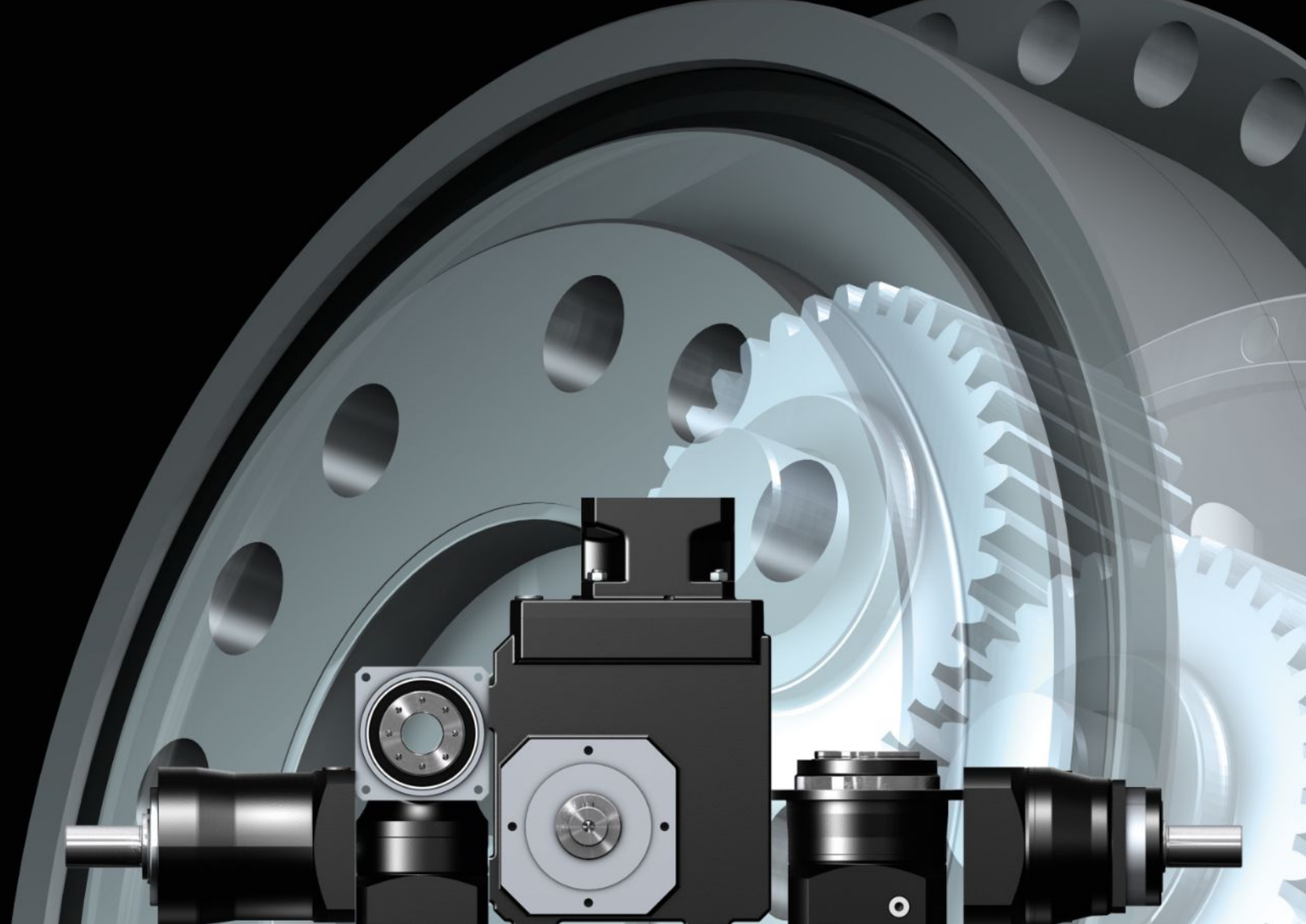


Lubricant fill volumes

STÖBER

Lubricant fill volumes

Table of contents

1 User information

This document contains information on lubricant fill volumes for all current gearbox series as well as for gearbox series which are no longer current. These are indicated by the generation in brackets (e.g. G3).

Using the nameplate of your gearbox, the type designation and your order documents you can find the chapter that corresponds to your product.

Alternatively, you can easily find the lubricant specification and mandatory lubricant fill volume for your gearbox entering the serial number of your gearbox at https://id.stober.com

2 Planetary gearboxes P2 – P9

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V	$V_{rev,op}$
P231	13	18
P331	33	46
P431	60	85
P531	118	165
P731	218	310
P831	550	780
P931	900	1230

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V	$V_{rev,op}$
P331	31	43
P431	56	78
P531	103	146
P731	200	285
P831	520	740
P931	820	1130

Fill volumes for two-stage gearboxes with standard bearings/radially reinforced bearings

Type	i =12	i=16, 20, 25, 28	i=32	i=35, 40, 50	i=56	i=70, 80	i=100
	V	V	V	V	V	V	V
P332	65	68	68	68	68	68	65
P432	108	115	124	115	124	124	124
P532	219	239	239	239	239	239	239
P732	445	445	445	445	445	430	430
P832	1010	1065	1010	1065	1010	1010	960
P932	–	1875	1875	1875	1875	1750	1750

Fill volumes for two-stage gearboxes with axially reinforced bearings

Type	i =12	i=16, 20, 25, 28	i=32	i=35, 40, 50	i=56	i=70, 80	i=100
	V	V	V	V	V	V	V
P332	61	64	64	64	64	64	61
P432	99	106	115	106	115	115	115
P532	196	216	216	216	216	216	216
P732	415	415	415	415	415	400	400
P832	955	1010	955	1010	955	955	905
P932	–	1735	1735	1735	1735	1610	1610

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

3 Planetary gearboxes PH3 – PH8

Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PH331	25	35
PH431	42	58
PH531	80	114
PH731	185	264
PH831	490	690

Fill volumes for two-stage gearboxes

Type	i=16	i=20	i=25, 35, 50	i=28, 40	i=70, 100
	V	V	V	V	V
PH332	–	52	52	49	49
PH432	88	88	88	88	84
PH532	175	175	175	175	158
PH732	372	372	390	372	372
PH832	950	950	905	950	855

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

4 Planetary gearboxes PH9 – PH10

Fill volumes for two-stage gearboxes

Type	i=12, 16, 20, 28, 32, 40	i=18, 24, 30, 42, 48, 60	
	V	V	V
PH942	1825	1725	–
PH1042	–	–	2585

Symbol	Unit	Explanation
V	ml	Fill volume

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

5 Planetary gearboxes PHQ4 – PHQ8

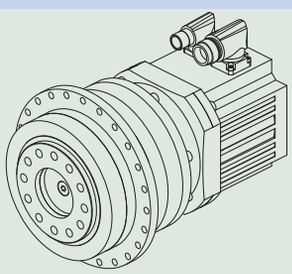
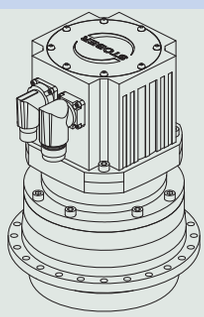
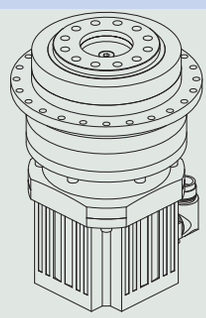
Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PHQ431	37	55
PHQ531	72	110
PHQ731	170	255
PHQ831	430	650

Fill volumes for two-stage gearboxes

Type	V	$V_{rev,op}$
PHQ432	80	88
PHQ532	155	168
PHQ732	350	370
PHQ832	810	900

Mounting positions of three-stage gearboxes

EL1	EL5	EL6
		
Horizontal output	Vertical downward output	Vertical upward output

Fill volumes for three-stage gearboxes

Type	EL1		EL5		EL6
	V	$V_{rev,op}$	V_2	V_1	V
PHQ733	280	445	170	150	390
PHQ833	650	1050	810	55	860

Symbol	Unit	Explanation
V	ml	Fill volume
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

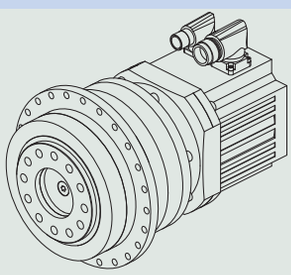
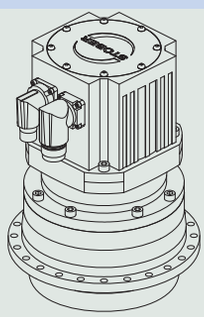
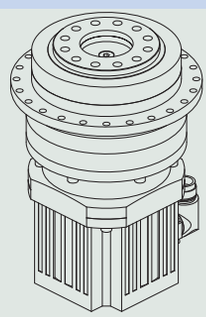
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

6 Planetary gearboxes PHQ9 – PHQ12

Fill volumes for two-stage gearboxes

Type			i=24, 30	i=18, 42, 60	i=42, 60	i=42	i=60
	V	$V_{rev,op}$	$V_{rev,op}$	$V_{rev,op}$	$V_{rev,op}$	$V_{rev,op}$	$V_{rev,op}$
PHQ942	1650	–	1935	1890	–	–	–
PHQ1042	2280	–	2785	–	2710	–	–
PHQ1142	5600	–	6325	–	–	6190	6000
PHQ1242	10800	12000	–	–	–	–	–

Mounting positions of three-stage gearboxes

EL1	EL5	EL6
		
Horizontal output	Vertical downward output	Vertical upward output

Fill volumes for three-stage gearboxes in mounting position EL1

Type		i=96, 120, 150, 168, 210, 240, 300	i=72, 420, 600
	V	$V_{rev,op}$	$V_{rev,op}$
PHQ943	1350	2220	2170

Type		i=96, 120	i=150, 168, 210, 240, 300	i=420, 600
	V	$V_{rev,op}$	$V_{rev,op}$	$V_{rev,op}$
PHQ1043	2175	3650	3580	3460

Type		i=96, 120, 150, 168, 210	i=240, 300
	V	$V_{rev,op}$	$V_{rev,op}$
PHQ1143	4300	7070	6930

Type		i=96, 120, 168, 240	i=210, 294, 420
	V	$V_{rev,op}$	$V_{rev,op}$
PHQ1243	8000	13370	12900

Fill volumes for three-stage gearboxes in mounting position EL5

Type		i=72, 96, 168, 240	i=120, 150, 210, 300, 420, 600
	V_2	V_1	V_1
PHQ943	1000	880	800

Type		i=96, 120, 150, 168, 210, 240, 300	i=420, 600
	V_2	V_1	V_1
PHQ1043	1500	1490	1360

Type	V_2	V_1
PHQ1143	3500	2160

Type	V_2	V_1
PHQ1243	6700	3650

Fill volumes for three-stage gearboxes in mounting position EL6

Type	V
PHQ943	1930

Type	i=96, 120, 150, 168	i=210, 240, 300, 420, 600
	V	V
PHQ1043	3200	3100

Type	V
PHQ1143	5700

Type	i=96, 120, 168, 240	i=210, 294, 420
	V	V
PHQ1243	10700	10200

Symbol	Unit	Explanation
V	ml	Fill volume
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

7 Planetary gearboxes PHV9 – PHV10

Fill volumes

Type	V	$V_{rev,op}$
PHV943	1910	2230
PHV1043	3060	3810

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

8 Planetary gearboxes PE2 – PE5

Fill volumes for single-stage gearboxes

Type	V
PE221	10 g (11 ml)
PE321	21 g (24 ml)
PE421	35 g (40 ml)
PE521	72 g (82 ml)

Fill volumes for two-stage gearboxes

Type	V_2	V_1
PE222	6 g (7 ml)	9 g (10 ml)
PE322	9 g (10 ml)	10 g (11 ml)
PE422	35 g (40 ml)	16 g (18 ml)
PE522	72 g (82 ml)	25 g (82 ml)

