Service Manual

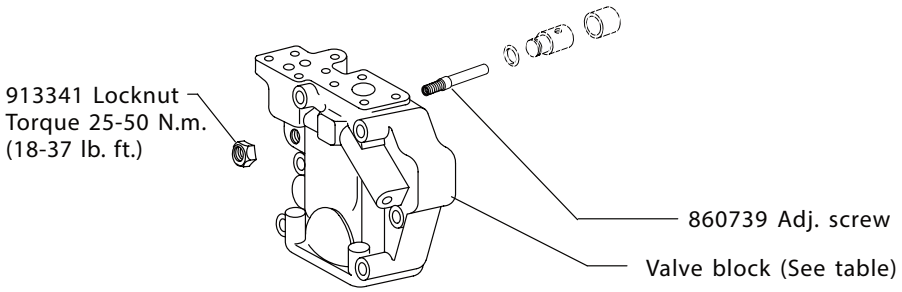
Piston Pumps

PVH131/141 Variable Displacement Piston Pump - 11 Design

AX441461721772en-000102

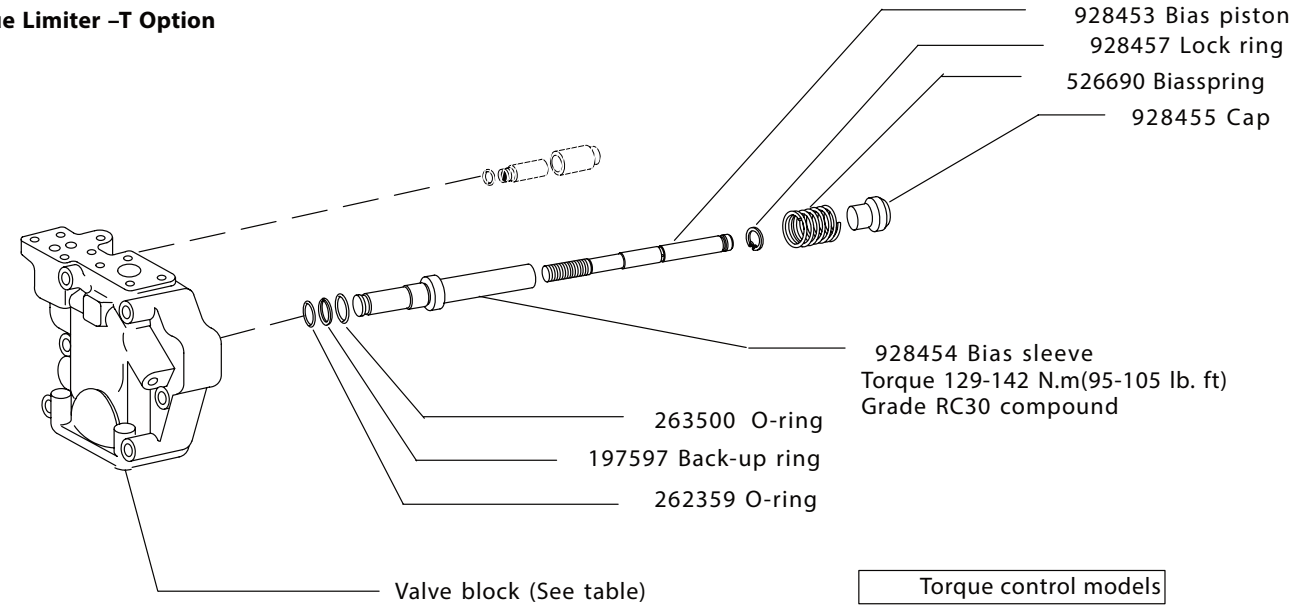
M-2209-S

Maximum Adjustable Stop –S Option



