

NOTE TO USER: This document is not the complete installation operating instructions. It is an abridged version specifically created for UPS Power Units. The complete installation, operating and maintenance instructions contains much more detailed information and can be referenced from the “Documentation” link at: www.seweurodrive.com

1. MECHANICAL INSTALLATION

1.1 Required tools/resources

- o Set of metric wrenches/sockets
- o Torque wrench for TorqLOC®
- o Compensation elements (shims, spacing rings)
- o Lubricant (e.g., NOCO® fluid)
- o Torque arm anchoring hardware at rubber buffer (bolt, washers, nut)

1.2 All standard UPS power units are supplied with

- o Synthetic lube
- o TorqLOC
- o Torque arm with rubber bushings
- o KT gear units with symmetrical hollow shaft or FT gear units with non-symmetrical hollow shaft

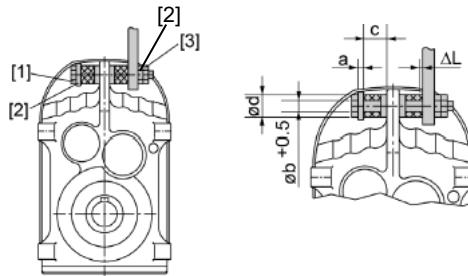
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1.3 Torque arms for shaft-mounted gear units

- Parallel-shaft helical gear units (F-Series)
- Right angle shaft helical bevel gear units using torque arm **without** integral bushing (K-Series)

The following figure shows the torque arm for parallel-shaft helical gear unit



[1] Bolt

[2] Washers

[3] Double nut*

-Items 1, 2 and 3 provided by integrator

Proceed as follows to mount the SEW supplied rubber buffers:

1. Use bolts [1] and washers according to the following table.
2. Use two nuts to secure the bolt connection [3]*
3. Tighten the Bolt until the initial stress “Δ L” of the buffers is reached according to the table
 - a. If unable to measure, ensure at least one buffer can be rotated by hand with resistance

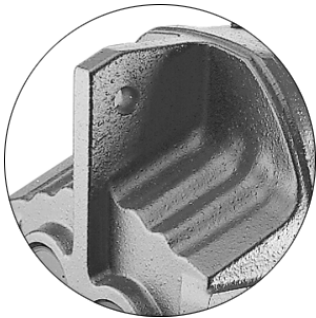
Gear Unit	Diameter	Rubber buffer inner diameter	Length (loose)	Washer Width	Δ L (taut)	Buffer part number
	d [mm]	b [mm]	c [mm]	a [mm]	[mm]	
F.27/G	40	12.5	20	5	1	00133485
F.37/G	40	12.5	20	5	1	00133485
F.47/G	40	12.5	20	5	1.5	00133485
F.57/G	40	12.5	20	5	1.5	00133485
F.67/G	40	12.5	20	5	1.5	00133485
F.77/G	60	21.0	30	10	1.5	00133493
F.87/G	60	21.0	30	10	1.5	00133493
F.97/G	80	25.0	40	12	2	00133507

*Lock nuts with washers are acceptable substitutes for double nuts.

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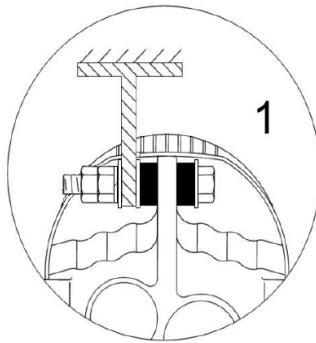
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F-Series:

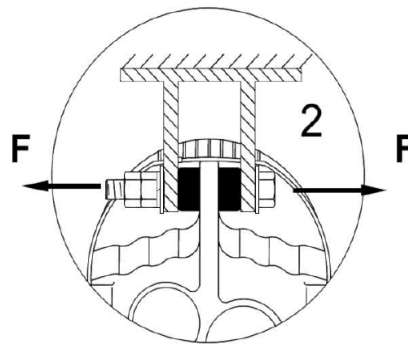


The F-series has a built-in torque arm lug at the top of the reducer. Rubber bushings should be ordered with all FA units. The letter "G" is added to the nomenclature after the reducer size to designate that the unit is supplied with rubber bushings (Ex: FA67G).