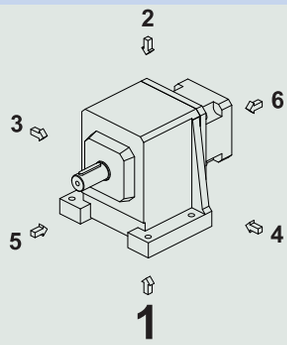
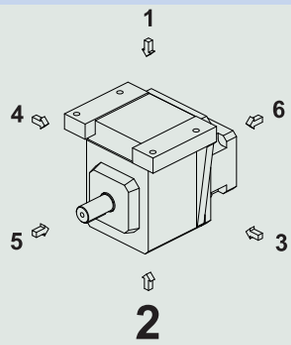
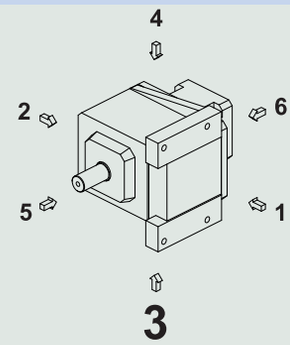
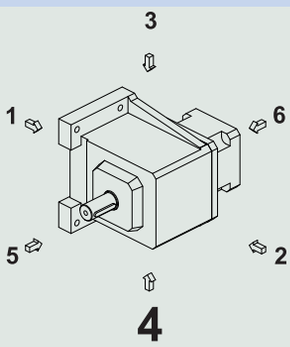
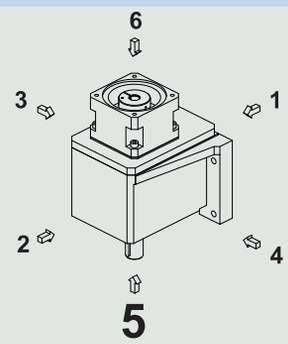
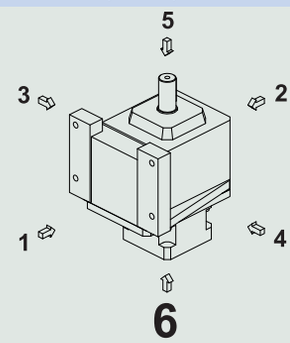
Symbol	Unit	Explanation
V	g (ml)	Fill volume
V_1	g (ml)	Fill volume for the input stage
V_2	g (ml)	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

9 Helical gearboxes C0 – C9

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1 IMB3, IMB5, IMB14, IMB34, IMB35	EL2 IMB8	EL3 IMB7
		
EL4 **IMB6**	**EL5** **IMV1, IMV5, IMV18**	**EL6** **IMV3, IMV6, IMV19**
		

Fill volumes

Type	V_{EL1}	V_{EL2}	V_{EL3}	V_{EL4}	$V_{EL5,GG,GF}$	$V_{EL5,GN}$	$V_{EL5,GQ}$	V_{EL6}
C002	0.3	0.4	0.3	0.3	0.44	0.50	0.50	0.5
C102	0.6	0.8	0.6	0.6	1.02	1.16	1.13	1.1
C103	0.8	1.0	0.9	0.9	1.25	1.45	1.35	1.4
C202	0.8	1.2	1.0	1.0	1.46	1.58	1.58	1.6
C203	1.0	1.5	1.1	1.1	1.85	1.95	2.00	2.0
C302	1.2	1.6	1.4	1.4	2.17	2.34	2.35	2.2
C303	1.4	1.8	1.5	1.5	2.45	2.65	2.65	2.5
C402	1.8	2.7	2.2	2.2	3.52	3.75	3.70	3.3
C403	2.0	3.0	2.3	2.3	4.04	4.30	4.20	3.7
C502	2.8	4.0	3.4	3.4	5.34	5.80	–	5.0
C503	3.0	4.5	3.6	3.6	6.10	6.40	–	5.4
C612	4.0	5.0	4.2	4.2	6.00	6.60	–	6.2
C613	4.3	5.5	4.5	4.5	6.95	7.50	–	6.6
C712	6.6	8.0	6.4	6.4	9.80	10.30	–	9.4
C713	6.5	8.6	6.8	6.8	10.40	11.00	–	10.0
C812	12.5	15.5	13.5	13.5	17.00	19.00	–	16.5
C813	13.5	16.5	14.5	14.5	18.50	21.50	–	19.0
C912	19.0	23.5	20.5	20.5	30.00	32.00	–	30.5
C913	20.5	25.0	22.0	22.0	33.00	35.00	–	32.0

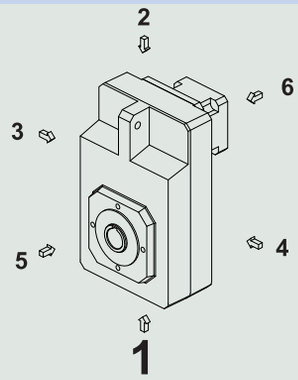
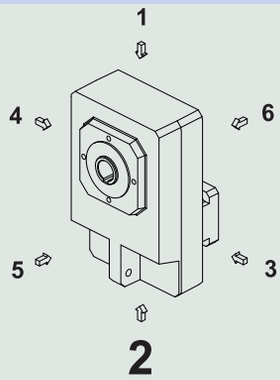
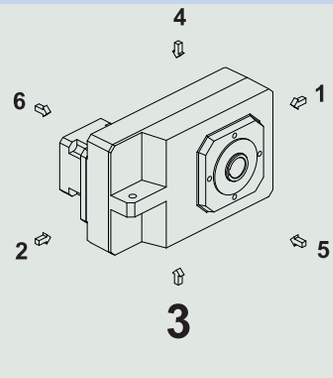
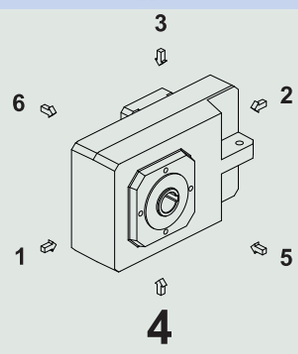
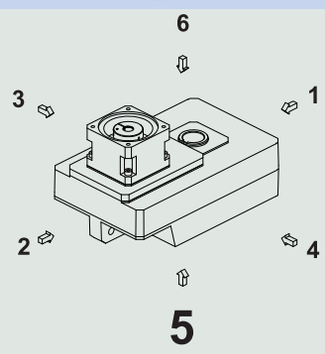
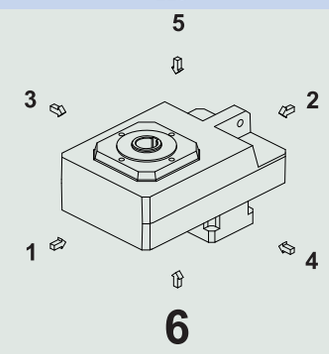
Symbol	Unit	Explanation
V_{EL1}	l	Fill volume for mounting position EL1
V_{EL2}	l	Fill volume for mounting position EL2
V_{EL3}	l	Fill volume for mounting position EL3
V_{EL4}	l	Fill volume for mounting position EL4
$V_{EL5,GG,GF}$	l	Fill volume for mounting position EL5 and housing design with pitch circle diameter/round flange
$V_{EL5,GN}$	l	Fill volume for mounting position EL5 and housing design with foot
$V_{EL5,GQ}$	l	Fill volume for mounting position EL5 and housing design with square flange
V_{EL6}	l	Fill volume for mounting position EL6

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

10 Offset helical gearboxes F1 – F6

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes

Type	V_{EL1}	V_{EL2}	V_{EL3}	V_{EL4}	$V_{EL5,WA,WS}$	$V_{EL5,WV}$	V_{EL6}
F102	0.7	0.8	0.7	0.7	0.90	0.90	0.7
F202	1.4	1.8	1.2	1.2	2.10	2.15	1.6
F203	2.0	2.2	1.4	1.4	2.25	2.40	1.9
F302	2.2	2.5	2.0	2.0	3.00	3.35	2.0
F303	2.8	3.1	2.3	2.3	3.45	3.50	2.3
F402	3.0	3.6	2.8	2.8	4.60	4.70	3.0
F403	4.1	3.9	3.0	3.0	4.95	5.30	3.5
F602	5.3	6.0	4.8	4.8	7.60	7.70	5.5
F603	7.4	7.0	5.4	5.4	8.10	8.20	6.5

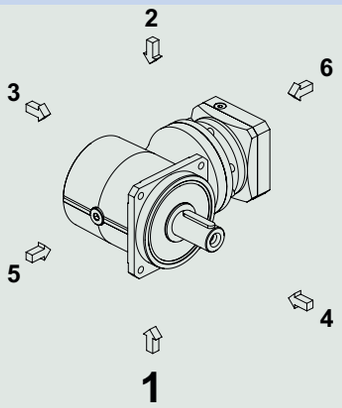
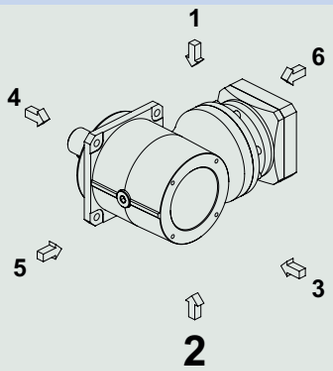
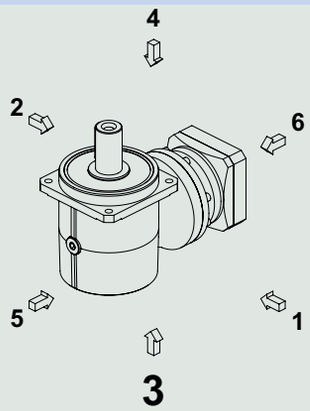
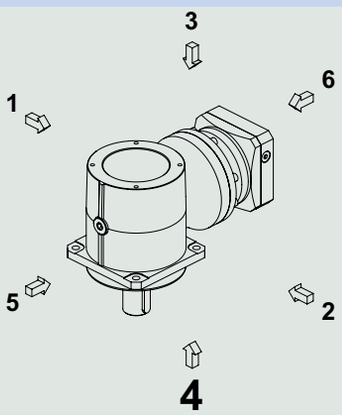
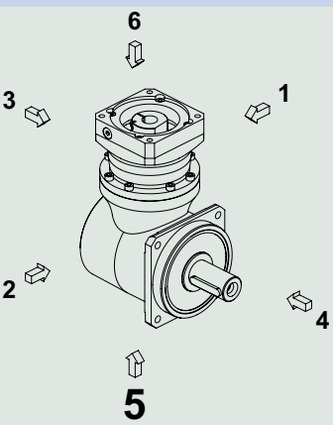
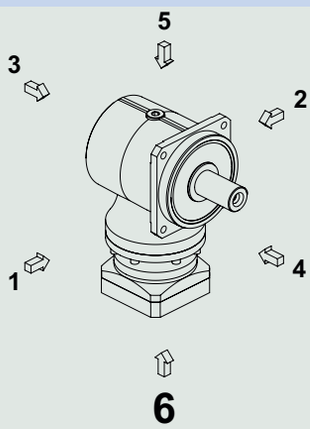
Symbol	Unit	Explanation
V_{EL1}	l	Fill volume for mounting position EL1
V_{EL2}	l	Fill volume for mounting position EL2
V_{EL3}	l	Fill volume for mounting position EL3
V_{EL4}	l	Fill volume for mounting position EL4
$V_{EL5,WA,WS}$	l	Fill volume for mounting position EL5 and hollow shaft/hollow shaft with shrink ring
$V_{EL5,WV}$	l	Fill volume for mounting position EL5 and solid shaft
V_{EL6}	l	Fill volume for mounting position EL6

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

11 Right-angle servo gearboxes KS3 – KS7

The following table shows the standard mounting positions for two- and three-stage gearboxes. Single-stage gearboxes can be used in any mounting position.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Since the lubricant filling volume of the gearbox depends on the mounting position, the mounting position for two- and three-stage gearboxes must be specified when ordering.

