

Disassembly Instructions LS28K Series Planetary Winch



Refer to parts breakdown drawing

- 1) Drain oil from gear box.
- 2) Loosen Socket head cap screws (Ref. 28) on the cover (Ref. 27), then remove cover from end support (Ref. 26).
- 3) Remove retaining ring (Ref. 12) from drum shaft (Ref. 24).
- 4) Remove end support (Ref. 26) and spacer (Ref. 15) from drum shaft (Ref. 24). If replacement of oil seal (Ref. 14) and ball bearing (Ref. 10) are required, press oil seal and ball bearing out of end support.
- 5) Remove drum (Ref. 16) and keys (Ref. 25) from drum shaft (Ref. 24).
- 6) Remove spacer (Ref. 15) from drum shaft (Ref. 24).
- 7) Loosen nut on hydraulic hose fitting (Ref. 90).
- 8) Loosen Socket head cap screws (Ref. 1), carefully remove hydraulic motor (Ref. 4) and hydraulic brake (Ref. 5) from planetary gear box (Ref. 8).
- 9) Carefully remove planetary gear box (Ref. 8) from gear support (Ref. 11) by loosening hex nuts & bolts (Ref. 7 & 9).
- 10) Remove retaining ring (Ref. 12) from drum shaft (Ref. 24).
- 11) Remove drum shaft (Ref. 24) from gear support (Ref. 11).
- 12) Remove cover (Ref. 13) from gear support (Ref. 11) by loosening socket head cap screws (Ref. 20). If replacement of oil seal (Ref. 14) is required, press oil seal out of cover (Ref. 13).
- 13) Remove ball bearings (Ref. 10) from gear support (Ref. 11).

