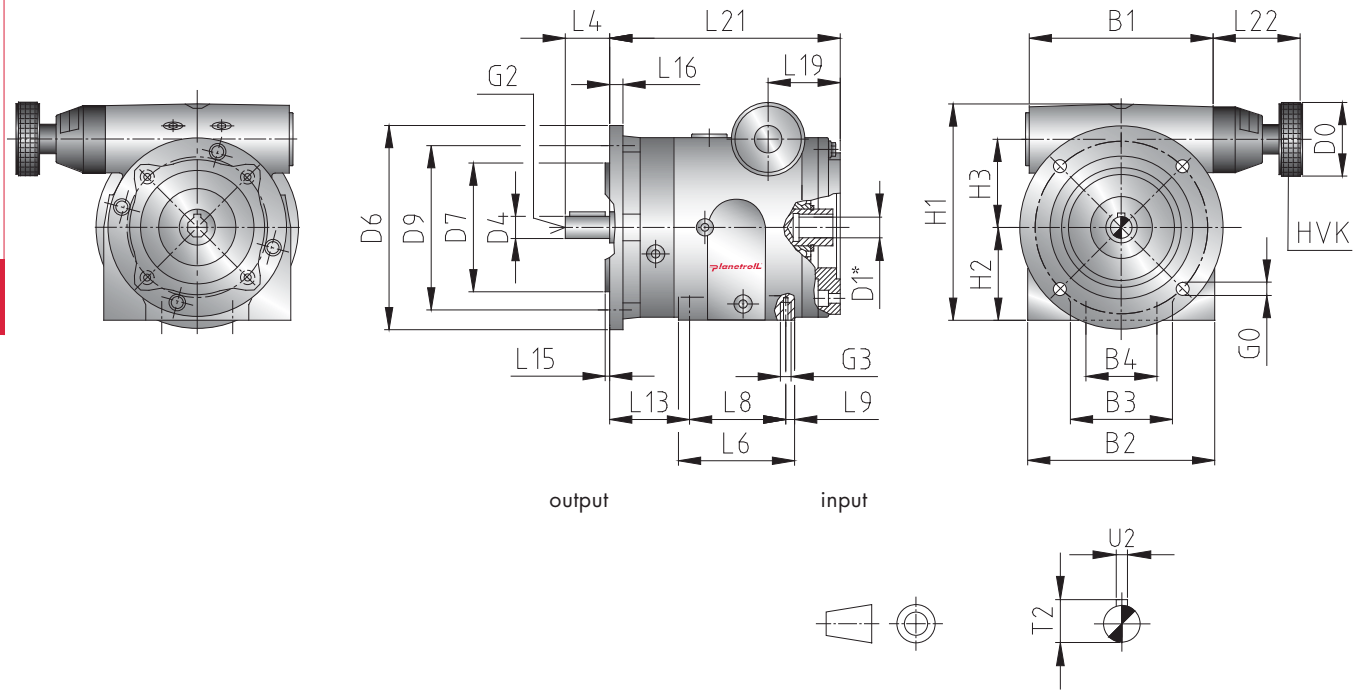


table 12

size	dimensions [mm]														
MR3-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127	70	50			50	*			14h6		120	80j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	100				6,6		D M5	M5x10				148	63	60	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						30	81		65	10				50	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3	7			49		156	64		16			5		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR3-B14 with input hollow shaft

picture 9 ◂

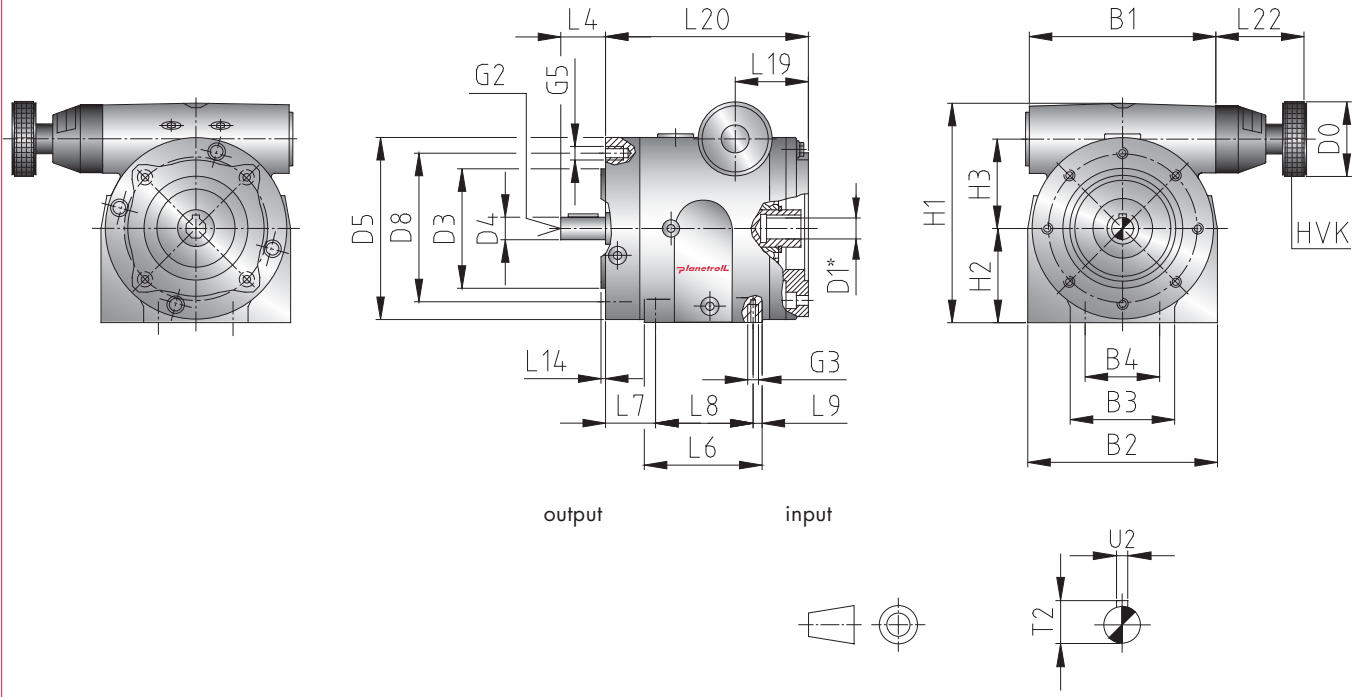


table 13 ◂

size	dimensions [mm]														
MR3-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127	70	50			50	*		80j6	14h6	122			100
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M5	M5x10		M6x12		148	63	60	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						30	81	30	65	10					3
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					49	136		64		16			5		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR5-B3 with input hollow shaft

picture 10

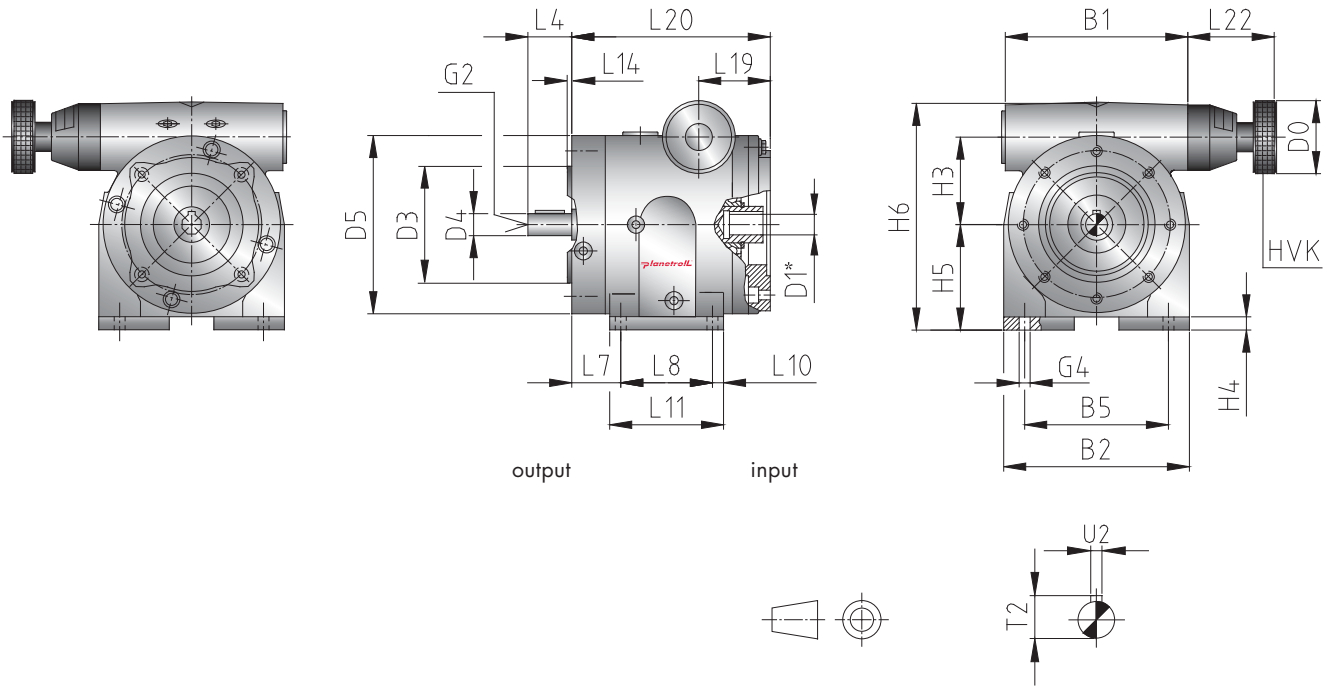


table 14

size	dimensions [mm]														
MR5-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165			130		50	*		110j6	19h6	160			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M6		9					76	10
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	90	191				40		43	80		15	110			3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					62	180		64		21,5			6		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR5-B5 with input hollow shaft

picture 11 ◂

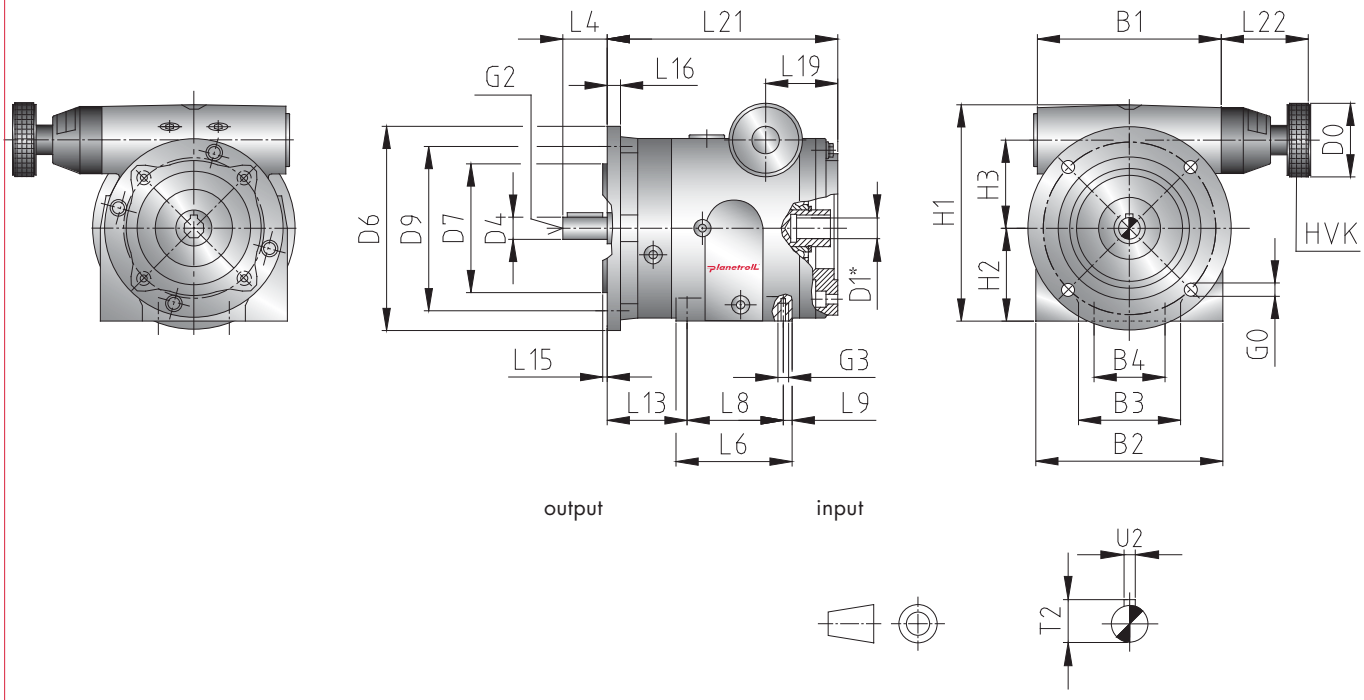


table15 ◂

size	dimensions [mm]														
MR5-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165	105	90			50	*			19h6		160	110j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	130				9		D M6	M8x16				181	80	76	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						40	106		80	15				63	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3,5	9			62		200	64		21,5			6		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR5-B14 with input hollow shaft

picture 12

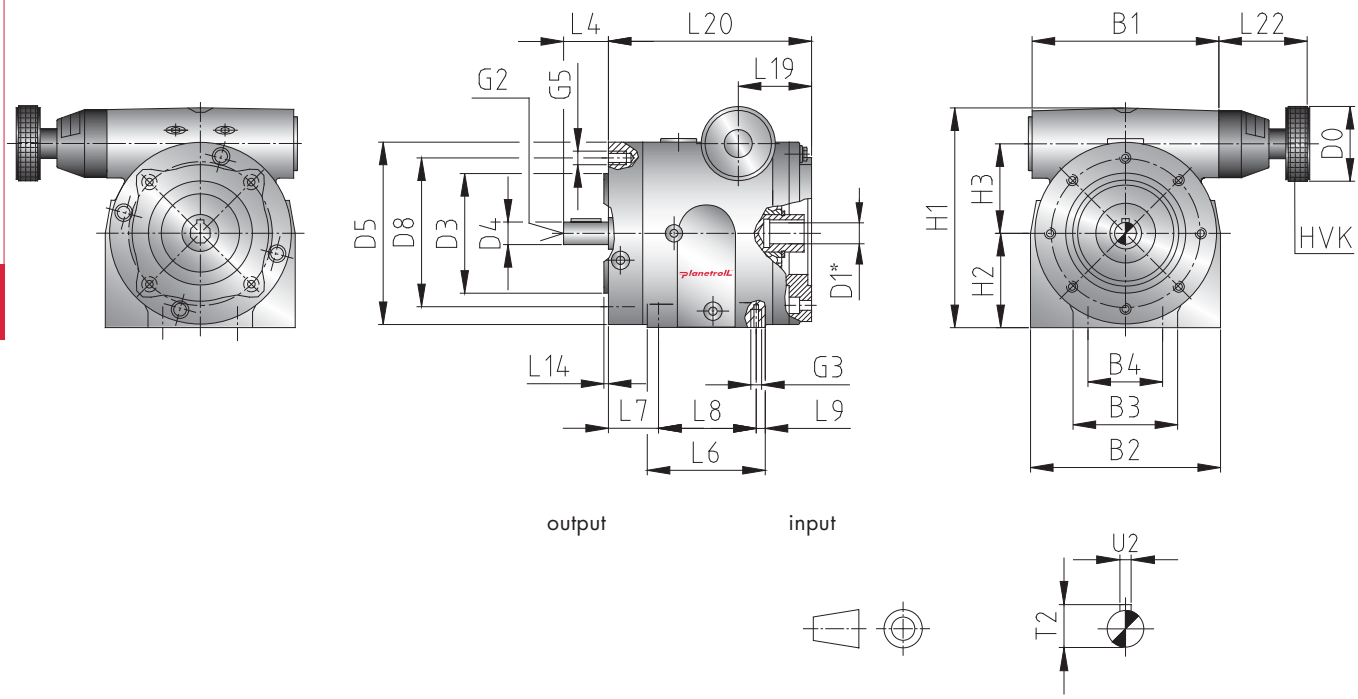


table 16

size	dimensions [mm]														
MR5-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165	105	90			50	*		110j6	19h6	160			130
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M6	M8x16		M8x16		181	80	76	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						40	106	43	80	15					3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					62	180		64		21,5			6		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR7-B3 with input hollow shaft

picture 13 ◂

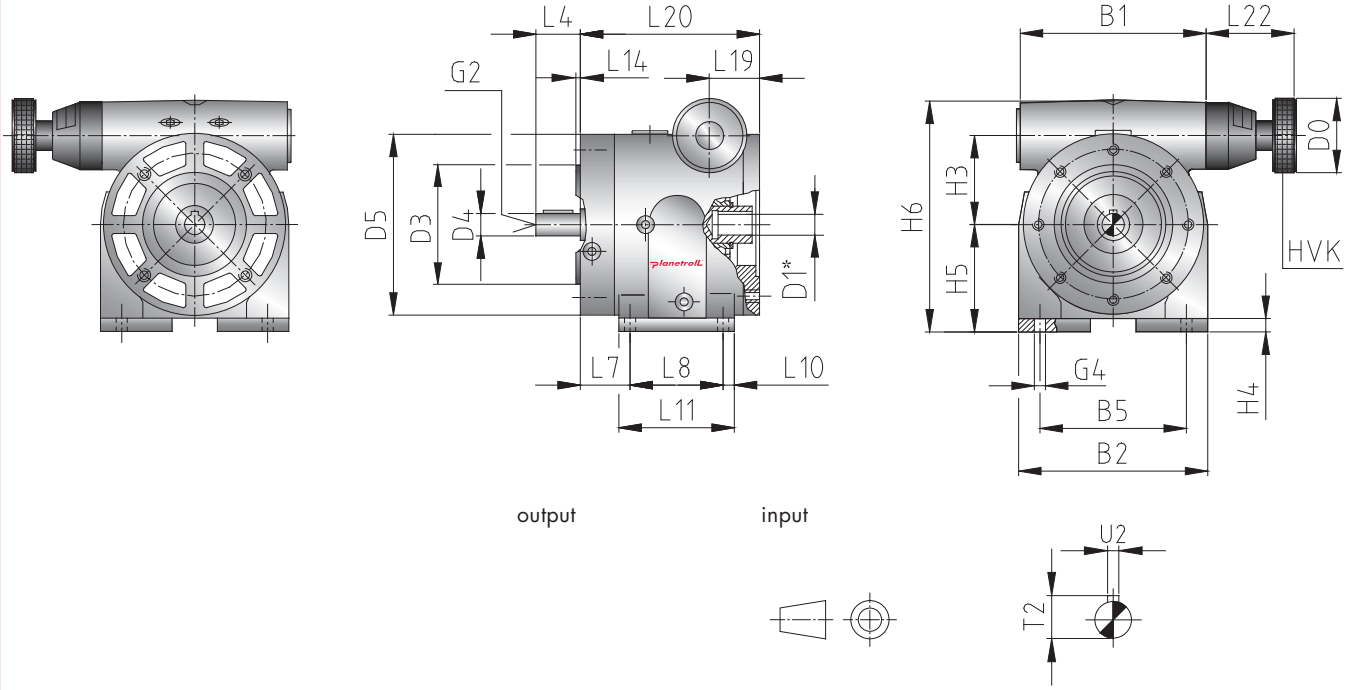


table17 ◂

size	dimensions [mm]														
MR7-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202			160		70	*		130j6	24h6	199			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M8		11					95	12
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	112	244				50		30	110		17,5	145			3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					60	185		92		27			8		