Fill volumes for single-stage gearboxes

Type	V
KS311	70
KS411	125
KS511	235
KS711	430

Fill volumes for two-stage gearboxes

Type	6≤i≤40	i= 6, 8, 10, 14, 20			i= 12, 16, 28, 40		
	$V_{EL1,2,3,4,6}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$
KS312	85	145	158	155	140	153	150
KS412	150	250	280	270	243	273	263
KS512	285	491	541	523	471	522	504
KS712	510	899	959	919	862	922	882

Fill volumes for three-stage gearboxes

Type	6≤i≤40	i= 6, 8, 10, 14, 20			i= 12, 16, 28, 40			
	$V_{EL1,2,3,4,6}$	$V_{2\ EL5,\ WF}$	$V_{2\ EL5,\ WP,WG}$	$V_{2\ EL5,\ WS}$	$V_{2\ EL5,\ WF}$	$V_{2\ EL5,\ WP,WG}$	$V_{2\ EL5,\ WS}$	$V_{1\ EL5}$
KS313	96	145	158	155	140	153	150	5 g (5 ml)
KS413	163	250	280	270	243	273	263	5 g (5 ml)
KS513	312	491	541	523	471	522	504	9 g (10 ml)
KS713	560	899	959	919	862	922	882	15 g (17 ml)

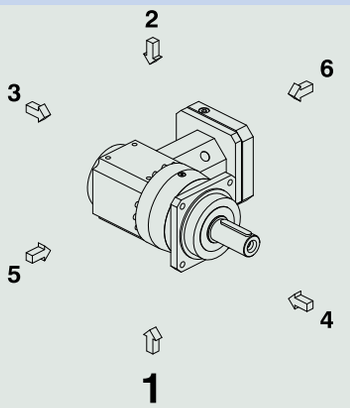
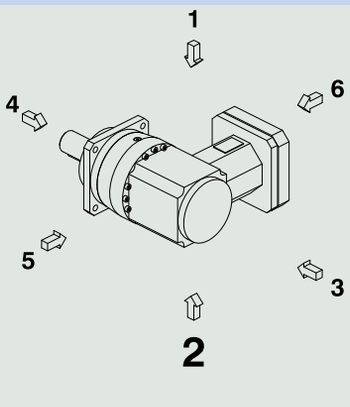
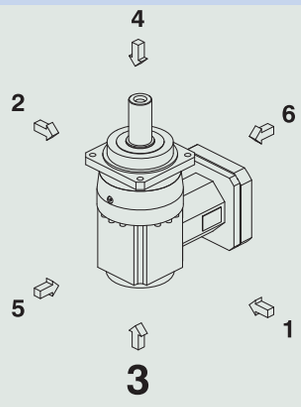
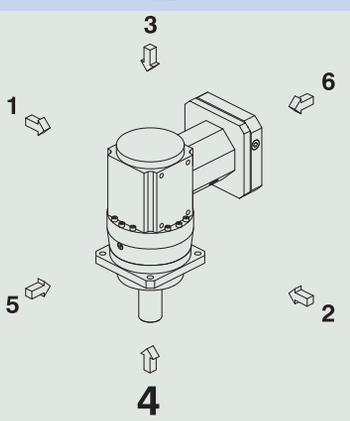
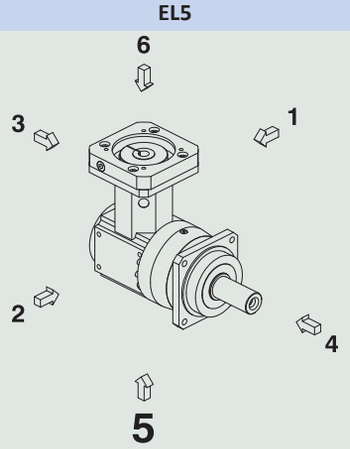
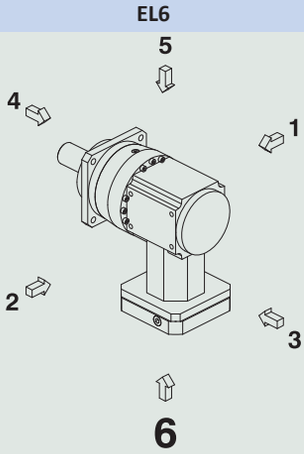
Symbol	Unit	Explanation
V	ml	Fill volume
$V_{EL1,2,3,4,6}$	ml	Fill volume for mounting position EL1, EL2, EL3, EL4 and EL6
$V_{EL5,WF}$	ml	Fill volume for mounting position EL5 and flange hollow shaft
$V_{EL5,WP,WG}$	ml	Fill volume for mounting position EL5 and solid shaft with feather key/solid shaft without feather key
$V_{EL5,WS}$	ml	Fill volume for mounting position EL5 and hollow shaft with shrink ring
$V_{2\ EL5,WF}$	ml	Fill volume for the output stage for mounting position EL5 and flange hollow shaft
$V_{2\ EL5,WP,WG}$	ml	Fill volume for the output stage for mounting position EL5 and solid shaft with feather key/solid shaft without feather key
$V_{2\ EL5,WS}$	ml	Fill volume for the output stage for mounting position EL5 and hollow shaft with shrink ring
$V_{1\ EL5}$	g (ml)	Fill volume for the input stage for mounting position EL5

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

12 Right-angle planetary gearboxes P2KX3 – P9KX7

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P231_KX301	13	42
P331_KX301	33	42
P431_KX401	60	80
P531_KX501	118	160
P731_KX701	218	390
P831_KX801	550	820

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P331_KX301	31	42
P431_KX401	56	80
P531_KX501	103	160
P731_KX701	200	390
P831_KX801	520	820

Fill volumes for two-stage gearboxes in horizontal mounting positions (EL1, EL2, EL5 and EL6) with standard bearings/radially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P332_KX301	43	42
P432_KX301	82	42
P532_KX401	155	80
P732_KX501	295	160
P832_KX701	710	390
P932_KX701	1350	390

Fill volumes for two-stage gearboxes in vertical mounting positions (EL3 and EL4) with standard bearings/radially reinforced bearings

Type	i =12	i=16, 20, 25, 28, 35, 40, 50	i=32, 56	i=70	i=100	
	V_2 (P)	V_2 (P)	V_2 (P)	V_2 (P)	V_2 (P)	V_1 (KX)
P332_KX301	65	68	68	68	65	42
P432_KX301	108	115	124	124	124	42
P532_KX401	219	239	239	239	239	80
P732_KX501	445	445	445	430	430	160
P832_KX701	1010	1065	1010	1010	960	390
P932_KX701	–	1875	1875	1750	1750	390

Fill volumes for two-stage gearboxes in horizontal mounting positions (EL1, EL2, EL5 and EL6) with axially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P332_KX301	41	42
P432_KX301	77	42
P532_KX401	142	80
P732_KX501	278	160
P832_KX701	680	390
P932_KX701	1275	390

Fill volumes for two-stage gearboxes in vertical mounting positions (EL3 and EL4) with axially reinforced bearings

Type	i =12	i=16, 20, 25, 28, 35, 40, 50	i=32, 56	i=70	i=100	
	V_2 (P)	V_2 (P)	V_2 (P)	V_2 (P)	V_2 (P)	V_1 (KX)
P332_KX301	61	64	64	64	61	42
P432_KX301	99	106	115	115	115	42
P532_KX401	196	216	216	216	216	80
P732_KX501	415	415	415	400	400	160
P832_KX701	955	1010	955	955	905	390
P932_KX701	–	1735	1735	1610	1610	390

In the mounting positions EL3 and EL4, there is a shaft seal ring between the input and output stages; so the gearboxes have separate oil chambers.

In the mounting positions EL1, EL2, EL5 and EL6, there is no shaft seal ring between the input and output stages, so the gearboxes have a common oil chamber. Nevertheless, the lubricant is filled separately for the input and output stages.

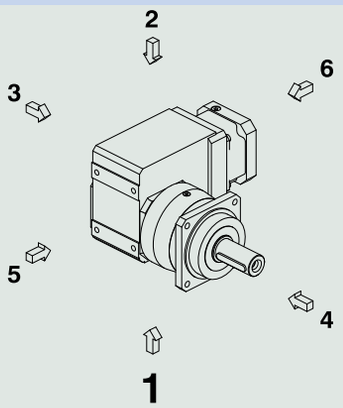
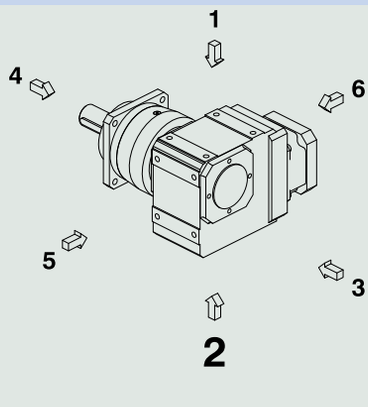
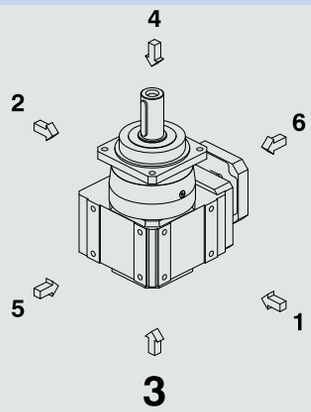
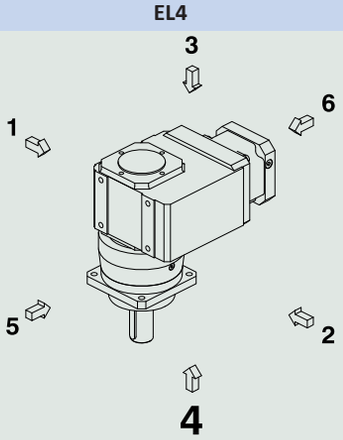
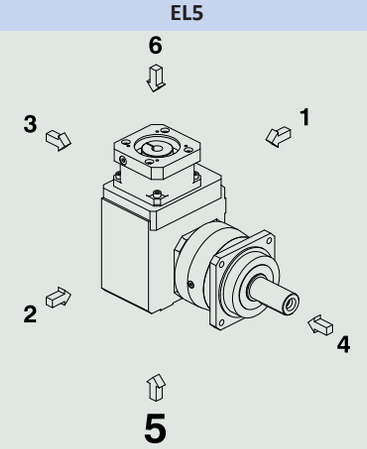
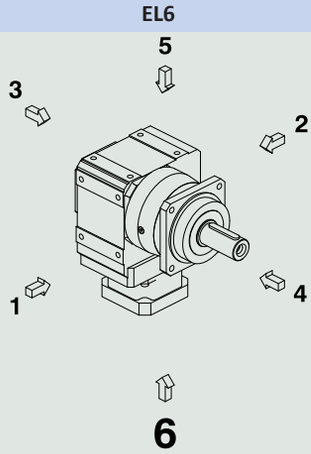
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

13 Right-angle planetary gearboxes P5K1 – P9K4

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V_2 (P)	V_1 (K)
P531_K102	118	–
P731_K102	218	–
P731_K202	218	–
P831_K202	550	–
P831_K302	550	–
P931_K402	900	–

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V_2 (P)	V_1 (K)
P531_K102	103	–
P731_K102	200	–
P731_K202	200	–
P831_K202	520	–
P831_K302	520	–
P931_K402	820	–

Fill volumes for input stage K can be found in the chapter [▶ 19].

