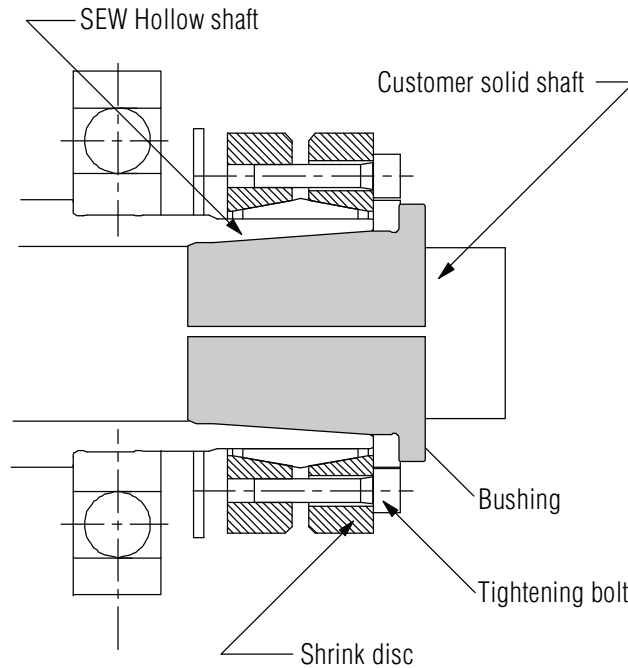


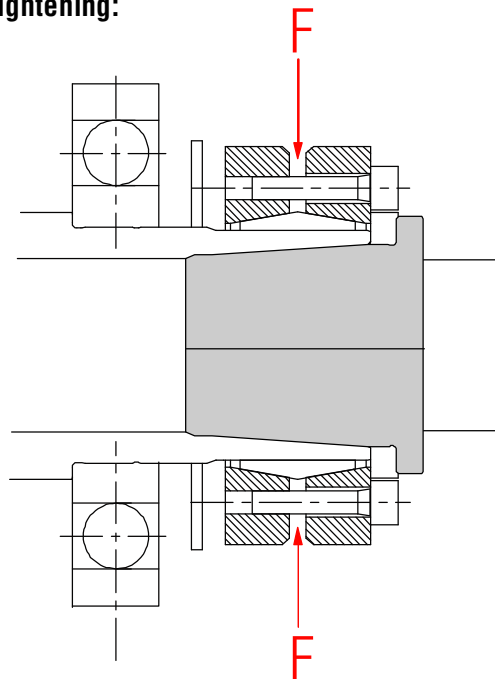
# Technical Note

## TorqLOC® Design

### Before Tightening:



### After Tightening:



#### Concept:

Tightening the bolts creates a radial clamping force, **F**. As this force on the hollow shaft increases, the force on the bushing increases.

A slit in the bushing allows the bushing diameter to shrink and to tighten onto the user's solid shaft.

Notice how the bushing slit gets smaller after the TorqLOC® is tightened.

The total resultant force acts radially on the customer's solid shaft.

Therefore:

1. No key is needed to transmit torque.
2. The bearings are not preloaded since there is no wedging action on the bearings.

# Technical Note

## TorqLOC™ - Specifications

SEW's patented TorqLOC™ is the premier choice for a keyless hollowshaft connection. Due to its corrosion resistance and ease of installation, it is highly recommended in wet environments or in applications where a concern for safety prohibits the use of belts and chains.

TorqLOC is available on K, F, and S-series reducers.

### Nomenclature

When a reducer is supplied with a TorqLOC shaft, the letter, "T" is added to the model number after the first letter that represents the reducer series.

Examples: **K**T67DT90S4  
**F**T87DV132S4  
**S**T47DT80K4



### Bore Sizes

Metric and Inch bores are available as shown below. The use of heavy-duty bearings with a TorqLOC™ shaft is physically possible, but is currently unavailable.