* motor mounting dimensions see page 55

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll the driving power

MR7-B5 with input hollow shaft

picture 14

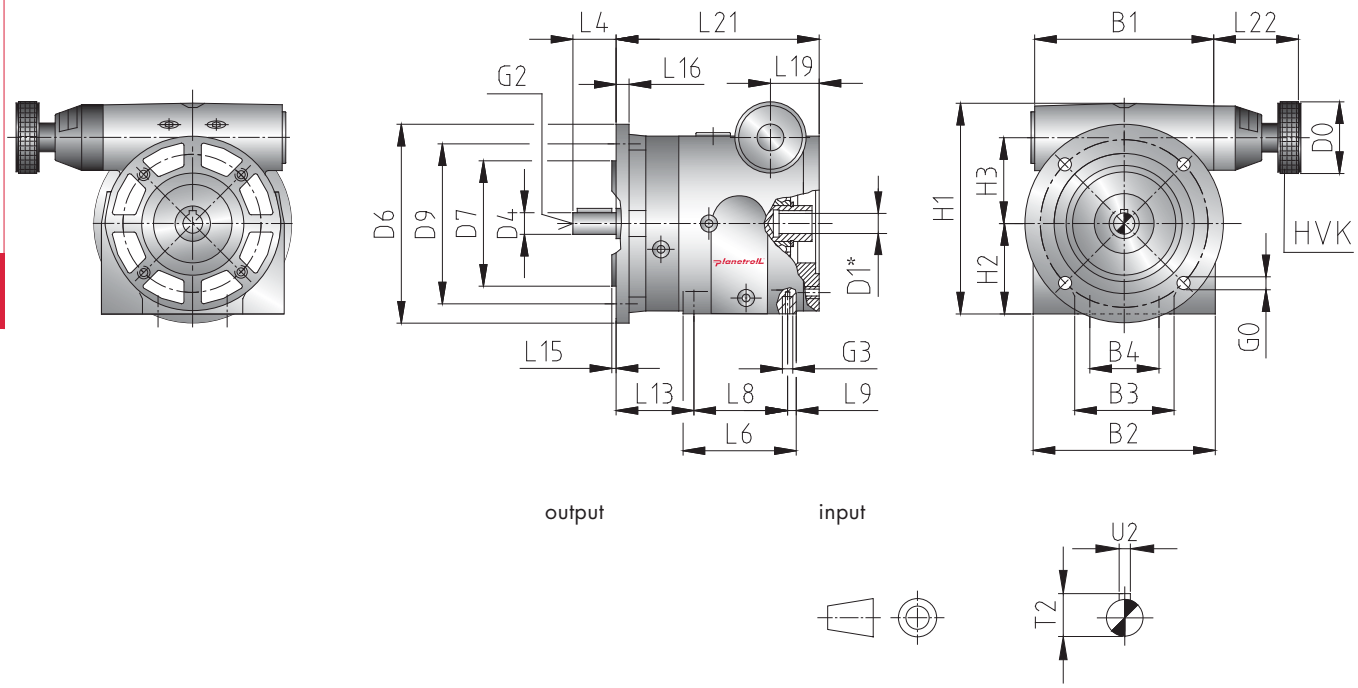


table 18

size	dimensions [mm]														
MR7-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202	122	105			70	*			24h6		200	130j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	165				11		D M8	M8x16				232	100	95	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						50	135		110	18				55	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3,5	11			60		210	92		27			8		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR7-B14 with input hollow shaft

picture 15 ◂

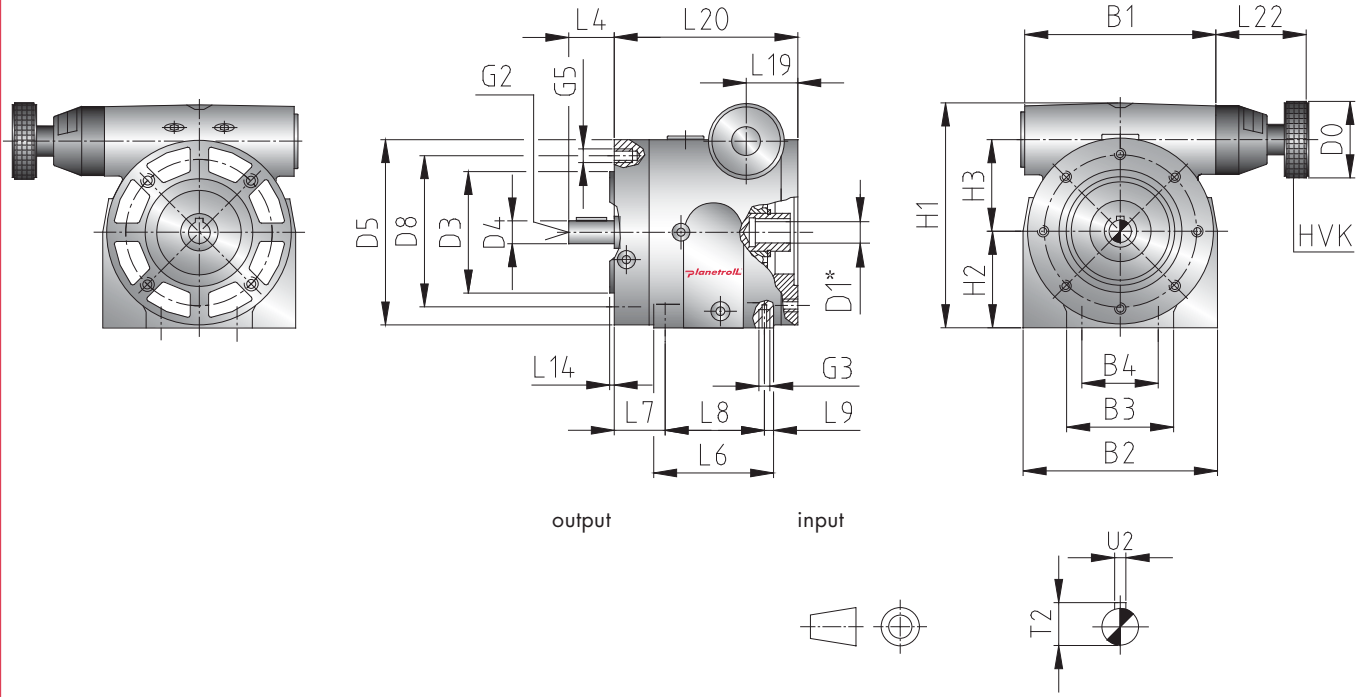


table 19 ◂

size	dimensions [mm]														
MR7-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202	122	105			70	*		130j6	24h6	199			165
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M8	M8x16		M10x20		232	100	95	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						50	135	30	110	18					3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					60	185		92		27			8		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR9-B3 with input hollow shaft

picture 16

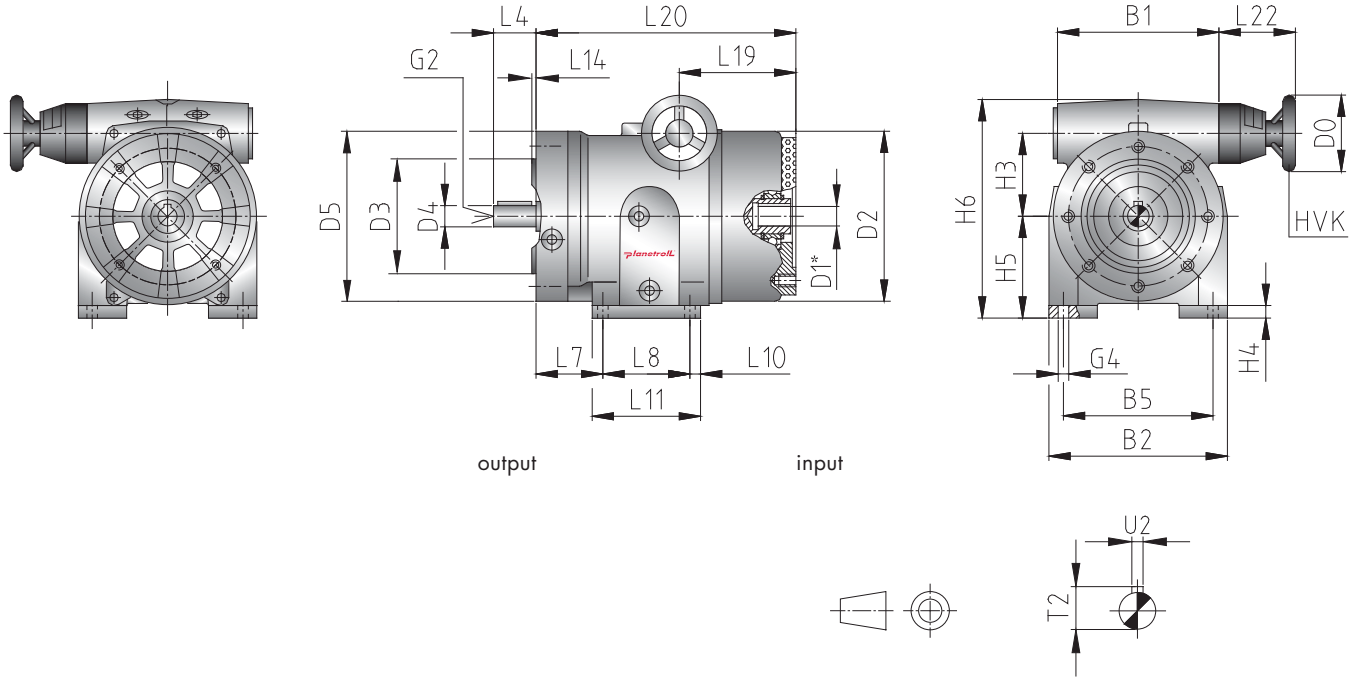


table 20

size	dimensions [mm]														
MR9-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230			200		100	*	250	180j6	28h6	238			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M10		14					112	12
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	132	287				60		41	130		20	170			4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					165	320		92		31			8		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR9-B5 with input hollow shaft

picture 17 ◂

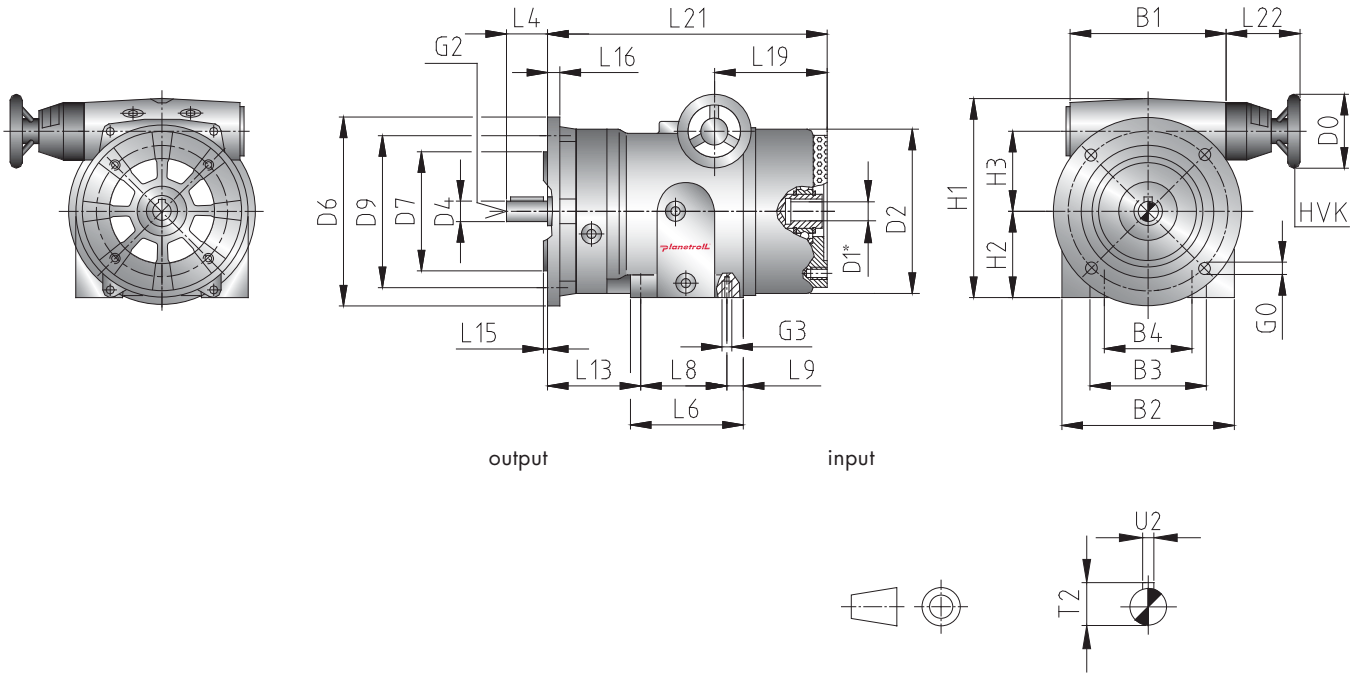


table 21 ◂

size	dimensions [mm]														
MR9-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230	162	144			100	*	250		28h6		250	180j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	215				14		D M10	M10x20				275	120	112	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						60	172		130	29				71	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	4	12			165		350	92		31			8		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR9-B14 with input hollow shaft

picture 18

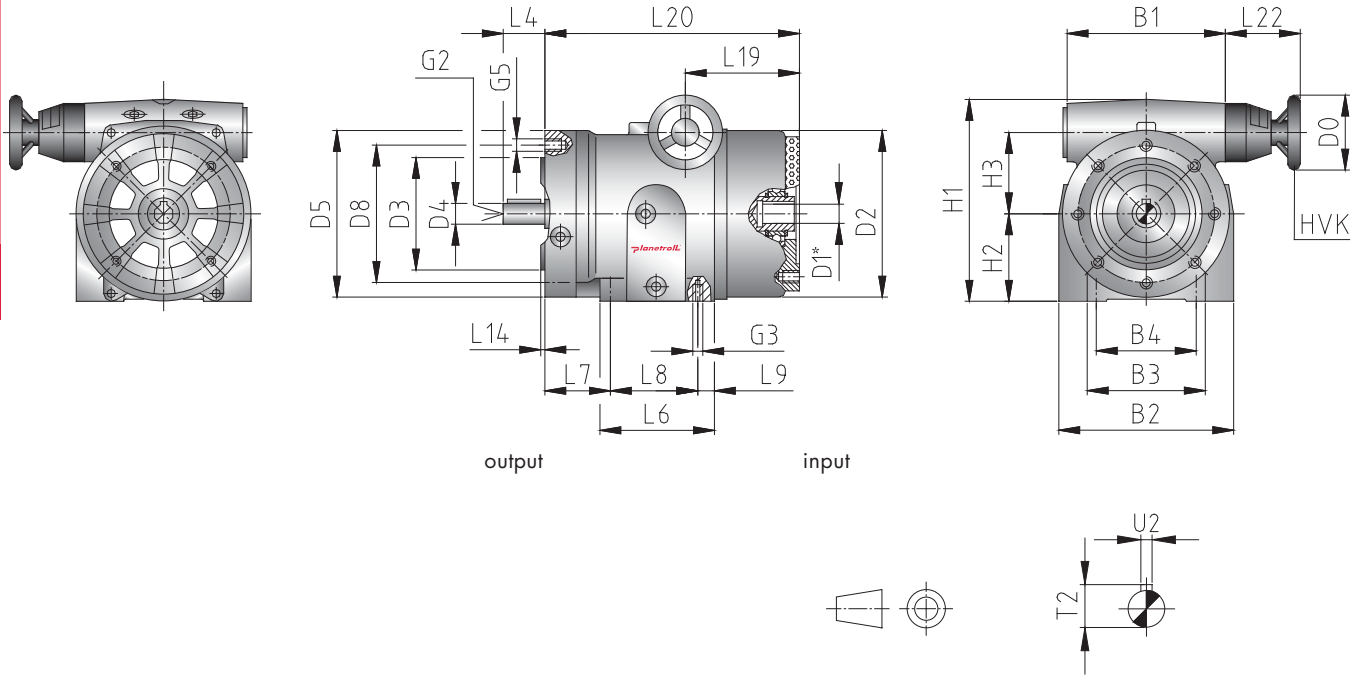


table 22

size	dimensions [mm]														
MR9-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230	162	144			100	*	250	180j6	28h6	238			215
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M10	M10x20		M12x24		275	120	112	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						60	172	41	130	29					4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					165	320		92		31			8		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR11-B3 with input hollow shaft

picture 19 ◂

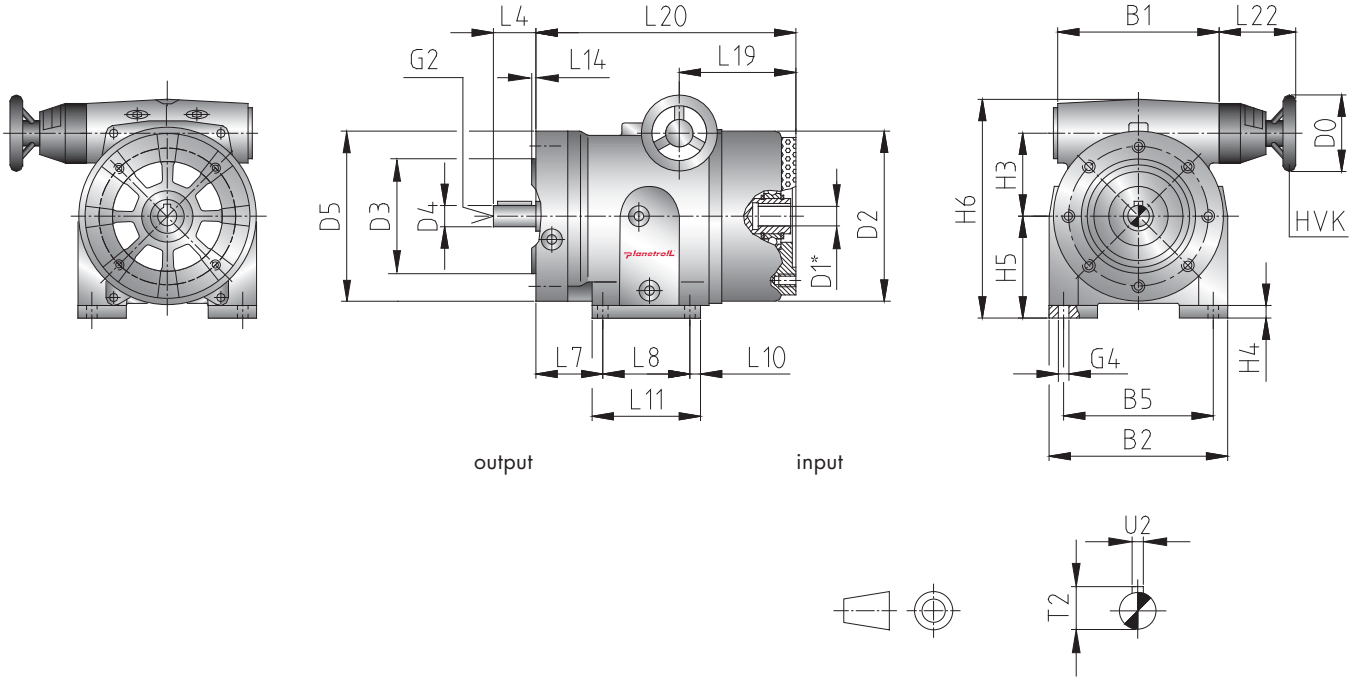


table 23 ◂

size	dimensions [mm]														
MR11-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315			280		125	*	350	230j6	38h6	318			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M12		14					147	20
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	200	390				80		45	200		25	250			4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					223	460		92		41			10		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR11-B5 with input hollow shaft

picture 20

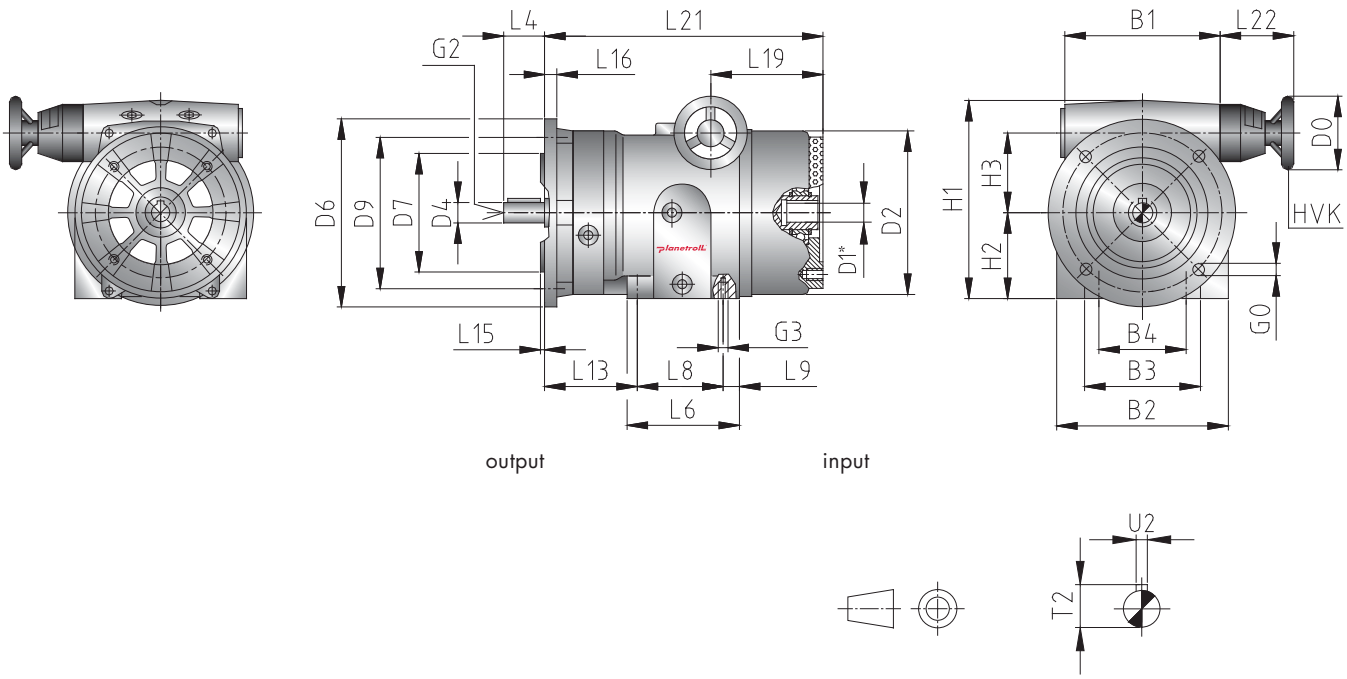


table 24

size	dimensions [mm]														
MR11-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315	225	192			125	*	350		38h6		350	250h6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	300				18		D M12	M12x24				370	180	147	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						80	258		200	45				85	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	5	15			223		500	92		41			10		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR11-B14 with input hollow shaft

picture 21 ◂

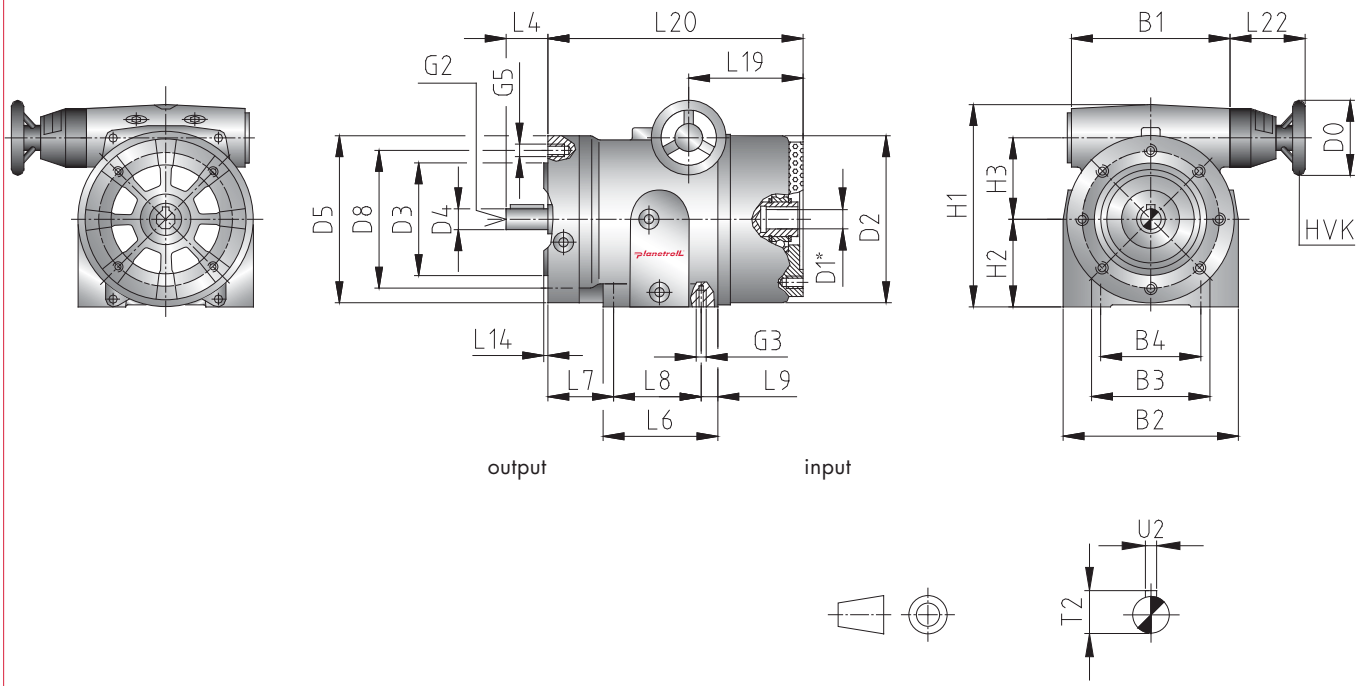


table 25 ◂

size	dimensions [mm]														
MR11-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315	225	192			125	*	350	230j6	38h6	318			265
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
							D M12	M12x24		M12x22		370	180	147	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
						80	258	45	200	45					4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
					223	460		92		41			10		