Assembly Instructions LS28K Series Planetary Winch

Refer to parts breakdown drawing

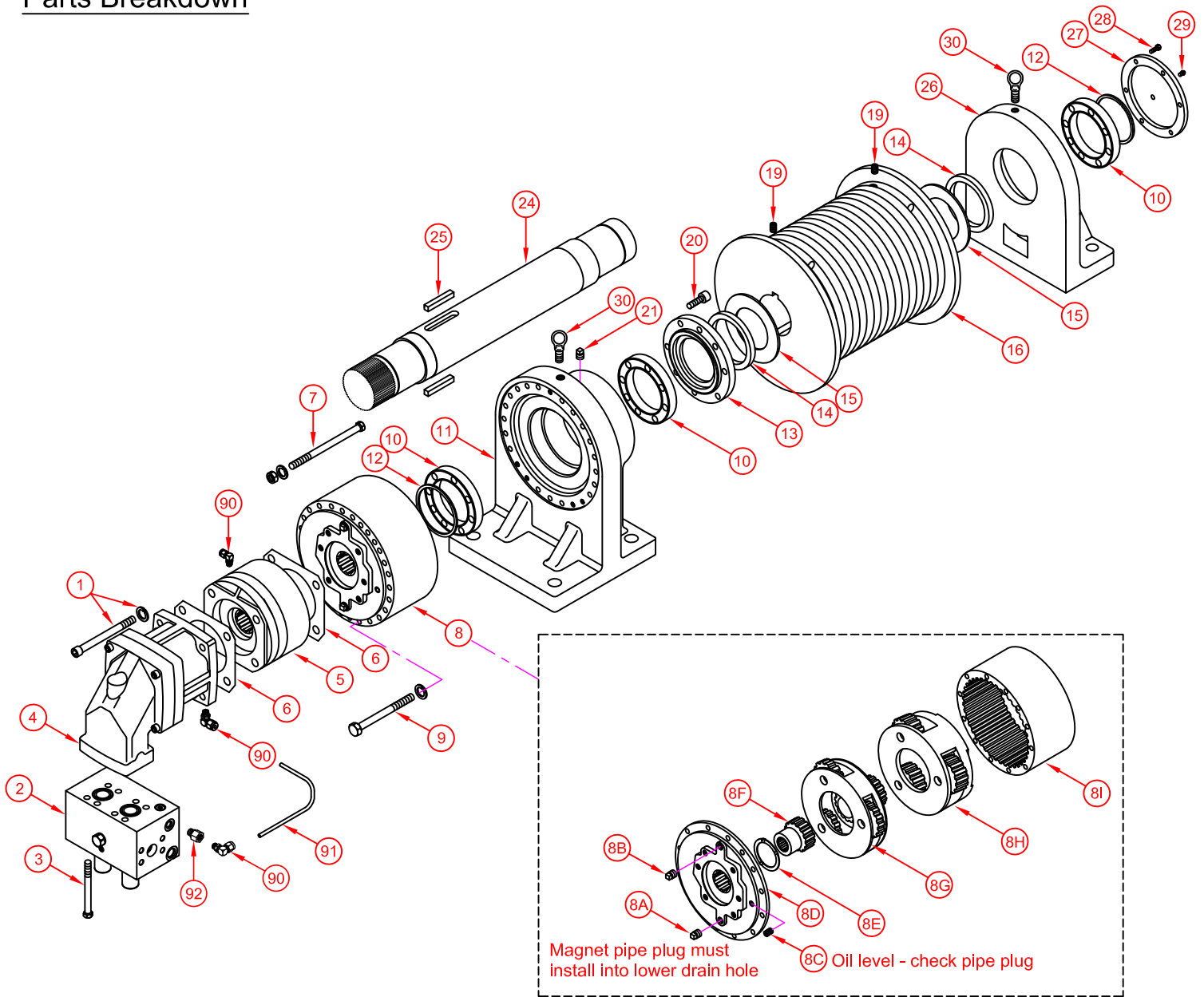
- 1) Clean gear box and all parts thoroughly, inspect all parts and replace if worn or scored.
- 2) Install ball bearings (Ref. 10) into gear support (Ref. 11).
- 3) If removed, lubricate lips of oil seal (Ref. 14) and install onto cover (Ref. 13).
- 4) Use silicon sealant (Silastic RTV732 sealer and General Electric Silimate RTV No. 1473 or RTV No. 1503 are recommended) onto gear support (Ref. 11) (gear support cover side).
Then install cover (Ref. 13) onto gear support (Ref. 11) with (8) 7/16"-14UNC x 1" lg. 18-8 stainless steel socket head cap screws (Ref. 20). (being sure tighten the screws evenly)
- 5) Install drum shaft (Ref. 24) onto gear support (Ref. 11) and install retaining ring (Ref. 12) onto drum shaft (Ref. 24).
- 6) If removed, first apply silicone sealant (as recommended above) to face of gear support (Ref. 11) that mates with ring gear (Ref. 8I), assembly ring gear (Ref. 8I) to gear support (Ref. 11) being careful to align all the bolt holes.
- 7) Install the secondary carrier assembly (Ref 8H) into ring gear (Ref. 8I) and onto splined end drum shaft (Ref. 24).
- 8) Install the primary carrier assembly (Ref. 8G) into ring gear (Ref. 8I). It will be necessary to rotate carrier (Ref. 8G) to align secondary carrier (Ref. 8H) and ring gear (Ref. 8I).
- 9) Install primary sun gear (Ref. 8F) into primary carrier assembly (Ref. 8G). Sun gear (Ref. 8F) should turn freely by hand when assembled.
- 10) Apply silicone sealant (as recommended above) to cover face of ring gear (Ref. 8I). Secure thrust washer (Ref. 8E) with tangs engaged in gear box cover (Ref. 8D).
Note: Washer (Ref. 8E) can be secured to gear box cover (Ref. 8D) with a small amount of grease or silicone sealant.
Assemble gear box cover (Ref. 8D) to ring gear (Ref. 8I) with (19) 3/8"-16UNC x 8" lg. gr. 8 HHCS W/ lock washers and hex nuts (Ref. 7), and (5) 3/8"-16UNC x 6" lg. gr. 8 W/ lock washers. (being sure tighten the screws evenly)
- 11) Install spacer (Ref. 15) onto drum shaft (Ref. 24).
- 12) Install keys (Ref. 25) into drum shaft (Ref. 24). Grease drum shaft (Ref. 24) with multi-purpose lithium grease or equivalent and install drum (Ref. 16).
- 13) Install spacer (Ref. 15) onto drum shaft (Ref. 24).
- 14) If oil seal (Ref. 14) and ball bearing (Ref. 10) in end support have been removed, press in new oil seal and ball bearing.
Note: being sure to lubricate lips of oil seal (Ref. 14) before installing.
- 15) Carefully slide end support (Ref. 26) onto drum shaft (Ref. 24) and install retaining ring (Ref. 12).
- 16) Apply silicone sealant (as recommended above) onto end support cover (Ref. 27)
Then install cover (Ref. 27) onto end support (Ref. 26) with (6) 5/16"-18UNC x 1" lg. 18-8 stainless steel socket head cap screws (Ref. 28).