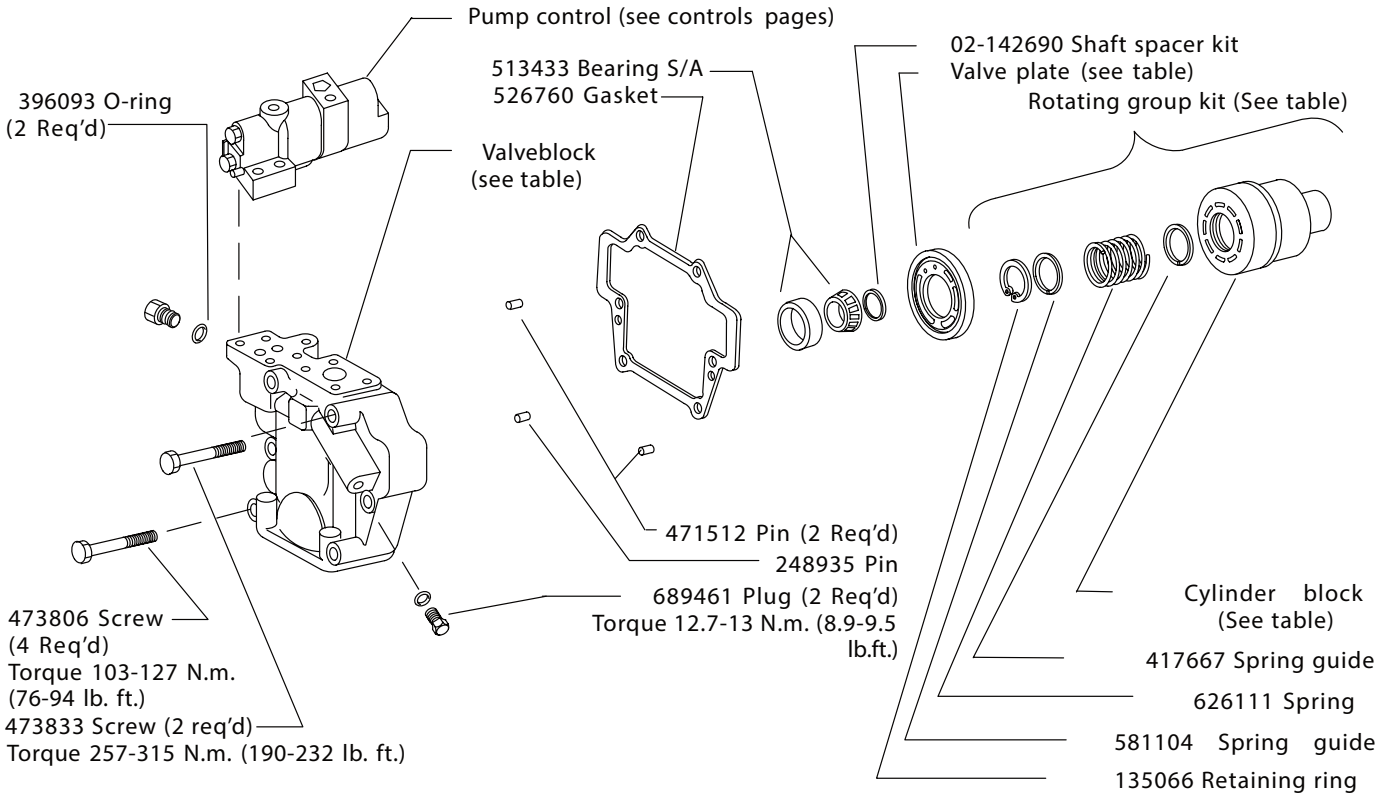
Valve Block Table		
Pump Type	RH	LH
F–11–C	928637	928687
M–11–C	928638	928688
SF–11–C	928624	928673
SM–11–C	928625	928674
F–11–CT	860852	860861
M–11–CT	860853	860862