* motor mounting dimensions see page 56

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MRV-B3 free input shaft

picture 22

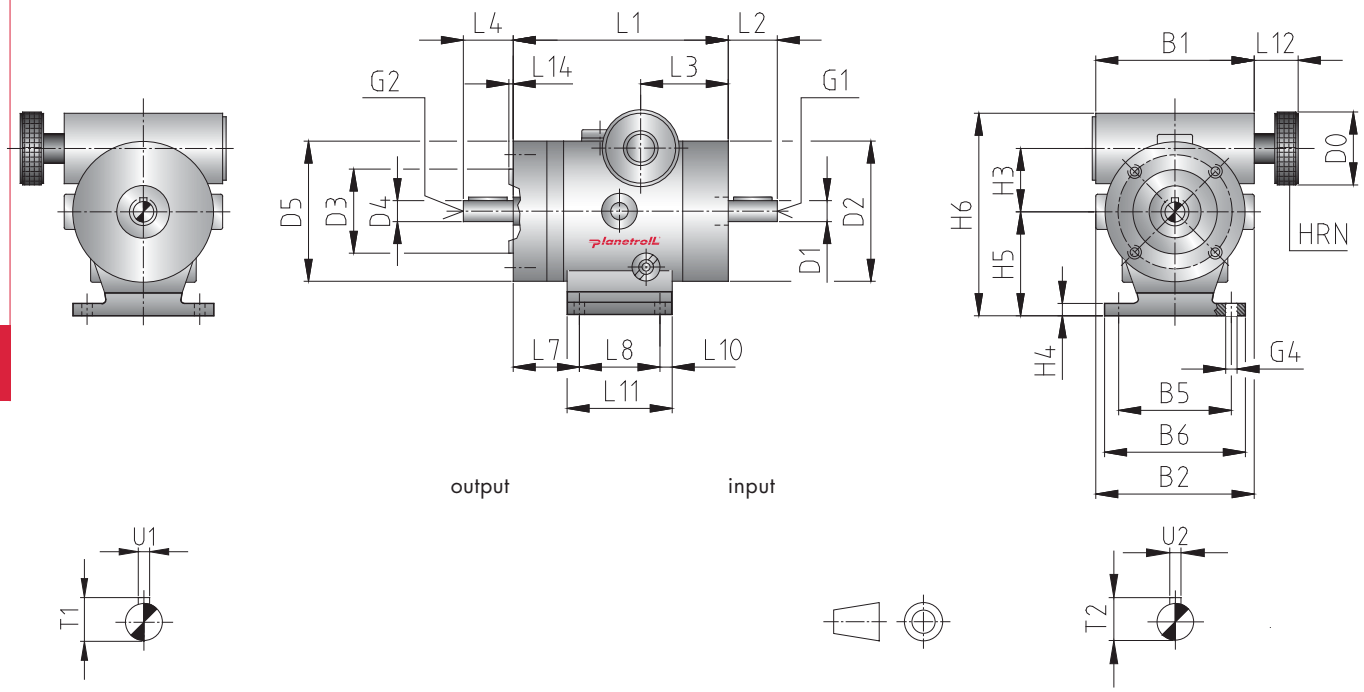


table 26

size	dimensions [mm]														
MRV-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62	64			45	55	32	8h6	54	30j6	8h6	55			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M3	D M3		4,5					25	5
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	42	82	87	20	35	22		26	35		5	45	28		2
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
									8,8	8,8		2	2		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MRV-B5 free input shaft

picture 23 ◂

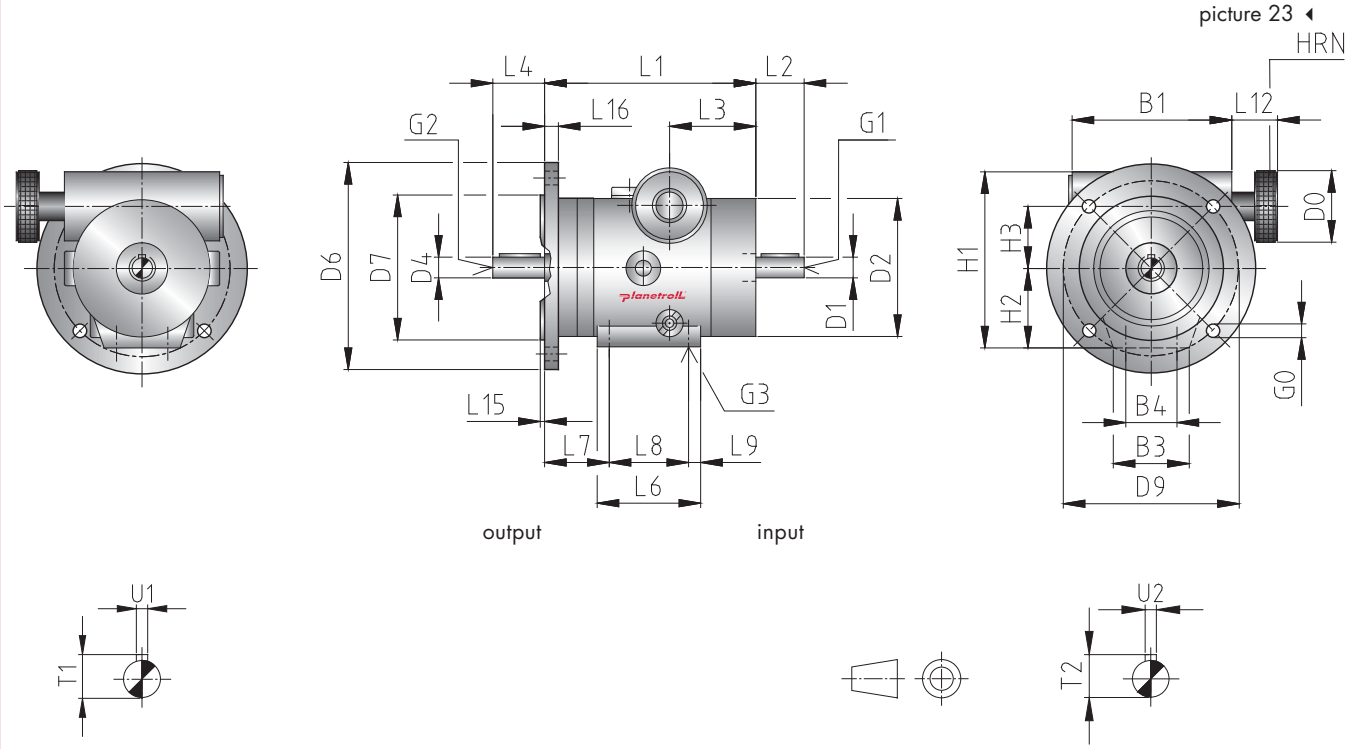


table 27 ◂

size	dimensions [mm]														
MRV-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62		30	20			32	8h6	54		8h6		90	60j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	75				5,5	D M3	D M3	M4x8				72	32	25	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			87	20	35	22	45	26	35	5			28		
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	2,5	8							8,8	8,8		2	2		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MRV-B14 free input shaft

picture 24

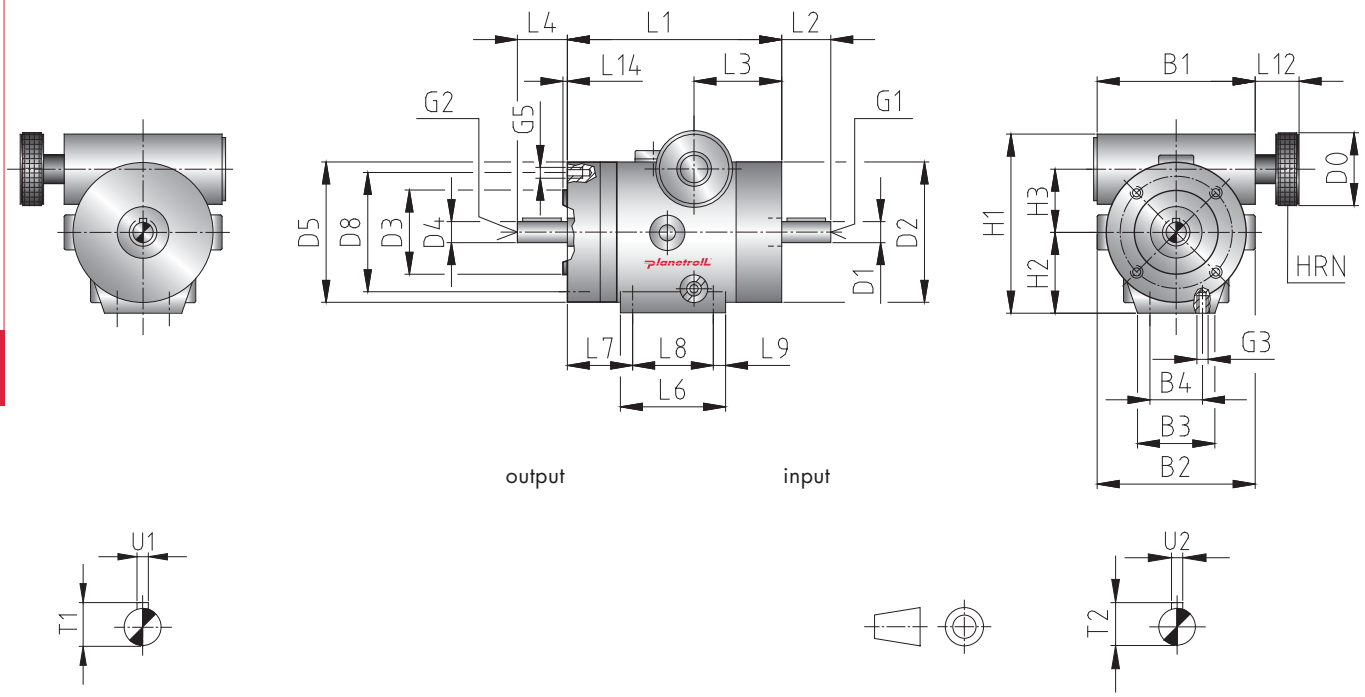


table 28

size	dimensions [mm]														
MRV-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	62	64	30	20			32	8h6	54	30j6	8h6	55			47
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M3	D M3	M4x8		M3x6		72	32	25	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			87	20	35	22	45	26	35	5			28		2
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
									8,8	8,8		2	2		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR1-B3 free input shaft

picture 25 ◂

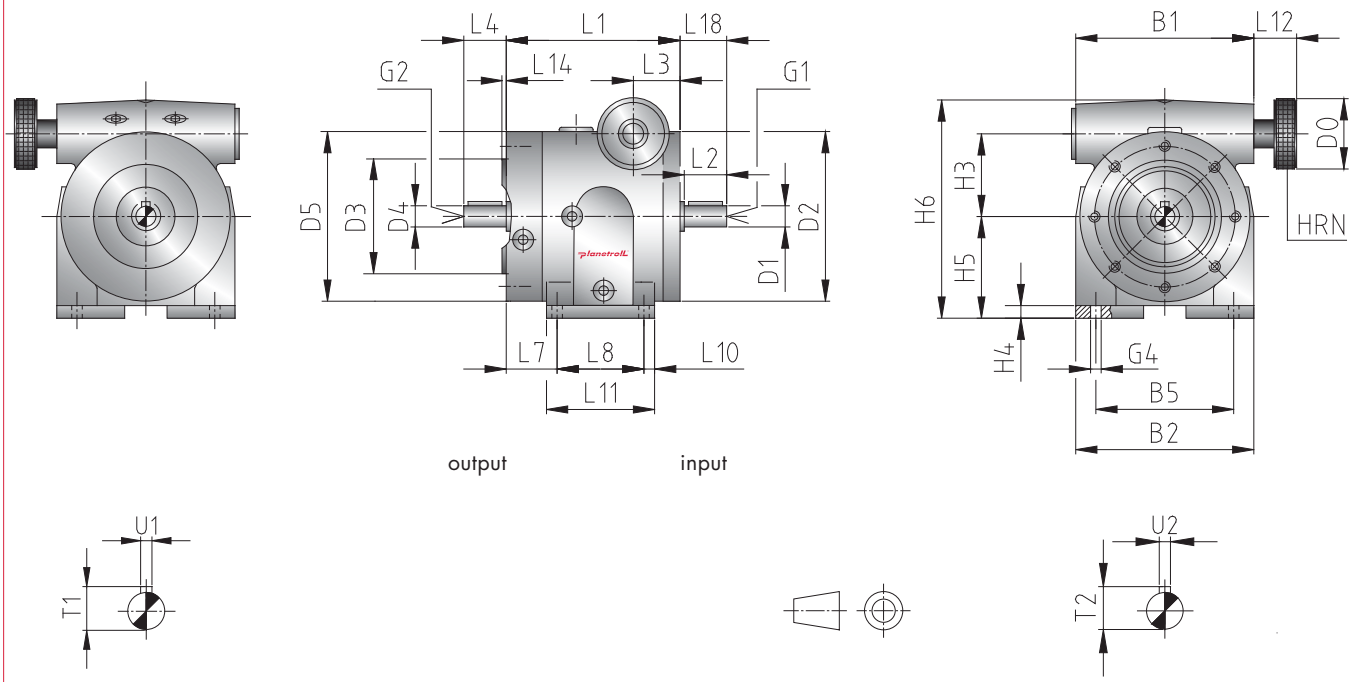


table 29 ◂

size	dimensions [mm]														
MR1-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87			70		40	9h6	85	50j6	9h6	85			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M4	D M4		5,5					39	6
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	56	114	104	20	30	20		22	60		7,5	75	36		2,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				21					10,2	10,2		3	3		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR1-B5 free input shaft

picture 26

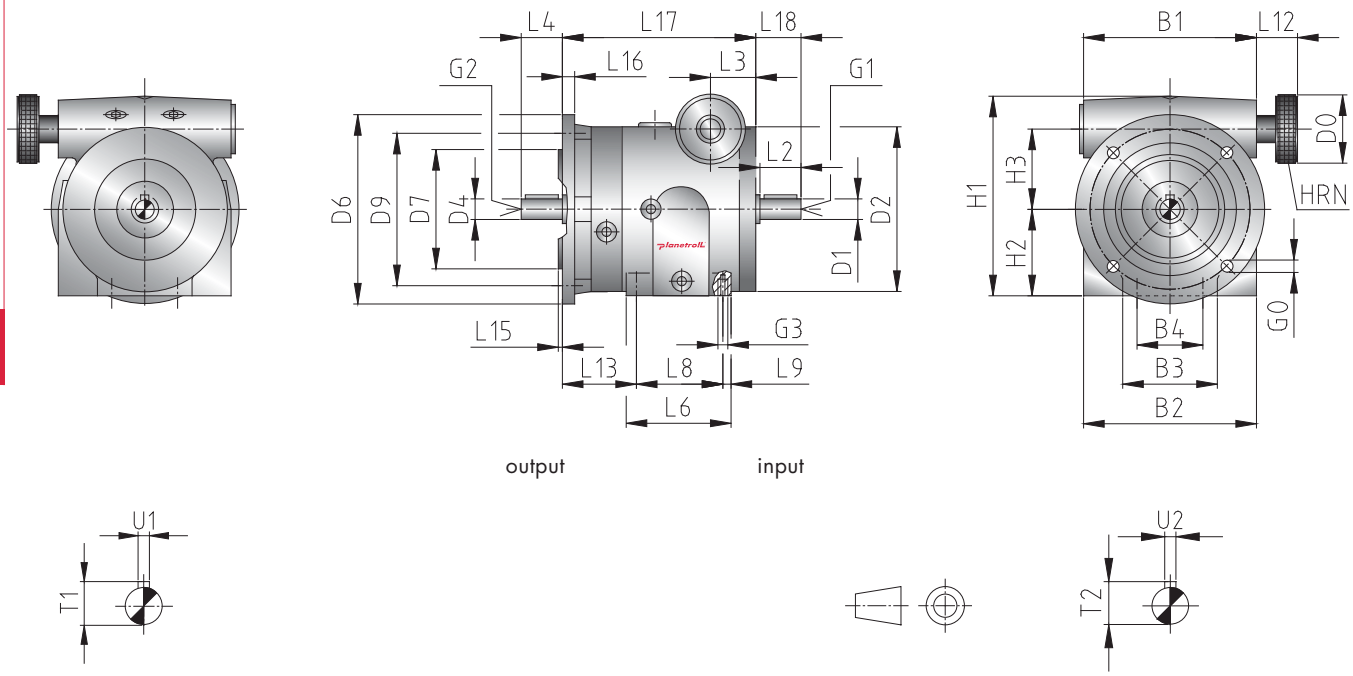


table 30

size	dimensions [mm]														
MR1-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87	48	38			40	9h6	85		9h6		120	80j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	100				6,6	D M4	D M4	M5x10				108	50	39	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				20	30	20	73		60	7			36	37	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3	10	119	21					10,2	10,2		3	3		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR1-B14 free input shaft

