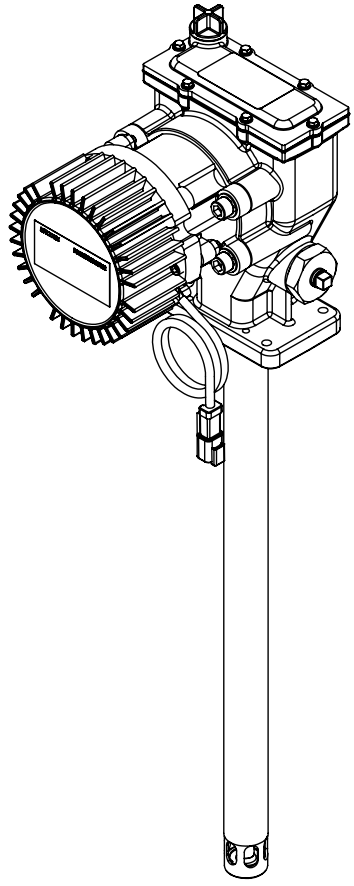
User and maintenance instructions

FlowMaster II rotary driven 24 V ⎓ electric pump, series “A”

Models 85736 and 520-5011 CAT, 5 US gallons, 85737, 60 lbs, 85738 and 508-3335 CAT, 120 lbs, 85739 and 512-0195 CAT, 400 lbs, 85740, 40 lbs



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* Indicates change.

Declaration of Conformity*

DOCUMENT NUMBER
404517.DoC

Manufacturer name/address:
Lincoln Industrial Corporation
5148 N. Hanley Road
St. Louis, MO 63134 U.S.A.
TEL: +1 (314) 679-4200 **FAX:** +1 (314) 679-4367

Authorized to compile the technical file:
SKF Lubrication Systems Germany GmbH
Heinrich-Hertz-Straße 2-8
69190 Walldorf, Germany

EMAIL: robert.collins@skf.com **WEBSITE:** www.skf.com

CE

This Declaration of Conformity is issued under sole responsibility of the manufacturer. Lincoln Industrial Corporation hereby declares that the machinery stated below:

Name: FlowMaster II pump (24 V ⎓)
Model number(s):
85736, 85737, 85738, 85739, 85740, series "A"
Description:
Electric pumps for grease
Year of CE: 2019

in its intended use, is in conformity with the relevant union harmonization legislation:

Machinery Directive 2006/42/EU

Low Voltage Directive 2014/35/EU

Electromagnetic Compatibility Directive 2014/30/EU

ErP Directive -Ecodesign for Energy Related Products 2009/125/EC

RoHS Directive 2011/65/EU

and conforms to the following harmonized standards:

EN 60204-1:2018
Safety of machinery - Electrical equipment of machines - Part 1: General requirements

EN ISO 12100:2010
Safety of machinery. General principles for design. Risk assessment and risk reduction

EN ISO 809:1998+A1:2009
Pumps and pump units for liquids - Common safety requirements

ISO 20361:2019
Liquid pumps and pump units – Noise test code – Grade 2 and 3 of accuracy

EN 349:1993+A:2008
Safety of machinery – Minimum gaps to avoid crushing of parts of the body

EN IEC 6300:2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The manufacturer maintains a technical construction file containing test reports and product documentation:

Technical file summary sheet number:
RA404517-00

I, the undersigned of Lincoln Industrial Corporation, do hereby declare that the equipment specified above, in its intended use, conforms to the requirements of the above directives and harmonized standards at the time of placing the above product on the market.

Robert Collins
Technical Compliance Manager
St. Louis, MO, U.S.A.
2022/02/10

* Indicates change.

U.K. Declaration of Conformity*

DOCUMENT NUMBER
UK404517CA

Manufacturer name/address:
Lincoln Industrial Corporation
5148 N. Hanley Road
St. Louis, MO 63134 U.S.A.
TEL: +1 (314) 679-4200 **FAX:** +1 (314) 679-4367

Authorized to compile the technical file:
SKF (U.K.) Limited
2 Canada Close
Banbury, Oxfordshire, OX16 2RT, GBR

EMAIL: robert.collins@skf.com **WEBSITE:** www.skf.com

This U.K. Declaration of Conformity is issued under sole responsibility of the manufacturer. Lincoln Industrial Corporation hereby declares that the machinery stated below:

Name: FlowMaster II pump (24 V ⎓)
Model number(s):
85736, 85737, 85738, 85739, 85740, series "A"
Description:
Electric pumps for grease
Year of CE: 2019

in its intended use, is in conformity with the relevant union harmonization legislation:

Supply of Machinery (Safety) Regulations 2008 (S.I. 2008:1597)

Electromagnetic Compatibility Regulations 2016 (S.I. 2016:1091)

The Ecodesign for Energy-Related Products Regulations 2010 (S.I. 2010:2617)

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012:3032)

and conforms to the following harmonized standards:

EN 60204-1:2018
Safety of machinery - Electrical equipment of machines - Part 1: General requirements

EN ISO 12100:2010
Safety of machinery. General principles for design. Risk assessment and risk reduction

EN ISO 809:1998+A1:2009
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EN IEC 6300:2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The manufacturer maintains a technical construction file containing test reports and product documentation:

Technical file summary sheet number:
RA404517-00

I, the undersigned of Lincoln Industrial Corporation, hereby declare that the equipment specified above, in its intended use, conforms with all requirements of the U.K. legislation Supply of Machinery (Safety) Regulations 2008 No. 1597 by the time of placing it on the market.



Robert Collins
Technical Compliance Manager
St. Louis, MO, U.S.A.
2022/02/10

* Indicates change.

Safety

Read and carefully observe installation instructions before installing, operating or troubleshooting assembly. Assembly must be installed, maintained and repaired exclusively by persons familiar with instructions.

Install assembly only after safety instructions have been read and are completely understood.

- Adequate personal protection must be used to prevent splashing of material on skin or in eyes.
- Always disconnect power source (electricity, air or hydraulic) from pump when not in use.
- Equipment generates very high grease pressure. Extreme caution should be used when operating equipment as material leaks from loose or ruptured components can inject fluid through skin and into body. If fluid appears to penetrate skin, seek attention from doctor immediately.
- Do not treat injury as simple cut. Tell attending doctor exactly what type of fluid was injected.
- Any other use not in accordance with instructions will result in loss of claim for warranty or liability.
- Do not misuse, over-pressurize, modify parts, use incompatible chemicals, fluids, or use worn and/or damaged parts.
- Do not exceed stated maximum working pressure of pump or of lowest rated component in system.
- Always read and follow fluid manufacturer's recommendations regarding fluid compatibility, and use of protective clothing and equipment.
- Failure to comply may result in personal injury and/or damage to equipment.

Explanation of signal words for safety

NOTE
Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

⚠ CAUTION
Indicates a dangerous situation that can lead to light personal injury or property damage if precautionary measures are ignored.

⚠ WARNING
Indicates a dangerous situation that could lead to death or serious injury if precautionary measures are ignored.

⚠ DANGER
Indicates a dangerous situation that will lead to death or serious injury if precautionary measures are ignored.

⚠ WARNING*
Do not use equipment to supply, transport, or store hazardous substances and mixtures in accordance with annex I part 2-5 of the CLP regulation (EG 1272/2008) or HCS 29 CFR 1910.1200 marked with GHS01, GHS06 and GHS08 hazard pictograms shown:



* Indicates change.

Overview

This manual details the procedure that must be followed while installing, operating, troubleshooting and repairing FlowMaster II rotary driven 24 V ⎓ electric pump.

All required parts, tools, and equipment needed to complete operation of FlowMaster II rotary driven 24 V ⎓ electric pump are defined and listed within manual.

Review of parts list and nomenclature is recommended before starting disassembly or operation.

Appropriate use

All pump models are exclusively designed to pump and dispense lubricants using electric power. Specifications for pump are shown in **table 1**. Maximum specification ratings should not be exceeded.

Any other use not in accordance with instructions will result in loss of claims for warranty and liability.