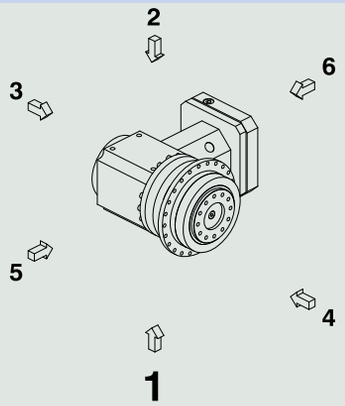
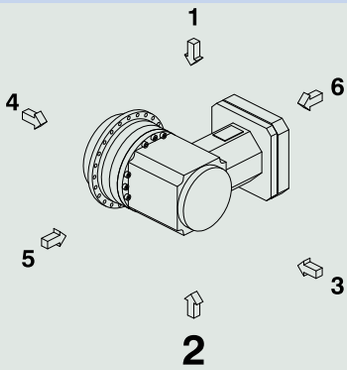
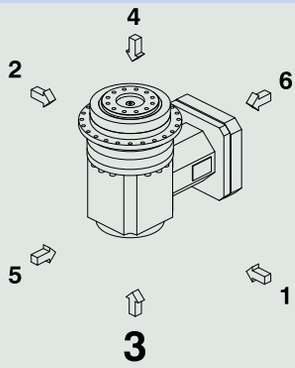
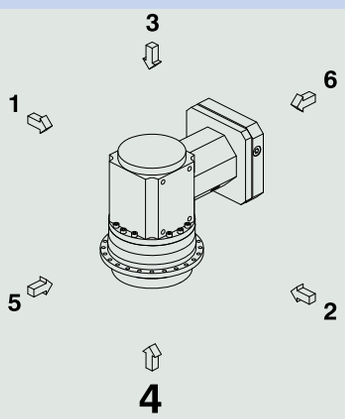
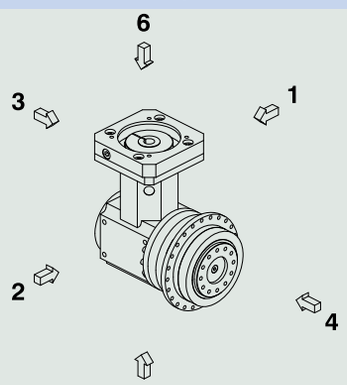
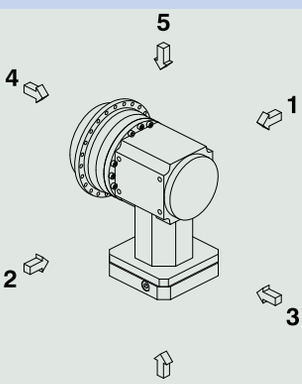
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

14 Right-Angle Planetary Gearboxes PH3KX3 – PH8KX8

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage gearboxes

Type	V_2 (PH)	V_1 (KX)
PH331_KX301	25	42
PH431_KX401	42	80
PH531_KX501	80	160
PH731_KX701	185	390
PH831_KX801	490	820

Fill volumes for two-stage gearboxes in horizontal mounting positions (EL1, EL2, EL5 and EL6)

Type	V_2 (PH)	V_1 (KX)
PH332_KX301	35	42
PH432_KX301	63	42
PH532_KX401	120	80
PH732_KX501	260	160
PH832_KX701	645	390

Fill volumes for two-stage gearboxes in vertical mounting positions (EL3 and EL4)

Type	i=16 V_2 (PH)	i=20 V_2 (PH)	i=25, 35, 50 V_2 (PH)	i=28, 40 V_2 (PH)	i=70, 100 V_2 (PH)	V_1 (KX)
PH332_KX301	–	52	52	49	49	42
PH432_KX301	88	88	88	88	84	42
PH532_KX401	175	175	175	175	158	80
PH732_KX501	372	372	390	372	372	160
PH832_KX701	950	950	905	950	855	390

In the mounting positions EL3 and EL4, there is a shaft seal ring between the input and output stages; so the gearboxes have separate oil chambers.

In the mounting positions EL1, EL2, EL5 and EL6, there is no shaft seal ring between the input and output stages, so the gearboxes have a common oil chamber. Nevertheless, the lubricant is filled separately for the input and output stages.

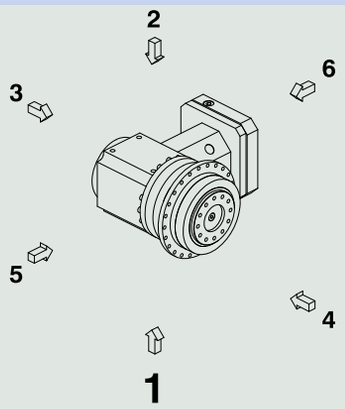
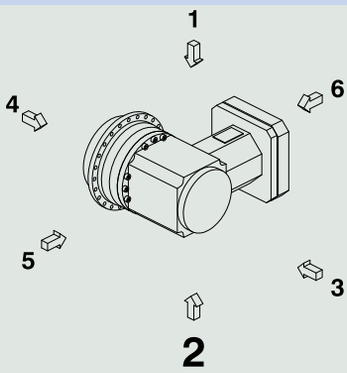
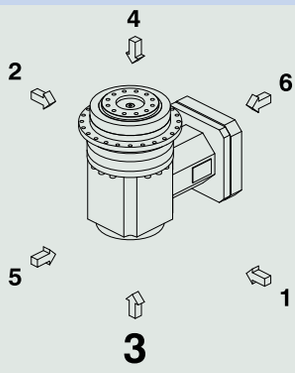
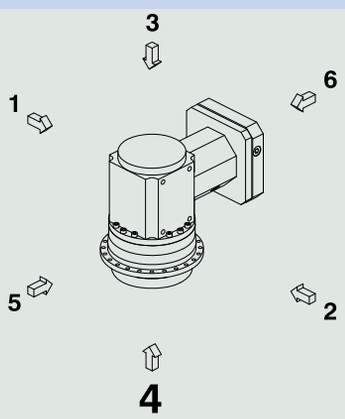
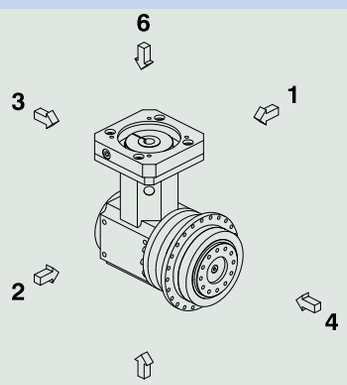
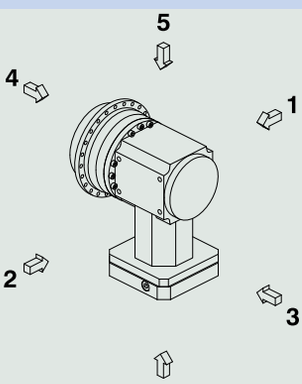
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

15 Right-angle planetary gearboxes PH9KX7 – PH10KX7

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for two-stage gearboxes in horizontal mounting positions (EL1, EL2, EL5 and EL6)

Type	V_2 (PH)	V_1 (KX)
PH942_KX701	720	390
PH1042_KX701	1050	390

Fill volumes for two-stage gearboxes in vertical mounting positions (EL3 and EL4)

Type	i=12, 16, 20, 28, 32, 40	i=18, 24, 30, 42, 48, 60		
	V_2 (PH)	V_2 (PH)	V_2 (PH)	V_1 (KX)
PH942_KX701	1825	1725	–	390
PH1042_KX701	–	–	2585	390

In the mounting positions EL3 and EL4, there is a shaft seal ring between the input and output stages; so the gearboxes have separate oil chambers.

In the mounting positions EL1, EL2, EL5 and EL6, there is no shaft seal ring between the input and output stages, so the gearboxes have a common oil chamber. Nevertheless, the lubricant is filled separately for the input and output stages.

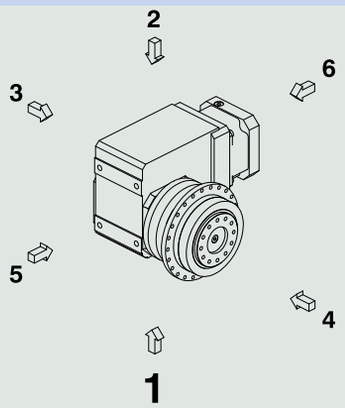
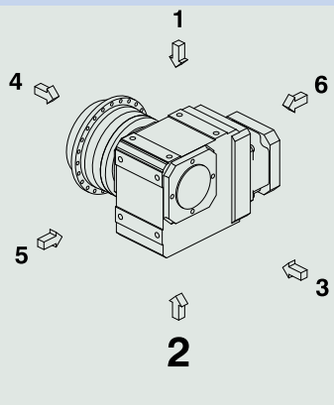
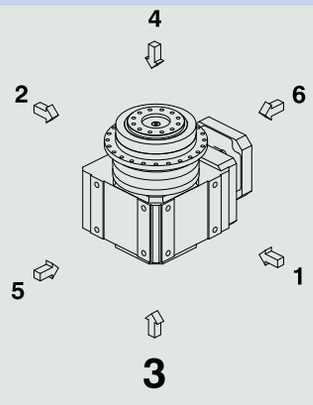
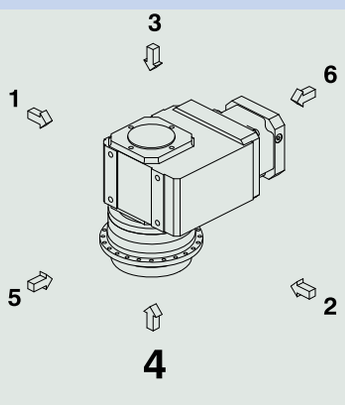
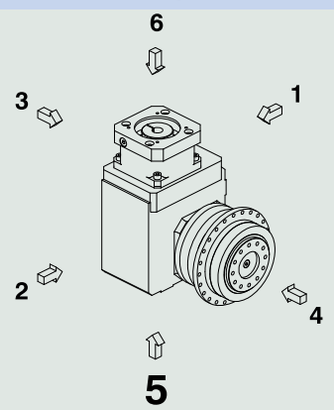
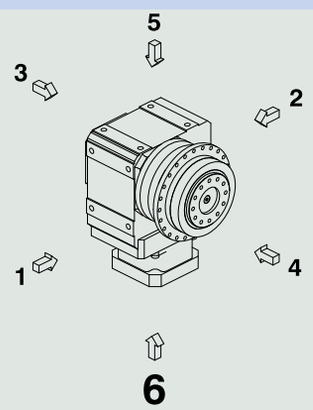
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

16 Right-angle planetary gearboxes PH5K1 – PH8K3 / PHQ5K1 – PHQ8K4

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage PHK gearboxes

Type	V_2 (PH)	V_1 (K)
PH531_K102	80	–
PH731_K102	185	–
PH731_K202	185	–
PH831_K202	490	–
PH831_K302	490	–

Fill volumes for single-stage PHQK gearboxes

Type	V_2 (PHQ)	V_1 (K)
PHQ531_K102	72	–
PHQ731_K202	170	–
PHQ831_K402	430	–

Fill volumes for input stage K can be found in the chapter [19].

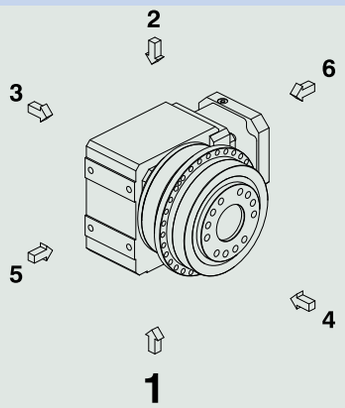
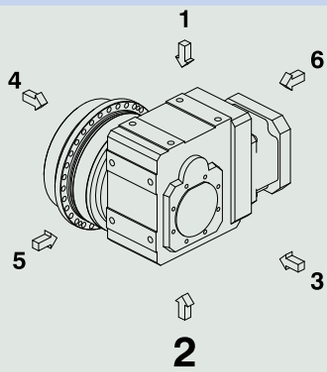
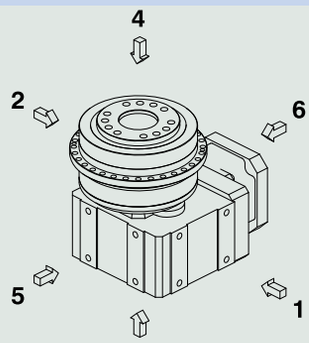
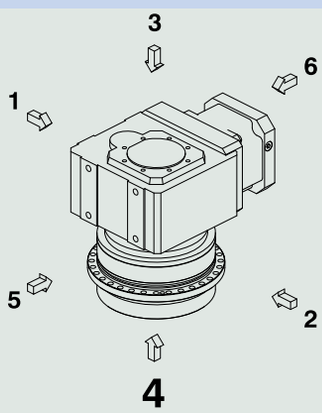
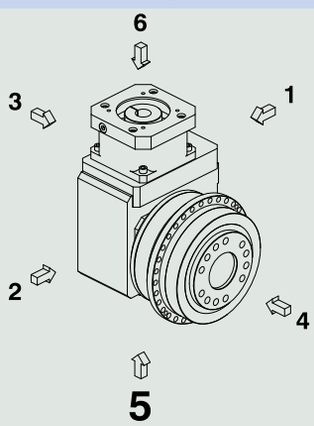
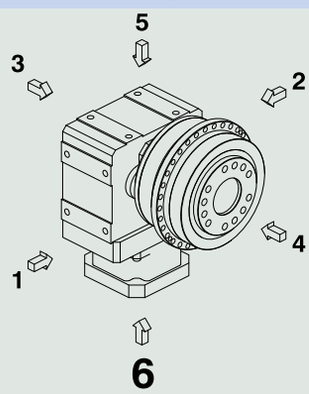
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

17 Right-angle planetary gearboxes PH9K5 – PH10K6 / PHQ9K5 – PHQ12K9

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage PHK gearboxes

Type	i=4, 6	i=6	
	V_2 (PH)	V_2 (PH)	V_1 (K)
PH941_K513	940	–	–
PH1041_K613	–	1200	–

Fill volumes for single-stage PHQK gearboxes

Type	V_2 (PHQ)	V_1 (K)
PHQ941_K513	720	–
PHQ1041_K713	1020	–
PHQ1141_K813	2500	–
PHQ1241_K913	5200	–

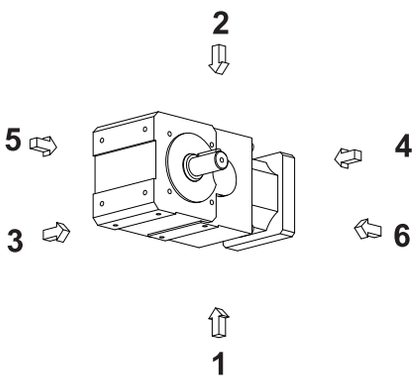
Fill volumes for input stage K can be found in the chapter [▷ 19].

Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

18 Helical bevel gearboxes KL1 – KL2

The numbers identify the gearbox sides.



Fill volumes

Type	V
KL102	0.196
KL202	0.409

Symbol	Unit	Explanation
V	l	Fill volume

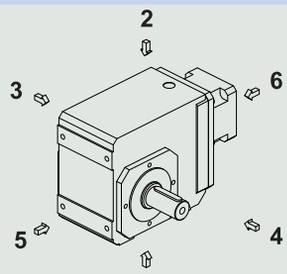
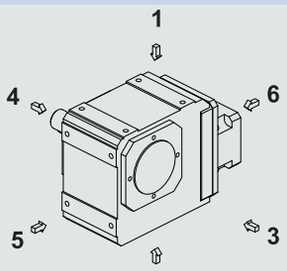
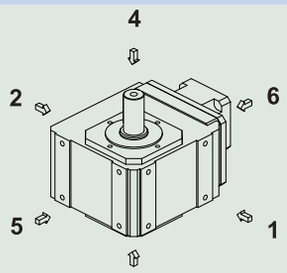
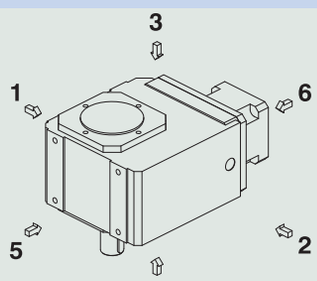
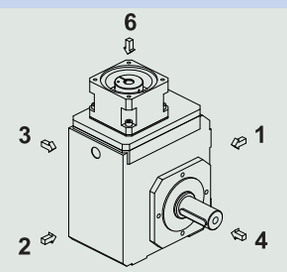
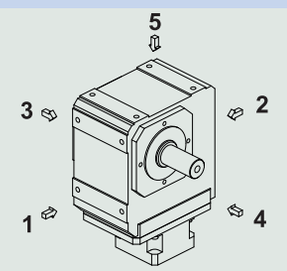
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

19 Helical bevel gearboxes K1 – K10

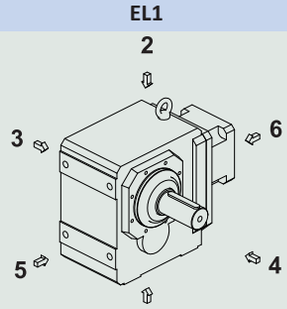
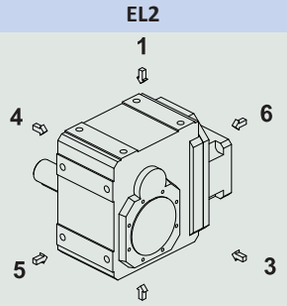
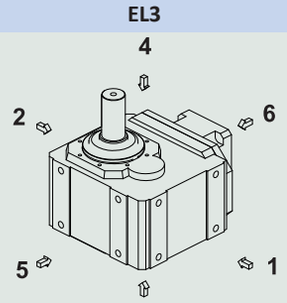
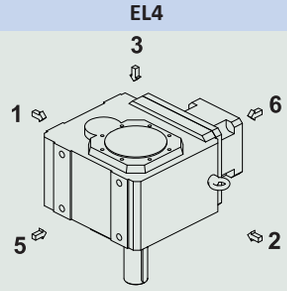
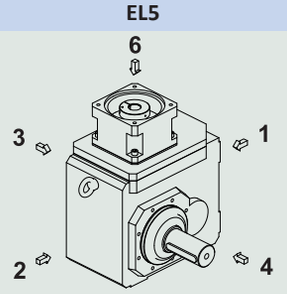
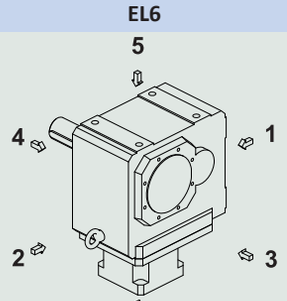
The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

Mounting positions for gearbox sizes K1 – K4

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Mounting positions for gearbox sizes K5 – K10

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes

Type	V_{EL1}	V_{EL2}	V_{EL3}	V_{EL4}	$V_{EL5,WDR2}$	$V_{EL5,WDR4}$	$V_{EL5,WV}$	V_{EL6}
K102	0.4	1.1	0.7	0.7	1.31	1.31	1.32	0.9
K202	0.8	1.9	1.6	1.6	2.35	2.30	2.35	2.0
K203	1.5	2.2	1.9	1.9	2.50	2.45	2.50	2.4
K302	1.2	2.8	2.3	2.3	3.50	3.45	3.50	3.0
K303	1.8	3.0	2.7	2.7	3.75	3.70	3.75	3.5
K402	2.5	4.0	3.5	3.5	5.30	5.25	5.30	4.0
K403	3.5	4.5	4.0	4.0	5.65	5.50	5.65	4.5
K513	3.0	4.5	3.5	3.5	5.85	5.70	6.00	4.0
K514	4.0	4.5	4.0	4.0	6.35	6.30	6.50	5.0
K613	4.2	6.8	5.5	5.5	8.60	8.50	8.75	6.0
K614	5.4	7.3	6.0	6.0	9.30	9.20	9.45	6.5
K713	6.0	9.0	7.0	7.0	11.40	11.30	11.60	8.5
K714	8.0	9.5	8.0	7.5	12.50	12.40	12.80	9.5
K813	12.0	15.0	13.0	13.0	20.70	20.50	21.00	14.0
K814	14.0	16.0	15.0	14.0	22.30	21.90	23.30	15.0
K913	21.0	28.0	26.0	26.0	37.00	0.00	38.00	25.0
K914	24.0	30.0	29.0	29.0	38.50	0.00	40.30	28.0
K1013	30.0	47.0	50.0	50.0	60.50	0.00	60.50	43.0
K1014	33.0	52.0	55.0	55.0	63.00	0.00	63.00	49.0

Symbol	Unit	Explanation
V_{EL1}	l	Fill volume for mounting position EL1
V_{EL2}	l	Fill volume for mounting position EL2
V_{EL3}	l	Fill volume for mounting position EL3
V_{EL4}	l	Fill volume for mounting position EL4
$V_{EL5,WDR2}$	l	Fill volume for mounting position EL5 and all shaft designs, 2 shaft seal rings on the output except solid shaft on both sides
$V_{EL5,WDR4}$	l	Fill volume for mounting position EL5 and all shaft designs, 4 shaft seal rings on the output except solid shaft on both sides
$V_{EL5,WV}$	l	Fill volume for mounting position EL5 and solid shaft
V_{EL6}	l	Fill volume for mounting position EL6

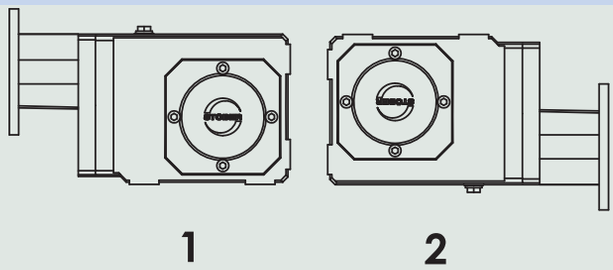
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

20 Helical bevel gearboxes KSS1 – KSS4

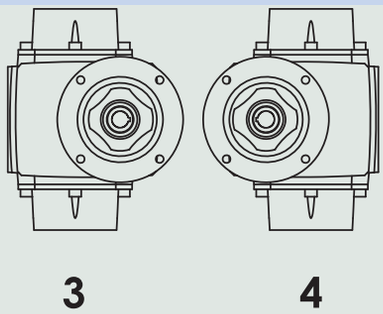
The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

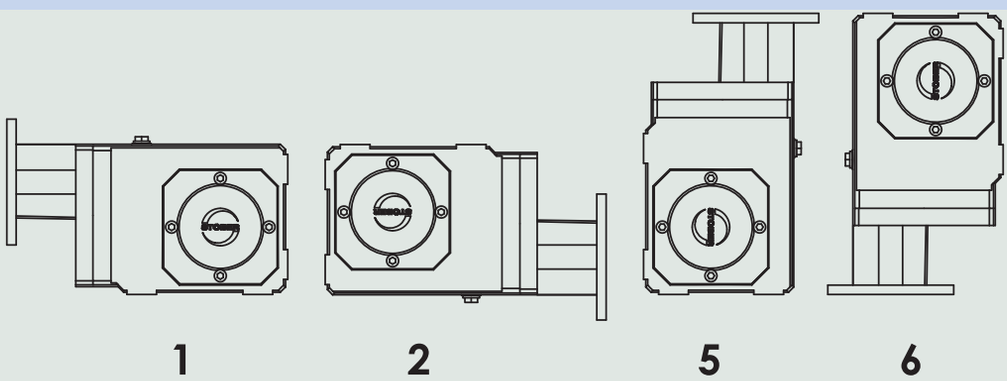
EL12



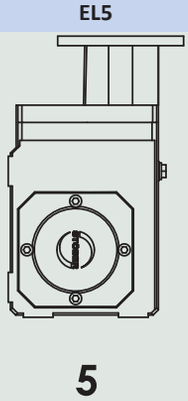
EL34



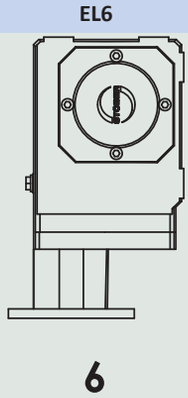
EL1256



EL5



EL6



Fill volumes

Type	V_{EL12}	V_{EL34}	V_{EL1256}	V_{EL5}	V_{EL6}
KSS102	0.57	0.56	0.93	0.93	0.68
KSS202	1.10	0.96	1.63	1.63	1.22
KSS203	1.28	1.30	1.72	1.72	1.44
KSS302	1.46	1.45	2.40	2.40	1.74
KSS303	1.88	2.05	2.52	2.52	2.05
KSS402	2.40	2.30	3.90	3.90	2.70
KSS403	2.70	3.20	4.10	4.10	3.20

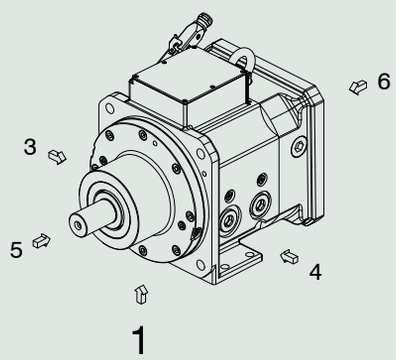
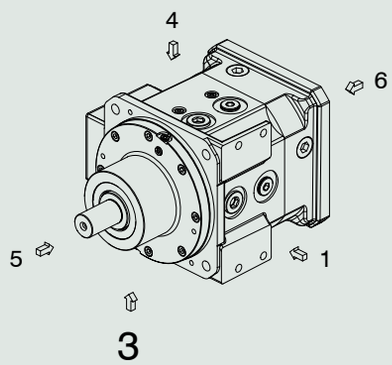
Symbol	Unit	Explanation
V_{EL12}	l	Fill volume for mounting position EL12
V_{EL34}	l	Fill volume for mounting position EL34
V_{EL1256}	l	Fill volume for mounting position EL1256
V_{EL5}	l	Fill volume for mounting position EL5
V_{EL6}	l	Fill volume for mounting position EL6

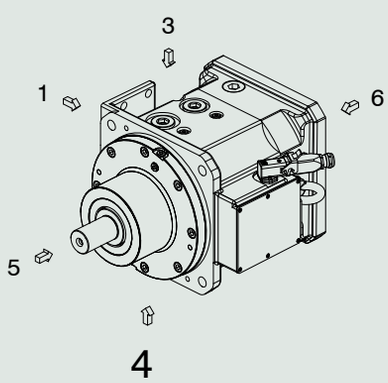
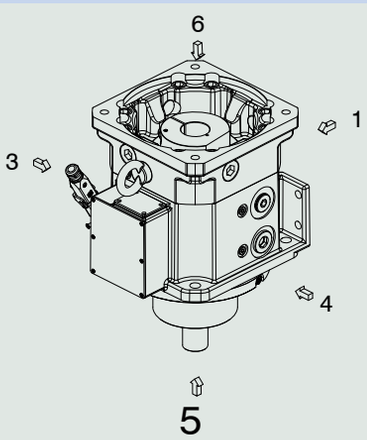
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

21 Two-speed gearboxes PS25 – PS30

The following table shows the standard mounting positions.