picture 27 ◂

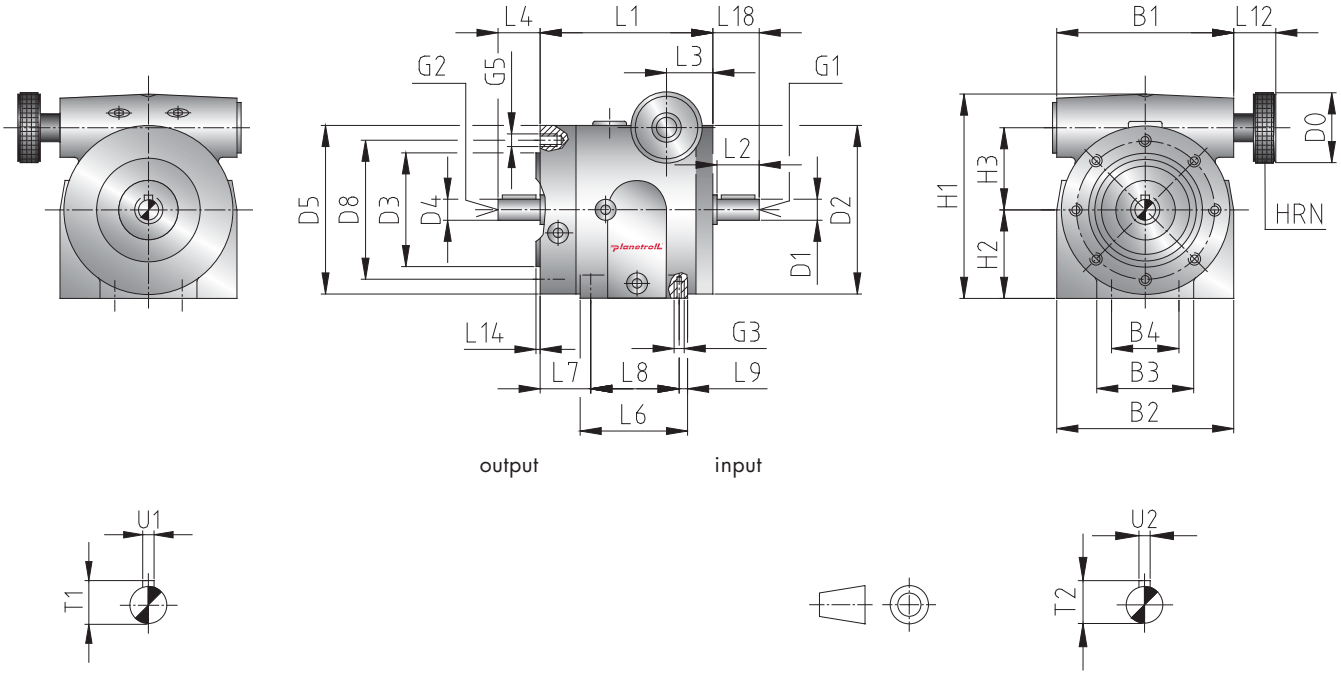


table 31 ◂

size	dimensions [mm]														
MR1-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	90	87	48	38			40	9h6	85	50j6	9h6	85			65
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M4	D M4	M5x10		M5x10		108	50	39	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			104	20	30	20	73	22	60	7			36		2,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				21					10,2	10,2		3	3		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR3-B3 free input shaft

picture 28

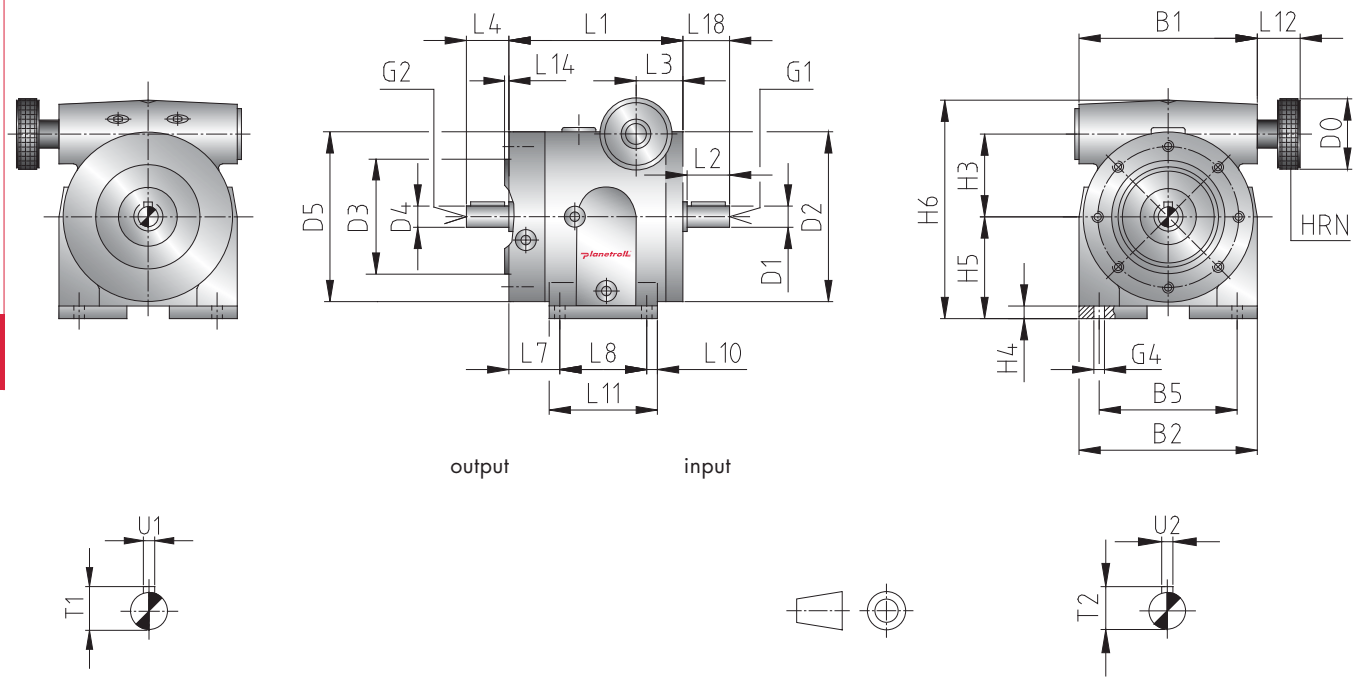


table 32

size	dimensions [mm]														
MR3-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127			90		50	14h6	122	80j6	14h6	122			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M5	D M5		6,6					60	8
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	71	156	121	30	34	30		30	65		10	85	31		3
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				31					16	16		5	5		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR3-B5 free input shaft

picture 29 ◂

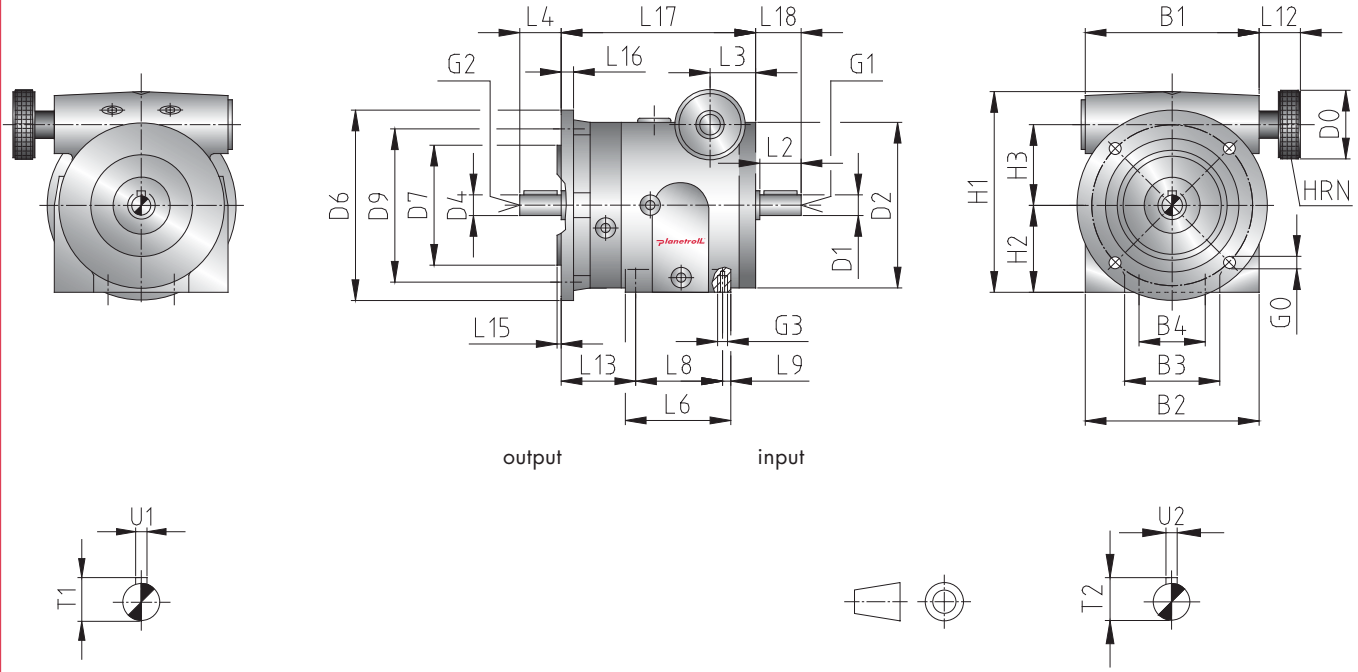


table 33 ◂

size	dimensions [mm]														
MR3-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127	70	50			50	14h6	122		14h6		120	80j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	100				6,6	D M5	D M5	M5x10				148	63	60	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				30	34	30	81		65	10			31	50	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3	7	141	31					16	16		5	5		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR3-B14 free input shaft

picture 30

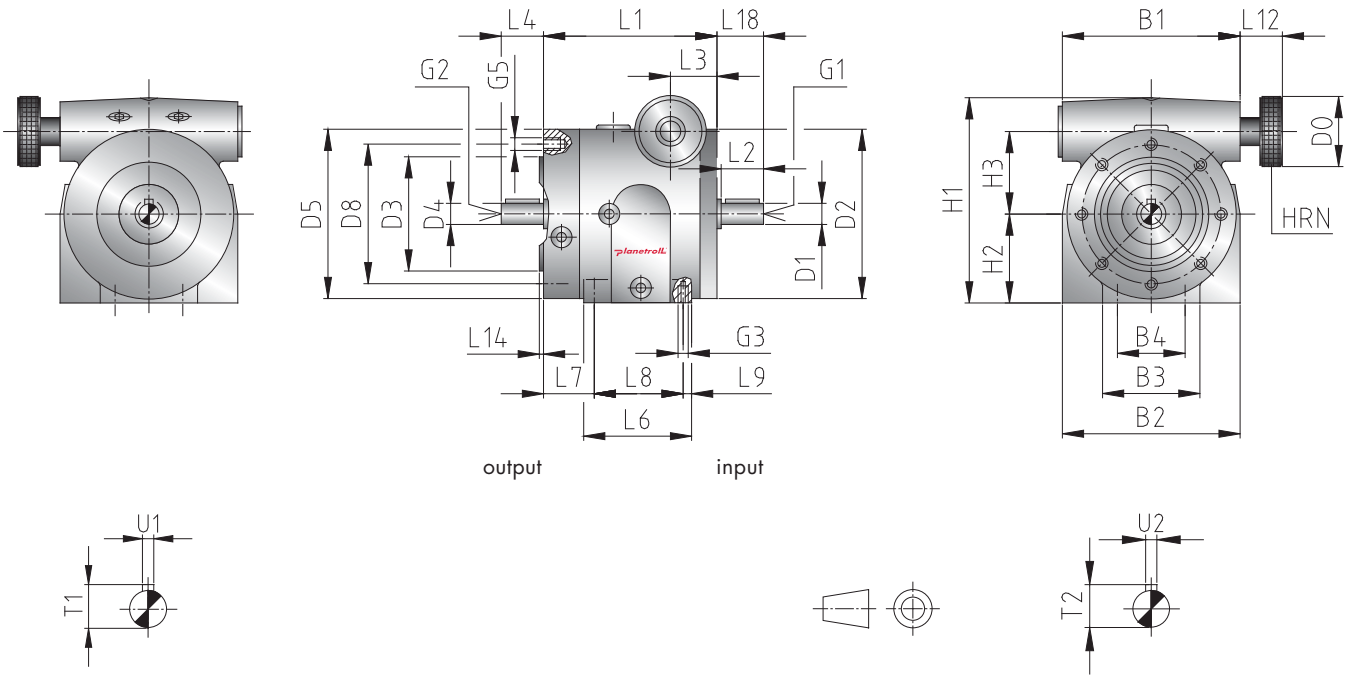


table 34

size	dimensions [mm]														
MR3-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	125	127	70	50			50	14h6	122	80j6	14h6	122			100
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M5	D M5	M5x10		M6x12		148	63	60	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			121	30	34	30	81	30	65	10			31		3
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				31					16	16		5	5		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR5-B3 free input shaft

picture 31 ◂

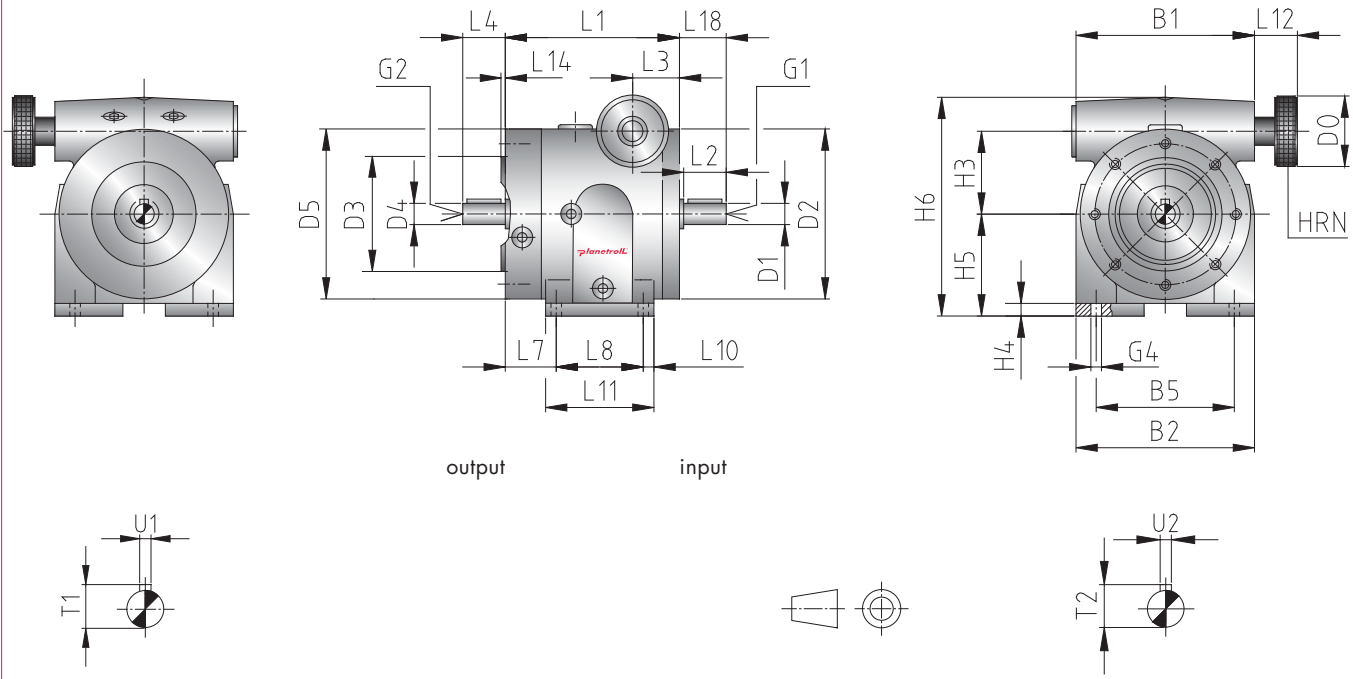


table 35 ◂

size	dimensions [mm]														
MR5-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165			130		50	19h6	160	110j6	19h6	160			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M6	D M6		9					76	10
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	90	191	160	40	42	40		43	80		15	110	31		3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				41					21,5	21,5		6	6		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR5-B5 free input shaft

picture 32

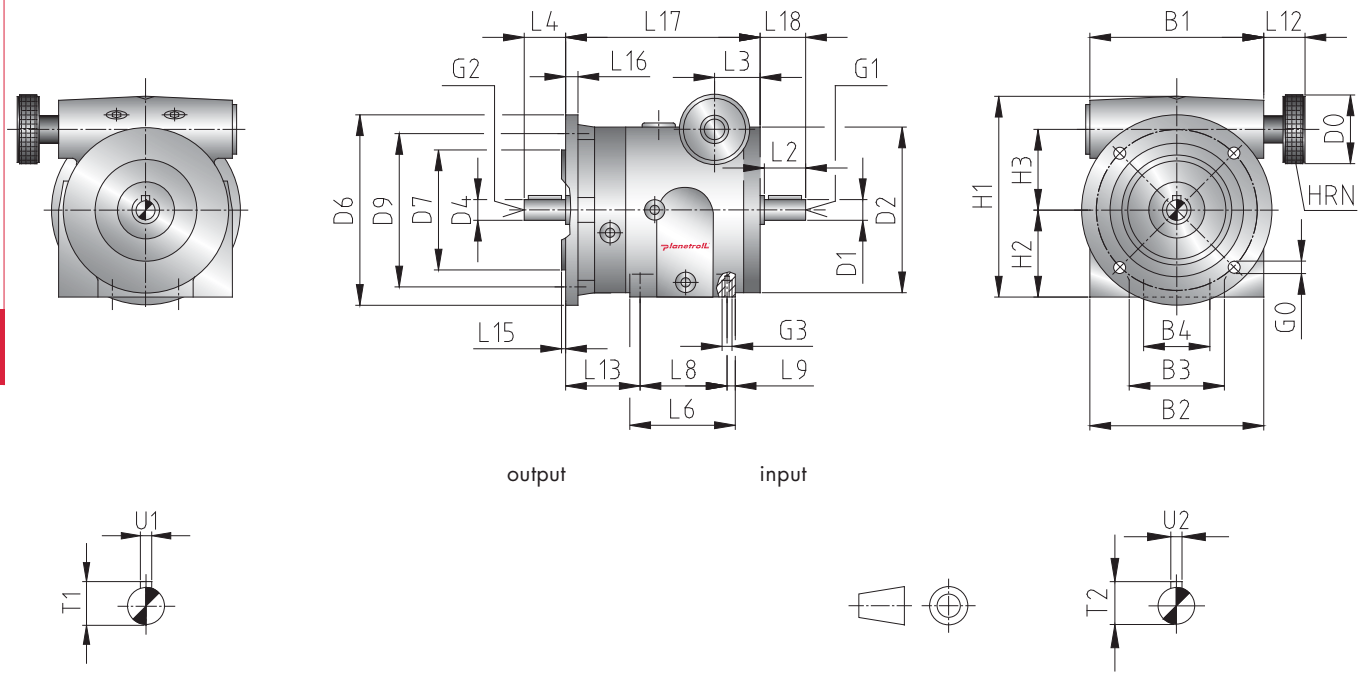


table 36

size	dimensions [mm]														
MR5-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165	105	90			50	19h6	160		19h6		160	110j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	130				9	D M6	D M6	M8x16				181	80	76	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				40	42	40	106		80	15			31	63	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3,5	9	180	41					21,5	21,5		6	6		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR5-B14 free input shaft

picture 33 ◂

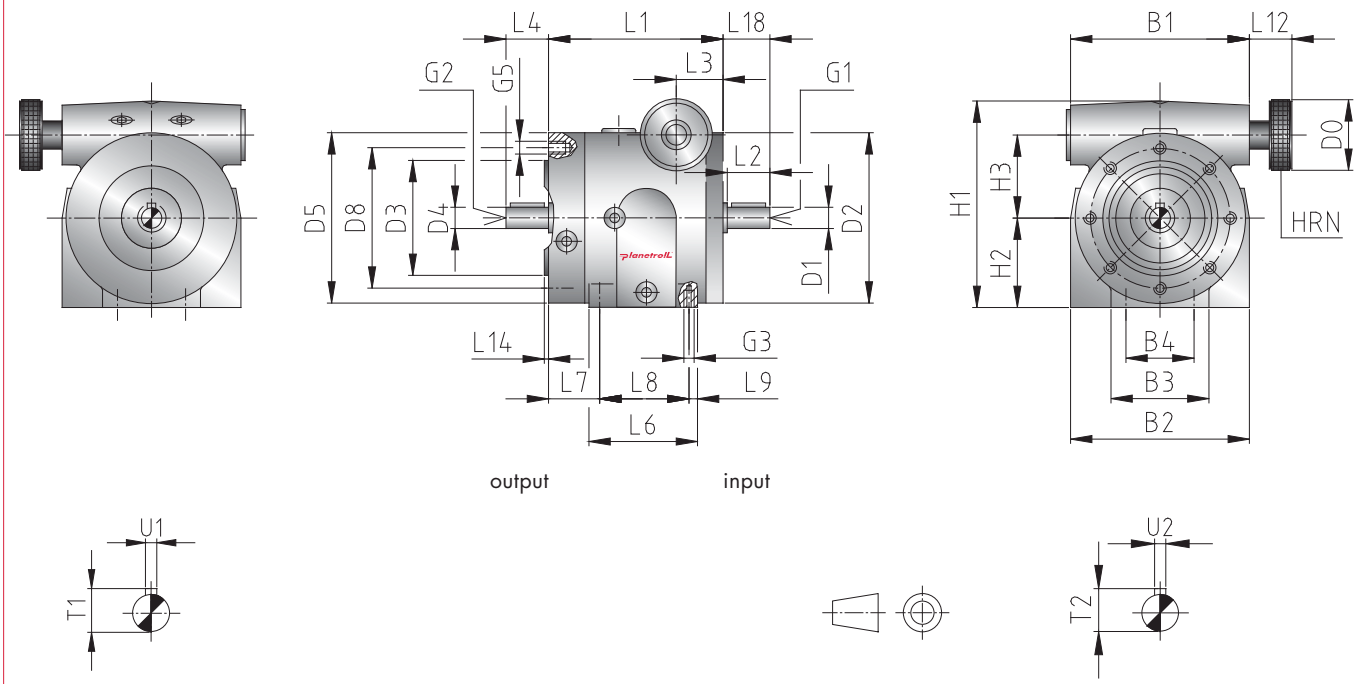


table 37 ◂

size	dimensions [mm]														
MR5-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	162	165	105	90			50	19h6	160	110j6	19h6	160			130
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M6	D M6	M8x16		M8x16		181	80	76	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			160	40	42	40	106	43	80	15			31		3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				41					21,5	21,5		6	6		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR7-B3 free input shaft