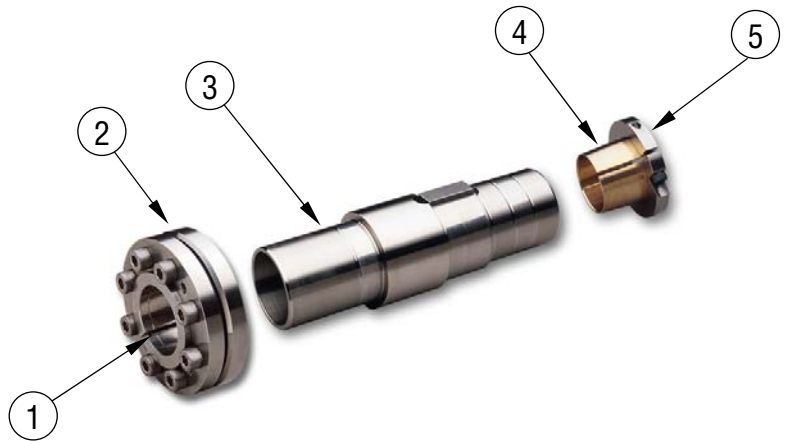
Unit	mm	Inch				
<b>ST 37</b>	16, 20	0.625	0.6875	0.75		
<b>FT/KT 37</b> <b>ST 47</b>	25, 30	1.00	1.1875	1.25		
<b>FT/KT 47</b> <b>ST 57</b>	30, 35	1.1875	1.25	1.375	1.4375	
<b>FT/KT 57</b>	35, 40	1.375	1.4375	1.50	1.625	
<b>FT/KT/ST 67</b>	35, 40	1.375	1.4375	1.50	1.625	1.6875
<b>FT/KT/ST 77</b>	40, 45, 50	1.625	1.75	1.9375	2.00	
<b>FT/KT/ST 87</b>	55, 60, 65	1.9375	2.00	2.375	2.4375	
<b>FT/KT/ST 97</b>	60, 65, 70, 75	2.4375	2.75	2.9375		
<b>FT/KT 107</b>	80, 85, 90, 95	3.250	3.4375	3.625	3.750	
<b>FT/KT 127</b>	95, 100, 105	3.4375	3.750	3.937	4.00	4.1875
<b>FT/KT 157</b>	110, 125	4.4375	4.50	4.9375	5.00	

# Technical Note

## Material

A typical keyed hollow shaft is made from carbon steel and is likely to corrode to a customer's solid shaft. In time, separating the two shafts may be nearly impossible.

In contrast, the TorqLOC requires no key and should remain corrosion free, even after years of service. It contacts the customer's solid shaft in only two places – at the torque bushing (#1) and at the support bushing (#4).



The support bushing is bronze and will not corrode to steel due to the nature of dissimilar metals. The standard torque bushing is carbon steel. However, the high clamping forces located at the torque bushing prohibit the presence of oxygen so oxidation (rust) cannot occur.

Several of the TorqLOC parts are available in stainless steel as an option. SEW uses a material with a composition similar to the **400 Series Martensitic/Ferritic (MF)** stainless steels due to their advanced strength and anti-corrosive properties. It has a higher chromium and carbon content than those of the 300 Series (ie: Type 304), which have more nickel and manganese. Therefore, the SEW material is also magnetic, which seems uncommon among stainless steels simply because the 300 Series is not magnetic. Nevertheless, its magnetism does not affect its ability to hinder corrosion.

Because stainless steel is softer than carbon steel, its torque transmitting capability is lower than carbon steel. Therefore, whenever a stainless steel TorqLOC™ part is used, the gearmotor should have a **Service Factor  $\geq 1.4$**  (AGMA Class II)

The following chart shows the standard and optional materials.