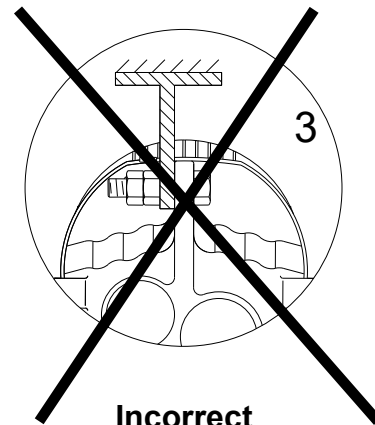
The following are correct and incorrect methods for installing a torque arm.



Correct



Correct



Incorrect

#1 and #2:

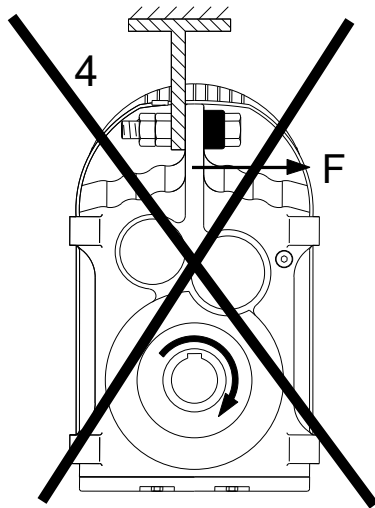
The built-in lug on the F-series reducer must be padded on both sides with a rubber bushing, which protects the reducer in both the clockwise or counterclockwise directions. The only difference between #1 and #2 is the shape of the torque arm bracket. Since the force from the reducer (F) is parallel to the retaining bolt as shown in #2, a twisting force is not induced on the bolt in either CW or CCW direction. Thus, a rigid single bracket arm provides adequate restraint for both directions.

#3:

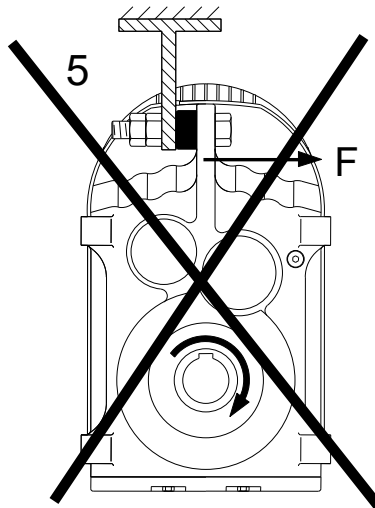
The lug is not protected on either side with a rubber bushing. Therefore, the reducer is very rigidly fixed. A shaft that is slightly out-of-round will cause stress on the bearings and on the reducer shaft. Ultimately, the bearings may fail prematurely.

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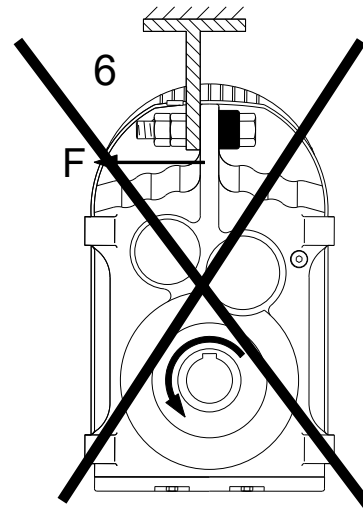
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Incorrect



Incorrect



Incorrect

#4:

The reducer moves in a clockwise direction. A rubber bushing is placed between the reducer lug and the bolt head to cushion the reducer from the force, F that occurs when the reducer operates CW. While this design appears acceptable, it is not recommended due to the fact that a force opposite to the one shown may occur if the load shaft is out-of-round. Since there is no bushing to the left of the reducer lug, there is no cushion. Therefore, binding and bearing stress may still occur.

#5:

The reducer moves in a clockwise direction. The force, F , is present due to the direction of rotation. Even though a rubber bushing is placed to the left of the reducer lug, it does not cushion the reducer from shock forces in the same direction as F .

#6:

This design is the opposite of #5 since the reducer moves in a CCW direction. The force, F , is present due to the direction of rotation. Even though a rubber bushing is placed to the right of the reducer lug, it does not cushion the reducer from shock forces in the same direction as F .