Torque Limiter –T Option



Torque control models

Standard –C/CM/CMV/CV/IC



Housing	Flange/Seal
692944	-C-*S -
876277	C-*D -
864310	C3-*S

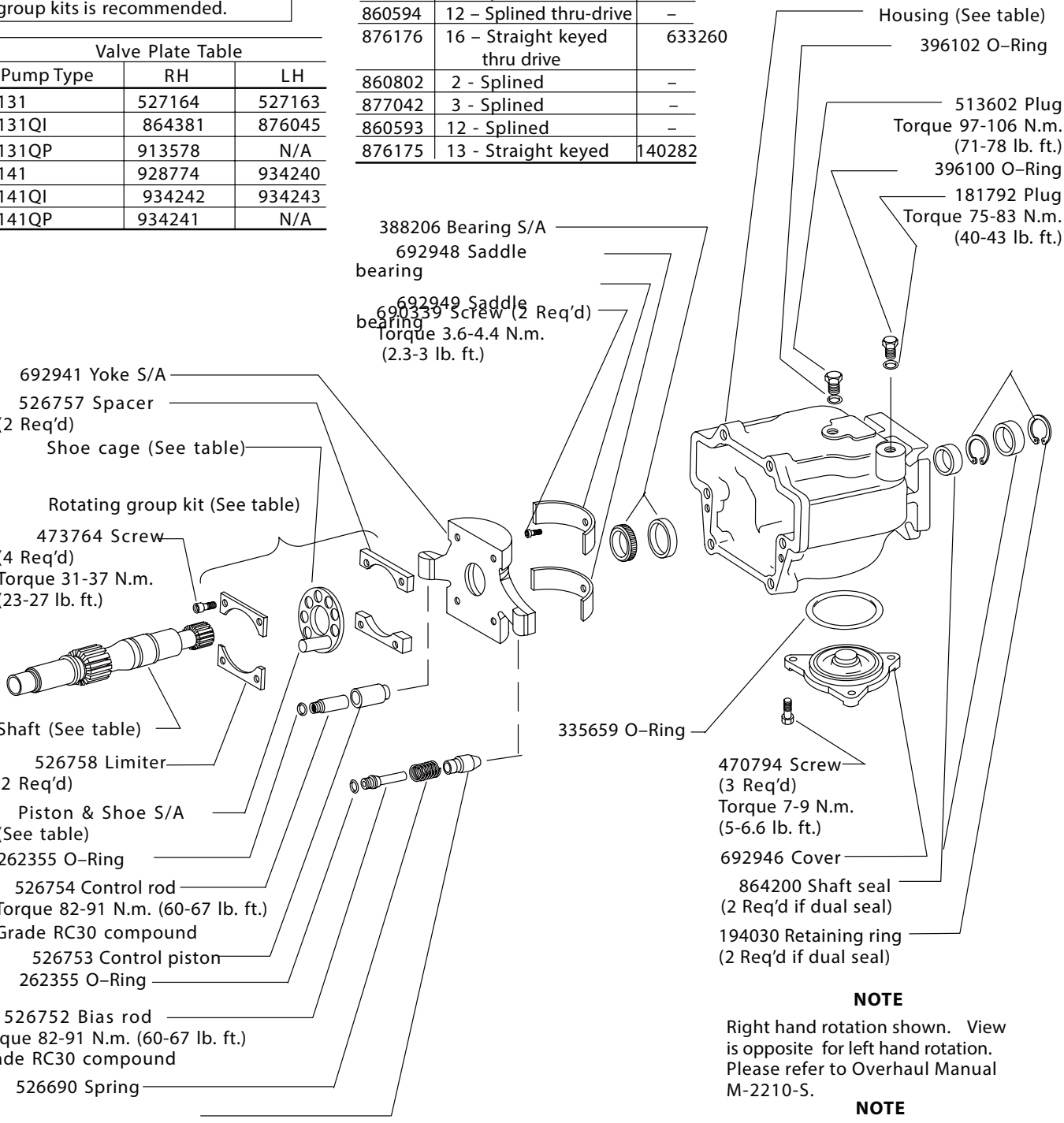
Model Designation	Piston & Shoe S/A (9 req'd)	Cylinder Block	Shoe Cage	Rotating Group Kit
131 Size	02-159749	680628	683791	877419
141 Size	02-306332	928786	928776	02-322898

Note
Complete replacement via rotating group kits is recommended.

Shaft	Type	Key
876177	3 – Splined thru-drive	–
860594	12 – Splined thru-drive	–
876176	16 – Straight keyed thru drive	633260
860802	2 - Splined	–
877042	3 - Splined	–
860593	12 - Splined	–
876175	13 - Straight keyed	140282

Valve Plate Table

Pump Type	RH	LH
131	527164	527163
131QI	864381	876045
131QP	913578	N/A
141	928774	934240
141QI	934242	934243
141QP	934241	N/A



NOTE

Right hand rotation shown. View is opposite for left hand rotation. Please refer to Overhaul Manual M-2210-S.

NOTE

Use shims as required to obtain 0.01–0.10 mm (.0004–.004 in.) axial shaft end play.