#	Part Description	Standard	Optional
1	Torque Bushing	1045 Steel	MF Stainless Steel
2	Shrink Disc with Bolts		MF Stainless Steel
3	Hollow Shaft	1045 Steel	MF Stainless Steel
4	Support Bushing	Bronze	--
5	Split Ring (Clamping Ring) w/Bolt	1045 Steel with Electroless Nickel Plating	MF Stainless Steel

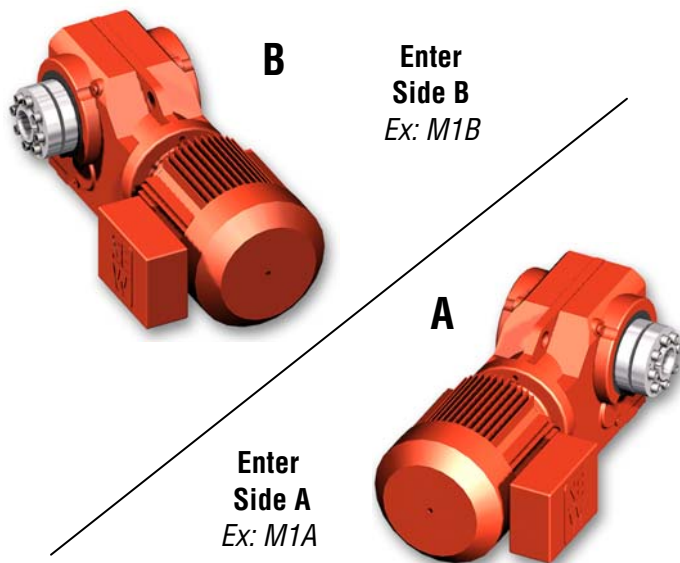
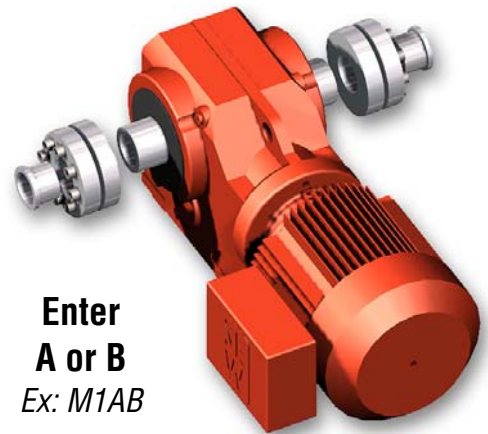
# Technical Note

## Shaft Styles – K/S Series

TorqLOC shafts are available in either a symmetrical or a non-symmetrical design. The desired design must be specified upon ordering. Stainless steel parts, as discussed in the previous section, are optional on both designs.

### *Symmetrical*

- Shaft Extension – Located on both sides
- Shrink Collar – One is supplied. Mounts on either side
- Clamping Force – Sufficient force is obtained from just one shrink collar to ease installation
- Versatile – only one style is needed for two different applications
- Mounting – The letters “AB” are added to the mounting position to designate a shaft extension on both sides (Ex: M1AB).
- Cover – Mounts via bolts that thread into tapped holes located on either side of housing.



### *Non-Symmetrical*

- Shaft Extension – Exists on only one side of reducer; other side is flush with reducer.
- Shrink Collar - Mounts onto shaft extension on one side only.
- Compact – Since shrink disc bolts do not exist on the flush side, extra clearance space is not needed to tighten bolts. Thus, the reducer may be placed close to customer’s machine.
- Mounting Position – Contains either the letter “A” or “B” to designate the side into which the customer’s shaft enters (Ex: M1A).
- Cover – Mounts via bolts that thread into tapped holes located on face of housing.

**Note:** Although TorqLOC™ is available on K-series with a footed housing (ex: KT77**B**), there are no holes to mount a cover. Therefore, the user must properly protect moving parts per OSHA requirements.