Description

Lincoln Industrial rotary 24 V ⎓ electric pump uses a 24 V ⎓ motor and either a single or two stage planetary gear drive. Grease output is proportional to pump revolutions per minute. Pump is primarily designed for centralized lubrication systems such as single line parallel, single line progressive and two line systems.

Pump is driven by rotary motion of electric motor. Rotary motion is converted to reciprocating motion through eccentric crank mechanism. Reciprocating action causes pump cylinder to move up and down. Unit is a positive displacement double-acting pump as grease output occurs during both up and down stroke. Pump motor employs an integral speed control capable of reducing pump speed to 10% maximum value.

During down stroke, pump cylinder is extended into grease. Through combination of shovel action and vacuum generated in pump cylinder chamber, grease is forced into pump cylinder. Simultaneously, grease is discharged through outlet of pump. Volume of grease during intake is twice amount of grease output during one cycle.

During upstroke, inlet check closes, and one half of grease taken in during previous stroke is transferred through outlet check and discharged to outlet port. Typical output of pump is shown in **Table 2**.

All five models 85736 5 U.S. gallons *(18 liter)*, 85737 60 lb *(27 liter)* 85738 120 lb *(181 kg)*, 85739 400 lb *(181 kg)* and 85740 40 lb *(18 kg)* are similar, with main difference being length of housing tube.

Fig. 1, **page 7,** is an electrical wiring schematic for pump without controller.

Inspection

If overpressurizing of equipment is believed to have occurred, contact factory authorized warranty and nearest service center for inspection of pump.

Specialized equipment and knowledge is required for repair of pump.

Annual inspection by factory authorized warranty and nearest service center is recommended.

Damaged pumps

Do not use any pump that appears to be damaged, badly worn or operating abnormally. Remove pump from service and contact factory authorized warranty and nearest service center for repairs.

Listing of authorized warranty and service centers is available upon request.

Table 1

Pump specifications

Operating temperature	–40 to 150 °F *(–40 to 65 °C)*
Operating voltage [1)]	24 V ⎓ (minimum 18, maximum 32 V ⎓)
Motor, power	1/3 HP *(0,25 kW)*
Current draw	→ **Table 3**
Output/pump cycle	0.07 in³ *(1,15 cm³)*
Pump performance	→ **Table 2**
Pump outlets	1/4 NPTF internal

[1)] Motor controller will shut motor off when outside of voltage limits.

Table 2

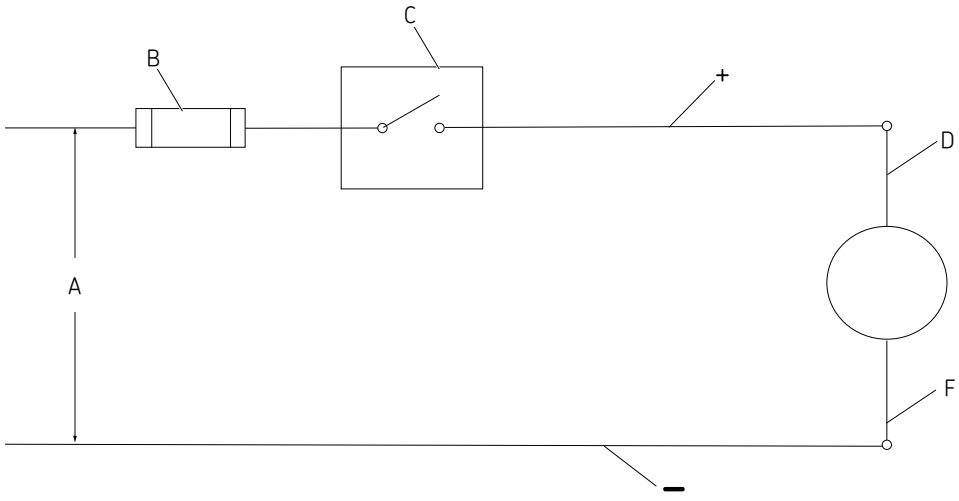
Electric pump performance specifications

Temperature	50 r/min	100 r/min
80 °F *(27 °C)*	3.5 in³/min *(57 cm³/min)*	7 in³/min *(114 cm³/min)*
40 °F *(4 °C)*	3.5 in³/min *(57 cm³/min)*	7 in³/min *(114 cm³/min)*
20 °F *(–7 °C)*	3 in³/min *(49 cm³/min)*	6 in³/min *(98 cm³/min)*
0 °F *(–18 °C)*	3 in³/min *(49 cm³/min)*	6 in³/min *(98 cm³/min)*
–10 °F *(–23 °C)*	2.5 in³/min *(40 cm³/min)*	5 in³/min *(81 cm³/min)*

Test conducted with NLGI 2 grade grease at 1 000 psi *(68 bar)* backpressure.

Fig. 1

Pump without controller

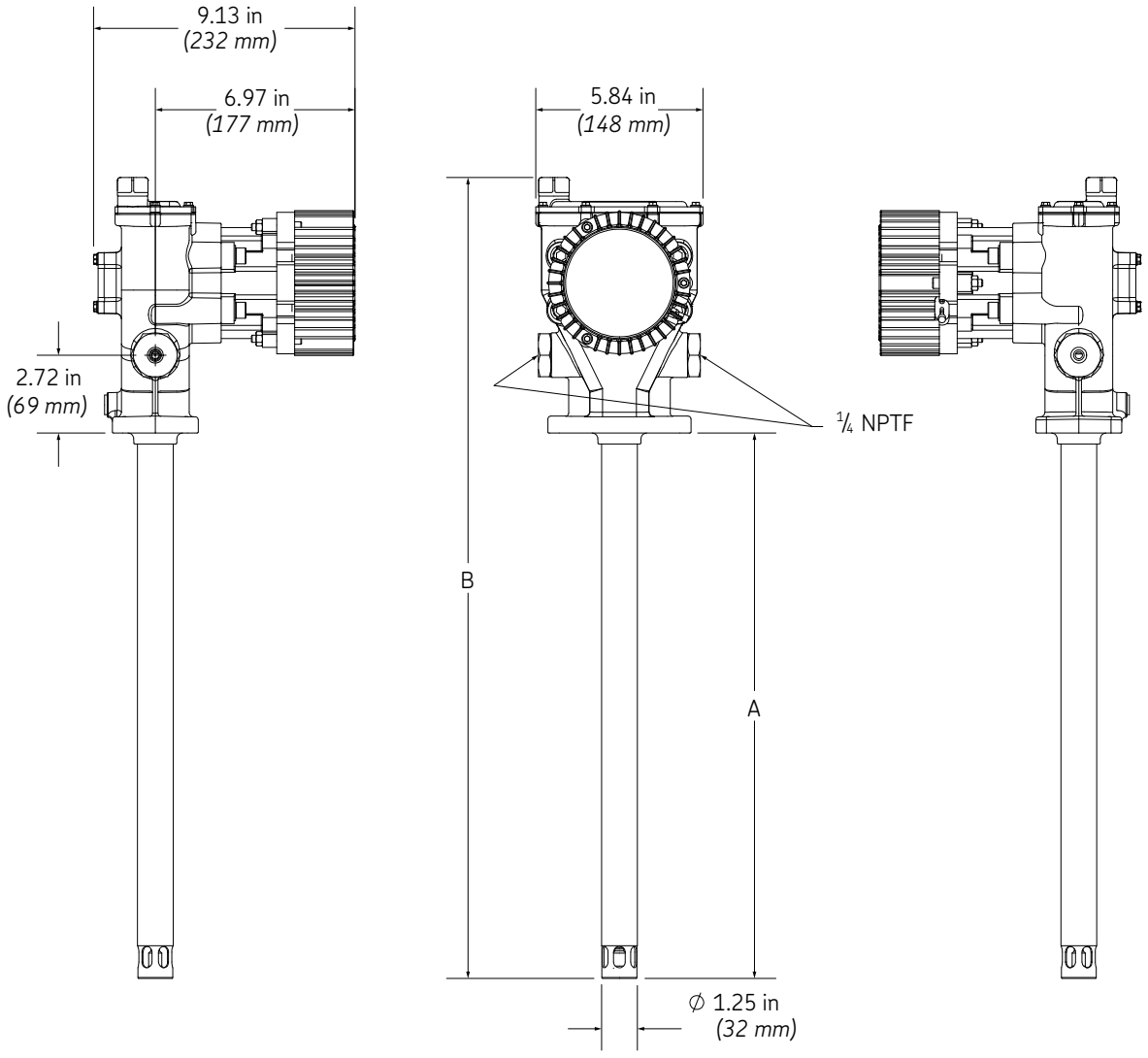


Item	Description
A	24 V ⎓
B	Fuse
C	Manual switch
D	Red wire
E	Motor
F	Black wire

Connect red motor lead to the positive side of the circuit. Motor is polarity sensitive and will not run if improperly wired.