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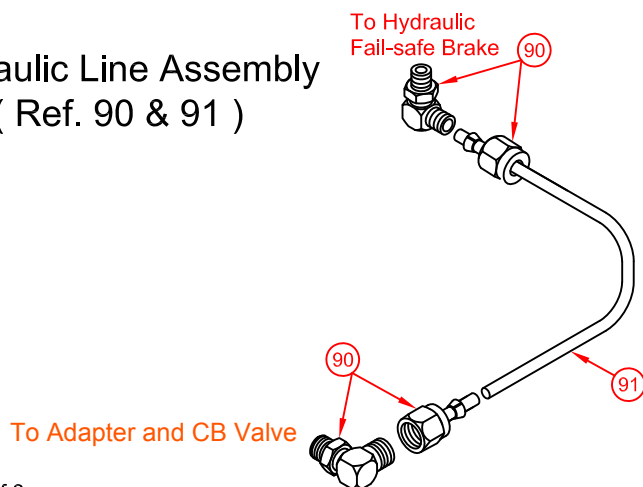
- 17) Apply Gasket Eliminator Flange Sealant onto planetary gear box (Ref. 8) and install hydraulic brake (Ref. 5) with gasket (Ref. 6) onto planetary gear box (Ref. 8).
Apply Gasket Eliminator Flange Sealant onto hydraulic brake (Ref. 5) then install hydraulic motor (Ref. 4) and gasket with (4) 1/2"-13UNC x 7" lg. grade 8 socket head cap screws and lock washers (Ref. 1).
- 18) If removed, install counterbalance valve (Ref. 2) onto hydraulic motor (Ref. 4) with (8) 7/16"-14UNC x 5" lg. grade 8 hex head cap screws (Ref. 3).
- 19) If removed, align both ends of hydraulic tube (Ref. 91) to the ports (Ref. 90). Push hydraulic tube (Ref. 91) into installed fitting body (Ref. 90) on counterbalance valve (Ref. 2) and hydraulic brake (Ref. 5) until it stops. Fasten nuts and tapered split rings to fittings. Turn nuts hand tight, then with wrench tighten one turn or until rear of tapered split ring is flush with the nut. Do Not Overtighten.
- 20) Fill gear box to check plug with (3) quarts (2.8 liters) Bloom ULLTRA-LUBE NO. 601 TRANS-WORM GEAR OIL.
- 21) Attach grease gun to zerk (Ref. 29), fill end support with multi-purpose lithium grease.