Solution to #4, #5, #6: Provide a rubber bushing on both sides of lug, regardless of the direction of rotation.

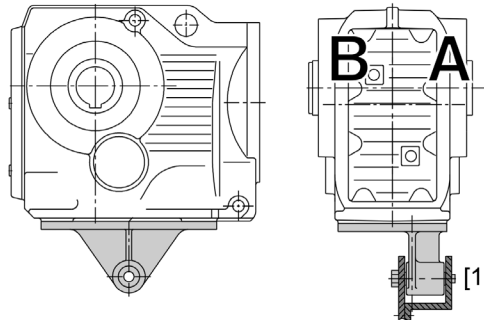
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- **Helical-bevel gear units (K-Series)**

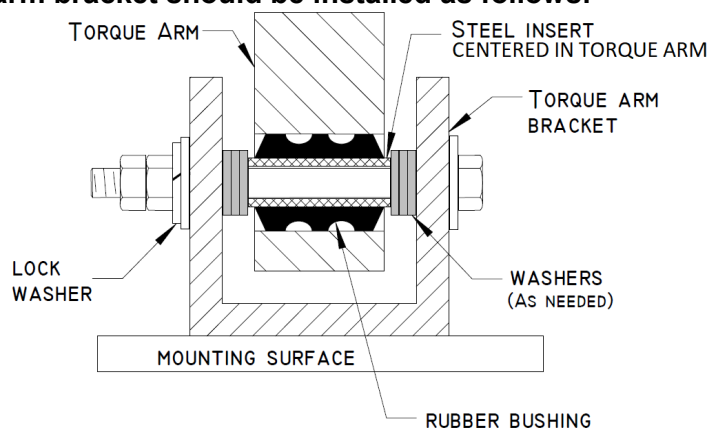
The following figure shows the installation of the SEW torque for helical-bevel gear units

- Install connection end B as mirror of image A



Gear unit	Screws	Tightening torque
K.37 /T	4 × M10 × 25 – 8.8	48 Nm
K.47 /T	4 × M10 × 30 – 8.8	48 Nm
K.67 /T	4 × M12 × 35 – 8.8	86 Nm
K.77 /T	4 × M16 × 40 – 8.8	210 Nm
K.87 /T	4 × M16 × 45 – 8.8	210 Nm
K.97 /T	4 × M20 × 50 – 8.8	410 Nm
K.107 /T	4 × M24 × 60 – 8.8	710 Nm
K.127 /T	4 × M36 × 130 – 8.8	2500 Nm
K.157 /T	4 × M36 × 130 – 8.8	2500 Nm

- Tightening torques for bolts holding torque arm to reducer
 - It is recommended to use thread locker, such as Loctite 242 or 243, on these screws
- **Torque arm bracket should be installed as follows:**



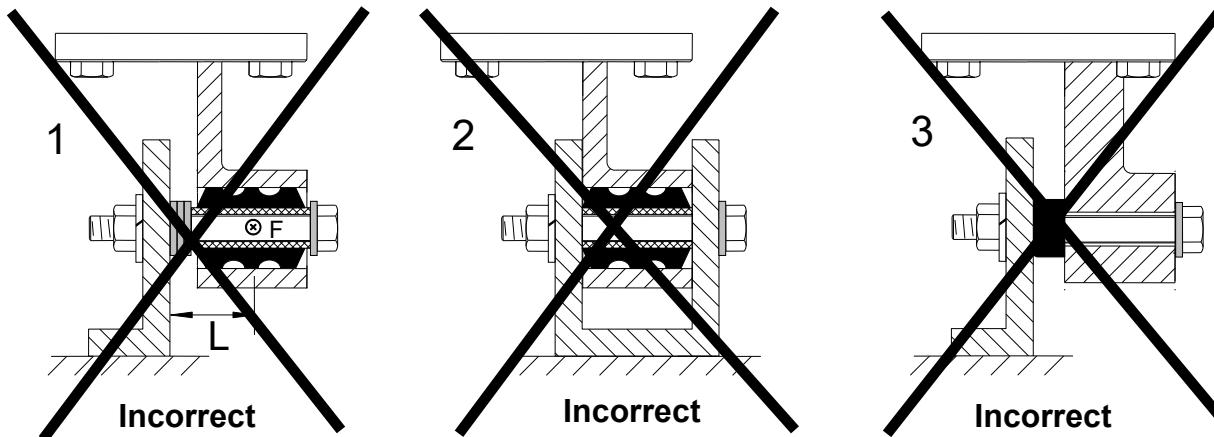
- Double nuts on bolt*
- Washer between nuts and bracket
- Washers as needed to fill gap between bushing insert and bracket
 - Minimum gap 3/32"
 - Steel insert should be centered in the torque arm and bracket
- Washer between bolt head and bracket
- **Do not force torque arm.** If it does not align with the bracket, move the bracket
- **Torque arm must move freely**
- **Bracket must not contact the body of the torque arm**