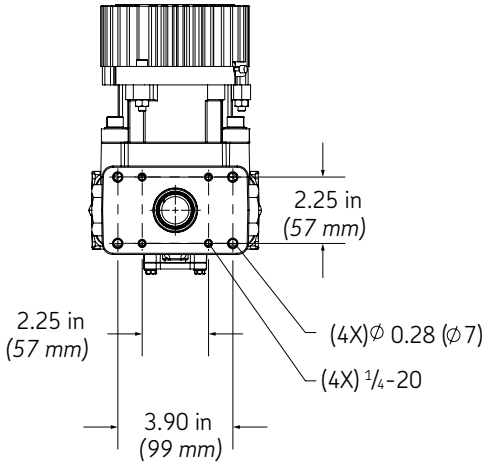
Fig. 2

Pump dimensions



Dimensions

Model	Dimension "A"	Dimension "B"
85736	13.74 in *(349 mm)*	22.67 in *(576 mm)*
85737	19.05 in *(484 mm)*	27.98 in *(711 mm)*
85738	27.56 in *(700 mm)*	36.49 in *(927 mm)*
85739	34.06 in *(865 mm)*	42.99 in *(1 092 mm)*
85740	15.76 in *(400 mm)*	24.69 in *(627 mm)*
520-5011	13.74 in *(349 mm)*	22.67 in *(576 mm)*
508-3335	27.56 in *(700 mm)*	36.49 in *(927 mm)*
512-0195	34.06 in *(865 mm)*	42.99 in *(1 092 mm)*



Install pump

Pump was tested in lightweight oil and was left in to protect pump from corrosion. Flush pump before connecting to system to prevent contamination of grease with residual oil.

1 Mount pump securely on drum cover so that it cannot move or vibrate during operation. Refer to **Fig. 3**.
2 Connect material supply line to pump outlet pin nut (**55**).
3 Install safety unloader (**77**) in open outlet port.

⚠ DANGER

Do not connect electrical power prior to lockout/tag out procedure being completed. Failure to comply will result in death or serious personal injury.

NOTE

If it is necessary to drill mounting holes into reservoir cover, refer to **Fig. 2**, **page 8,** for hole pattern and dimensions.

4 Install high pressure shut-off valve in material supply line (required).

NOTE

Refer to **Fig. 1**, **page 7,** if system does not have a controller.

5 Refer to **Fig. 1**, **page 7,** to wire pump motor and vent valve (if used).

NOTE

Connect red motor lead to positive side of circuit. Motor is polarity sensitive and will not run if not properly connected.

6 Fuse motor as recommended in **Table 3**.
7 Connect power to motor leads.

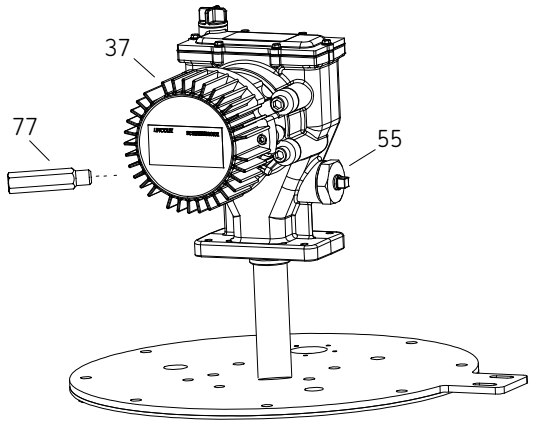
Table 3

Electric FlowMaster II pump

24 V ⎓ 19:1 gear ratio, 2 stage Backpressure	Current [1]
0 psi *(0 bar)* at 105 r/min.	1.28 A
1 000 psi *(68 bar)* at 103 r/min.	2.03 A
2 000 psi *(137 bar)* at 101 r/min.	2.96 A
3 000 psi *(206 bar)* at 99 r/min.	3.68 A
4 000 psi *(275 bar)* at 98 r/min.	4.83 A
5 000 psi *(344 bar)* at 96 r/min.	6.47 A

[1] Fuse for 10 A.

Fig. 3



Operation

⚠ WARNING

Do not operate pump without relief valve installed. Pressure must remain below 5 000 psi *(345 bar)*. Use only high pressure components.

Failure to comply may result in serious personal injury.

Prime pump

1 Remove pump outlet line from outlet pin nut (**55**).

NOTE

Never allow pump to run dry of lubricant. Dry pump quickly speeds up, creating friction heat that can damage seals. Monitor supply lubricant level and refill when necessary.

Failure to comply may result in damage to equipment.

2 With pump in full container of lubricant, start pump.
3 Purge air from pump.
4 Verify lubricant is flowing evenly from pump.
5 Stop pump.
6 Attach pump outlet line to outlet pin nut (**55**).

Set pump speed

1 Refer to **Fig. 4** and remove speed adjustment hex socket head (3 mm) cover screw.
2 Adjust screw counter-clockwise to reduce pump speed.
3 Install speed adjustment hex socket head (3 mm) cover screw.

NOTE

Motor used in 24 V ⎓ FlowMaster II pump is equipped with a built in speed control. Pump speed is factory set to maximum setting.

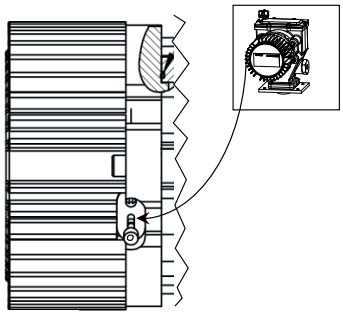
Speed adjustment screw is located under cover screw, 120° away from power cord.

NOTE

Do not reduce pump speed below 20 r/min. Speed adjustment screw has no stop and has total of 30 turns.

Refer to **table 2**, **page 4,** for speed recommendations.

Fig. 4



Crankcase oil service interval

- Check oil level after every 750 hours of machine operation, or monthly.
- Change oil after every 2 000 hours of machine operation, or every year.
- Use SAE 10W30 motor oil in all units used in an ambient temperature of –40 to 150 °F *(–40 to 65 °C)*. Use Mobil Aero HFA or equivalent low temperature oil if pump is to be used continuously in temperatures below 50 °F *(10 °C)*.
- Oil level should be at indicating dot on dipstick (middle of crankshaft).
- Crankcase capacity: 15 oz *(0,44 l)*.

NOTE

Do not change pump settings until after start up procedure. All pumps are set to run at full speed.

Failure to comply may result in damage to pump.

⚠ DANGER

Do not exceed maximum rated outlet pressure. Pumps are not equipped with high pressure shut off valve.

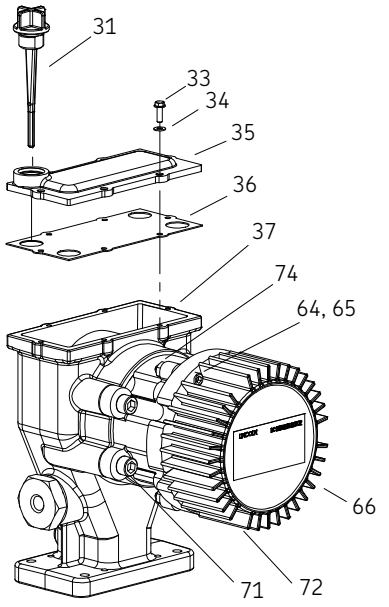
Failure to comply will result in death or serious personal injury.