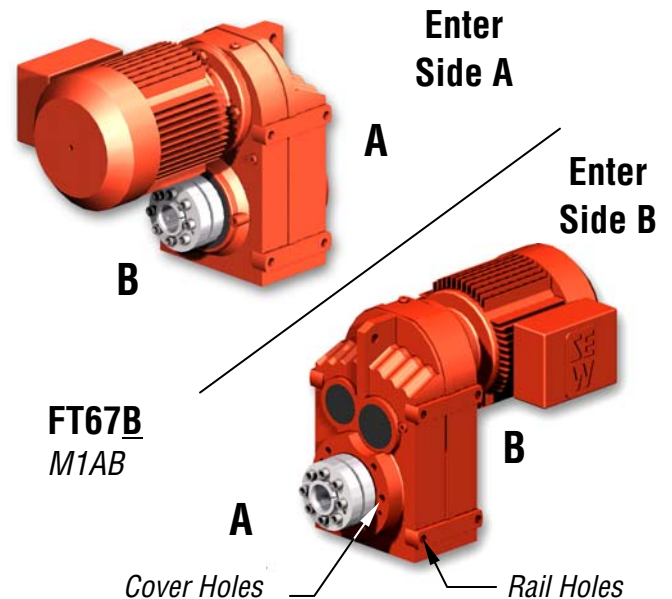
# Technical Note

## Shaft Styles – F Series

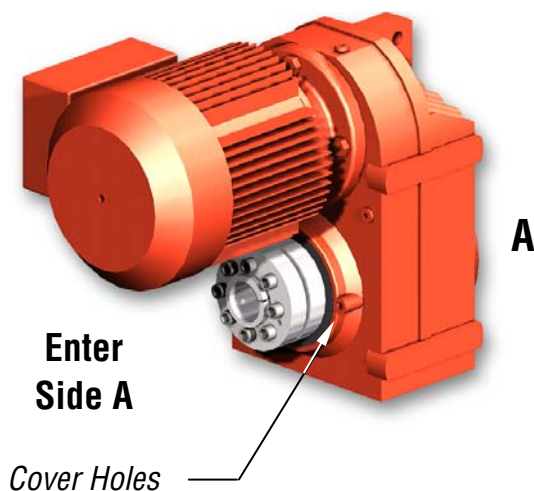
Unlike the FH design that is available solely with a shrink disc collar located beneath the motor, the FT design is available with a symmetrical shaft that has extensions on both sides of the housing, allowing the collar to be placed either beneath the motor or on the front (side A). With a non-symmetrical shaft, the FT is available with entry on Side A only.

### Symmetrical

- Shaft Side – Enter from side A or Side B
- Mounting Position – Contains “AB” to represent symmetrical shaft (ex: M1AB)
- Housing – A housing containing rail holes is the standard since it contains face holes for mounting the cover when Entry Side B is used. Therefore, the model number also contains a “B” after the size (ex: FT67B)
- Cover – The shrink disc cover that is automatically supplied mounts via bolts that thread into the tapped holes on side A.



**FT67**  
*M1A*



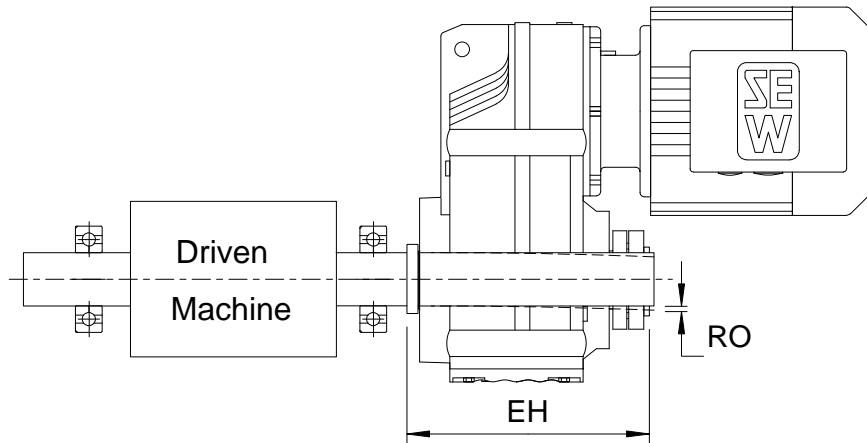
### Non-Symmetrical

- Shaft Side – Enter Side A only! Shaft is flush with housing on Side A.
- Mounting Position – Contains “A” (ex: M1A) to represent the entry side for the customer’s shaft.
- Housing - Does not contain rail holes. An optional housing containing rail holes that may be used as mounting feet is available upon request. When rail holes are supplied, “B” is added after the reducer size (ex: FT67B).
- Cover – The shrink disc cover that is supplied mounts via bolts that thread into two tapped holes located on the housing beneath the motor, as shown. **Note:** Cover interferes on some models. See Tech Note **GM-036** for more information on covers.