The numbers indicate the sides of the two-speed gearbox. The mounting position is defined by the side of the two-speed gearbox that is facing downward.

EL1	EL2	EL3
	Not permitted	

EL4	EL5	EL6
		Not permitted

Fill volumes

Type	$V_{EL1,3,4}$	$V_{EL5,LS}$	$V_{EL5,LM}$	$V_{EL5,LL}$
PS25	0.99	2.37	2.45	2.55
PS30	1.05	2.40	2.50	2.60

Symbol	Unit	Explanation
$V_{EL1,3,4}$	l	Fill volume for mounting position EL1, EL3 and EL4
$V_{EL5,LS}$	l	Fill volume for mounting position EL5 and short bearing distance
$V_{EL5,LM}$	l	Fill volume for mounting position EL5 and medium bearing distance
$V_{EL5,LL}$	l	Fill volume for mounting position EL5 and long bearing distance

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

22 Planetary gearboxes P2 – P9 (G2)

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V	$V_{rev,op}$
P221	13	18
P321	39	52
P421	62	90
P521	135	180
P721	225	330
P821	550	800
P921	1000	1450

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V	$V_{rev,op}$
P321	32	47
P421	49	80
P521	97	155
P721	190	300
P821	450	720
P921	780	1260

Fill volumes for two-stage gearboxes with standard bearings/radially reinforced bearings

Type	12 ≤ i ≤ 15	16 ≤ i ≤ 100	12 ≤ i ≤ 100
	V	V	V
P222	–	–	34
P322	–	–	76
P422	–	–	143
P522	260	–	–
P522	–	275	–
P722	–	–	520
P822	–	–	1230
P922	–	–	2180

Fill volumes for two-stage gearboxes with axially reinforced bearings

Type	12 ≤ i ≤ 15	16 ≤ i ≤ 100	12 ≤ i ≤ 100
	V	V	V
P322	–	–	69
P422	–	–	130
P522	232	–	–
P522	–	247	–
P722	–	–	494
P822	–	–	1140
P922	–	–	1930

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

23 Planetary gearboxes PA3 – PA8 (G2)

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V	$V_{rev,op}$
PA321	32	47
PA421	49	80
PA521	97	155
PA721	190	300
PA821	450	720

Fill volumes for two-stage gearboxes with axially reinforced bearings

Type	12 ≤ i ≤ 15	16 ≤ i ≤ 100	12 ≤ i ≤ 100
	V	V	V
PA322	–	–	69
PA422	–	–	117
PA522	210	–	–
PA522	–	225	–
PA722	–	–	460
PA822	–	–	1080

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

24 Planetary gearboxes PH3 – PH10 (G2/G3)

Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PH321	23	37
PH421	38	62
PH521	70	116
PH721	200	300
PH821	505	750

Fill volumes for two-stage gearboxes

Type	12 ≤ i ≤ 60 V	70 ≤ i ≤ 100 V
PH322	53	49
PH422	110	104
PH522	209	192
PH722	480	480
PH822	1200	1110
PH932	2040	–
PH1032	2850	–

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

25 Planetary gearboxes PHA3 – PHA10 (G2/G3)

Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PHA321	23	37
PHA421	38	62
PHA521	70	116
PHA721	200	300
PHA821	505	750

Fill volumes for two-stage gearboxes

Type	12 ≤ i ≤ 60 V	70 ≤ i ≤ 100 V
PHA322	53	49
PHA422	97	92
PHA522	186	174
PHA722	450	450
PHA822	1130	1040
PHA932	1950	–
PHA1032	2850	–

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

26 Planetary gearboxes PHQ4 – PHQ12 (G2/G3)

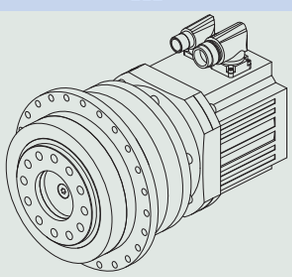
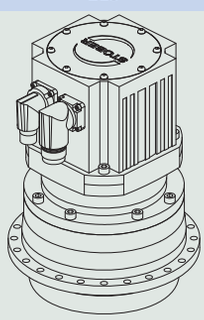
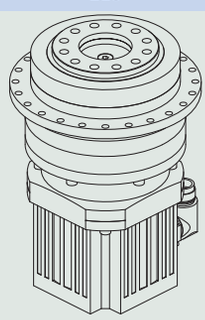
Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PHQ421	38	58
PHQ521	87	112
PHQ721	200	300

Fill volumes for two-stage gearboxes

Type	V	$V_{rev,op}$
PHQ422	100	115
PHQ522	191	225
PHQ722	440	465
PHQ822	1040	1080
PHQ932	2020	2370
PHQ1032	3600	3820
PHQ1132	5800	6220
PHQ1232	11900	12800

Mounting positions of three-stage gearboxes

EL1	EL5	EL6
		
Horizontal output	Vertical downward output	Vertical upward output

Fill volumes for three-stage gearboxes

Type	EL1		EL5		EL6
	V	$V_{rev,op}$	V_2	V_1	V
PHQ723	320	570	190	215	500
PHQ823	720	1280	605	450	1100
PHQ933	1400	2600	800	1120	2400
PHQ1033	2600	4700	1300	2150	4375
PHQ1133	4300	7500	5800	550	6860
PHQ1233	8600	15500	8600	4900	14500

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

27 Planetary gearboxes PHQA4 – PHQA10 (G2/G3)

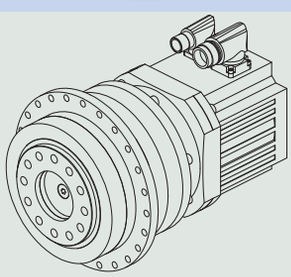
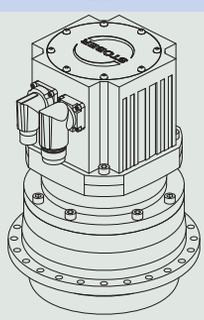
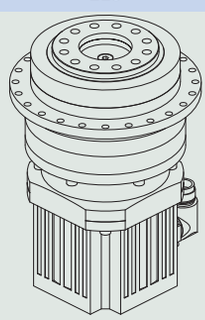
Fill volumes for single-stage gearboxes

Type	V	$V_{rev,op}$
PHQA421	38	58
PHQA521	87	112
PHQA721	200	300

Fill volumes for two-stage gearboxes

Type	V	$V_{rev,op}$
PHQA422	87	105
PHQA522	171	210
PHQA722	410	435
PHQA822	970	1015
PHQA932	1900	2090
PHQA1032	3600	3820

Mounting positions of three-stage gearboxes

EL1	EL5	EL6
		
Horizontal output	Vertical downward output	Vertical upward output

Fill volumes for three-stage gearboxes

Type	EL1		EL5		EL6
	V	$V_{rev,op}$	V_2	V_1	V
PHQA723	290	515	190	200	440
PHQA823	670	1200	460	410	1000
PHQA933	1400	2480	800	990	2260
PHQA1033	2600	4700	1300	2150	4375

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

28 Planetary gearboxes PHV9 – PHV10 (G3)

Fill volumes

Type	V	$V_{rev,op}$
PHV933	1910	2230
PHV1033	3060	3810

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

29 Planetary gearboxes PHVA9 – PHVA10 (G3)

Fill volumes

Type	V	$V_{rev,op}$
PHVA933	1910	2230
PHVA1033	3060	3810

Symbol	Unit	Explanation
V	ml	Fill volume
$V_{rev,op}$	ml	Fill volume for reverse operation and horizontally aligned output

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

30 Planetary gearboxes PE2 – PE5 (G1)

Fill volumes for single-stage gearboxes

Type	V
PE211	5 g (6 ml)
PE311	18 g (20 ml)
PE411	32 g (35 ml)
PE511	66 g (73 ml)

Fill volumes for two-stage gearboxes

Type	V
PE212	10 g (11 ml)
PE312	28 g (31 ml)
PE412	51 g (57 ml)
PE512	107g (119 ml)

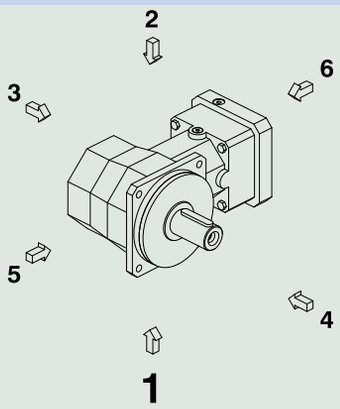
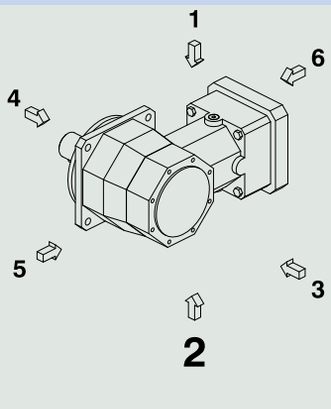
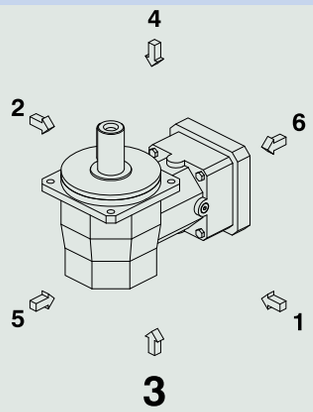
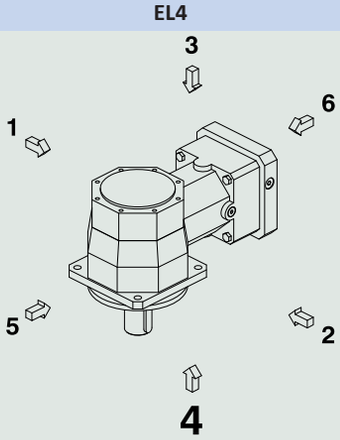
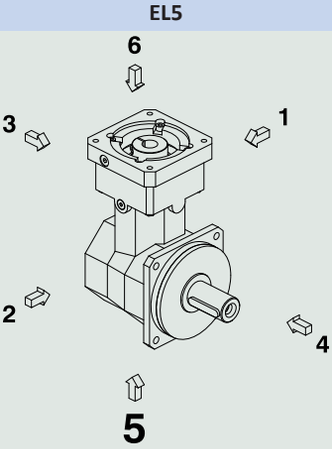
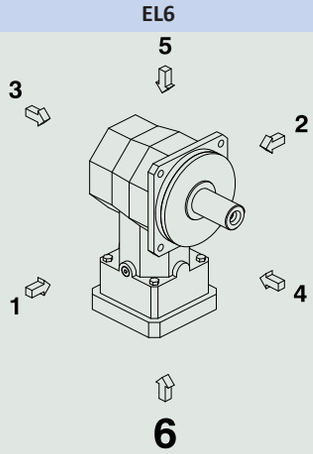
Symbol	Unit	Explanation
V	g (ml)	Fill volume