Disassembly

Pump

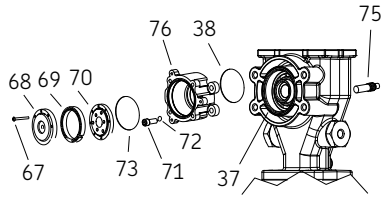
1 Place pump into vise.
2 Remove dipstick (**31**).
3 Drain crankcase oil from crankcase.
4 Remove housing cover screws (**33**) (→ **fig. 5**).
5 Remove housing cover (**35**) and gasket (**36**).
6 Loosen and remove three jam nuts (**74**) from electric motor (**66**) (→ **fig. 5**).
7 Remove electric motor (**66**) mounting screws (**64**) with lock washers (**65**).
8 Remove electric motor (**66**).
9 Remove motor o-ring (**73**).

Fig. 5



10 Refer to **Fig. 6** and remove gear box mounting screws (**71**), washers (**72**) and gear box (**76**).
11 Loosen and remove screws (**67**) holding first stage gear set (**68**), spacer (**69**) and final stage gear set (**70**) in place.
12 Remove first stage gear set (**68**), spacer (**69**) and final stage gear set (**70**) from gear box (**76**).
13 Remove shaft adapter (**75**).
14 Remove gear box o-ring (**38**).
15 Loosen screws (**44**) holding shaft cover (**46**) on pump housing (**37**) (→ **fig. 7**).
16 Remove retaining ring (**48**) from pump shaft (**40**).
17 Remove pump shaft (**40**) by pushing pump shaft on retaining ring (**48**) side.

Fig. 6



18 Remove outlet pin nut (**55**) from pump housing (**37**).
19 Remove o-ring (**54**) from groove in outlet pin nut (**55**).
20 Remove back up washer (**52**) from outlet pin nut (**55**).
21 Remove o-ring (**53**) from outlet pin nut (**55**).
22 Repeat **steps 18 - 21** for remaining outlet pin nut (**55**) on opposite side of pump.
23 Remove retaining ring (**63**) from housing tube (**60**). Refer to **Fig. 8**.

NOTE

Slight force may be necessary to remove eccentric (**5**) and crank rod (**7**) from housing (**37**).

Fig. 7

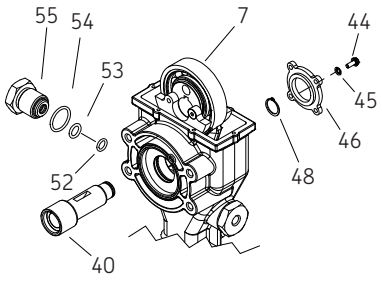
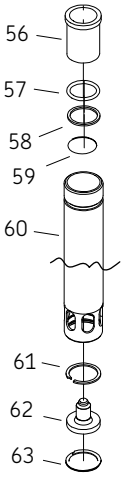


Fig. 8



24 Remove shovel plug (**62**) from housing tube (**60**).
25 Remove spiral retaining ring (**61**).
26 Loosen and remove housing tube (**60**) from housing pump (**37**) (→ **fig. 8**).
27 Remove bronze bearing (**56**) from tube housing (**60**).
28 Remove o-ring (**57,**) back up washer (**58**) and o-ring (**59**) from tube housing (**60**).
29 Tap on crank rod (**7**) inside housing (**37**).
30 The eccentric (**5**) is located inside of bearing (**6**) (**fig. 12**). Pull crank rod (**7**) with eccentric (**5**) out of pump housing (**37**).

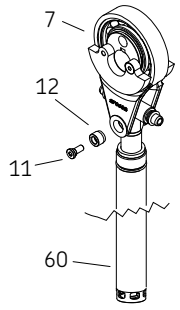
Crank rod and eccentric

1 Remove pivot screws (**11**) from crank rod (**7**) (→ **fig. 9**).

NOTE

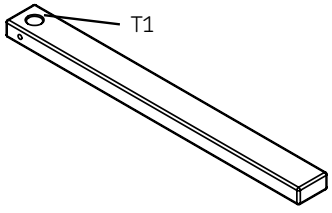
Wrist pin bushings **(12)** often stick in wrist pin anchor **(13)**. It may be necessary to use 5/16–24 bolt from kit (276275) to remove wrist pin bushings **(12)**.

Fig. 9



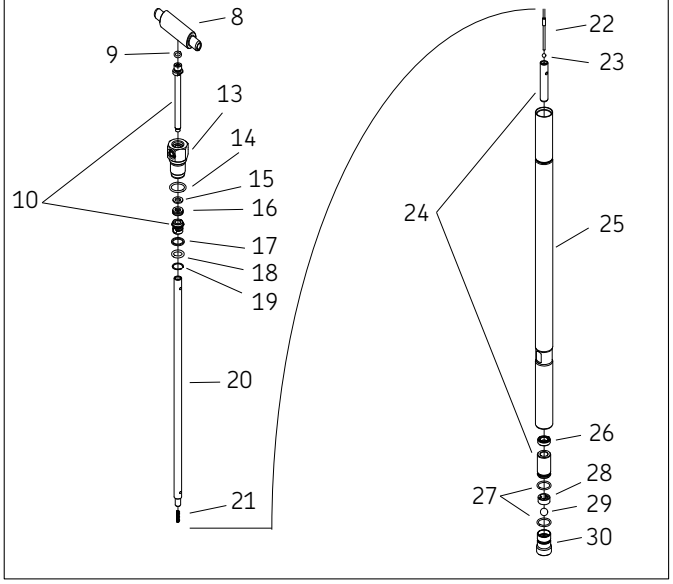
2 Using 5/16–24 bolt, press out wrist pin bushing (**12**).
3 Remove crank rod (**7**).
4 Refer to **Fig. 11** and remove wrist pin anchor (**13**) from reciprocating tube (**25**).
5 Pull cup seal (**16**) out of wrist pin anchor (**13**).
6 Remove steel backup ring (**17**).
7 Place plunger link rod (**20**) in vise.
8 Loosen plunger link rod (**20**) and remove from outlet pin (**8**).
9 Remove plunger link rod (**20**).
10 Remove retainer clip (**19**) from plunger link rod (**20**).
11 Remove o-ring (**18**) from plunger link rod (**20**).
12 Remove back up washer (**15**) from plunger link rod (**20**).
13 Remove o-ring (**14**) from plunger tube (**10**).
14 With crank rod in vise and using special tool (**T1**) provided in tool kit, remove plunger link rod (**20**) (→ **fig. 11**).
15 Place end of plunger link rod (**20**) into hole of special tool (**T1**).
16 Align outlet hole of plunger link rod (**20**) with hole in special tool (**T1**) (→ **fig. 11**).

Fig. 11



17 Insert pin included in tool kit (275996) through tool and into plunger link rod (**20**) outlet hole.
18 Turn tool counter clockwise to remove lower bushing and plunger (**24**) from plunger link rod (**20**).
19 Remove plunger (**24**).
20 Remove check rod from (**22**) lower bushing and plunger (**24**).
21 Remove ball (**23**) from lower bushing and plunger (**24**).
22 Remove spring (**21**) from link rod (**20**).

Fig. 10



Reciprocating tube

1 Loosen check seat housing (**30**) with 3/8 in hex head wrench (**→ fig. 12)**.
2 Remove check seat housing (**30**) from reciprocating tube (**25**).
3 Remove ball cage (**28**), check ball (**29**) and o-ring seals (**27**) from check seat housing (**30**).
4 Remove lower bushing (**24**) from reciprocating tube (**25**).
5 Remove lower cup seal (**26**) from reciprocating tube (**25**).

