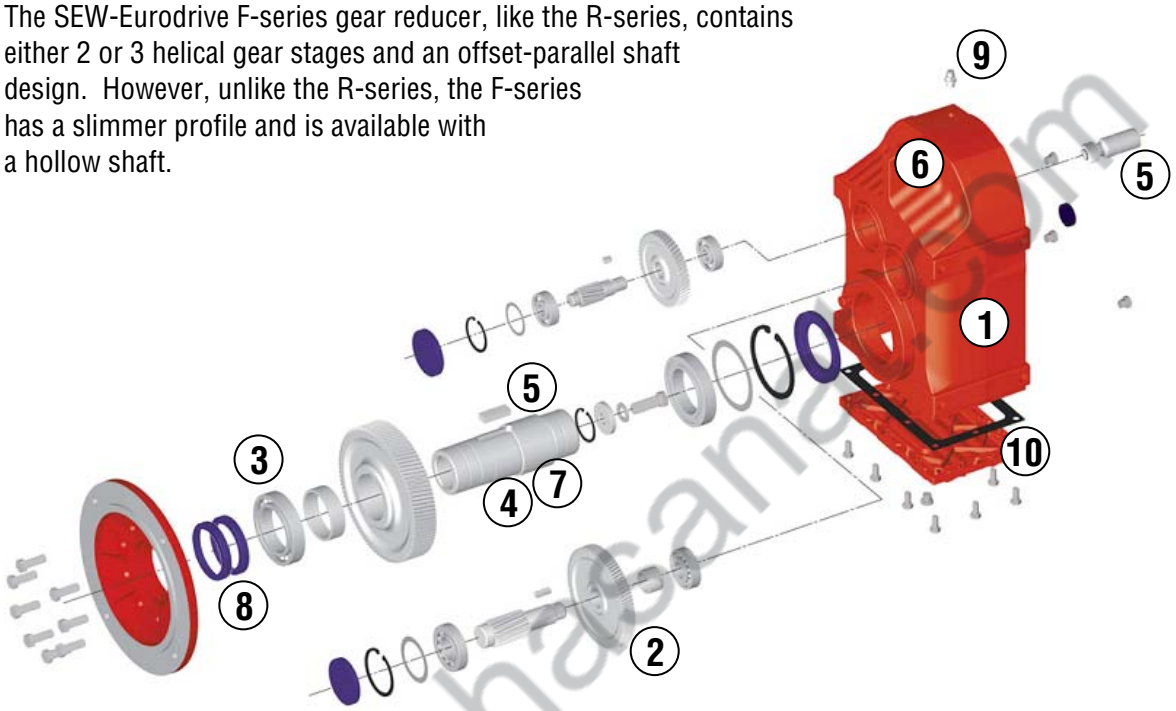
Technical Note

F-Series Gear Reducer - theSnuggler®

F-Series

Features

The SEW-Eurodrive F-series gear reducer, like the R-series, contains either 2 or 3 helical gear stages and an offset-parallel shaft design. However, unlike the R-series, the F-series has a slimmer profile and is available with a hollow shaft.



1. SAE Class 30 or equivalent (GG20) gray cast iron housing and flanges on sizes F37-F157. No bolt-on bearing covers
2. Finish ground or shaved steel gears heat treated and hardened to 58-62 Rockwell C
3. ABEC-1 bearing tolerances
4. SAE 1045 steel shafts
5. Captured keys on input and output shafts
6. Corrugated surface improves heat dissipation and reduces vibration
7. Input and output shafts available in either inch or metric sizes. Solid shafts contain a center-tapped hole to ease the mounting of components onto the shaft.
8. Exclusive **interlocking** 2-piece seal design consisting of a patented bi-helix Viton® inner seal and a double-lip Nitrile (Buna N) outer seal to provide three sealing surfaces against contaminants (not available on F27/F37)
9. Oil level and breather plugs strategically placed according to the customer's mounting position
10. Removable inspection cover

Additional Features:

- **Style**: Parallel shaft orientation (motor shaft is parallel to output shaft) in either 2 or 3 gear stages
- **Flange**: Contains O-ring to minimize oil leakage that may result from mounting to a "flat" surface that exceeds acceptable tolerances. Also contains a centering tenon (pilot) and is available with either through holes (B5) or tapped holes (B14).
- **Input Types**: Available with adapters to accommodate NEMA or IEC motor frames, solid input shafts, backstops, adjustable motor mounting platforms, and scoops. Also accepts an R-series reducer as the input (ex: FAF67R37) to attain higher ratios and lower output speeds
- **Output Shaft – Keyed**: Metric or inch shaft available in hollow or solid designs. Keyed hollow shaft supplied with special mounting paste and a retaining kit. Paste protects against corrosion as is available in regular or food grade. Retaining kit secures customer's solid shaft and contains bolt, washer, and protective cap.
- **Output Shaft – Keyless**: Available as a metric shrink disc, an inch tapered bushing (TorqLOC™), or a DIN 5480 spline
- **Mounting**: Available as foot (rail), flange, or shaft mount
- **Torque Ratings**: Based upon mechanical capacity under continuous duty operation
- **Torque Capacity**: From 930 lb-in to 159,300 lb-in
- **Shaft Rotation**: Unrestricted - clockwise or counterclockwise
- **Efficiency**: 97% (2-stage), 95.5% (3-stage) - 1.5% efficiency loss per gear stage
- **Ratio Range – Single**: 3.77 to 281.71
- **Ratio Range – Compound**: 134 to 29,211
- **Fatigue Strength**: Shafts and gears designed for infinite fatigue strength
- **Shock Capacity**: Meets or exceeds AGMA 6009-A00, which states that reducer must be capable of withstanding 4 shock loads within an 8-hour period – each shock equal to 200% of the maximum rated torque for 2 seconds.