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

31 Right-angle servo gearboxes KS4 – KS7 (G0)

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for two-stage gearboxes

Type	6≤i≤20	i=6			8≤i≤10			14≤i≤20		
	$V_{EL1,2,3,4,6}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$
KS402	145	236	250	241	236	250	241	236	250	241
KS502	255	391	415	402	391	415	402	395	420	406
KS702	475	759	807	777	772	819	788	776	824	793

Fill volumes for three-stage gearboxes

Type	$V_{EL1,2,3,4,6}$	$V_{EL5,\ WF}$	$V_{EL5,\ WP,WG}$	$V_{EL5,\ WS}$
KS403	155	268	283	273
KS503	280	470	495	480
KS703	520	913	958	928

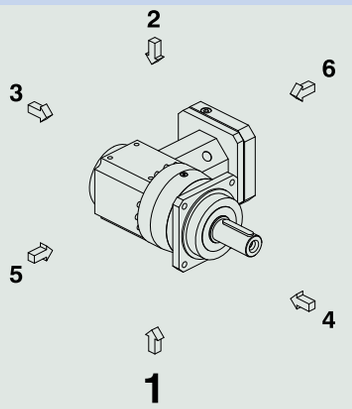
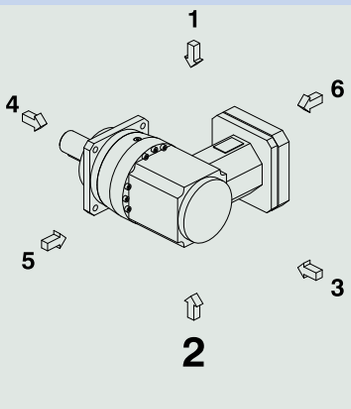
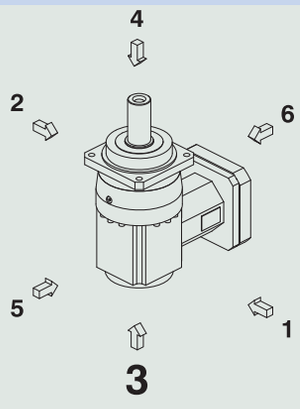
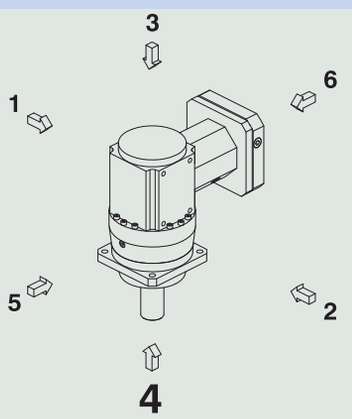
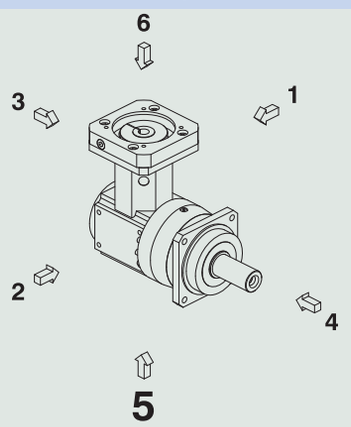
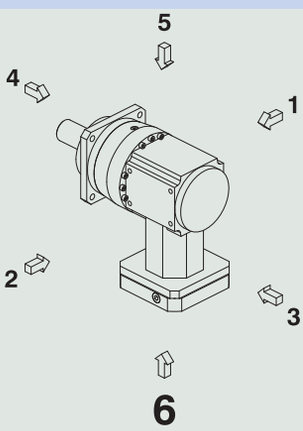
Symbol	Unit	Explanation
$V_{EL1,2,3,4,6}$	ml	Fill volume for mounting position EL1, EL2, EL3, EL4 and EL6
$V_{EL5,WF}$	ml	Fill volume for mounting position EL5 and flange hollow shaft
$V_{EL5,WP,WG}$	ml	Fill volume for mounting position EL5 and solid shaft with feather key/solid shaft without feather key
$V_{EL5,WS}$	ml	Fill volume for mounting position EL5 and hollow shaft with shrink ring

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

32 Right-angle planetary gearboxes P2KX3 – P9KX8 (G2)

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P221_KX301	13	42
P321_KX301	39	42
P421_KX401	62	80
P521_KX501	135	160
P721_KX701	225	390
P821_KX801	550	820

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V_2 (P)	V_1 (KX)
P321_KX301	32	42
P421_KX401	49	80
P521_KX501	97	160
P721_KX701	190	390
P821_KX801	450	820

Fill volumes for two-stage gearboxes with standard bearings/radially reinforced bearings

Type	EL1, EL2, EL5, EL6		EL3, EL4	
	V_2 (P)	V_1 (KX)	V_2 (P)	V_1 (KX)
P222_KX301	22	42	34	42
P322_KX301	53	42	76	42
P422_KX301	87	42	143	42
P522_KX401	162	80	275	80
P722_KX501	305	160	520	160
P822_KX701	715	390	1230	390
P922_KX801	1340	820	2180	820

Fill volumes for two-stage gearboxes with axially reinforced bearings

Type	EL1, EL2, EL5, EL6		EL3, EL4	
	V_2 (P)	V_1 (KX)	V_2 (P)	V_1 (KX)
P322_KX301	50	42	69	42
P422_KX301	77	42	130	42
P522_KX401	140	80	247	80
P722_KX501	283	160	494	160
P822_KX701	670	390	1140	390
P922_KX801	1230	820	1930	820

In the mounting positions EL3 and EL4, there is a shaft seal ring between the input and output stages; so the gearboxes have separate oil chambers.

In the mounting positions EL1, EL2, EL5 and EL6, there is no shaft seal ring between the input and output stages, so the gearboxes have a common oil chamber. Nevertheless, the lubricant is filled separately for the input and output stages.

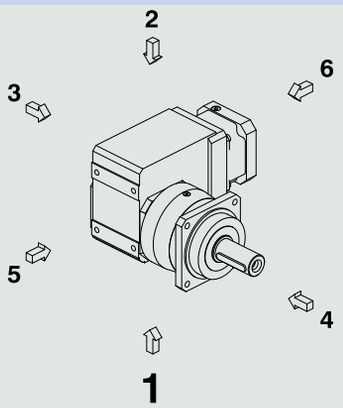
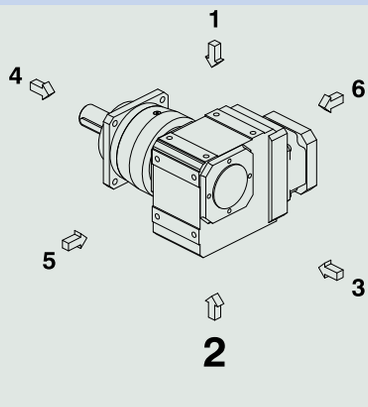
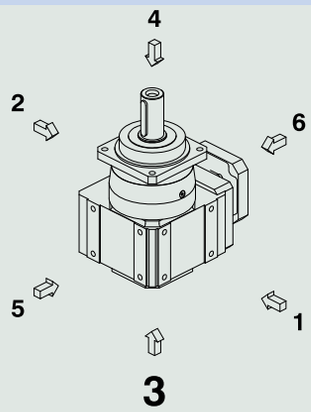
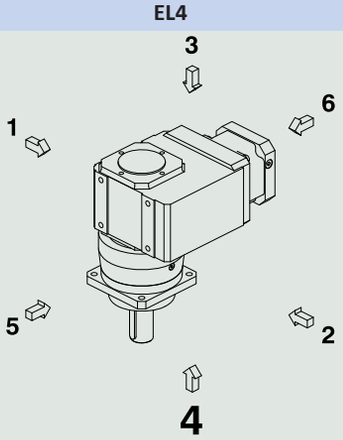
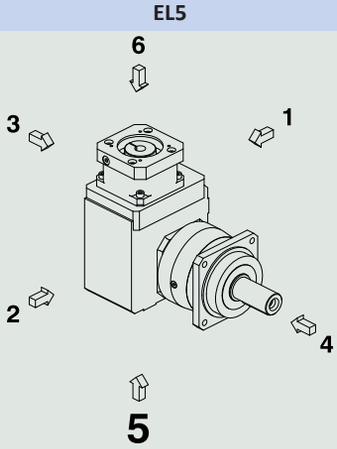
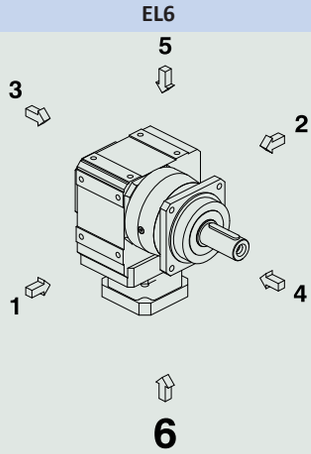
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

33 Right-angle planetary gearboxes P5K1 – P9K4 (G2)

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage gearboxes with standard bearings/radially reinforced bearings

Type	V_2 (P)	V_1 (K)
P521_K102	135	–
P721_K102	225	–
P721_K202	225	–
P821_K202	550	–
P821_K302	550	–
P921_K402	1000	–

Fill volumes for single-stage gearboxes with axially reinforced bearings

Type	V_2 (P)	V_1 (K)
P521_K102	97	–
P721_K102	190	–
P721_K202	190	–
P821_K202	450	–
P821_K302	450	–
P921_K402	780	–

Fill volumes for input stage K can be found in the chapter [19].

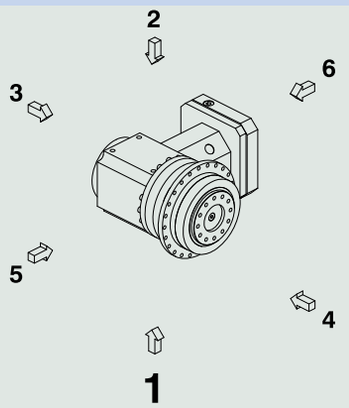
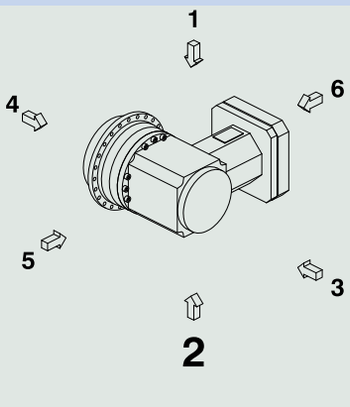
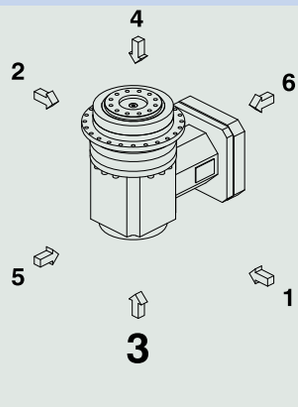
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

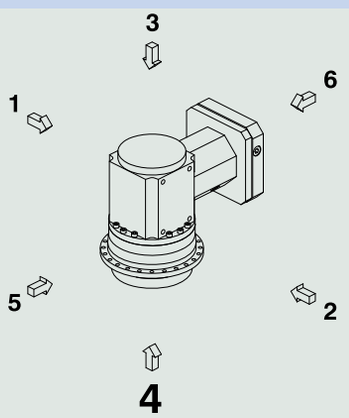
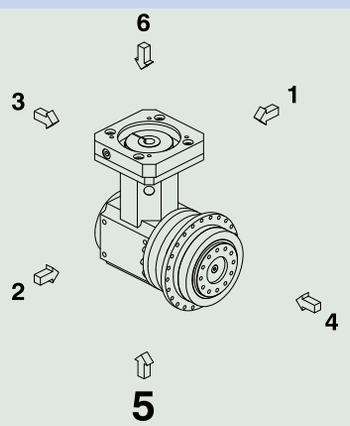
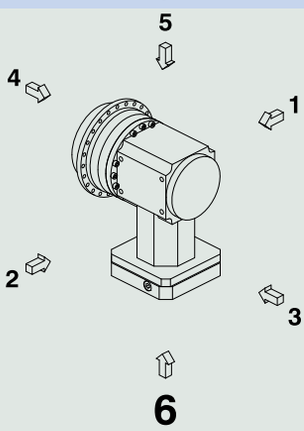
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

34 Right-angle planetary gearboxes PH3KX3 – PH10KX8 (G2/G3)

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		

EL4	EL5	EL6
		

Fill volumes for single-stage gearboxes

Type	V_2 (PH)	V_1 (KX)
PH321_KX301	23	42
PH421_KX401	38	80
PH521_KX501	70	160
PH721_KX701	200	390
PH821_KX801	505	820

Fill volumes for two-stage gearboxes

Type	EL1, EL2, EL5, EL6		EL3, EL4				
	V_2 (PH)	V_1 (KX)	V_2 16 ≤ i ≤ 20	V_2 25 ≤ i ≤ 50	V_2 70 ≤ i ≤ 100	V_2 12 ≤ i ≤ 60	V_1 (KX)
PH322_KX301	36	42	53	53	49	–	42
PH422_KX301	75	42	110	110	104	–	42
PH522_KX401	135	80	209	209	192	–	80
PH722_KX501	280	160	480	480	480	–	160
PH822_KX701	700	390	1200	1140	1110	–	390
PH932_KX801	1270	820	–	–	–	2040	820
PH1032_KX801	1680	820	–	–	–	2850	820

In the mounting positions EL3 and EL4, there is a shaft seal ring between the input and output stages; so the gearboxes have separate oil chambers.