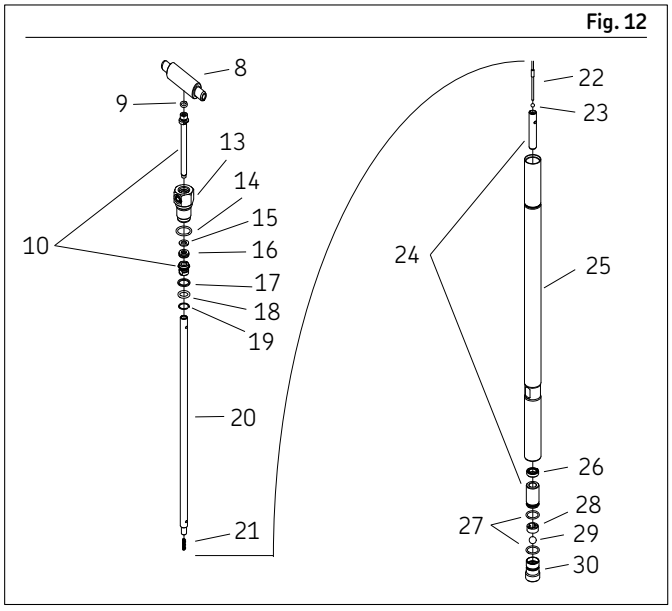


Fig. 12

Crank rod

1 Loosen and remove flat head screws (**1**) from eccentric (**5**) (**→ fig. 13**).
2 Remove counterbalance weights (**2**).
3 Remove outer (**3**) and inner (**4**) retaining ring from both sides of crank rod (**7**).
4 Place crank rod (**7**) on supplied 2 1/2 in *(63,5 mm)* diameter steel pipe.
5 Drive crank eccentric (**5**) out of ball bearing (**6**).
6 Drive ball bearing (**6**) out of crank rod (**7**).

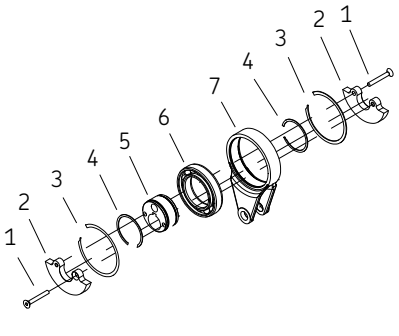


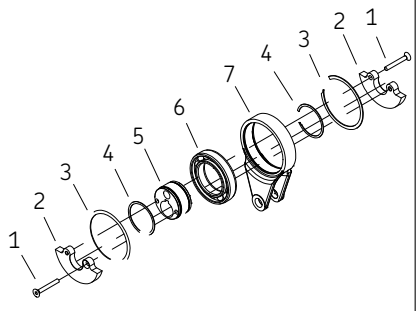
Fig. 13

Assembly

Crank rod and eccentric assembly

1 Place crank rod (**7**) on 2 1/2 in *(63,5 mm)* diameter steel pipe from kit.
2 Refer to **fig. 14** and install ball bearing assembly (**6**) into crank rod (**7**).
3 Place eccentric (**5**) in ball bearing (**6**).
4 Place one end of inner retaining ring (**4**) on top of eccentric (**5**).
5 Squeeze other end of retaining ring (**4**) toward center and slide retaining ring (**4**) into place.
6 Place one end of outer retaining ring (**3**) on top of inner retaining ring (**4**).
7 Squeeze other end of retaining ring (**4**) toward center and slide retaining ring (**4**) into place.
8 Align holes of counter-balance weights (**2**) with threaded holes of eccentric (**5**) and place on eccentric (**5**).

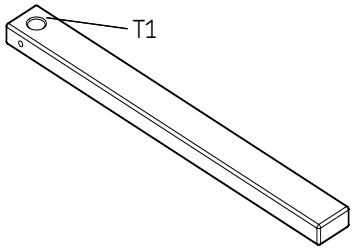
Fig. 14



Pump

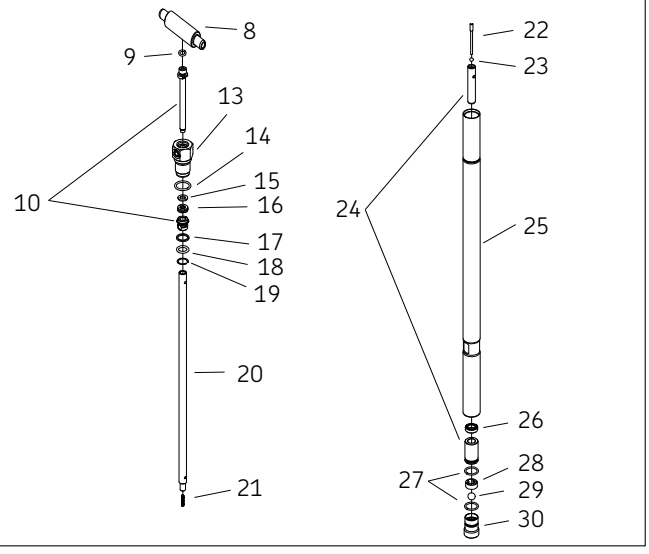
1 Install ball (**23**) into lower bushing and plunger (**24**) (→ **fig. 15**).
2 Insert check rod (**22**) into pump plunger (**23**).
3 Place spring (**21**) onto check rod (**22**).
4 Thread plunger link rod (**20**) into pump plunger (**24**).
5 Insert lower bushing pump plunger (**24**) into tool (**T1**).
6 Refer to**fFig. 16** and align hole in lower bushing pump plunger (**24**) with hole in supplied tool (**T1**).
7 Insert pin into hole of tool (**T1**) and into lower bushing pump plunger (**24**).
8 Torque lower bushing pump plunger (**24**) to torque of 110–125 in.lbf *(12,4–14,1 Nm)*.
9 Install steel back up ring (**17**) onto threads of upper bushing and plunger end (**10**).
10 Slide o-ring (**18**) onto upper bushing and plunger end (**10**).
11 Install retaining clip (**19**) on upper bushing and plunger end (**10**).
12 Install o-ring (**9**) on upper bushing and plunger end (**10**).
13 Place outlet pin (**8**) into vise.
14 Apply threadlocker to threads of upper bushing and plunger end (**10**).
15 Thread upper bushing and plunger end (**10**) into outlet pin (**8**).
16 Torque to 110–125 in.lbf *(12,4–14,1 Nm)*.
17 Install back-up washer (**15**) in wrist pin anchor (**13**).

Fig. 16



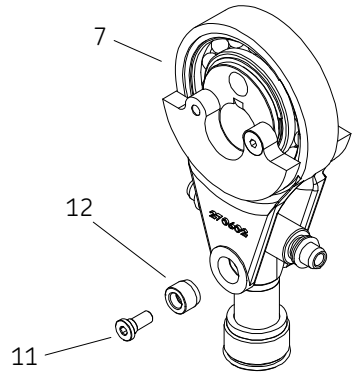
18 Place new cup seal (**16**) inside wrist pin anchor (**13**).
19 Clean threads of wrist pin anchor (**13**).
20 Install o-ring (**14**) on he wrist pin anchor (**13**) (→ **fig. 15**).
21 Insert upper bushing and plunger end (**10**) into wrist pin anchor (**13**) and tighten.
22 Place wrist pin anchor (**13**) in vise.
23 Tighten wrist pin anchor (**13**) to torque of 20–25 ft.lbf *(27–34 Nm)*.
24 With wrist pin anchor (**13**) still in vise, align crank rod/eccentric assembly (**7**) holes with wrist pin anchor (**13**) holes (→ **fig. 17**, **page 13**).
25 Install wrist pin bushings (**12**) through crank rod (**7**) and into wrist pin anchor (**13**) (→ **fig. 17**, **page 13**).