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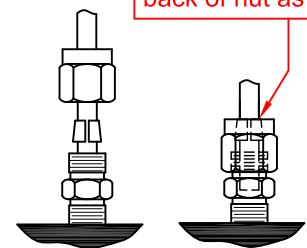
Parts Breakdown

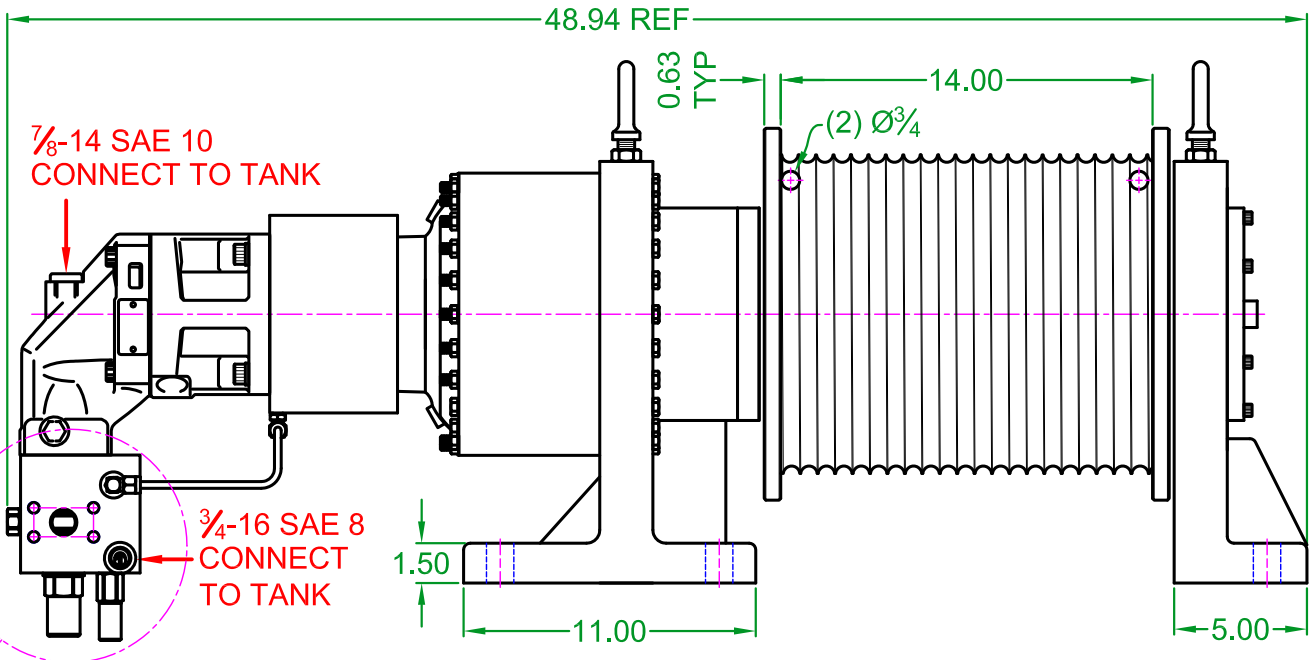
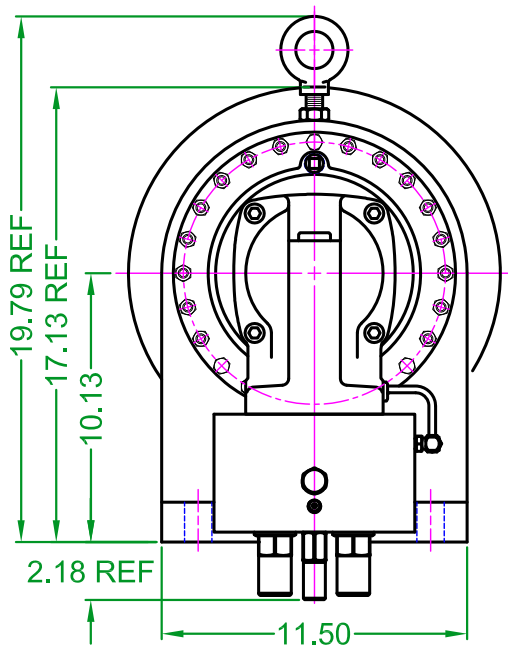


Hydraulic Line Assembly (Ref. 90 & 91)