*Lock nuts with washers are acceptable substitutes for double nuts.

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The following illustrations show incorrect installations of a torque arm for K-series.



- #1:** An SEW torque arm is anchored on one side. A lock washer and spacers are properly used, along with a bushing and metal insert. However, as the load shaft rotates, the torque arm produces a force, F with its direction going into or out of the page. This force is located at a distance, L from the edge of the mounting surface.

Problem: The bolt experiences a bending moment equal to $(F \times L)$. Eventually, the bolt loosens or fails from fatigue stress.

Solution: Anchor torque arm on both sides.

- #2:** An SEW torque arm is anchored on both sides. It incorporates a lock washer, a rubber bushing, and a metal insert.

Problem: Washers between the torque arm and the mounting bracket are missing. Friction between the bracket and the face of the torque arm restrict the torque arm and reduce the effectiveness of the rubber buffer.

Solution: Widen the torque arm bracket and use spacers (washers).

- #3:** This illustration represents a torque arm not designed by SEW. In lieu of SEW's built-in bushing, another type of rubber bushing is used between the torque arm and bracket, which is supposed to cushion and give adequate space between the bracket.

Problem 1: Same as #1 above.

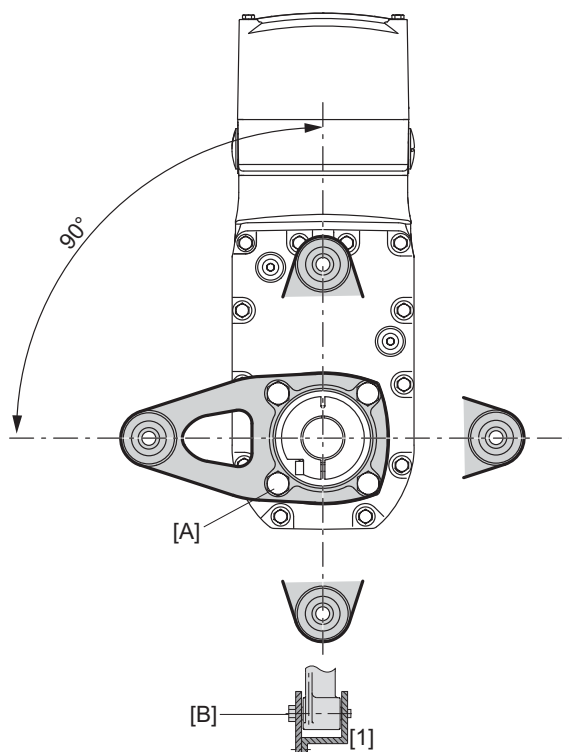
Problem 2: The rubber bushing cushions forces from left to right only. However, the direction of the problematic forces is in and out of the page and is perpendicular to the bolt. Thus, the bushing provides no real cushion, just space between the bracket and the mounting surface.

Solution: In addition to solution for #1 above, use a hollow bushing that is entirely surrounded with rubber to cushion the forces going in and out of page.

- MOVIGEAR® units

The following figure shows the torque arm for MOVIGEAR® units

- Bushing [1] with bearings on both ends.



Drive	Screw A		Screw B	
	Size	Tightening torque [Nm]	Size	Tightening torque [Nm]
MGF.T2	M10	48 Nm	M10	20 Nm
MGF.T4	M12	70 Nm	M10	20 Nm

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1.4 TorqLoc installation instructions

1.

Clean with degreaser

2.

Apply NOCO fluid supplied by SEW

3.

4.