Fig. 15



26 Apply threadlocker to threads of wrist pin bushing screws (**11**).
27 Insert and thread wrist pin bushing screws (**11**) into crank rod (**7**).
28 Torque bushing screws (**7**) to torque of 110–125 in.lbf *(12,4–14,1 Nm)*.
29 Install cup seal (**26**) with slotted side toward center of reciprocating tube (**25**) (**→ fig. 18**).
30 Place new o-ring (**27**) on lower bushing and plunger (**24**).
31 Slide lower bushing and plunger (**24**) into reciprocating tube (**25**) with o-ring (**27**) near bottom of reciprocating tube (**25**) (**→ fig. 18**).
32 Install steel check cage (**28**) into reciprocating tube (**25**).
33 Install ball (**29**) into steel check cage (**28**).

Fig. 17



34 Apply threadlocker to threads of check seat housing (**30**).
35 Thread check seat housing (**30**) into reciprocating tube (**25**) and tighten using 3/8 in hex key.
36 Torque to 20–25 ft.lbf *(27–33 Nm)*.
37 Remove crank rod (**7**) from vise.

NOTE
For ease of installation of lower cup, use small piece of tubing to slide lower cup into reciprocating tube and over pump plunger.

38 Refer to **Fig. 19** and insert o-ring (**59**) into housing tube (**60**).
39 Place back up washer (**58**) into housing tube (**60**).
40 Insert o-ring (**57**) into housing tube (**60**).
41 Insert bronze bearing (**56**) into housing tube (**60**).
42 Insert and thread housing tube (**60**) into pump housing (**37**). Refer to **Fig. 19 and 20, and Fig. 24**, **page 14**.
43 Tighten housing tube (**60**) to torque of 20 - 25 ft.lbf *(27 - 33 Nm)*.
44 Position crank rod assembly (**7**) over top of pump housing (**37**) and lower into pump housing (**37**).
45 Align crank rod (**7**) with shaft (**40**) mounting hole (**→ fig. 20**).
46 While aligning key (**39**) on shaft (**40**) with eccentric key way (**5**), slide shaft (**40**) into eccentric (**5**) (**→Fig. 21**).

Fig. 18

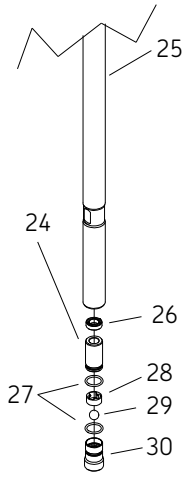
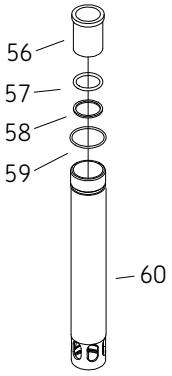


Fig. 19



47 Install retaining ring (**48**) on shaft (**40**).
48 Install shaft cover (**46**) on pump (**37**) (**→ fig. 20**).
49 Insert and thread screws (**44**) with lock washers (**45**) into shaft cover (**46**) and pump housing (**37**).

NOTE
Failure to align key on shaft and key way in eccentric will result in damage to equipment.

50 Install shaft adapter (**75**) inside pump housing (**37**).
51 Install gear box o-ring (**38**) in pump housing (**37**) groove (**→ fig. 22**, **page 14**).
52 Position final stage gear set (**70**) in gear box (**76**).
53 Place spacer (**69**) on top of final stage gear set (**70**).

Fig. 20

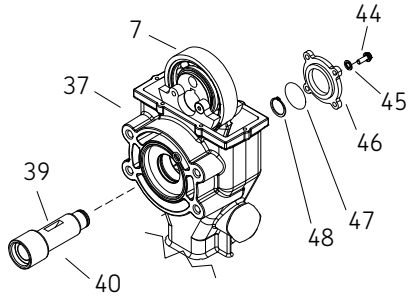
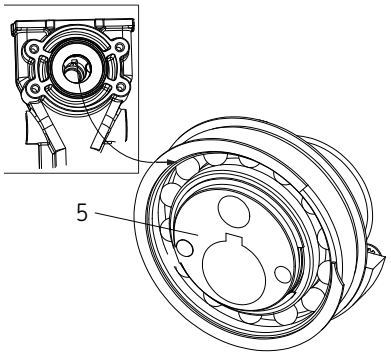
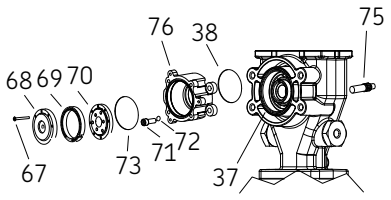


Fig. 21



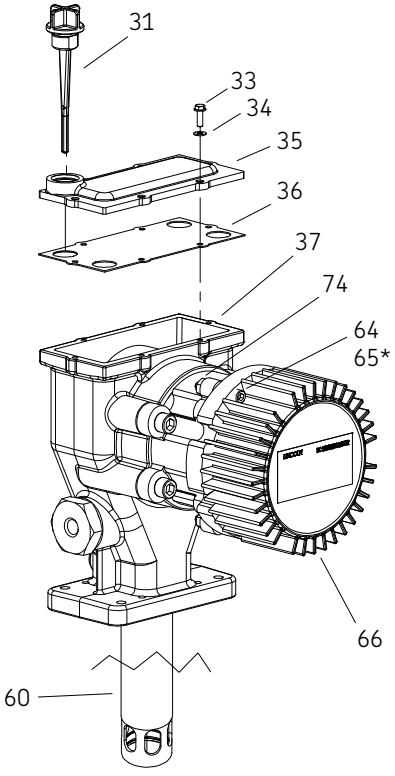
54 Insert final stage gear set (**68**) into gear box (**76**).
55 Install screws (**67**) through gear sets (**68** and **70**) and spacer (**69**) into gear box (**76**).
56 Torque screws (**67**) to 20–25 in.lbf *(2,3–2,8 Nm)*.
57 Place the gear box (**76**) on pump housing (**37**).
58 Install four gear box mounting screws (**71**) and washers (**72**) in gear box (**76**) and into pump housing (**37**).
59 Torque gear box mounting screws to torque of 20–25 ft.lbf *(27–33 Nm)*.

Fig. 22



60 Install electric motor o-ring (**73**) in groove of gear box (**76**).
61 Place electric motor (**66**) on pump housing (**37**).
62 Insert electric motor mounting screws (**64**) with lock washers (**65**) into electric motor (**66**) and gear box (**76**).
63 Thread electric motor jam nuts (**74**) onto mounting screws (**64**).
64 While holding mounting screws (**64**) with hex head wrench, torque jam nuts (**74**) to torque of 100–110 in.lbf *(1,3–12,4 Nm)* (**→ fig. 23**).
65 Refer to **Fig. 24** and insert retaining ring (**61**) into second groove of housing tube (**60**).
66 Install shovel plug (**62**) into housing tube (**60**).
67 Install spiral retaining ring (**63**).
68 Install new cover gasket (**36**) on pump housing (**37**) (**→ fig. 23**).
69 Install pump cover (**35**).
70 Install screws (**33**) with o-rings (**34**) into pump cover (**35**).
71 Torque screws (**33**) to torque of 10–15 in.lbf *(1,1–1,6 Nm)*.
72 Install o-ring (**54**) in outlet pin mounting hole groove of pump housing (**37**) (**→ fig. 24**).
73 Install back up washer (**52**) inside outlet pin nut (**55**).
74 Install the o-ring (**53**) inside the outlet pin nut (**55**).
75 Line up the outlet pin and thread the outlet pin nut (**55**) into the pump housing (**37**).
76 Torque to 30–35 ft.lbf *(40,7–47,5 Nm)*.
77 Fill the crankcase with oil up to indicator dot on dipstick.
78 Install crank case oil dip stick and torque to 10–15 in.lbf *(1,1–1,7 Nm)* (**→ fig. 24**).

Fig. 23



NOTE

Refer to **Crankcase oil service interval**, **page 7** for oil recommendations.