# Technical Note

## Run-out

The following table shows the maximum allowable solid shaft deflection (dimension RO) of the customer's solid shaft over the length, EH. EH is the distance from the split ring on one end of the reducer to the torque bushing on the other end of the reducer.



Unit	EH (inches)		RO (inches)
	Symmetrical	Non-symmetrical	
ST 37	7.24	6.54	0.0051
FT/KT 37 ST 47	7.60	6.69	
FT/KT 47 ST 57	9.17	8.15	
FT/KT 57	10.43	9.13	0.0062
ST 67	10.39	9.17	
FT/KT 67	10.91	9.65	
FT/KT/ST 77	13.21	11.61	0.0074
FT/KT 87	15.28	13.19	
ST 87	15.47	13.50	
ST 97	16.97	15.00	0.0083
FT/KT 97	17.72	15.59	
FT/KT 107	20.08	17.76	
FT/KT 127	23.90	20.94	0.0083
FT/KT 157	28.39	25.24	0.0083





# TorqLOC® FT/KT/ST/WT

**Kundenwelle ohne Anlageschulter**  
**Customer shaft without contact shoulder**  
**Arbre client sans épaulement**



**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

Anzugsdrehmomente Klemmring tightening torques retaining ring Couples de serrage de l'anneau de serrage				
Drehmomente [Nm] torques Couples				
Typ type Type	Standard-Ausführung standard version Exécution standard		Edelstahl stainless steel Acier spécial	
KT/FT	ST	WT		
-	37	37	18	7.5
37	47	47	18	7.5
47	57		18	7.5
57,67	67		35	18
77	77		35	18
87	87		35	18
97	97		35	18
107	-		38	38
127	-		65	65
157	-		150	150

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**Kundenwelle ohne Anlageschulter**  
**Customer shaft without contact shoulder**  
**Arbre client sans épaulement**

**7.**

**8.**

**9.**

**10.**

**11.**

**Anzugsdrehmomente Schrumpfscheibe**  
 tightening torques shrink disc  
 Couples de serrage de la frette

Typ type	Drehmomente [Nm] torques Couples			
	ST	WT	Standard-Ausführung standard version Exécution standard	Edelstahl stainless steel Acier spécial
-	37	37	4	7
37	47	47	10	7
47	57	-	12	7
57,67	67	-	12	15
77	77	-	30	30
87	87	-	30	50
97	97	-	30	50
107	-	-	59	65
127	-	-	100	120
157	-	-	100	120