5.

6.

KT, FT	Torque	
	Nm	lb-ft
37	18	13
47	18	13
57	18	13
67	35	26
77	35	26
87	35	26
97	35	26
107	38	28
127	65	48
157	150	111

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7.

8.

9.

10.

11.

Tightening Torques - Shrink Disc

KT, FT	Torque	
	Nm	lb-ft
37	10	7
47	12	9
57	12	9
67	12	9
77	30	22
87	30	22
97	30	22
107	59	44
127	100	77
157	100	77

12.

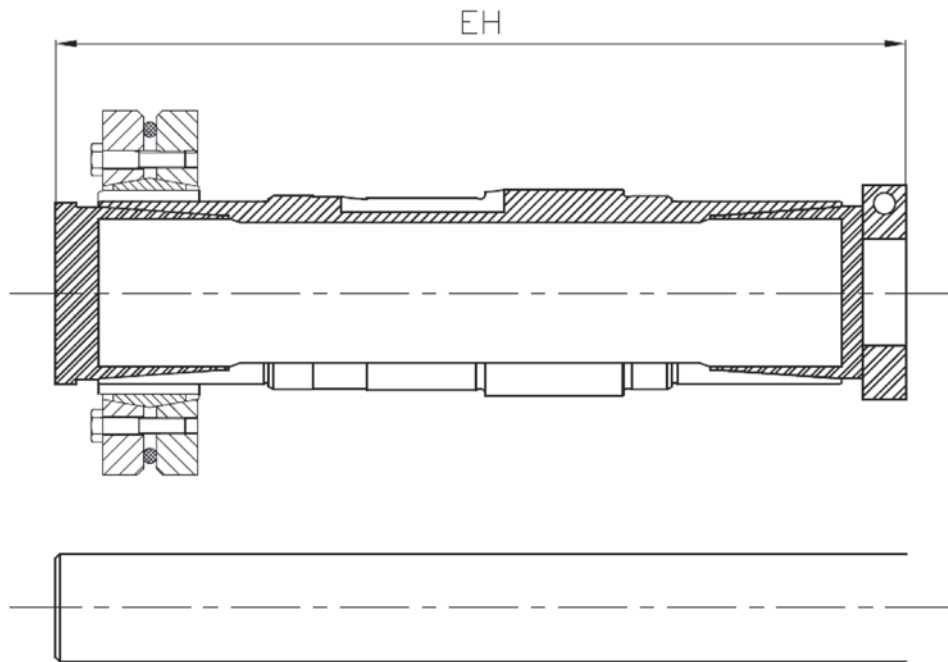
13.

**K...
S...
W...**

F...

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1.5 Solid Shaft Length for KT Gear Units with Stafford Manufacturing Locking Collars



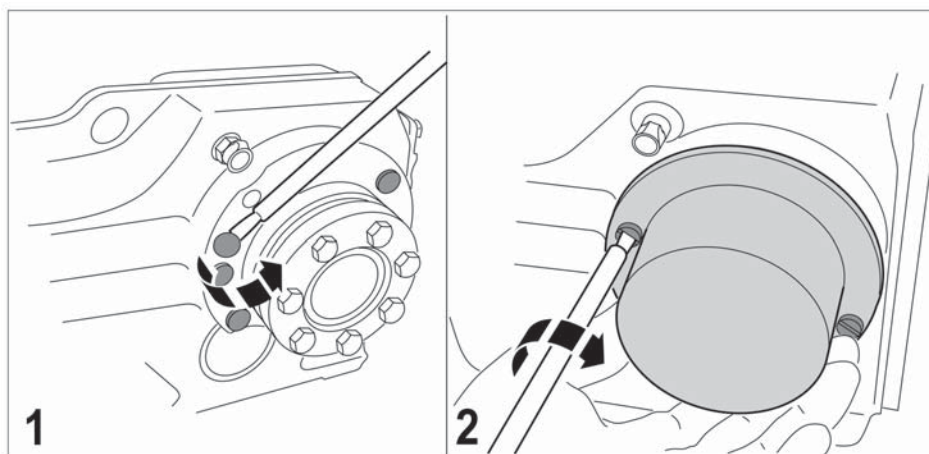
Unit Type	EH Dimension Symmetrical Shaft	EH Dimension Non-Symmetrical Shaft
KT/FT37	7.90"	6.95"
KT/FT47	9.39"	8.41"
KT/FT57	10.72"	9.46"
KT/FT67	11.24"	9.98"
KT/FT77	13.76"	11.94"
KT/FT87	15.68"	13.59"
KT/FT97	18.20"	15.99"
KT/FT107	20.44"	18.12"