In the mounting positions EL1, EL2, EL5 and EL6, there is no shaft seal ring between the input and output stages, so the gearboxes have a common oil chamber. Nevertheless, the lubricant is filled separately for the input and output stages.

Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

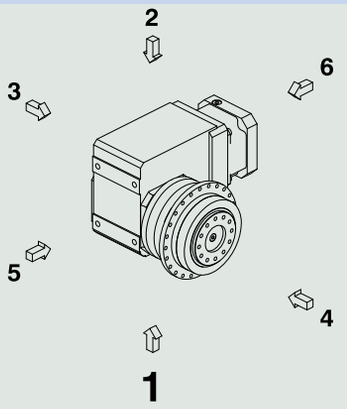
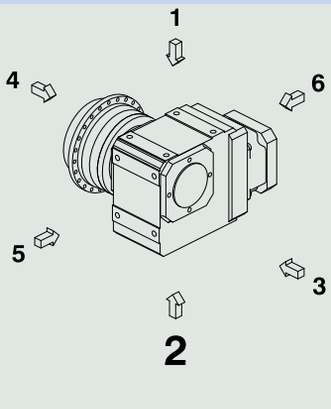
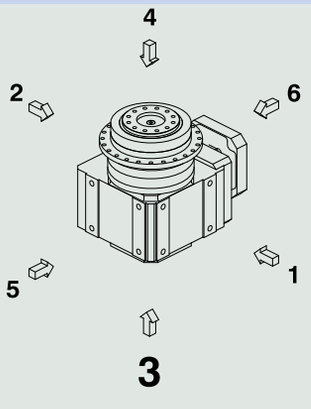
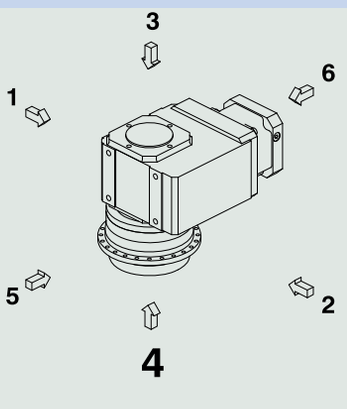
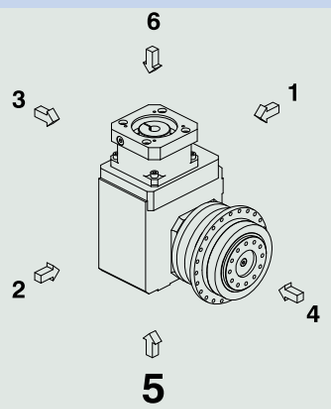
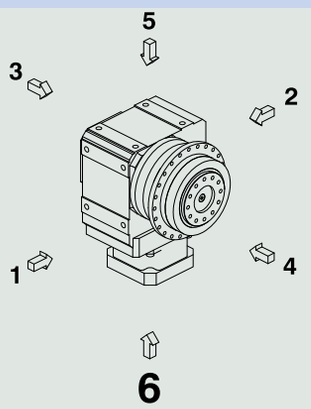
The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

35 Right-angle planetary gearboxes PH5K1 – PH10K6 / PHQ5K1 – PHQ12K9 (G2/G3)

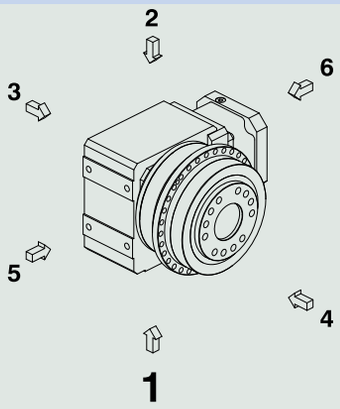
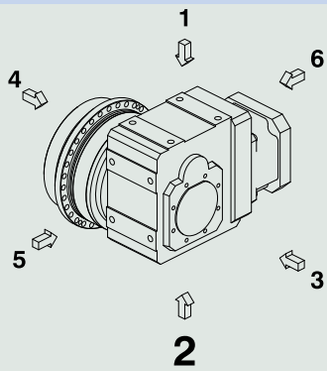
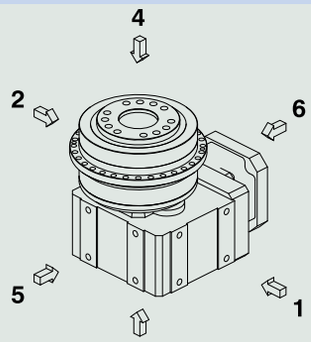
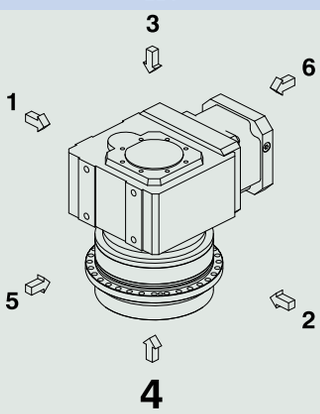
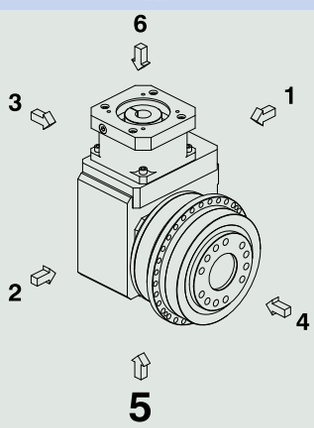
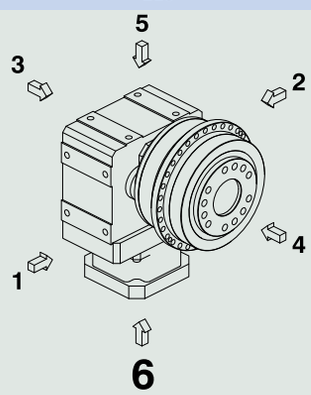
The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

PH5K1 – PH8K3 / PHQ5K1 – PHQ8K4

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

PH9K5 – PH10K6 / PHQ9K5 – PHQ12K9

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes for single-stage PHK gearboxes

Type	V_2 (PH)	V_1 (K)
PH521_K102	70	–
PH721_K102	200	–
PH721_K202	200	–
PH821_K202	505	–
PH821_K302	505	–
PH931_K513	940	–
PH1031_K613	1400	–

Fill volumes for single-stage PHQK gearboxes

Type	V_2 (PHQ)	V_1 (K)
PHQ521_K102	87	–
PHQ721_K202	200	–
PHQ821_K402	505	–
PHQ931_K513	940	–
PHQ1031_K713	1800	–
PHQ1131_K813	4700	–
PHQ1231_K913	8600	–

Fill volumes for input stage K can be found in the chapter [19].

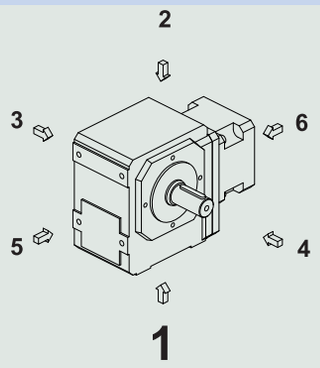
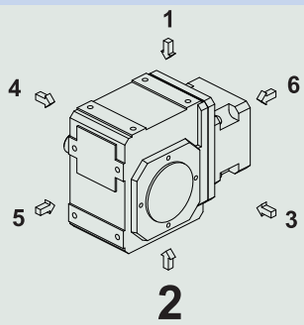
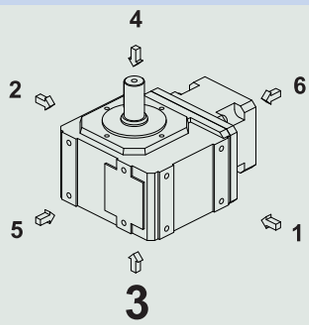
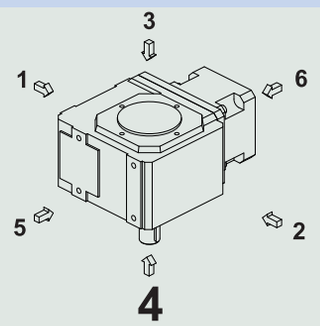
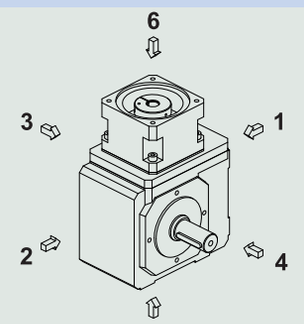
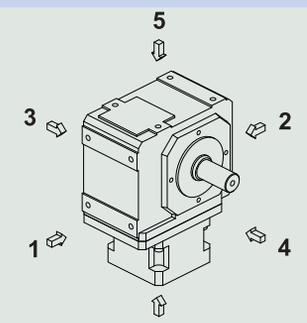
Symbol	Unit	Explanation
V_1	ml	Fill volume for the input stage
V_2	ml	Fill volume for the output stage

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

36 Helical worm gearboxes S0 – S4 (G0)

The following table shows the standard mounting positions.

The numbers identify the gearbox sides. The mounting position is defined by the gearbox side facing downwards.

EL1	EL2	EL3
		
EL4	**EL5**	**EL6**
		

Fill volumes

Type	V_{EL1}	V_{EL2}	V_{EL3}	V_{EL4}	$V_{EL5,WA,WS}$	$V_{EL5,WV}$	V_{EL6}
S002	0.30	0.50	0.36	0.36	0.53	0.53	0.44
S102	0.50	0.76	0.60	0.60	0.91	0.91	0.70
S202	1.00	1.50	1.20	1.20	1.80	1.90	1.60
S203	1.20	1.40	1.40	1.40	2.10	2.20	1.80
S302	1.55	2.20	1.80	1.80	3.00	3.10	2.40
S303	1.85	2.50	2.50	2.50	3.28	3.38	2.70
S402	2.60	3.50	2.70	2.70	4.40	4.50	3.50
S403	3.20	4.00	3.60	3.60	4.80	4.90	3.80

Symbol	Unit	Explanation
V_{EL1}	l	Fill volume for mounting position EL1
V_{EL2}	l	Fill volume for mounting position EL2
V_{EL3}	l	Fill volume for mounting position EL3
V_{EL4}	l	Fill volume for mounting position EL4
$V_{EL5,WA,WS}$	l	Fill volume for mounting position EL5 and hollow shaft/hollow shaft with shrink ring
$V_{EL5,WV}$	l	Fill volume for mounting position EL5 and solid shaft
V_{EL6}	l	Fill volume for mounting position EL6

The lubricant specification and mandatory lubricant fill volume for your gearbox can be found on the nameplate or by entering the serial number of the gearbox at https://id.stober.com.

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