picture 34

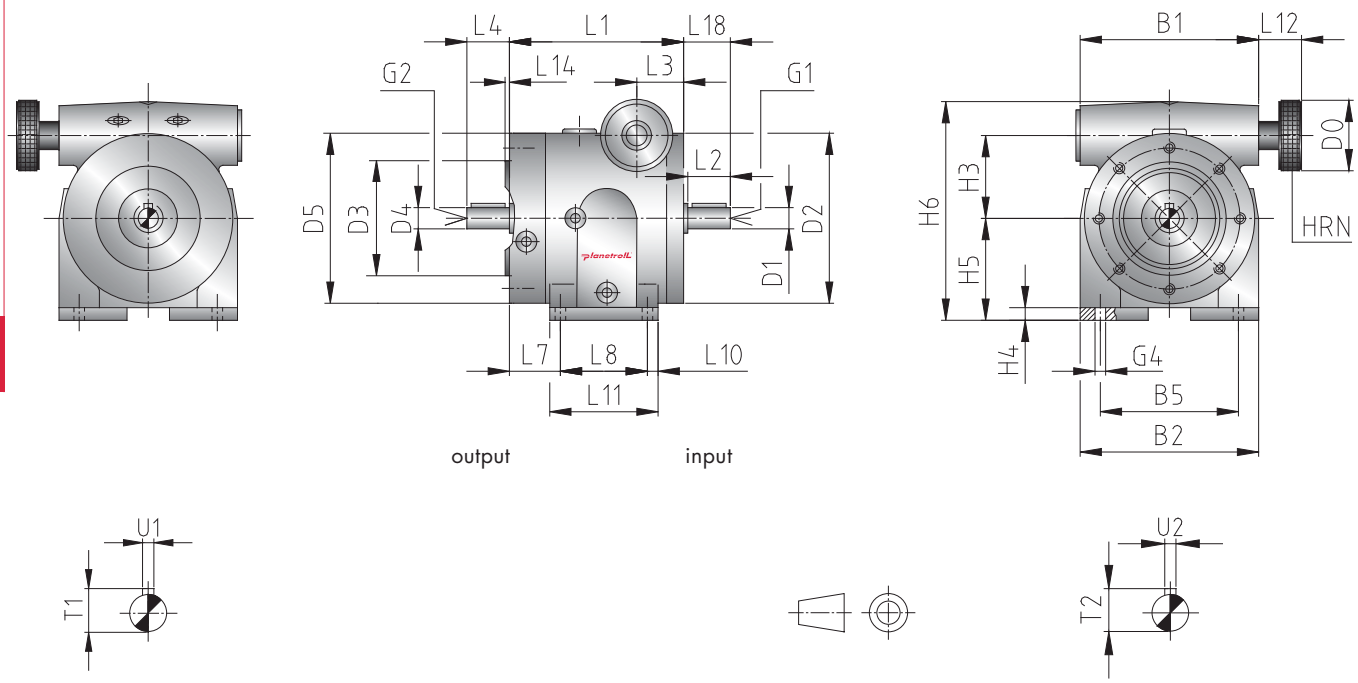


table 38

size	dimensions [mm]														
MR7-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202			160		70	24h6	200	130j6	24h6	199			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M8	D M8		11					95	12
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	112	244	185	50	60	50		30	110		17,5	145	52		3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				52					27	27		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR7-B5 free input shaft

picture 35 ◂

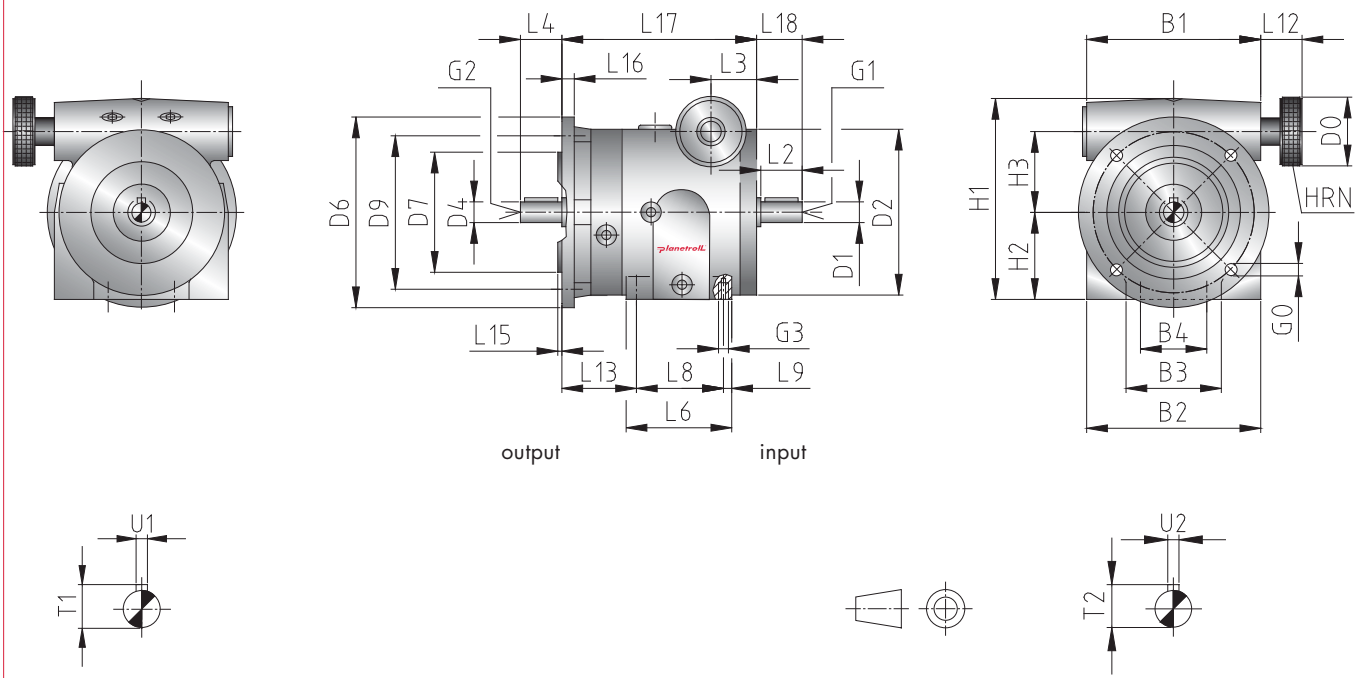


table 39 ◂

size	dimensions [mm]														
MR7-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202	122	105			70	24h6	200		24h6		200	130j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	165				11	D M8	D M8	M8x16				232	100	95	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				50	60	50	135		110	18			52	55	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	3,5	11	210	52					27	27		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR7-B14 free input shaft

picture 36

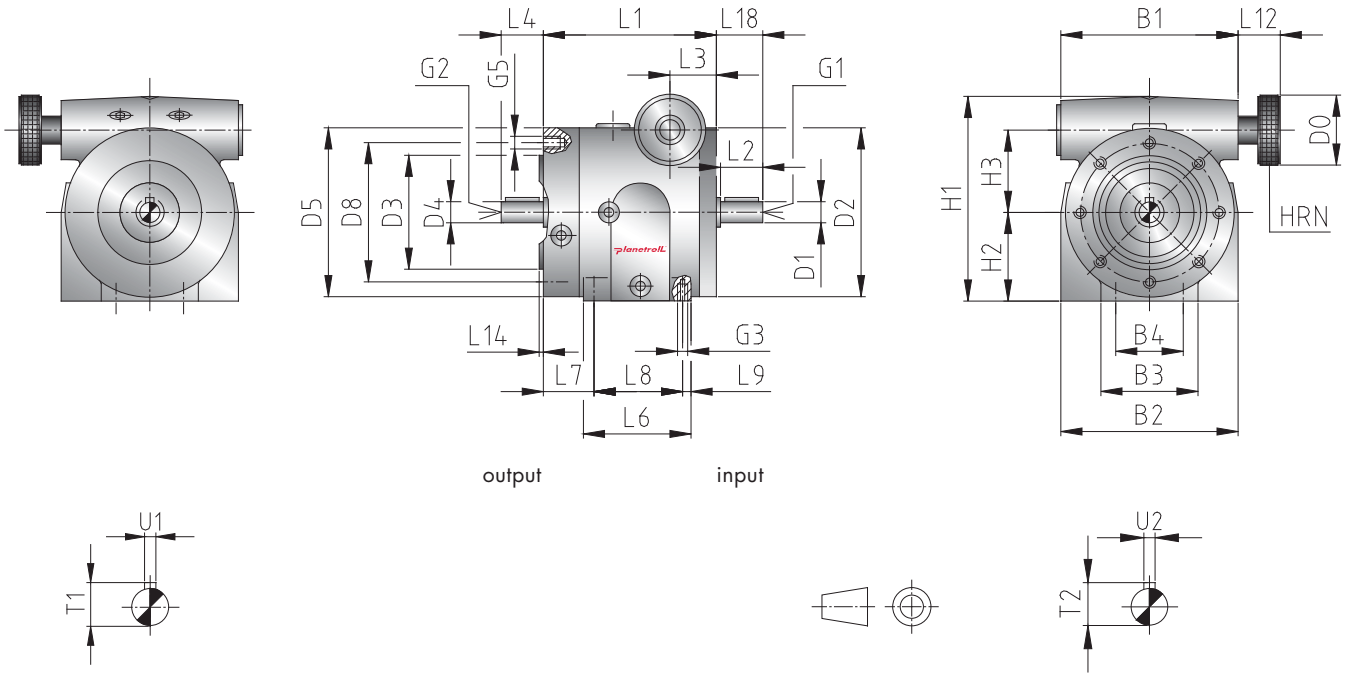


table 40

size	dimensions [mm]														
MR7-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	200	202	122	105			70	24h6	200	130j6	24h6	199			165
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M8	D M8	M8x16		M10x20		232	100	95	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			185	50	60	50	135	30	110	18			52		3,5
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				52					27	27		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR9-B3 free input shaft

picture 37 ◂

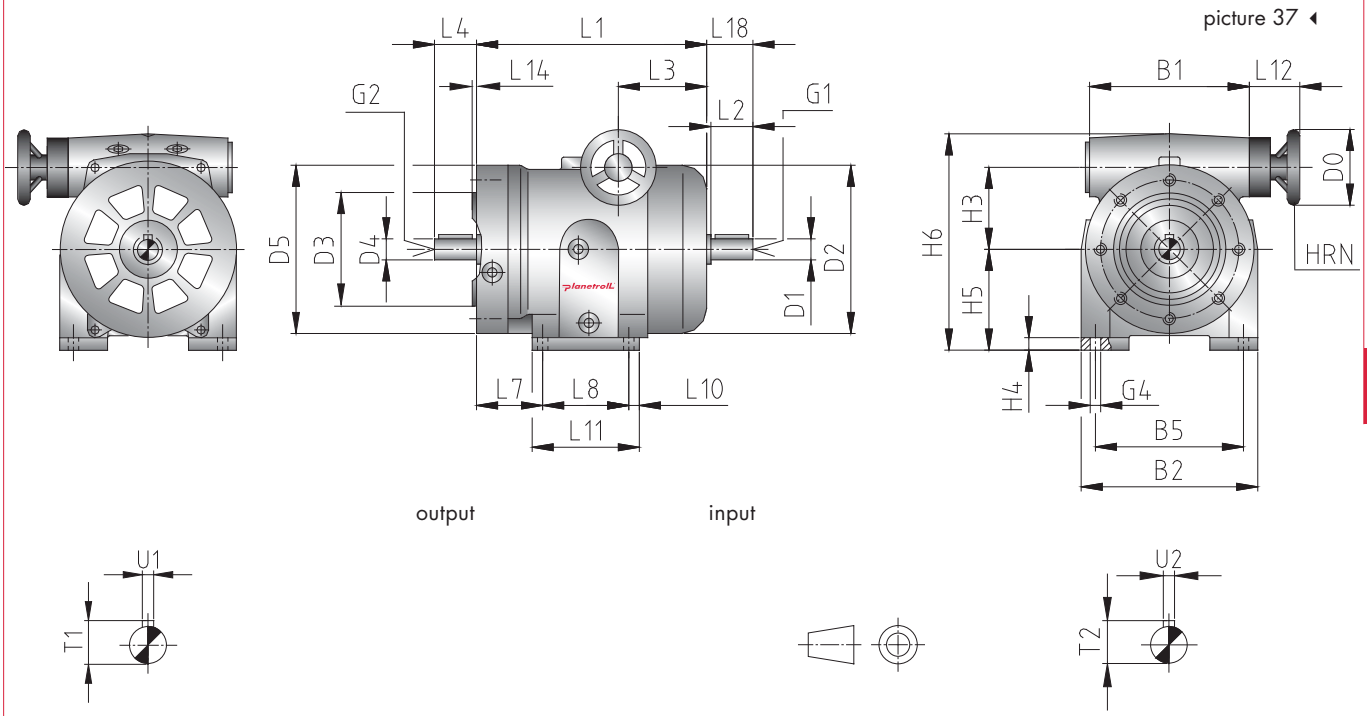


table 41 ◂

size	dimensions [mm]														
MR9-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230			200		100	28h6	250	180j6	28h6	238			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M10	D M10		14					112	12
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	132	287	295	60	140	60		41	130		20	170	50		4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				62					31	31		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR9-B5 free input shaft

picture 38

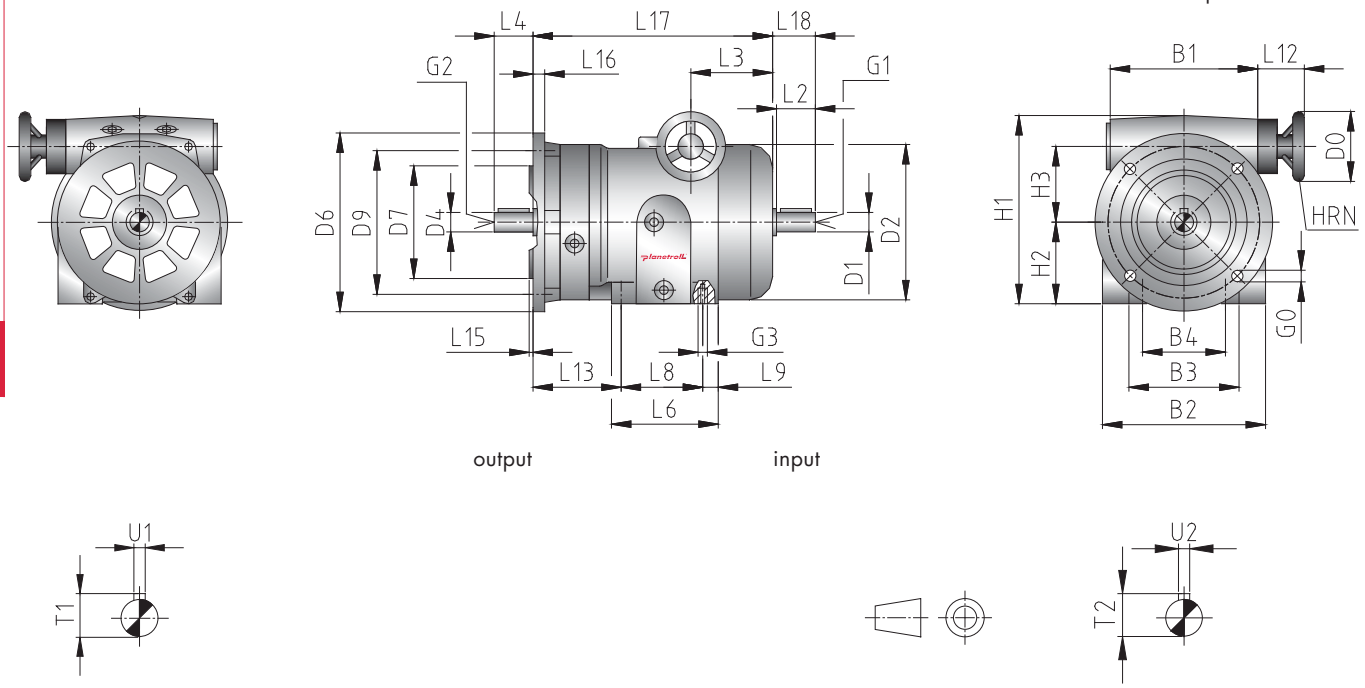


table 42

size	dimensions [mm]														
MR9-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230	162	144			100	28h6	250		28h6		250	180j6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	215				14	D M10	D M10	M10x20				275	120	112	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				60	140	60	172		130	29			50	71	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	4	12	325	62					31	31		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR9-B14 free input shaft

picture 39 ◂

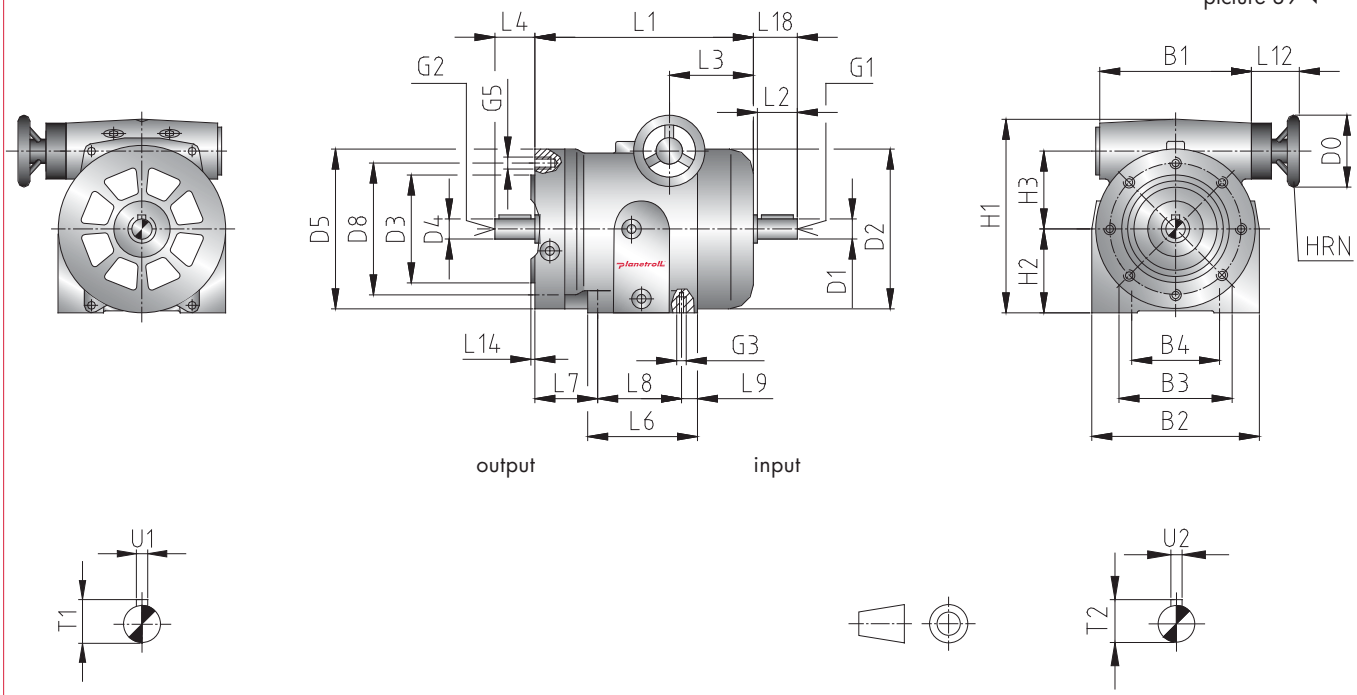


table 43 ◂

size	dimensions [mm]														
MR9-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	230	162	144			100	28h6	250	180j6	28h6	238			215
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M10	D M10	M10x20		M12x24		275	120	112	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			295	60	140	60	172	41	130	29			50		4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				62					31	31		8	8		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR11-B3 free input shaft