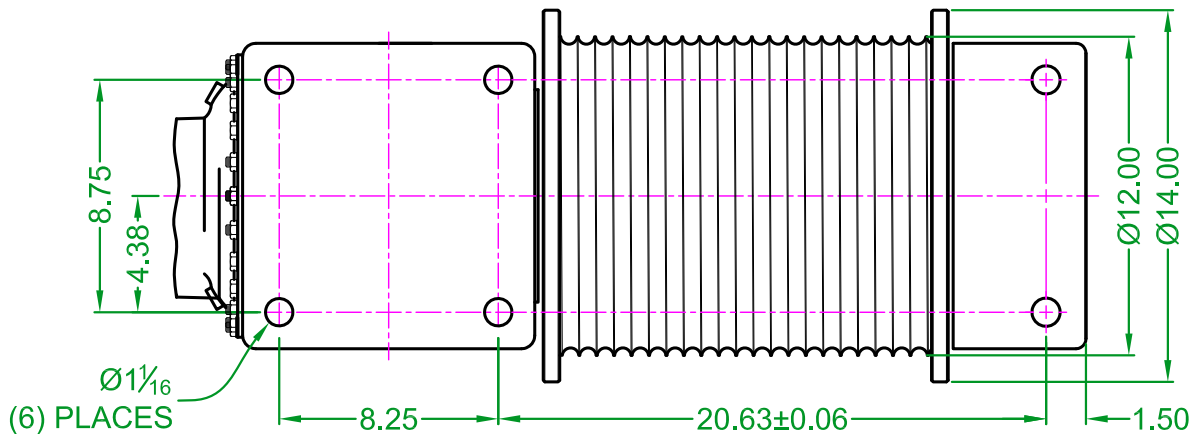
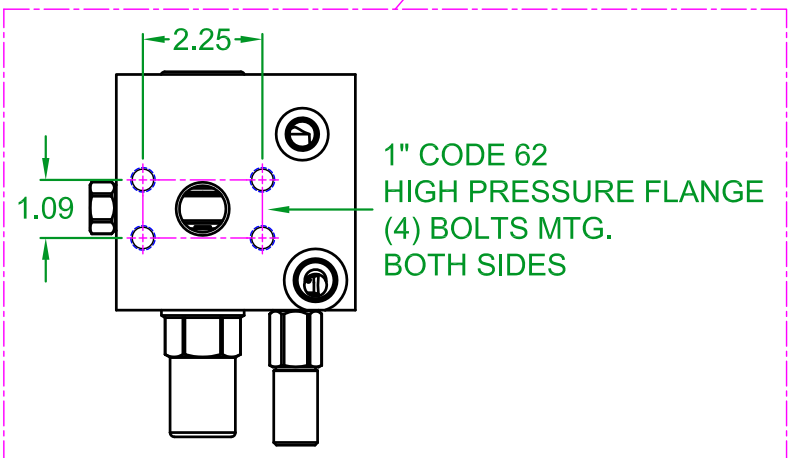
Tighten until tapered split ring is flush with back of nut as shown





**7/8-14 SAE 10
CONNECT TO TANK**

**3/4-16 SAE 8
CONNECT TO TANK**



TOLERANCES
(UNLESS OTHERWISE SPECIFIED)

- FRACTIONAL ±
- DECIMAL .XX ±
- DECIMAL .XXX ±
- ANGLES ±



BLOOM MFG., INC.
INDEPENDENCE, IOWA 50644 U.S.A.

SPEC. PLANETARY W/ GROOVE FOR 5/8" CABLE
MODEL LS28K-4.91M-14-14-27-6157

DWN. NV
CKD.

SCALE: 1:1 **DATE:** 11-15-13
MAT.