Fig. 24

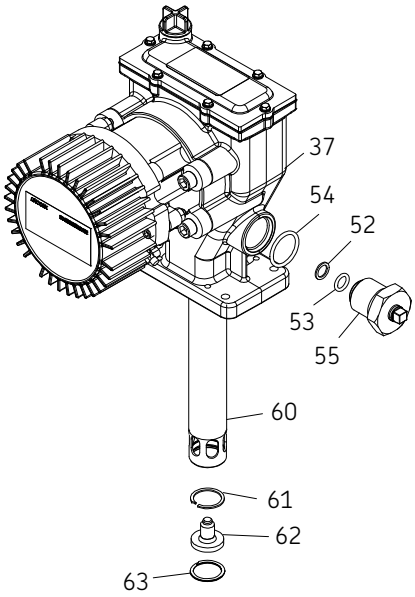


Fig. IPB 1

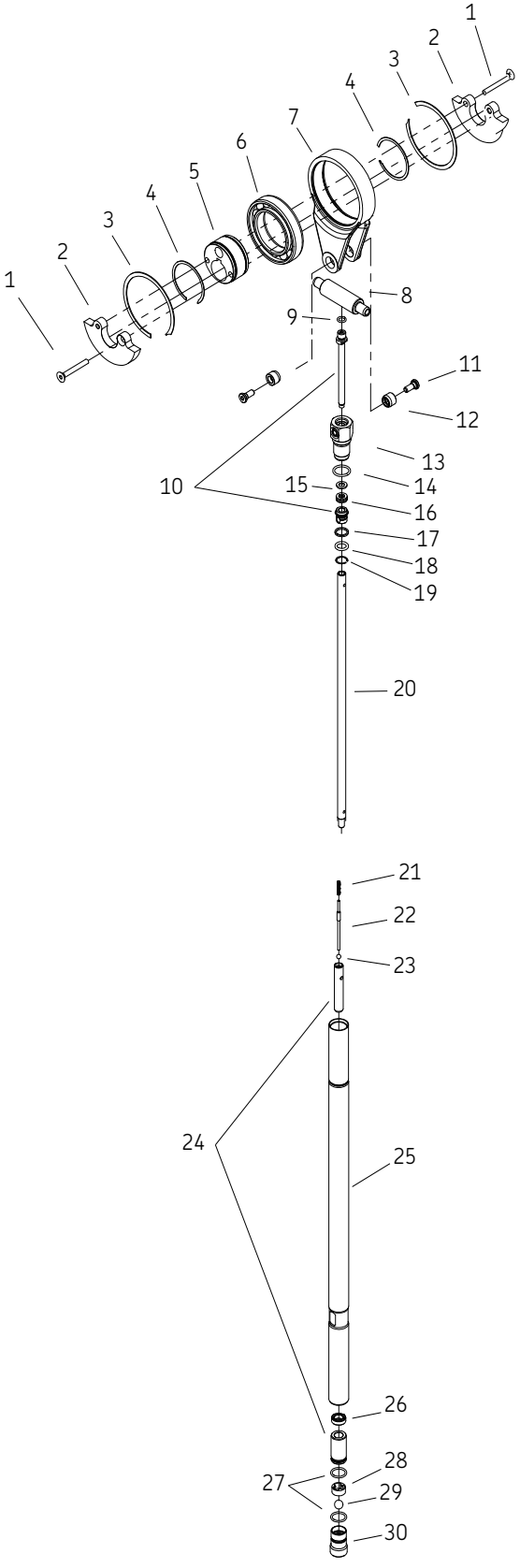

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Fig. IPB 2

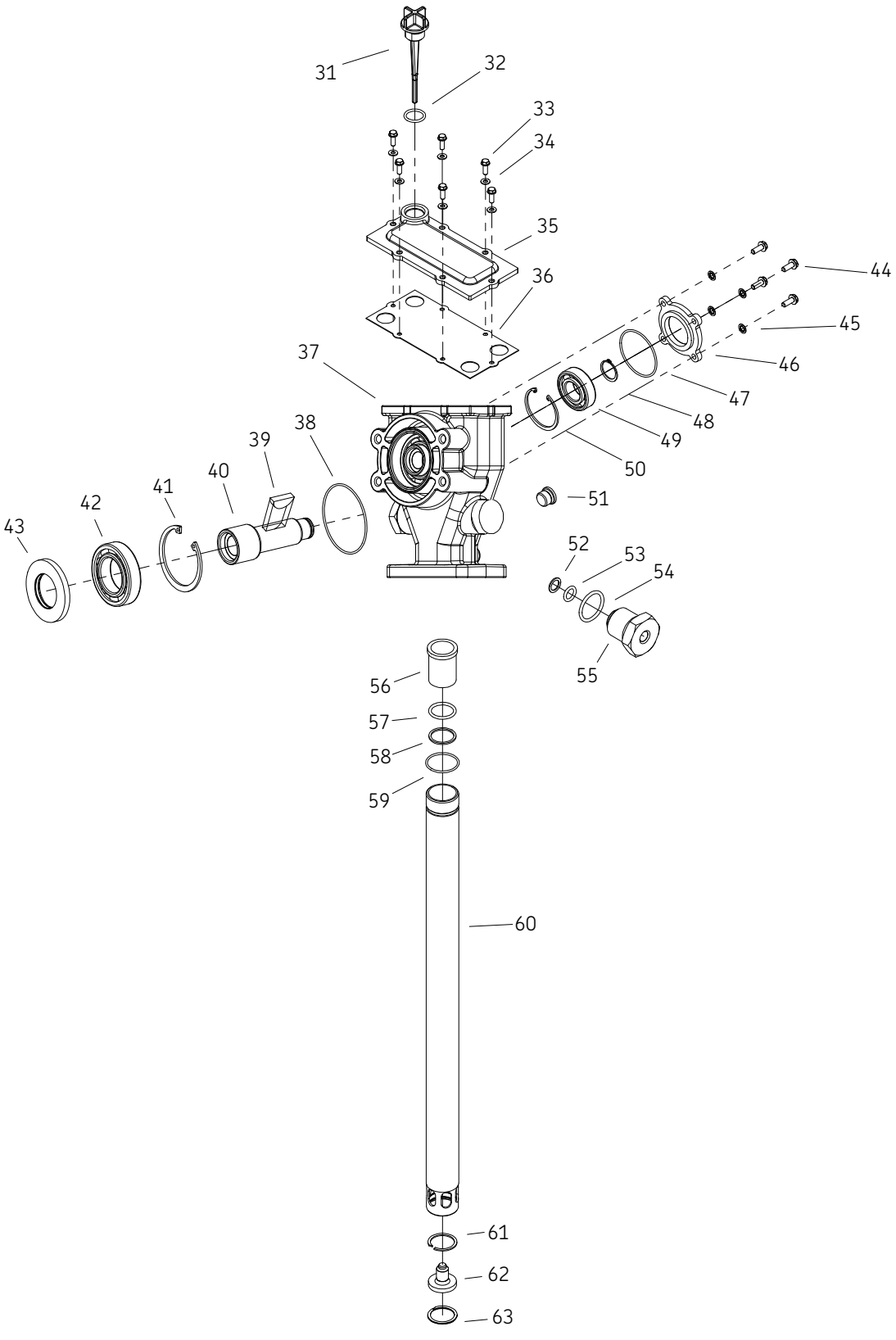
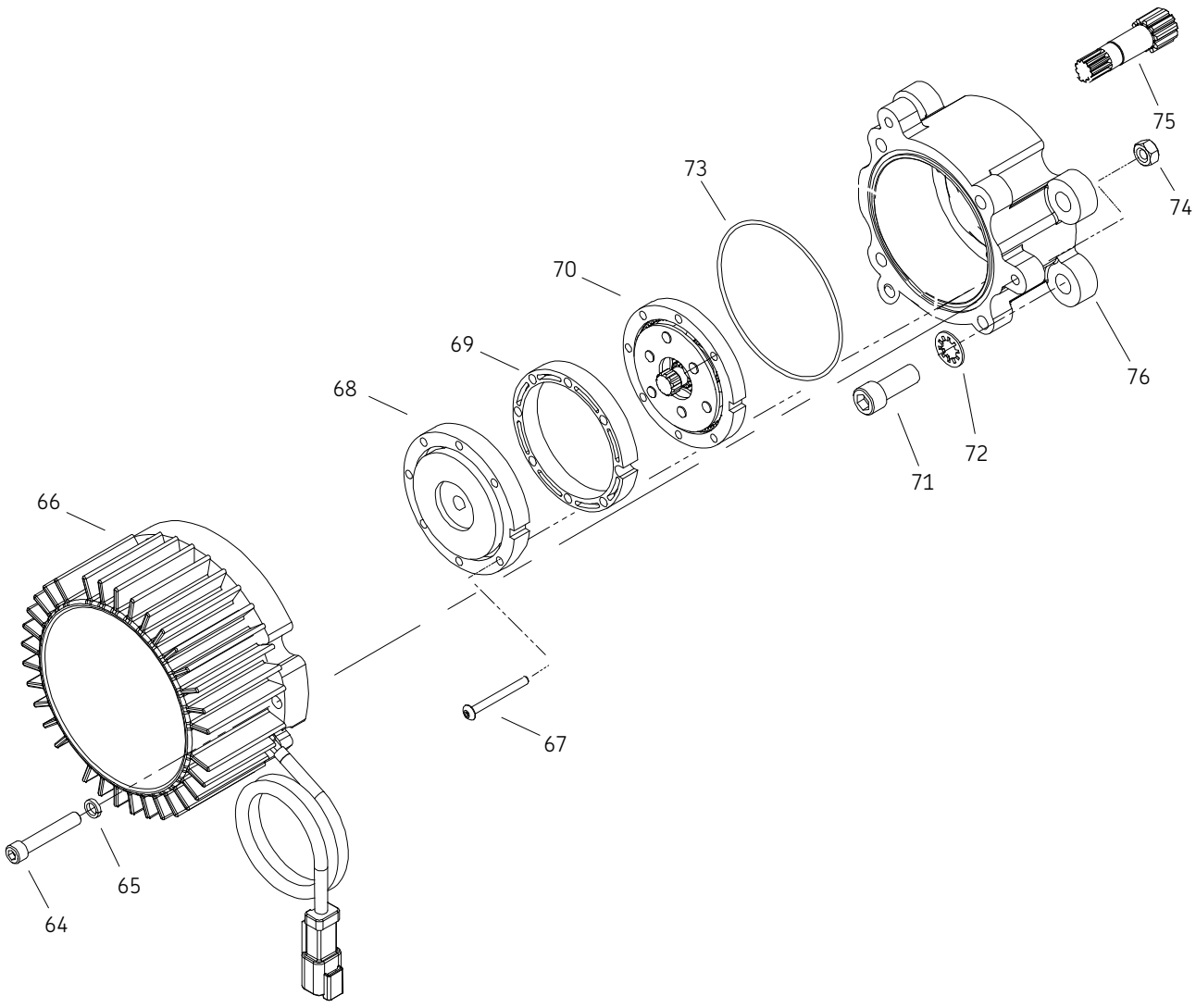