picture 40

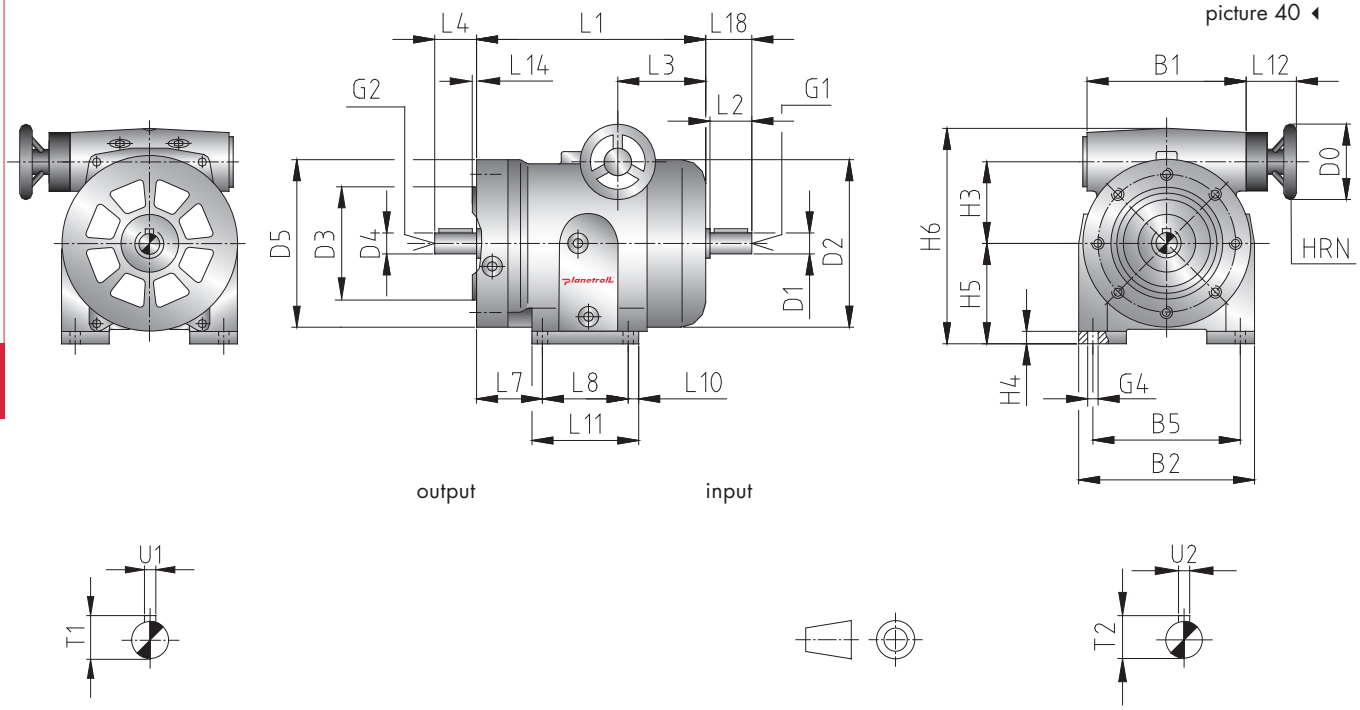


table 44

size	dimensions [mm]														
MR11-B3	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315			280		125	38h6	350	230j6	38h6	318			
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M12	D M12		14					147	20
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
	200	390	432	80	195	80		45	200		25	250	50		4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				82					41	41		10	10		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MR11-B5 free input shaft

picture 41 ◂

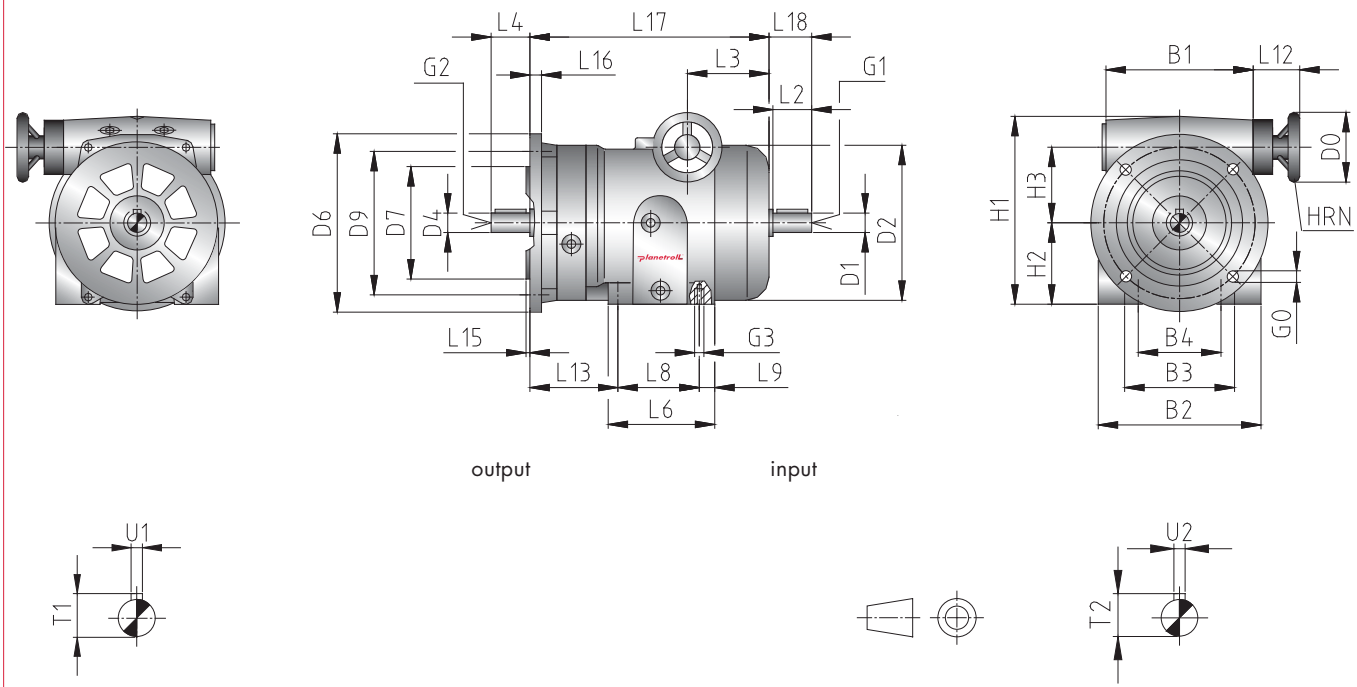


table 45 ◂

size	dimensions [mm]														
MR11-B5	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315	225	192			125	38h6	350		38h6		350	250h6	
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
	300				18	D M12	D M12	M12x24				370	180	147	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
				80	195	80	258		200	45			50	85	
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
	5	15	472	82					41	41		10	10		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

Planetroll® the driving power

MR11-B14 free input shaft

picture 42

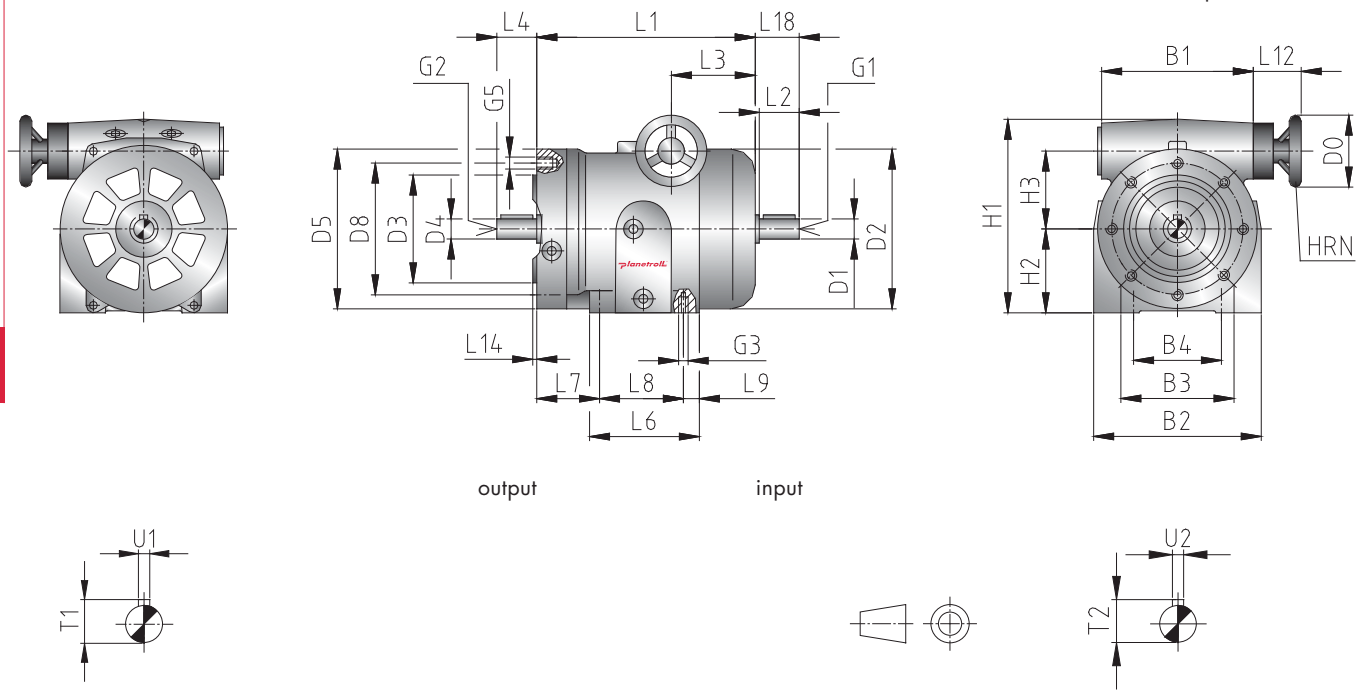


table 46

size	dimensions [mm]														
MR11-B14	B1	B2	B3	B4	B5	B6	D0	D1	D2	D3	D4	D5	D6	D7	D8
	236	315	225	192			125	38h6	350	230j6	38h6	318			265
	D9	D10	D11	D12	G0	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4
						D M12	D M12	M12x24		M12x22		370	180	147	
	H5	H6	L1	L2	L3	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14
			432	80	195	80	258	45	200	45			50		4
	L15	L16	L17	L18	L19	L20	L21	L22	T1	T2	T3	U1	U2	U3	
				82					41	41		10	10		

5 types of construction are to be defined on speed variator output and foot socket:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

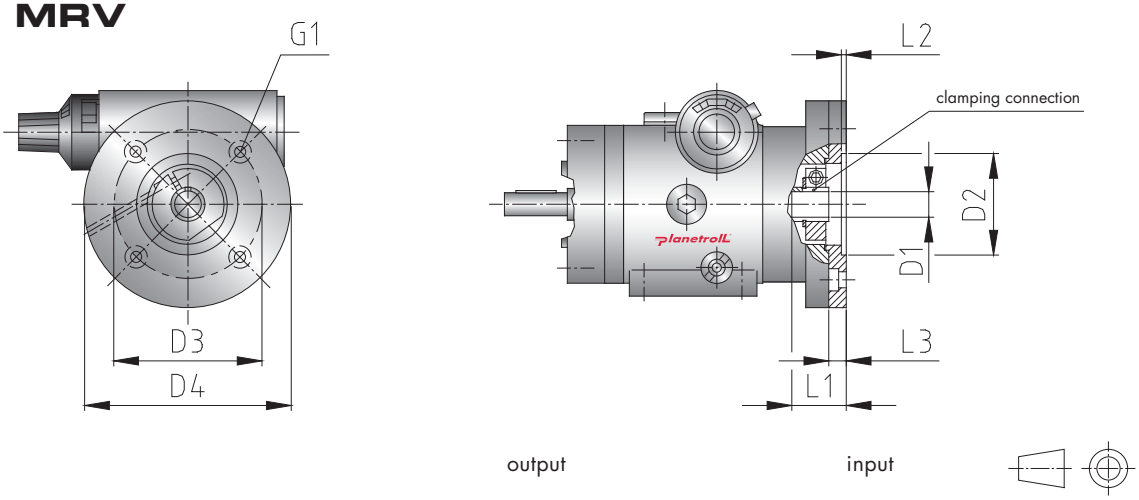
B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

MRV

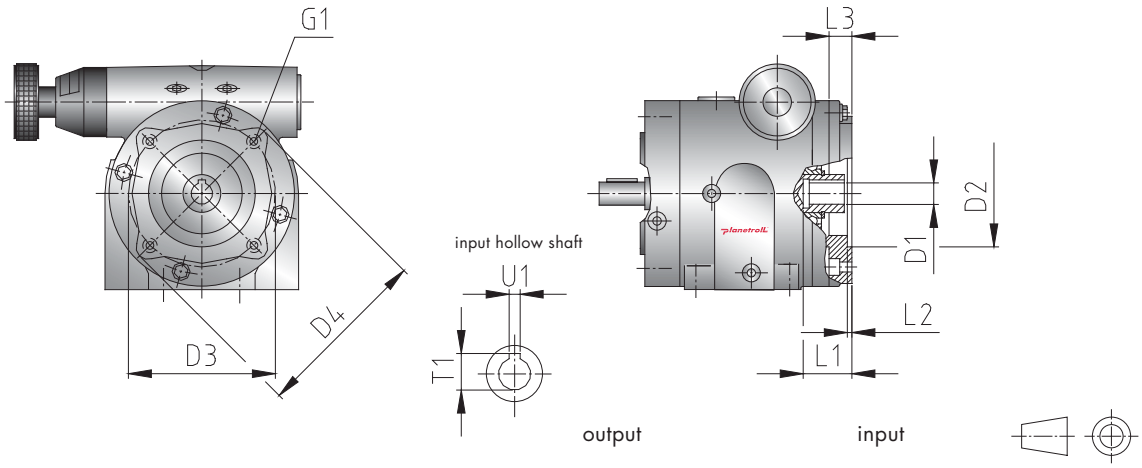


picture 43

table 47

size	motor size	motor flange type	flange dimensions [mm]								clamping connection	
			D1	D2	D3	D4	G1	L1	L2	L3		
MRV	no IEC standard	B14-28	8	28	40	72	5,5	25	5,5	6	tightening torque for clamping screw M3	2,1 Nm
		B14-25	9	25	36	72	4,5	25	5,5	6		
		B14-32	9	32	45	72	5,5	25	4	6		

MR1, MR3, MR5



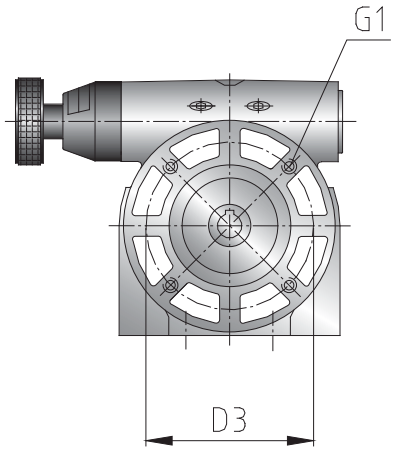
picture 44

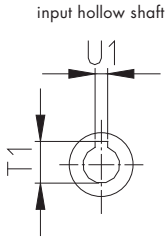
table 48

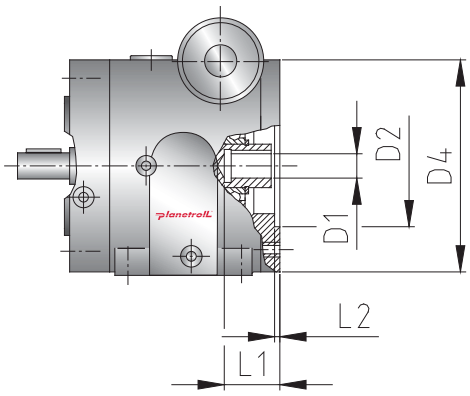
size	motor size	IEC motor flange type	flange dimensions [mm]									
			D1	D2	D3	D4	G1	L1	L2	L3	T1	U1
MR1	BG56	B14-80	9	50	65	80	5,5	20	3	12	10,4	3
	BG63	B14-90	11	60	75	90	5,5	23	3	12	12,8	4
MR3	BG63	B14-90	11	60	75	90	5,5	23	3	15	12,8	4
	BG71	B14-105	14	70	85	105	6,6	30	4	15	16,3	5
MR5	BG71	B14-105	14	70	85	105	6,6	30	4	20	16,3	5
	BG80	B14-120	19	80	100	120	6,6	40	4	20	21,8	6
	BG90	B14-140	24	95	115	140	9	50	4	20	27,3	8

All speed variators can be delivered according to NEMA motor connecting dimensions. Further IEC motor flange types and input hollow shaft diameters (D1) on request.

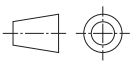
MR7







output input

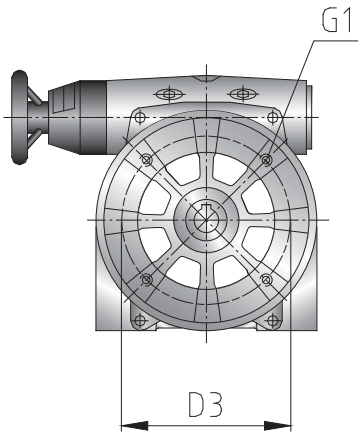


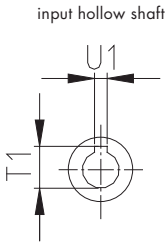
picture 45 ◂

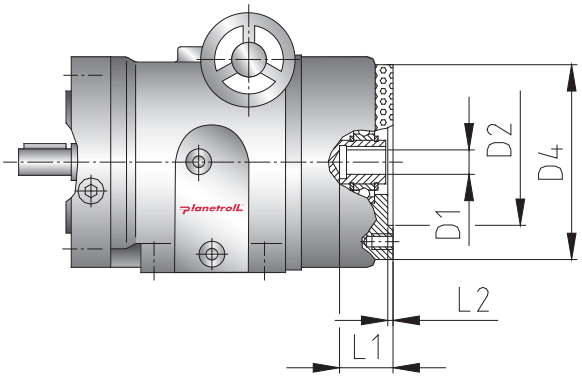
table 49 ◂

size	motor size	IEC motor flange type	flange dimensions [mm]								
			D1	D2	D3	D4	G1	L1	L2	T1	U1
MR7	BG80	B5-200	19	130	165	200	M10	40	4,5	21,8	6
	BG90	B5-200	24	130	165	200	M10	50	4,5	27,3	8

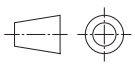
MR9, MR11







output input



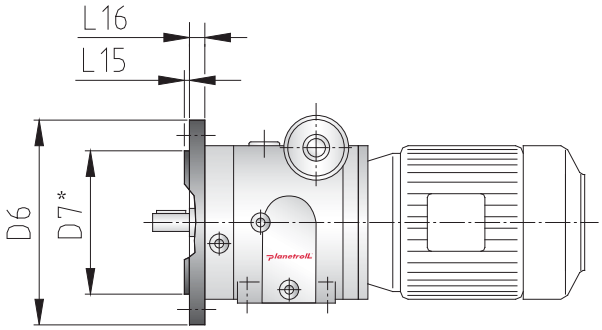
picture 46 ◂

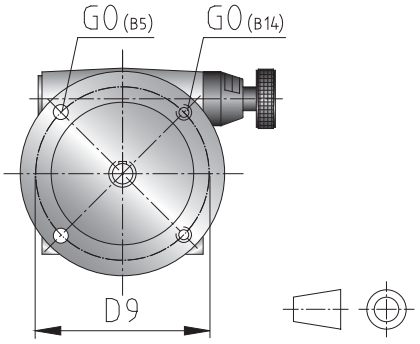
table 50 ◂

size	motor size	IEC motor flange type	flange dimensions [mm]								
			D1	D2	D3	D4	G1	L1	L2	T1	U1
MR9	BG100	B5-250	28	180	215	250	M12	60	6	31,3	8
	BG112	B5-250	28	180	215	250	M12	60	6	31,3	8
MR11	BG112	B5-250	28	180	215	250	M12	60	6	31,3	8
	BG132	B5-300	38	230	265	300	M12	80	6	41,3	10

All speed variators can be delivered according to NEMA motor connecting dimensions. Further IEC motor flange types and input hollow shaft diameters (D1) on request.

output flange dimensions





picture 47 ◂

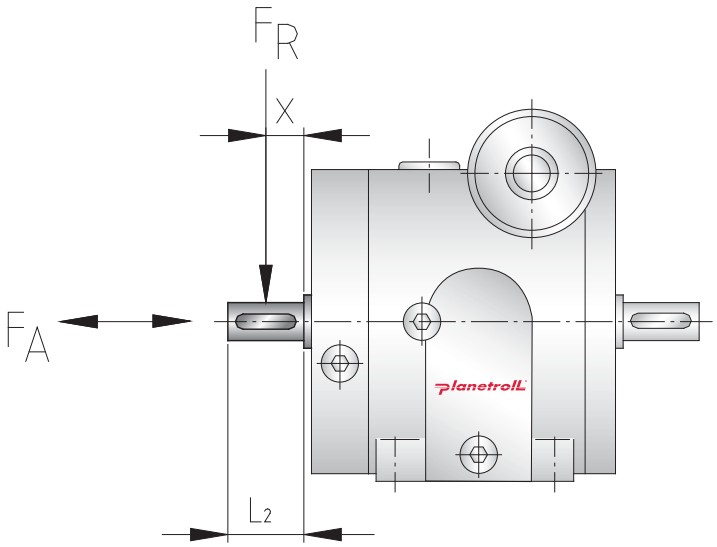
table 51 ◂

size	IEC flange type		flange dimensions [mm]							
	B5	B14	D6	D7*	D9	G0 (B5)	G0 (B14)	L15	L16 (B5)	L16 (B14)
MRV	B5-80	B14-80	80	50	65	5,5	M5x8	2,5	8	8
	B5-90	B14-90	90	60	75	5,5	M5x8	2,5	8	8
MR1	B5-90	B14-90	90	60	75	5,5	M5x15	2,5	6	15
	B5-105	B14-105	105	70	85	6,6	M6x15	2,5	7	15
	B5-120	B14-120	120	80	100	6,6	M6x15	3	10	15
	B5-140	B14-140	140	95	115	9	M8x15	3	10	15
	B5-160		160	110	130	9		3,5	10	
MR3		B14-90	90	60	75		M5x10	2,5		20
	B5-105	B14-105	105	70	85	6,6	M6x12	2,5	6	20
	B5-120	B14-120	120	80	100	6,6	M6x20	3	7	20
	B5-140	B14-140	140	95	115	9	M8x20	3	9	20
	B5-160	B14-160	160	110	130	9	M8x20	3,5	9	20
	B5-200	B14-200	200	130	165	11	M10x20	3,5	12	20
MR5		B14-120	120	80	100		M6x16	3		20
	B5-140	B14-140	140	95	115	9	M8x16	3	8	20
	B5-160	B14-160	160	110	130	9	M8x20	3,5	9	20
	B5-200	B14-200	200	130	165	11	M10x20	3,5	12	20
	B5-250		250	180	215	14		4	15	
MR7		B14-140	140	95	115		M8x20	3		25
	B5-160	B14-160	160	110	130	9	M8x20	3,5	12	25
	B5-200	B14-200	200	130	165	11	M10x20	3,5	11	25
	B5-250		250	180	215	14		4	12	
	B5-300		300	230	265	14		4	12	
MR9		B14-160	160	110	130		M8x25	3,5		30
	B5-200	B14-200	200	130	165	11	M10x25	3,5	12	30
	B5-250	B14-250	250	180	215	14	M12x30	4	12	30
	B5-300	B14-300	300	230	265	14	M12x24	4	12	30
	B5-350		350	250	300	18		5	12	
MR11		B14-200	200	130	165		M10x20	3,5		40
	B5-250	B14-250	250	180	215	14	M12x24	4	19	40
	B5-300		300	230	265	14		4	15	
	B5-350		350	250	300	18		5	15	
	B5-400		400	300	350	18		5	16	

D7* fitting clearance ≤ ø 230 in j6
> ø 230 in h6

permissible output shaft load

picture 48 ◂



output input

Point of load application corresponds to the centre of the output shaft. The values for F_R have regard to 30 % axial force.