Housing Material

Except for the F27, all SEW F-series gear reducers are manufactured from SAE 30 or equivalent (GG20) gray cast iron due to the following benefits:

- Cast iron flows well, allowing it to be used on intricate castings.
- Cast iron machines well.
- Cast iron serves as an excellent damping material to minimize vibration, contributing to longer bearing life and longer gear life.

Ductile iron (or nodular iron), a type of cast iron containing magnesium, is 2 to 4 times stiffer than gray cast iron. It is often used in applications involving heavy shock loads at low temperatures – when gray iron housings lose much of their shock absorbing strength.

Ductile iron housings are not available on F-series reducers.

Optional Bearings

Some F-series reducers are available with optional heavy-duty bearings as listed below. Heavy-duty bearings increase the axial and overhung load capacity and are standard on SEW Screw Conveyor Drives. For more information, contact SEW Regional Engineering.

Unit	Output Bearings	
	Standard	Optional
FA / FAF / FAZ 67	Ball	Taper Roller
FA / FAF / FAZ 77	Ball	Taper Roller
FA / FAF / FAZ 87	Ball	Taper Roller
FA / FAF / FAZ 97	Ball	Taper Roller
FA107	Ball	Taper Roller
FA127	Ball	Taper Roller

Note: Heavy-duty bearing option is only available with a metric hollow shaft.

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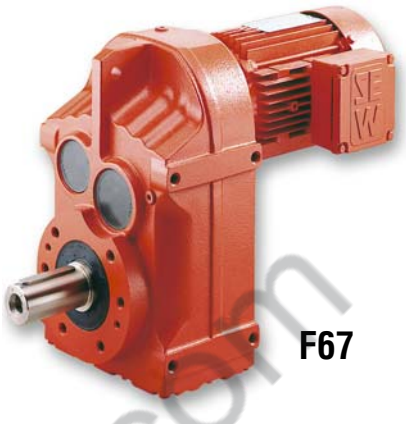
Foot Mounting

The F-series reducer is not "foot mounted" in the traditional sense, since it does not have feet with through-holes for mounting. Instead, tapped holes are provided along two raised rails on each side of the reducer, as shown at right.



F67

These rail holes are standard on all F-units, except on the following four styles:

- FA (keyed hollow shaft)
- FT (TorqLOC keyless tapered bushing)
- FV (DIN spline)
- FH (metric shrink disc)

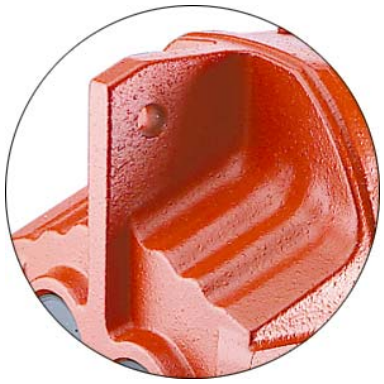
For the FA, FT, FH, or FV styles, rail holes may be ordered as an option. The letter "**B**" is added to the nomenclature and placed after the reducer size (ex: FA67B…) to designate this option, as shown at right.

FA67

FA67B

Shaft Mounting – Torque Arm

The preferred method of installing a hollow shaft reducer is to hang the reducer from a solid shaft and to allow the solid shaft to support the entire weight of the reducer and motor. Since this method does not require the use of feet or a flange, the reducer has a natural tendency to spin around the shaft if not restrained. To provide a mean of restraint, the F-series reducer contains a built-in mounting lug as shown at right.



The customer must provide an adequate mounting bracket. Optional rubber grommets are available from SEW for cushioning the reducer. See **Tech Note GM-021** for information on appropriate torque arm design and installation.

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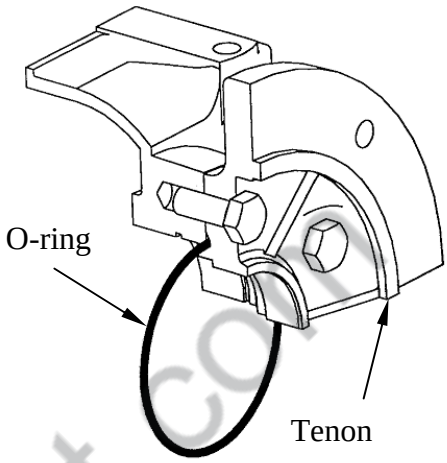
Flange Mounting

Two flange styles are available: **B5** and **B14**. Both styles contain an O-ring and tenon (pilot) as shown at right.



The O-ring helps prevent oil leakage that could occur if the flange is mounted to a "flat" surface that exceeds the recommended flatness tolerance.

The tenon allows for easier installation as well as protects the reducer from shifting out of alignment if the mounting bolts were to loosen.

B5 Flange ("F")
A B5 flange bolts onto the reducer housing and contains through-holes (non-threaded) for mounting. These holes are intentionally made slightly larger than the bolts for which they are intended. The letter "**F**" is added to the nomenclature to designate this option.

FAF67

B14 Flange ("Z")
A B14 flange bolts onto the housing. It contains through holes to allow access to the tapped holes of the housing. The bolt circle and tenon diameters are smaller on the B14 than on the B5 flange of the same reducer. The letter "**Z**" is added to the nomenclature to designate this option.

FAZ67

Reference **Tech Note GM-020** for important additional information on mounting procedures for flanged units.