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Fig. IPB 3



Parts list

Item no.	Description	Part no.	Qty,	Item no.	Description	Part no.	Qty,
1	Flat head screw (1/4-28 x 1 3/4)	270635	2	40	Pump shaft	277397	1
2	Counter weight	272197	2	41	Retaining ring	272561	1
3	Retaining ring	270609	2	42	Ball bearing	272556	1
4	Retaining ring	270608	2	43	Shaft seal	272554 [2]	1
5	Crank eccentric	270666	1	44	Screws	272557	4
6	Ball bearing	270607	1	45	Lock washer	66051	4
7	Crank rod	270665	1	46	Bearing cover	272549	1
8	Outlet pin	270670	1	47	O-ring	272559 [2]	1
9	O-ring (nitrile)	34255 [1] [2]	1	48	Retaining ring	272563	1
10	Upper bushing and plunger	275000 [1]	1	49	Ball bearing	272555	1
11	Pivot screw	275006	2	50	Retaining ring	272562	1
12	Wrist pin bushing	275005	2	51	Drain plug	244752	1
13	Wrist pin anchor	274992	1	52	Backup washer	249837 [2]	2
14	O-ring	275015 [2]	1	53	O-ring	249838 [2]	2
15	Backup washer	274998 [1] [2]	1	54	O-ring	270719 [2]	2
16	Cup seal (polyurethane)	274999 [1] [2]	1	55	Outlet pin nut	270619	2
17	Steel back-up ring	274997 [1] [2]	1	56	Bronze bearing	270674	1
18	O-ring	272791 [1] [2]	1	57	O-ring (polyurethane)	249839 [2]	1
19	Retainer clip	274996 [1] [2]	1	58	Backup washer	270652 [2]	1
20	Plunger link rod	See chart	1	59	O-ring	34431 [2]	1
21	Spring	277168 [2]	1	60	Housing tube	See chart	1
22	Check rod	277167	1	61	Retaining ring	277398	1
23	Ball (3/16 in)	66010 [2]	1	62	Shovel plug	270707	1
24	Lower bushing and plunger	275002	1	63	Retaining ring	270705	1
25	Reciprocating tube	See chart	1	64	Screw	50051	3
26	Cup Seal (polyurethane)	270625 [2]	1	65	Lock washer	272569	3
27	O-ring (nitrile)	275011 [2]	2	66	Motor	278661 [3]	1
28	Ball cage	272179	1	67	Screw	272552	4
29	Ball (3/16 in)	66001 [2]	1	68	First stage gear set	272543	1
30	Check seat	270664	1	69	Spacer	272547	1
31	Dipstick with o-ring	275369	1	70	Final stage gear set	272663	1
32	O-ring	275015 [2]	1	71	Screw	272564	4
33	Self-threading screw (#8 x 1/2)	270633	6	72	Lock washer	272566	4
34	Gasket (screw)	252986 [2]	6	73	O-ring seal	272544 [2]	1
35	Housing cover	275009	1	74	Nut (1/4–20)	51304	3
36	Cover gasket (nitrile)	270630 [2]	1	75	Shaft, adapter	272546	1
37	Pump housing	278230	1	76	Gear box housing	272541	1
38	O-ring	272567 [2]	1	77	Safety unloader	272722	1
39	Woodruff key	272560	1				

Non-common repair parts

		Models 85736 520-5011	Model 85737	Model 85738 508-3335	Model 85739 512-0195	Model 89740
20	Plunger link rod	277381	277382	277383	277384	277975
25	Reciprocating tube	277732	277733	277734	277735	277979
60	Housing tube	277736	277737	277738	277739	277981

[1] Included in 275186 upper bushing and plunger kit.
[2] Included in 277723 repair kit.
[3] 278662 for 508-3335, 512-0195 and 520-5011

Troubleshooting

Condition	Possible cause	Corrective action
Pump does not run.	Pump is seized or damaged.	Disassemble pump and repair any parts that are damaged or worn.
	Incorrectly wired.	Connect red motor lead to positive battery terminal and black motor lead to negative terminal.
Pump speeds up or runs erratically.	Low level of grease or reservoir is empty.	Fill reservoir.
	Follower plate is stuck and separated from grease.	Check follower plate and container for damage.
	Pump piston or checks are worn.	Disassemble pump and repair.
Pump runs, but output is low.	Motor speed set to low.	Increase motor speed setting.
	Faulty inlet check (**29**, **30**), faulty discharge check (**23**, **24**) or damaged o-ring (**27**).	Replace faulty components.
Seepage from housing cover (**35**).	Cup seal (**16**) or o-ring (**14**) worn out.	Check seals and replace if necessary.
Pump is noisy.	Crankcase needs oil.	Fill with oil.
	Worn wrist pin bushing (**12**).	Check bushings and replace if necessary Dismantle and clear check.
Pump does not build pressure.	Foreign material holding lower check open.	Consider adding grease filter to system.
Motor runs, but no pump output.	Gear set or adapter shaft stripped or broken.	Dismantle and replace damaged part.

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Warranty

The instructions do not contain any information on the warranty. This can be found in the General Conditions of Sales, available at: www.lincolnindustrial.com/technicalservice or www.skf.com/lubrication.

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