If force entry of radial load F_R is out of centre of output shaft, then the permissible values of force ($x > L_2/2$) will reduce or the permissible values of force ($x < L_2/2$) will increase.

Points of load application on speed variator output shaft:

F_A permissible axial force
F_R permissible radial force
L_2 shaft length
x distance

table 52 ◂

permissible output shaft radial force F_R [N]		
size	type of construction	
	B3/B14	V/B5
MRV	90	–
MR1	250	300
MR3	370	500
MR5	600	800
MR7	700	1.000
MR9	900	1.300
MR11	2.100	3.700

V Reinforced/double output shaft bearing (without output flange centering, with tapped holes in foot socket)

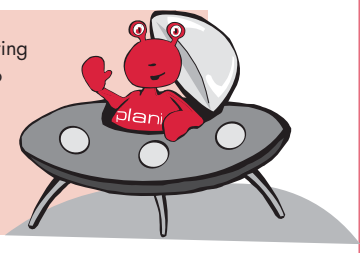
Please note:

The maximum permissible radial loads for a maximum output speed n_2 = 1,200 rpm (speed variator with 2-pole motor) and a rolling-contact bearing service life of 20,000 h are indicated in table 52.

If output speed range is used below n_2 = 1,200 rpm, then permissible radial load will increase and bearing life respectively. Such as for n_2 = 600 rpm permissible radial load on output shaft will duplicate and also bearing life.

Special executions for exceptional high radial and axial loads (e. g. as pump drive, progressive cavity pumps amongst others) or longer bearing life can be realized on request.

For closer technical information please contact planetroll®.



control element: **HRN**

picture 49 ◂

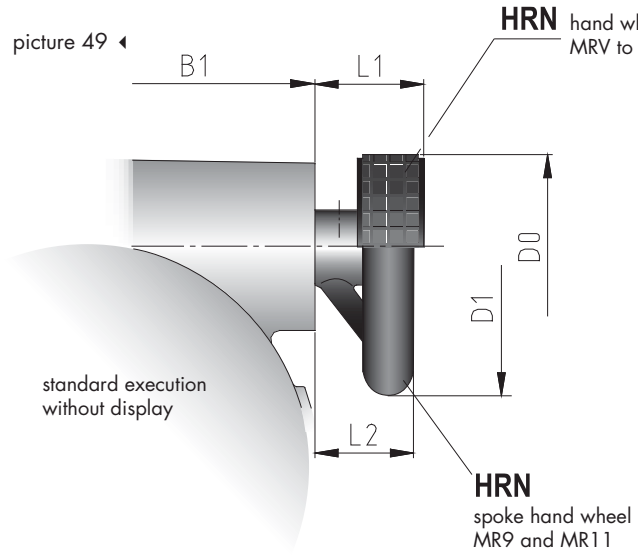


table 53 ◂

size	control element	dimensions [mm]				
		B1	D0	D1	L1	L2
MRV	HRN	62	32		28	
MR1	HRN	90	40		36	
MR3	HRN	125	50		31	
MR5	HRN	162	50		31	
MR7	HRN	200	70		52	
MR9	HRN	236		100		50
MR11	HRN	236		125		50

control element: **HVK**

picture 50 ◂

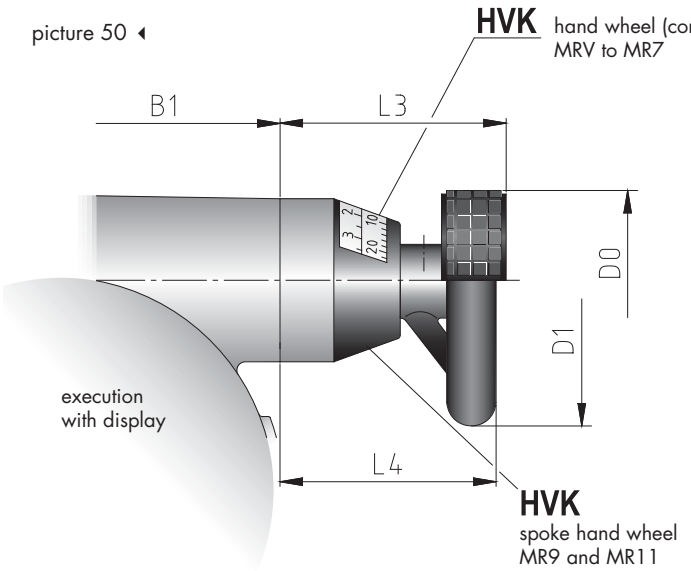


table 54 ◂

size	control element	dimensions [mm]				
		B1	D0	D1	L3	L4
MRV	HVN	62	13		28	
MR1	HVK4	90	40		57	
MR3	HVK5	125	50		64	
MR5	HVK5	162	50		64	
MR7	HVK6	200	70		92	
MR9	HVK7	236		100		92
MR11	HVK7	236		125		92

A very precise repeatable adjustment of variator output speed can be realized over the complete speed range by using the omnidirectional position indicator HVK.

MR9 and MR11 are equipped with a spoke hand wheel. The spoke hand wheels HRN and HVK for speed variator sizes MR9 and MR11 are made of aluminium.

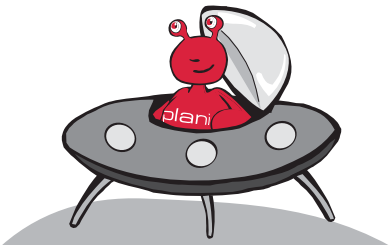
technical data/HVK:

housing: black, of polyamid 6.6, impact-proof with window

Ziffern: black

display:
- large scale: 0 - 12 with scaling
- fine scale: 0 - 100 with scaling

hand wheel: HRN black, plastics (aluminium)
- dust- and waterproof



Notice:
Further to speed setting by means of hand wheel, an electric speed setting is also possible (see page 62).

control element: **HRS**

picture 51 ◂

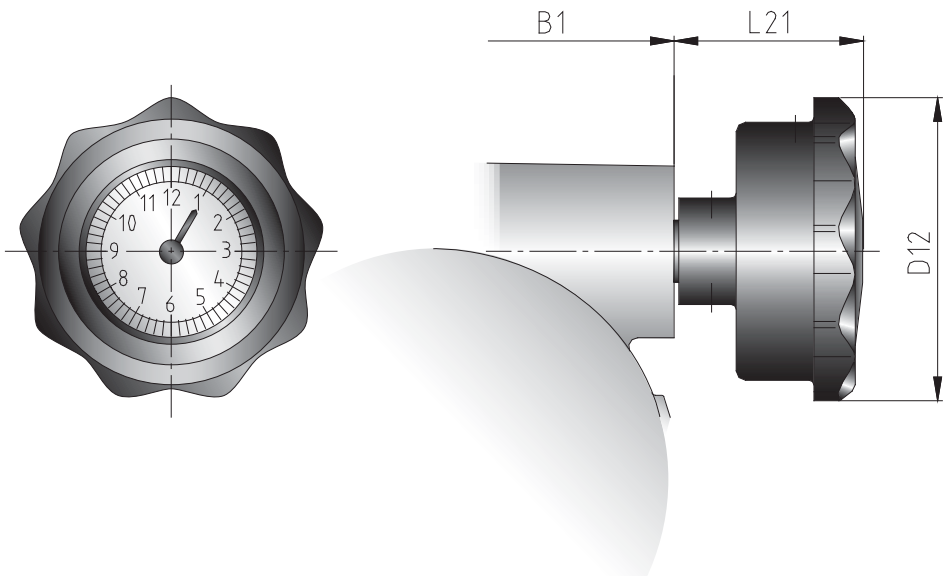


table 55 ◂

size	control element	dimensions [mm]		
		B1	D12	L21
MRV	HRS	62	75	54
MR1	HRS	90	75	57
MR3	HRS	125	75	47
MR5	HRS	162	75	47
MR7	HRS	200	100	70
MR9	HRS	236	120	78
MR11	HRS	236	120	78

This control element makes it possible to read the adjusted position by means of pointer and scale inside hand wheel. This control element HRS (gravity position indicator) is only suitable for speed variator assembly with horizontal setting shaft.

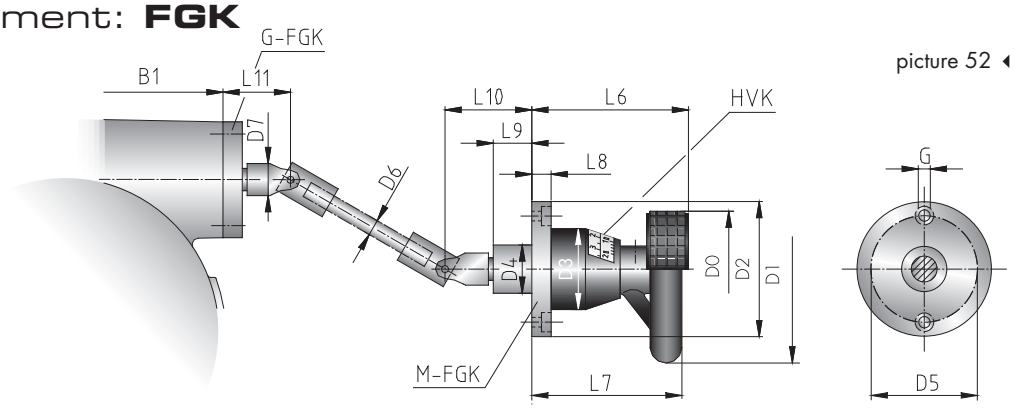
technical data:

position indicator:	dustproof
rotational direction to the right:	increasing values
standard scale:	0- 6 with scaling
	0-12 with scaling
hand wheel:	HRS, die-cast aluminium

options:

- special scales
- mineral glass display
- 2 pointers
- waterproof

control element: **FGK**



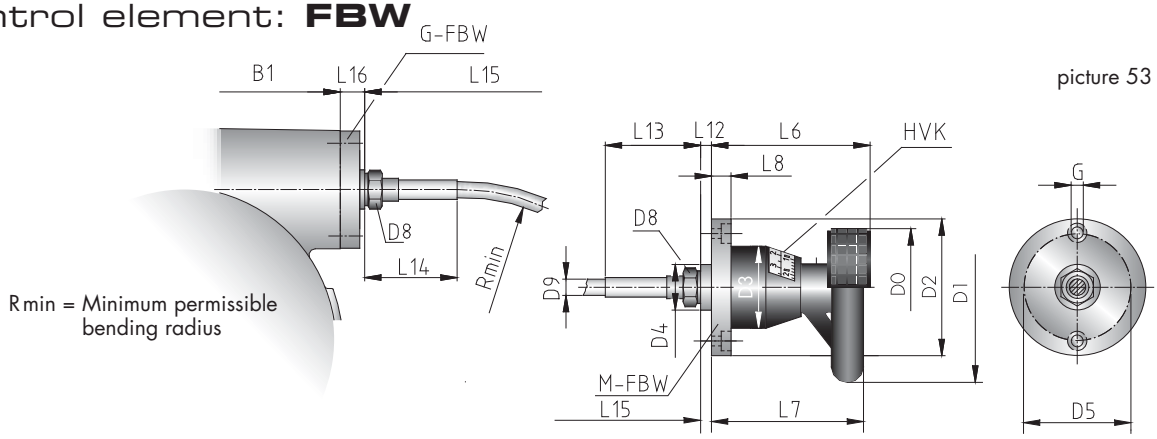
picture 52 ◂

FGK = Remote control by means of propeller shaft, connection acc. to DIN 808, angular misalignment max. 30°.

table 56 ◂

size	control element	dimensions [mm]															
		B1	D0	D1	D2	D3	D4	D5	D6	D7	G	L6	L7	L8	L9	L10	L11
MRV	FGK4	62	50		52	38	25	42	8	13	2x4,5	73		10	22	40	37
MR1	FGK5	90	50		75	46	25	65	8	13	2x4,5	74		10	24	42	51
MR3	FGK5	125	50		75	46	25	65	8	13	2x4,5	74		10	24	42	41
MR5	FGK5	162	50		75	46	25	65	8	13	2x4,5	74		10	24	42	41
MR7	FGK6	200	70		80	58	50	65	12	25	4x5,5	108		10	27	57	39
MR9	FGK7	236		100	80	58	50	65	12	25	4x5,5		102	10	27	57	39
MR11	FGK7	236		125	80	58	50	65	12	25	4x5,5		102	10	27	57	39

control element: **FBW**



Rmin = Minimum permissible bending radius

picture 53 ◂

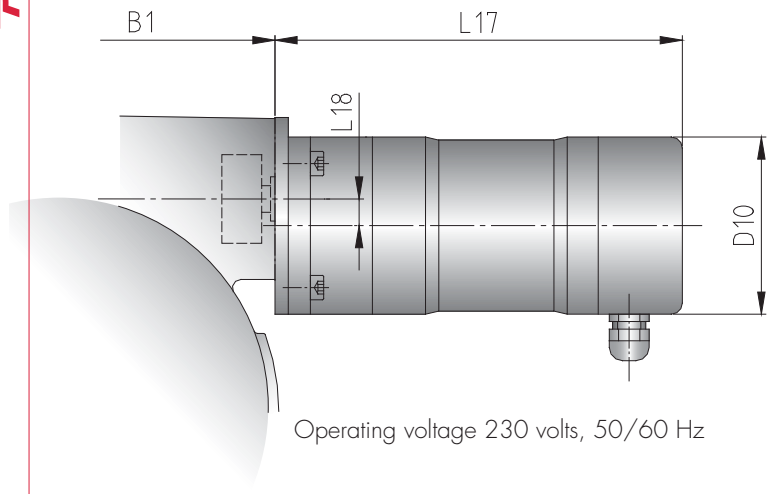
FBW = Remote control by means of flexible shaft, connection acc. to DIN 75 532.

table 57 ◂

size	control element	dimensions [mm]																		
		B1	D0	D1	D2	D3	D4	D5	D8	D9	G	L6	L7	L8	L12	L13	L14	L15	L16	Rmin
MRV	FBW4	62	50		52	38	25	42	SW27	14	2x4,5	67		10	11	60	60	ordering length flexible shaft	3	110
MR1	FBW5	90	50		75	46	25	65	SW27	14	2x4,5	74		10	13	60	60		18	110
MR3	FBW5	125	50		75	46	25	65	SW27	14	2x4,5	74		10	13	60	60		9	110
MR5	FBW5	162	50		75	46	25	65	SW27	14	2x4,5	74		10	13	60	60		9	110
MR7	FBW6	200	70		80	58	50	65	⌀ 33	24	4x5,5	108		10	14	100	100		23	230
MR9	FBW7	236		100	80	58	50	65	⌀ 33	24	4x5,5		102	10	14	100	100		23	230
MR11	FBW7	236		125	80	58	50	65	⌀ 33	24	4x5,5		102	10	14	100	100		23	230

control element: **EFB electric remote control**

picture 54 ◂



Operating voltage 230 volts, 50/60 Hz

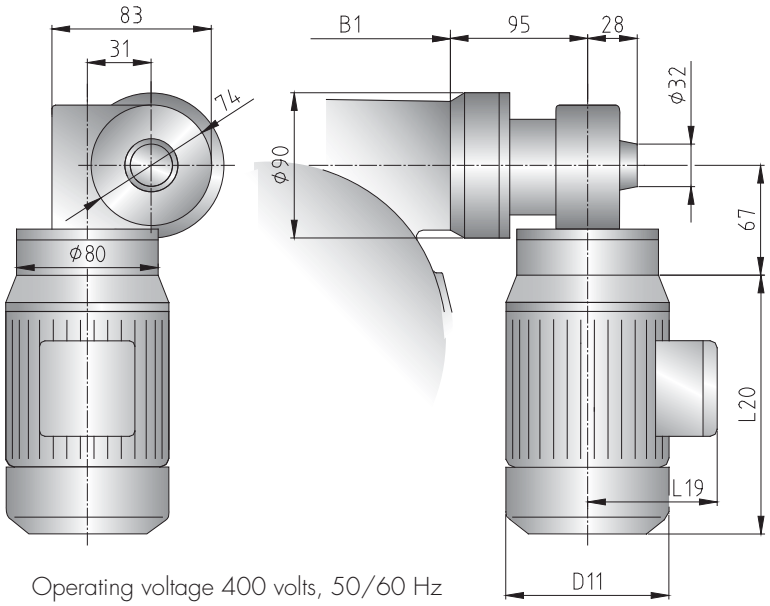
This electric remote control consits of a synchronous motor and a safety coupling as torque limiter. The standard setting time is 24 seconds for the complete speed setting range.

table 58 ◂

size	dimensions [mm]			
	B1	D10	L17	L18
MR1	90	65	135	13
MR3	125	65	127	13
MR5	162	65	189	13
MR7	200	65	200	13

The linear size L17 is specified for the EFB with standard setting time of 24 seconds.

picture 55 ◂



Operating voltage 400 volts, 50/60 Hz

This electric remote control for sizes MR7, MR9 and MR11 consists of a three-phase motor and a safety coupling as torque limiter. The standard setting time is 24 seconds for the complete speed setting range.

Special operating voltages for EFB on request.

table 59 ◂

size	dimensions [mm]			
	B1	D11	L19	L20
MR7	200	112	97	168
MR9	236	112	97	168
MR11	236	112	97	168

The dimensions D11 and L20 are specified for the EFB with standard setting time of 24 seconds.

Options for all remote controls:

Setting time 6, 12, **24**, 60, 120 seconds. All electric remote control motors can be delivered acc. to ATEX 95 for zones 1 and 21.