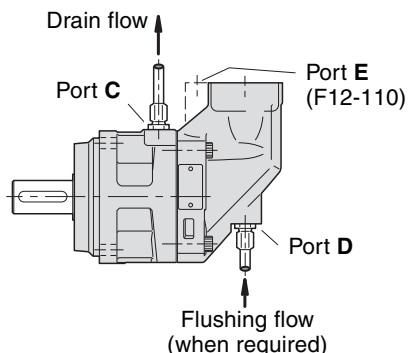
NUMBER
6157

Installation information

Case drain connections

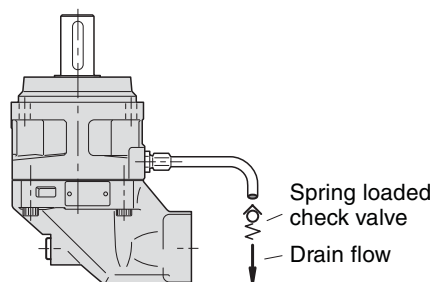
Series F11/F12 have two drain ports, **C** and **D**, while F12-110 has an additional port, **E**.

The uppermost drain port (such as port C in the illustration below) should always be utilized.



In mounting positions such as 'shaft up' (below) a spring loaded check valve should be installed in the drain line in order to insure a sufficiently high oil level in the case.

Preferably, the drain line should be connected directly to the reservoir.



Before start-up

Make sure the F11/F12 case as well as the entire hydraulic system is filled with a recommended fluid.

The internal leakage, especially at low operating pressures, is *not* sufficient to provide lubrication at start-up.

NOTE:

- To avoid cavitation and obtain a low noise level as well as reduced heat generation, tubes, hoses and fittings must be adequately dimensioned.
- Preferably, the suction line flow speed should be 1.5 to 3.5 fps (0.5 to 1 m/s), and pressure line flow speeds 10 to 16 fps (3 to 5 m/s).
- For series F12, suitable suction fittings are available

Installation information

Viscosity

The ideal operating range is 75 to 150 SUS (15 to 30 mm²/s).

At operating temperature, the viscosity (of the drain fluid) should be kept above 46 SUS (8 mm²/s [cSt]).

At start-up, the viscosity should not exceed 5 000 SUS (1000 mm²/s)

Filtration

To obtain the highest service life of the F11/F12, the fluid cleanliness should meet or exceed ISO code 18/13 (ISO 4406).

During normal operating conditions, a 10 µm (absolute) filter is recommended.

Case pressure

The tables below show the highest recommended case pressure as a function of shaft speed.

'Nominal' shaft seal life can be expected at a certain speed and the corresponding max case pressure. Seal life will be shorter, however, at unfavourable operating conditions (high temperature, low oil viscosity, contaminated oil).

Series F11

Max case pressure [psi] versus shaft speed [rpm]

Speed Shaft seal	1500		3000		4000		5000		6000		8000		9000		10000		11000		12000	
	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E	H/V	N/E
F11-5	20	2.2	13	1.9	10	1.6	8	1.3	6.5	0.9	5	0.6	4.2	0.5	4	0.3	3.5	0.2	3	0
F11-10	20	2.2	11.5	1.8	8.5	1.2	7	1.0	5.5	0.7	4	0.5	3.8	0.4	3.5	0.2	3.0	0	-	-
F11-14	19	2.2	9.5	1.5	7	1.0	5.5	0.8	4.5	0.5	3.5	0.4	3.0	0.2	2.5	0	-	-	-	-
F11-19	19	2.2	9.5	1.4	7	0.9	5.5	0.6	4.5	0.4	3.5	0.3	3.0	0	-	-	-	-	-	-
F11-150	9.5	2.2	4.5	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F11-250	9.5	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Max recommended case pressure versus shaft speed - F11 seal types **H** or **V** and **N** or **E**.

Series F12

Max case pressure [psi] vs. shaft speed [rpm]

Speed Shaft seal	1500		3000		4000		5000		6000	
	H/V	N	H/V	N	H/V	N	H/V	N	H/V	N
F12-30	205	30	100	20	80	15	65	10	50	-
F12-40	175	30	85	15	65	10	50	5	-	-
F12-60	175	30	85	15	65	10	50	5	-	-
F12-80	145	30	70	10	60	5	-	-	-	-
F12-110	140	30	65	10	-	-	-	-	-	-

Max recommended case pressure versus shaft speed - F12 seal types **H** or **V**, and **N**