SEW Part Number for Stafford Collar - listed by bore size							
1.250"	1.4375"	1.625"	1.6875"	1.9375"	2.4375"	2.9375"	3.4375"
19133413	19133421	19133448	19133456	19133464	19133472	19133480	19133405

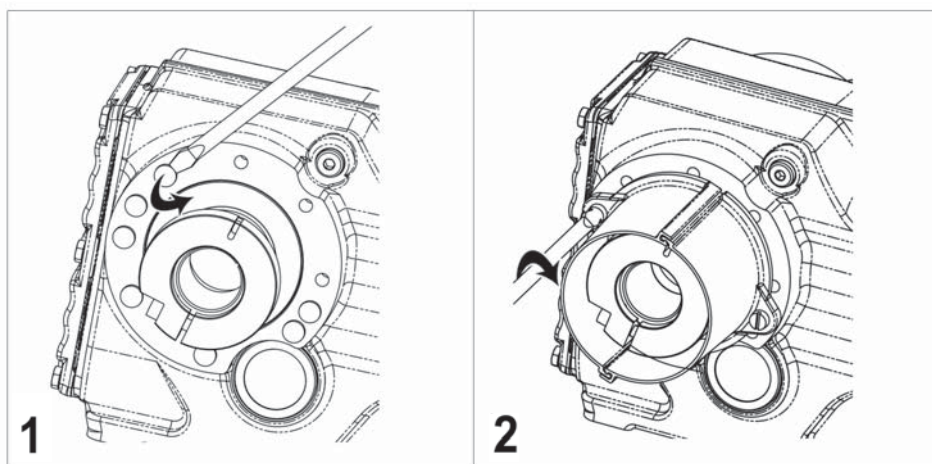
1.7 Installing the shrink disc and split covers

1. To attach the cover, remove the plastic plugs on the gear unit housing (see Figure 1).
2. Use the screws provided to mount the cover to the gear unit housing (see Figure 2).

Shrink Disc Cover



Split Cover



2. INSPECTION / MAINTENANCE INTERVALS

The following table list the obligatory maintenance intervals and corresponding measures to be taken.