The speed variator mounting positions are marked with the numbers 1 – 2 – 3 – 4 – 5 – 6. Deviating mounting positions, so-called pendulum positions, can be realized as well.

picture 56 ◂

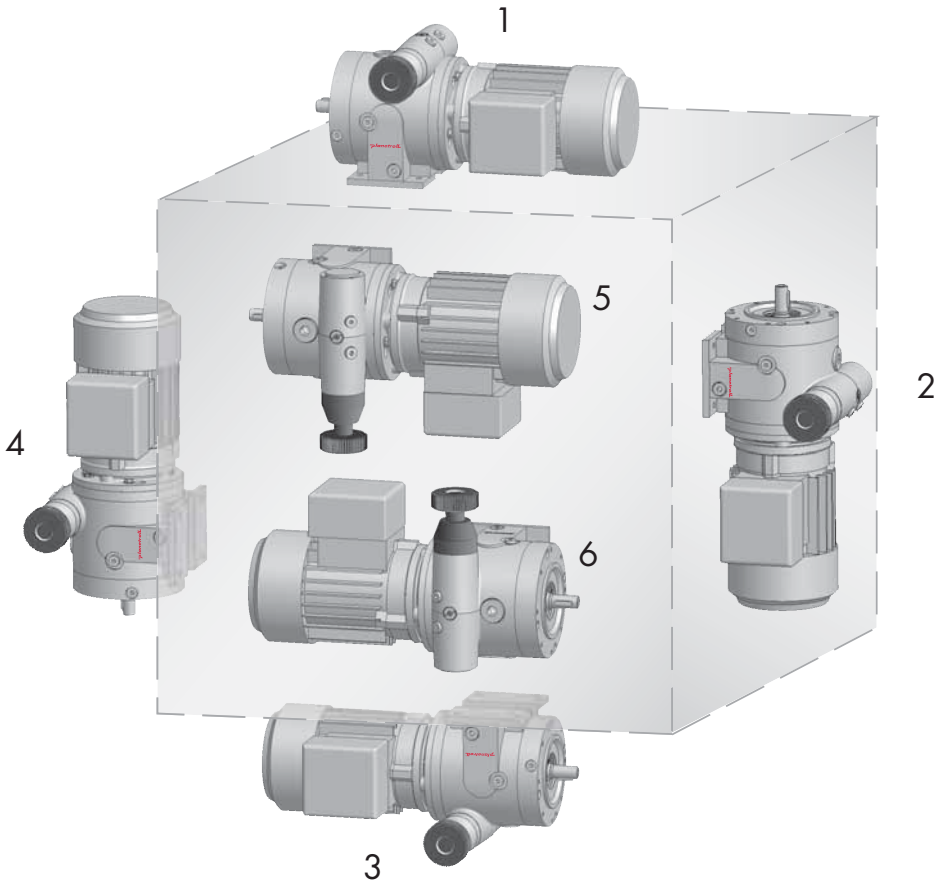


table 60 ◂

mounting position	1	2	3	4	5	6
	B3, B5, B14	V3, V6, V19	B8	V1, V5, V18	B6	B7
size	weight [kg]					
MRV	0,94					
MR1	2,21					
MR3	5,70	5,72	5,70	5,77	5,70	
MR5	11,68	11,75	11,68	11,82	11,70	
MR7	20,22	20,46	20,22	20,52	20,22	
MR9	39,48	39,75	39,43	39,91	39,48	
MR11	103,00		101,60	104,10	102,30	

The indicated weights refer to type of construction B14 with input hollow shaft as well as control element HRN.

description motor gear unit

table 61 ◂

sample of description:

0,25	D	4	(Ex)	M	R	3	-2

drive motor	code
motor power [kW]	
three-phase	**D**
AC current	**W**

motor pole count	
n_1 = 2,800 rpm motor pole count	**2**
n_1 = 1,400 rpm motor pole count	**4**
n_1 = 900 rpm motor pole count	**6**

motor execution		
standard motor	without code →	code casket not applied
brake motor		**(Br)**
increased safety		**(Ex)**
flame-proof enclosure		**(Ex)d**

speed variator	code
planomaster®	**M**
system	**R**
system	A
size	**V, 1, 3, 5, 7, 9, 11**

type of construction	
B3	**-1**
B5	**-2**
B14	**-3**
B3/B5	**-1/2**
B3/B14	**-1/3**
V	**-V**

Specification of types of construction:

B3 Foot mounting with through holes as well as centring and tapped holes in the output flange.

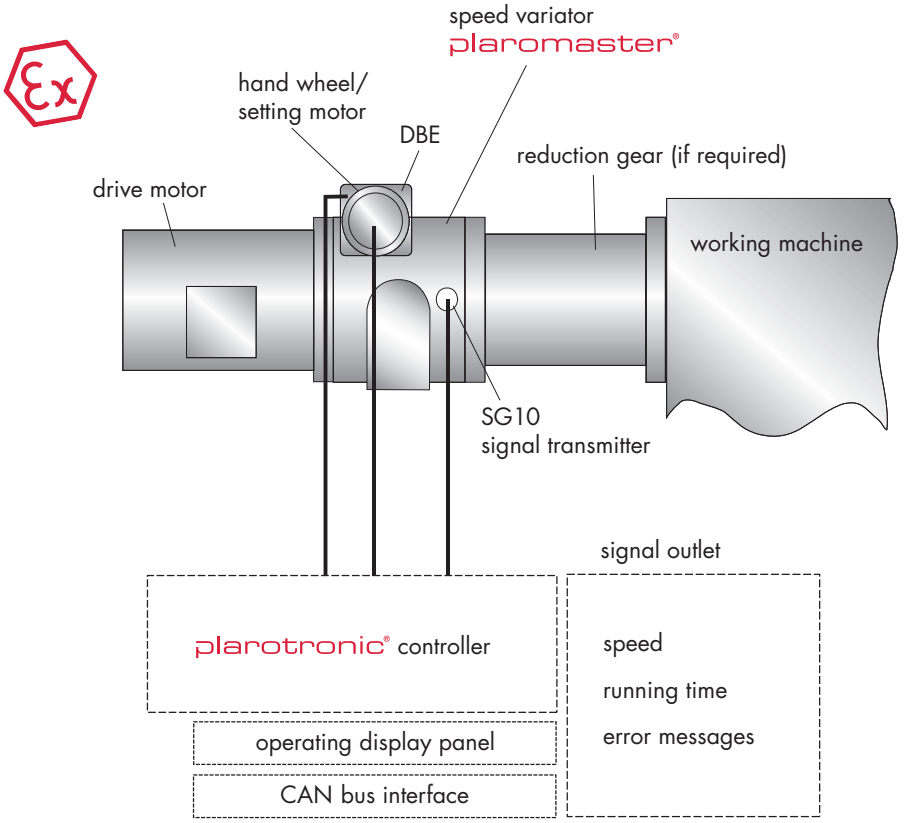
B5 Output flange mounting with centring and through holes as well as tapped holes foot-sided in the housing.

B14 Output flange mounting with centring and tapped holes as well as tapped holes foot-sided in the housing.

B3/B5 Foot mounting with through holes as well as output flange mounting with centring and through holes.

B3/B14 Foot mounting with through holes as well as output flange mounting with centring and tapped holes.

V Reinforced/double output shaft bearing (without output flange centring, with tapped holes in foot socket)



picture 57

DBE:
electric speed limiter

The planotronic® speed control can be compared systematically with a speed regulation of an electronical drive. Speed setting, that is the positioning element, is not realized over an electronic actuator, but a mechanical change in speed variator geometry. This mechanical change results in a speed adaption on speed variator output. If no electric remote control (EFB) is used, then mechanical change is realized by means of a hand wheel on so-called setting spindle. If the planotronic® speed regulation is used, a setting motor is planned as positioning element for the planomaster® speed. Setting motor obtains the corresponding positioning order from controller to faster or to slower speed, that means turning to the right or to the left. If a positioning order takes place, speed changes until positioning order is finished.

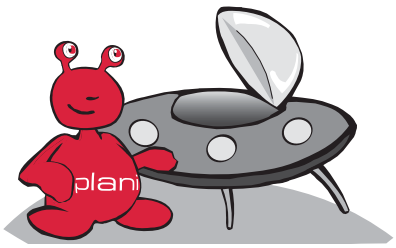
Therefore, the positioning element has an integral character. This is considered accordingly in planotronic® speed regulation.

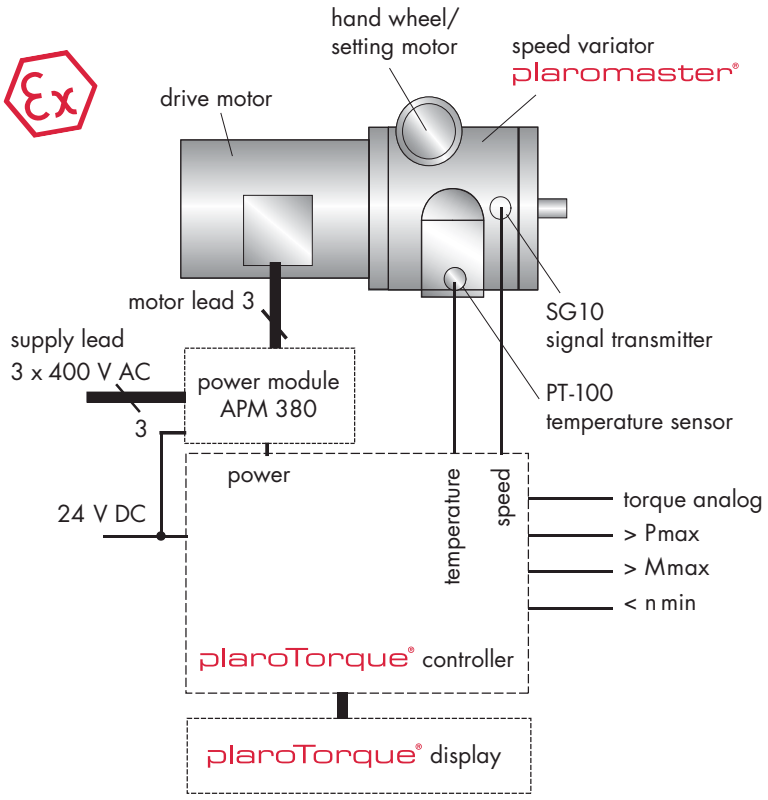
The actual value of transmission output speed of planomaster® speed variator is collected by means of an incremental speed sensing system. Sensing time of speed depends on resolution and accuracy of speed setting respectively. Sensing time is 1 second with exact speed settings to +/-1 revolution per minute, as gearing of transmission output ring of speed variator provides 60 pulses per revolution of output ring. This corresponds to 1 pulse per second during 1 revolution and 1 Hz pulse frequency respectively.

No longer available No longer available No longer available No longer available

technical data:

speed range:	1 to 1,200 rpm (50 Hz, without reduction gearbox)
power range:	0.18 to 7.5 kW (motor power)
temperature range:	-20 to +115 °C (on speed variator surface)
accuracy:	speed setting +/- 2 rpm
ATEX specification:	category 2, zones 1 and 21
input signals:	speed reference value 0..10 V or 0/4..20 mA
alarm signals:	block setting motor out of order
bus signals:	activation reference value checking alarm signals





picture 58 ◂

With the planetroll® torque meter plaroTorque® it is possible to collect the actual existing torque on speed variator output shaft regarding operating conditions.

The influencing variables changing over the speed range are included here.

Ultimately, the plaroTorque® is a measuring system with a typical accuracy of +/-2 %, referring to full scale.

If a reduction or transmission gear unit is used connected in series with the speed variator, then the typical influencing variables mentioned above are calculated with torque.

The torque determined by plaroTorque® is the basic principle for a sophisticated as well as cost- and energy-saving calculation of drive units and furthermore serves as process and characteristic value, i.e. in process technology.

The application of plaroTorque® in test rigs or experimental set-ups permits a precise knowledge of general efficiency, power demand as well as efficiency of working machines.

As a matter of course, it is no problem to apply the plaroTorque® in explosion-proof areas, zones 1 and 21 according to ATEX 95.

No longer available **No longer available** **No longer available** **No longer available**

technical data:

torque range:	0 to 110 Nm (without reduction gear)
speed range:	1 to 1,200 rpm (50 Hz, without reduction gear)
power range:	0.18 to 7.5 kW (motor power)
temperature range:	-20 to +115 °C (on speed variator surface)
accuracy:	+/-4 % (typically 2 %) from full scale
power supply:	input 400/440 V AC, 40/60 Hz controller 24 V DC
supply fluctuations:	are considered
ATEX specification:	category 2, zones 1 and 21
input signals:	speed reference 0..10 V or 0/4..20 mA
measuring signals:	torque, speed, power as voltage output 0..10 V or supply output 0/4..20 mA
alarm signals:	exceeding of max. torque, max. motor power and max. temperature as relay contact, operating time on display unit
bus signals:	further alarm signals digitally possible over device network

Classification of explosion-proof equipment

According to EU-Directive 94/9/EC (also named ATEX 95 – previously ATEX 100a) the explosion-proof equipment is classified as follows:

Specification of **planetroll®** drives printed in **bold**.

planetroll® speed variators do not need any external control in general! (However, this is not valid for system MA of speed variators.)

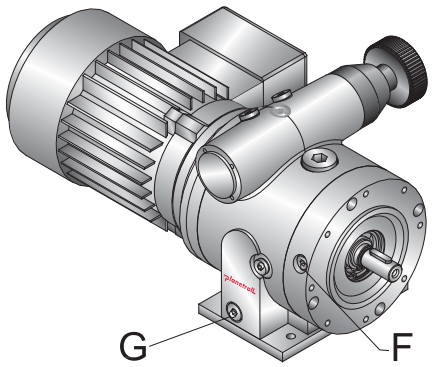
table 62 ◂

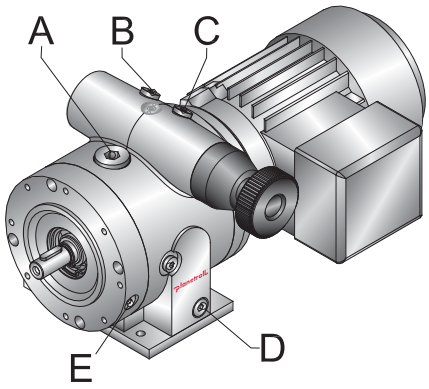
classification of equipment

group	group I		group II					
	mines, mine gas		other areas with danger of gas or dust explosion					
category	M		1		**2**		**3**	
zone	1	2	0	20	**1**	**21**	**2**	**22**
Ex atmosphere			G	D	**G**	**D**	**G**	**D**
ignition protective system planetroll® speed variators planomaster® system MR					**ck**	**ck**	**ck**	**ck**
ignition protective system planetroll® speed variators planetdrive®					**c**	**c**	**c**	**c**
ignition protective system planetroll® geared motors					**c/k**	**c/k**	**c/k**	**c/k**

category	M = mining	
	1 = extremely high safety	
	2 = high safety	
	3 = standard safety	
	Probability of explosive atmosphere:	
zone	0/20 = constantly, long-term, frequently (predominantly)	
	1/21 = occasionally, during standard operation	
	2/22 = rarely, short-time	
Ex atmosphere	**G = gas**	
	D = dust	
ignition protective system	fr = protection by vapour-resisting casing	b = protection by ignition source control
	d = protection by flame-proof enclosure	p = protection by pressurized enclosure
	g = intrinsic safety	**k = protection by liquid enclosure**
	c = protection by safe construction	

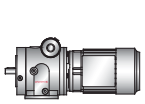
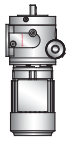
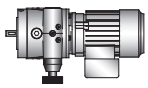
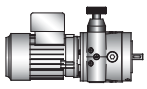
category	type	conformity by
2	electrical appliances	EC prototype test certification and – conformity to type of construction or – production quality assurance
	non-electrical appliances	**technical documentation to Notified Body and internal production control**
3	all	internal production control





picture 59 ◂

table 63 ◂

	mounting position	1	2	3	4	5	6
		B3, B5, B14	V3, V6, V19	B8	V1, V5, V18	B6	B7
size							
MRV	traction fluid filling for life (contents 15 ml)						
MR1	filling quantity	70 ml					
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G
MR3	filling quantity	160 ml	180 ml	160 ml	230 ml	160 ml	
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G
MR5	filling quantity	300 ml	370 ml	300 ml	450 ml	320 ml	
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G
MR7	filling quantity	500 ml	750 ml	500 ml	820 ml	500 ml	
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G
MR9	filling quantity	850 ml	1.130 ml	800 ml	1.300 ml	850 ml	
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G
MR11	filling quantity	3.200 ml		1.700 ml	4.400 ml	2.500 ml	
	filler plug	A	A	D/G	B/C	G	D
	control plug	E	G	F	D	C	B
	drain plug	D/G	B/C	B/C	E/F	D	G

ATTENTION!

Table 63 is only for information. It is absolutely necessary to observe the separate schedule for traction fluid quantities, DOKU T148 as well as the planomaster® operating instructions MR – ATEX (DOKU T146) and MR – non ATEX (DOKU T001)!

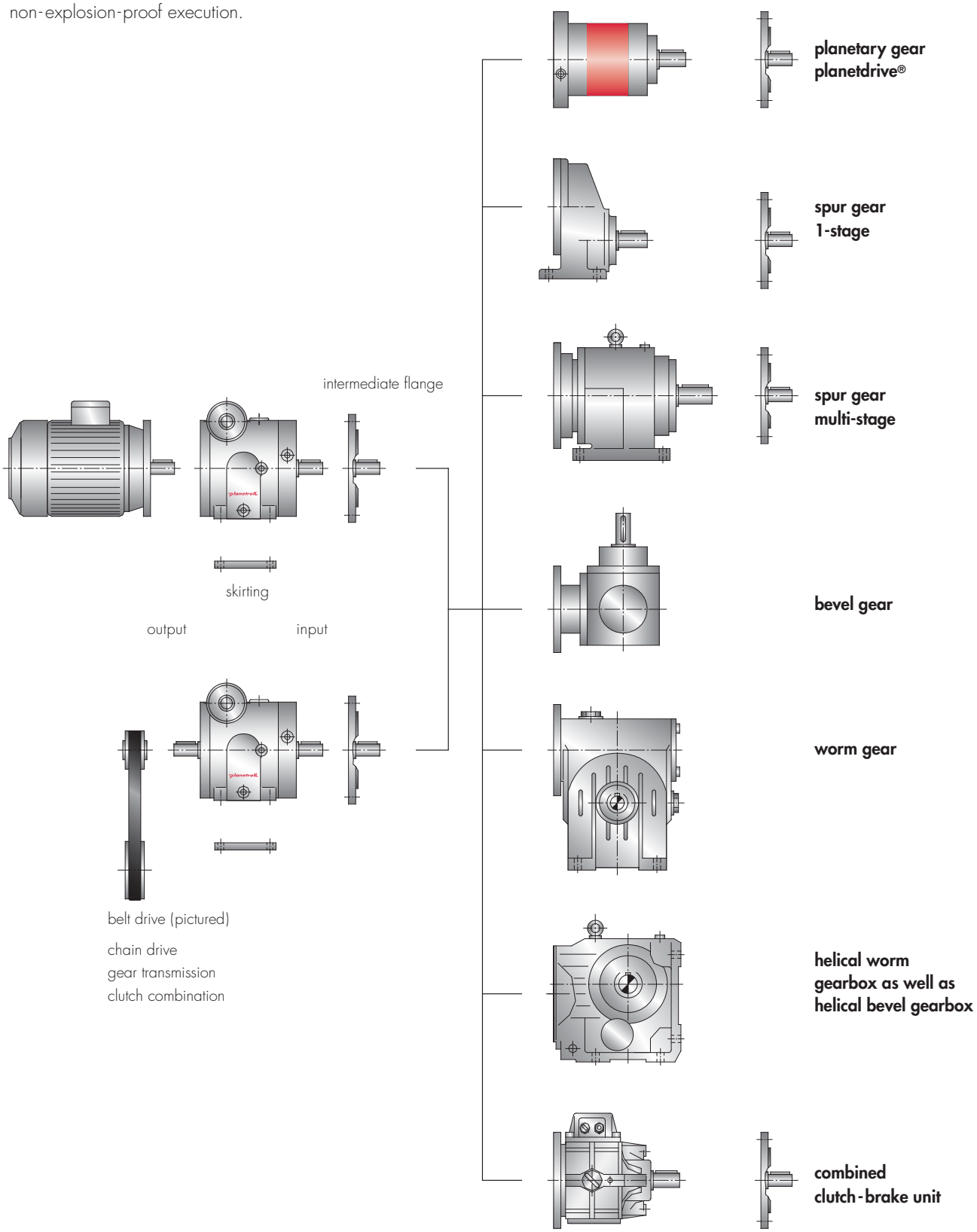
The synthetic traction fluids used in the speed variators planomaster® are special oils and may NOT be replaced by any gear lubricating oil or mixed up with minimum quantities of gear lubricating oil!

The planomaster® can be supplied with most different IEC standard motors, NEMA motors as well as other motor types in explosion-proof and non-explosion-proof execution. For ATEX explosion-proof zones 1 and/or 21 the planomaster® requires the motors conformal to ATEX only with ignition protective system "explosion-proof" for applications in zone 1.

The planomaster® output can be combined with a number of reduction or transmission gearboxes in explosion-proof and non-explosion-proof execution.

For this reason it is possible to reduce output speed of speed variator and to increase it respectively at the same time when speed is changing. These gearboxes connected in series can be mounted either in closed or so-called open type of construction on the planetroll® speed variators planomaster®.

picture 60



Before ending our journey through this planomaster® catalog, here is some additional useful information:

Important documents for the operation of the speed variators

planomaster® operating instructions
MR – ATEX (DOKU T146)
MR – non ATEX (DOKU T001)

traction fluid filling quantity schedule
DOKU T148

Speed variator technology

The speed variator planomaster® is not self-locking.

For backlash-free reversal and eccentric operating status we recommend to use the speed variator planomaster® of system MA.

System MA has to be controlled in applications acc. to ATEX 95.

Sorts of traction fluid

The sort of traction fluid filled to each speed variator is indicated on identification plate of speed variator. The traction fluids used in the planomaster® speed variator are special oils and may not be replaced by gear lubricating oil or mixed up with minimum quantities of gear lubrication oil. Traction fluid quantity depends on each mounting position of speed variator.

Please be aware of other planetroll® products:

planetdrive® (planetary gear)

low-backlash planetary gears

geared motors

high-precision speed variators

special gears (for customized solution)

Visit our website for other important information concerning planetroll® and its products

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www.planetroll.com

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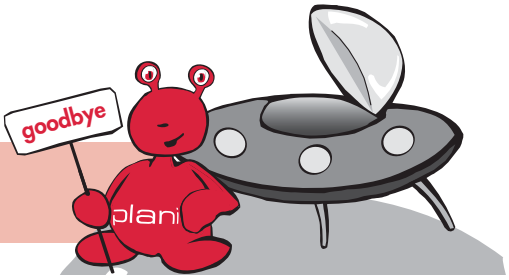
Should you have any additional questions, we are happy to assist you in any way possible.

Certified according to DIN EN ISO 9001:2000

We wish all the best for you and are looking forward to meet you again soon – your plani.



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