**12.**

**13.**

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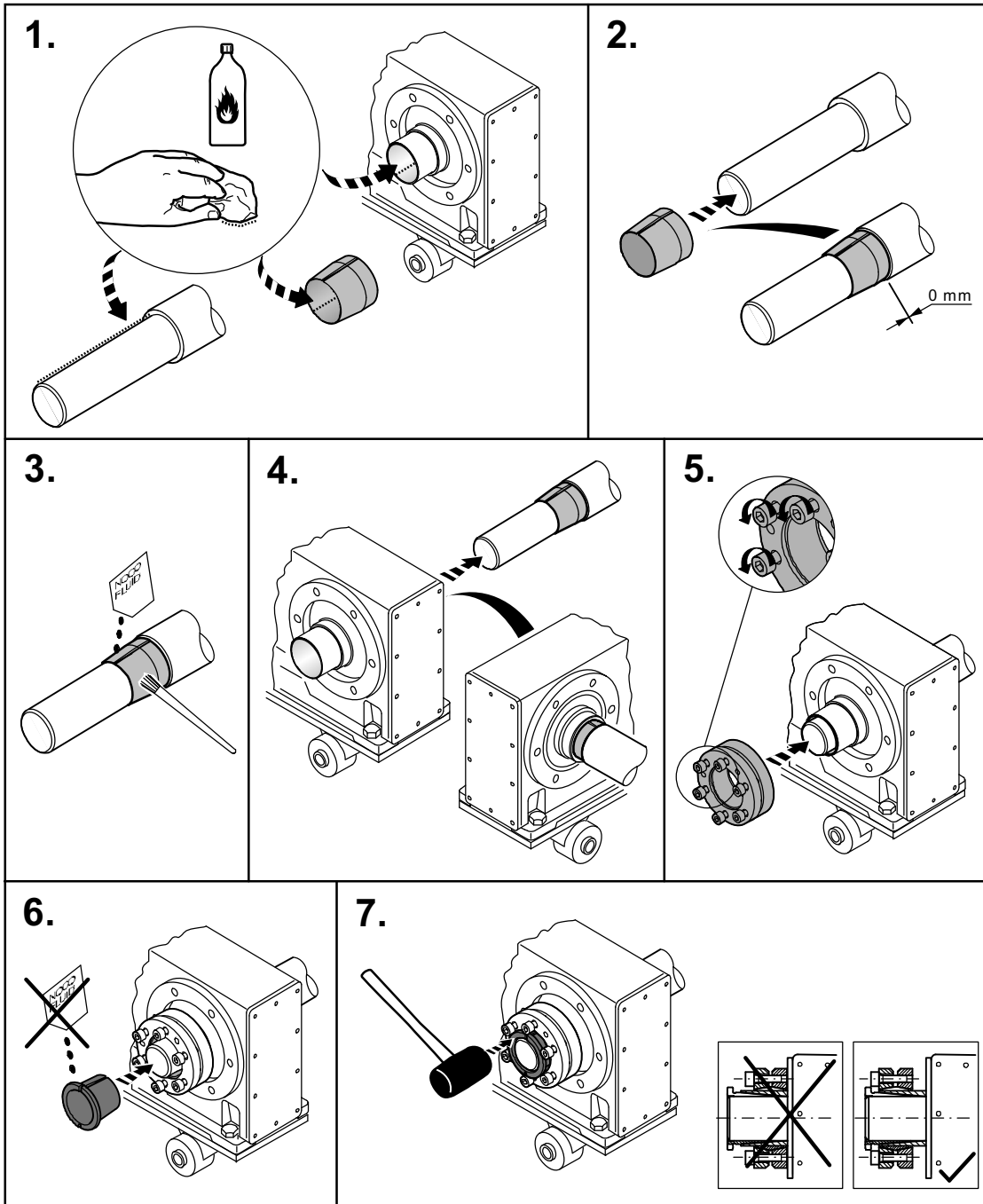




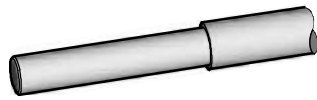
# TorqLOC® FT/KT/ST/WT



**Kundenwelle mit Anlageschulter**  
**Customer shaft with contact shoulder**  
**Arbre client avec épaulement**



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### Kundenwelle mit Anlageschulter Customer shaft with contact shoulder Arbre client avec épaulement

**8.**

**9.**

**Anzugsdrehmomente Schrumpfscheibe**  
tightening torques shrink disc  
Couples de serrage de la frette

Drehmomente [Nm]				
torques				
Couples				
Typ type Type	Standard-Ausführung standard version Exécution standard		Edelstahl stainless steel Acier spécial	
	KT/FT	ST	WT	
-	37	37	4	7
37	47	47	10	7
47	57	-	12	7
57,67	67	-	12	15
77	77	-	30	30
87	87	-	30	50
97	97	-	30	50
107	-	-	59	65
127	-	-	100	120
157	-	-	100	120

**10.**

**11.**

**12.**

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

**F...**

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