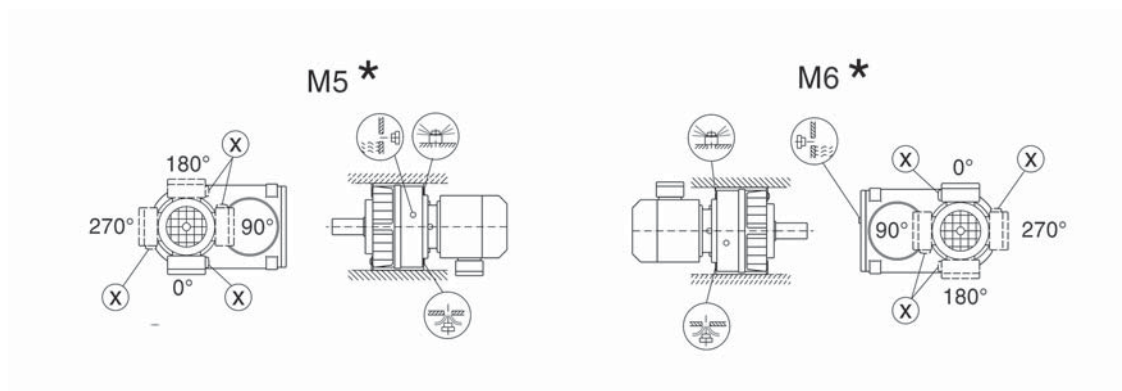
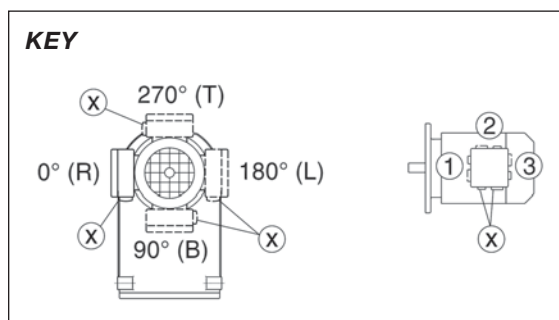
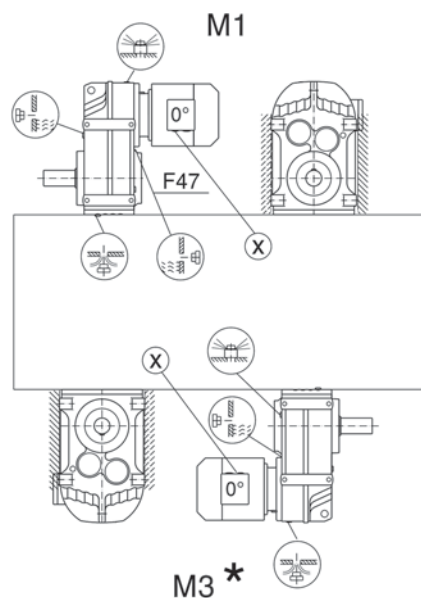
Time interval	What to do?
Every 3,000 hours of operation, at least every 6 months	- Check oil and oil level - Check running noise for possible bearing damage - Visual inspection of the seals for leakage - For gear units with a torque arm: Check and replace the rubber buffers, if necessary
- Depending on the operating conditions (see illustration below), every 3 years at the latest - according to oil temperature	- Change mineral oil - Replace rolling bearing grease (recommendation) - Replace oil seal (do not install it in the same track)
- Depending on the operating conditions (see illustration below), every 5 years at the latest - according to oil temperature	- Change synthetic oil - Replace rolling bearing grease (recommendation) - Replace oil seal (do not install it in the same track)
Varying (depending on external factors)	Touch up or renew the surface/anticorrosion coating

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3. MOUNTING POSITIONS

3.1 FT27...FT157 (only relevant mounting positions shown)

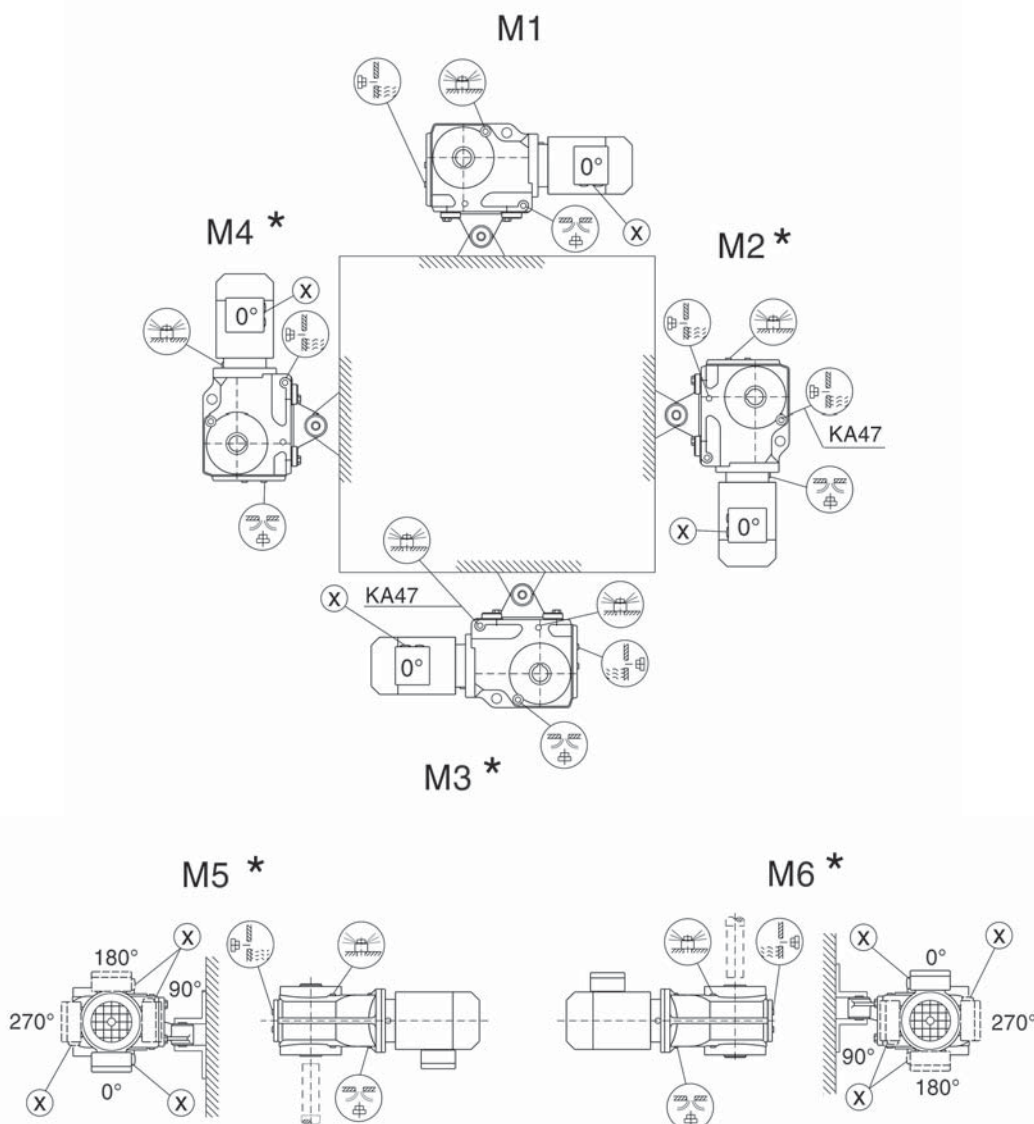
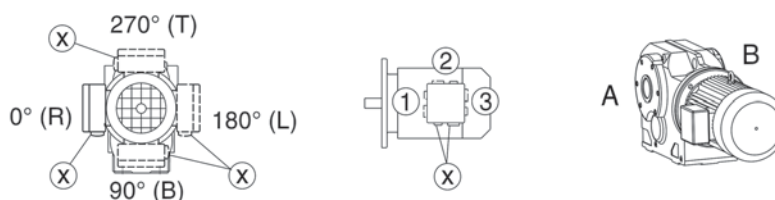


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3.2 KT37...KT157 (all mounting positions shown)

KEY



4. TECHNICAL DATA – LUBRICANTS

4.1 Oil Fill Quantity for FT Gear Units

Gear unit	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
F..27	0.60	0.80	0.65	0.70	0.60	0.60
F..37	0.95	1.25	0.70	1.25	1.00	1.10
F..47	1.50	1.80	1.10	1.90	1.50	1.70
F..57	2.70	3.50	2.10	3.40	2.90	3.00
F..67	2.70	3.80	1.90	3.80	2.90	3.20
F..77	5.9	7.3	4.30	8.0	6.0	6.3
F..87	10.8	13.0	7.7	13.8	10.8	11.0
F..97	18.5	22.5	12.6	25.2	18.5	20.0
F..107	24.5	32.0	19.5	37.5	27.0	27.0
F..127	39.0	54.5	34.0	61.0	45.0	46.5
F..157	68.0	103.0	62.0	104.0	85.0	79.5

4.2 Oil Fill Quantity for KT Gear Units

Gear unit	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
K..29	0.65	0.65	0.65	0.8	0.65	0.65
K..37	0.50	1.00	1.00	1.40	1.00	1.00
K..47	0.80	1.30	1.60	2.15	1.60	1.60
K..57	1.20	2.20	2.40	3.15	2.70	2.40
K..67	1.10	2.40	2.70	3.70	2.60	2.60
K..77	2.10	4.10	4.60	5.9	4.40	4.40
K..87	3.70	8.2	8.8	11.1	8.0	8.0
K..97	7.0	14.7	15.7	20.0	15.7	15.7
K..107	10.0	20.5	24.0	32.4	24.0	24.0
K..127	21.0	41.5	43.0	52.0	40.0	40.0
K..157	31.0	66.0	67.0	87.0	62.0	62.0
K..167	33.0	95.0	105.0	123.0	85.0	84.0
K..187	53.0	152.0	167.0	200	143.0	143.0