NOTE

For satisfactory service life of these components in industrial applications, use full flow filtration to provide fluid which meets cleanliness code 16/14/12 or cleaner.

Non-torque control models

Available in doubleshaft seal kit 02–102266

Available in bearing kit 877426

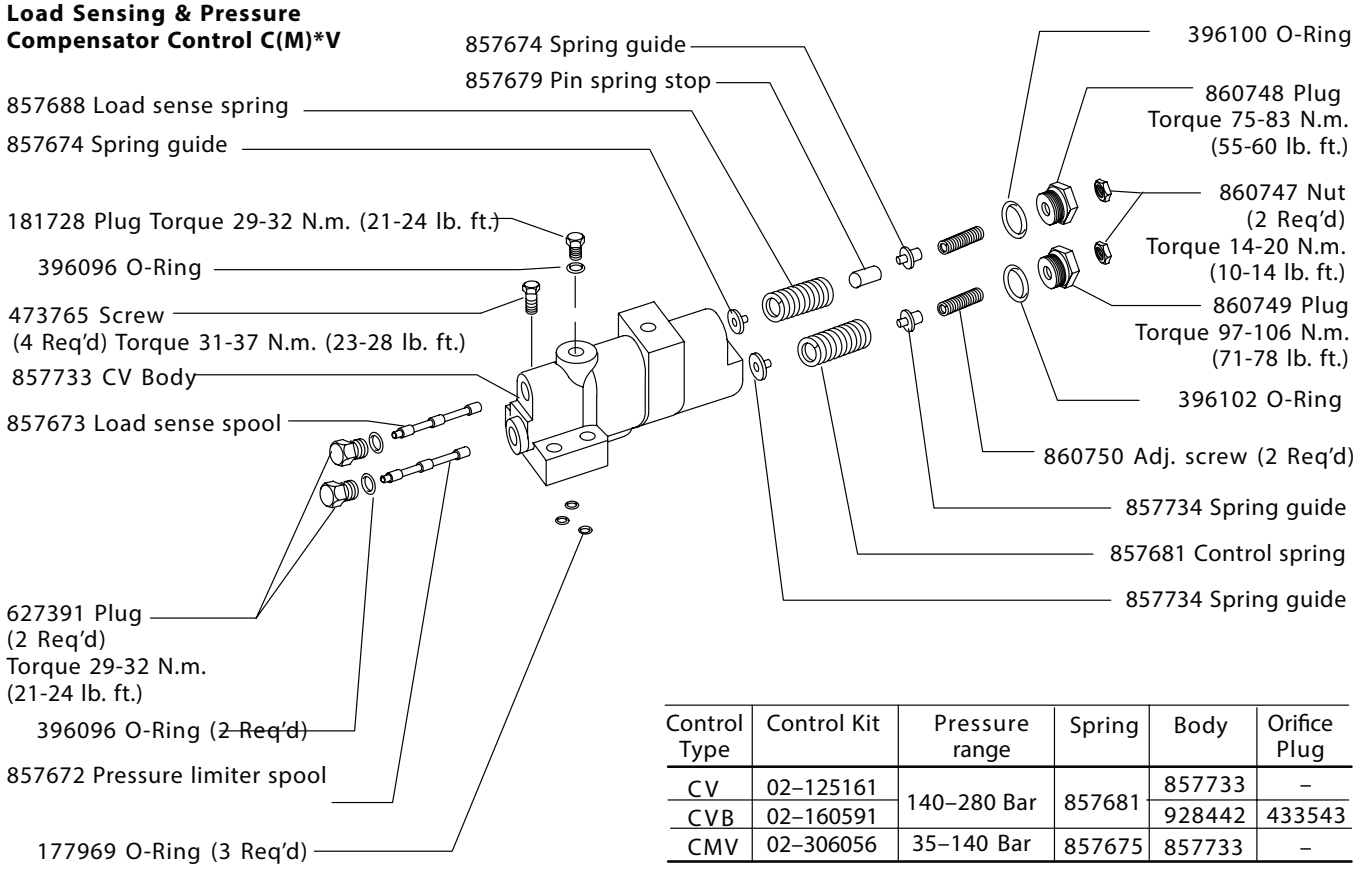
Availablein bearing/yoke kit 02-334838

Available in PVH131 rotating group kit.

Available in PVH141 rotating group kit.

692152 Bias piston

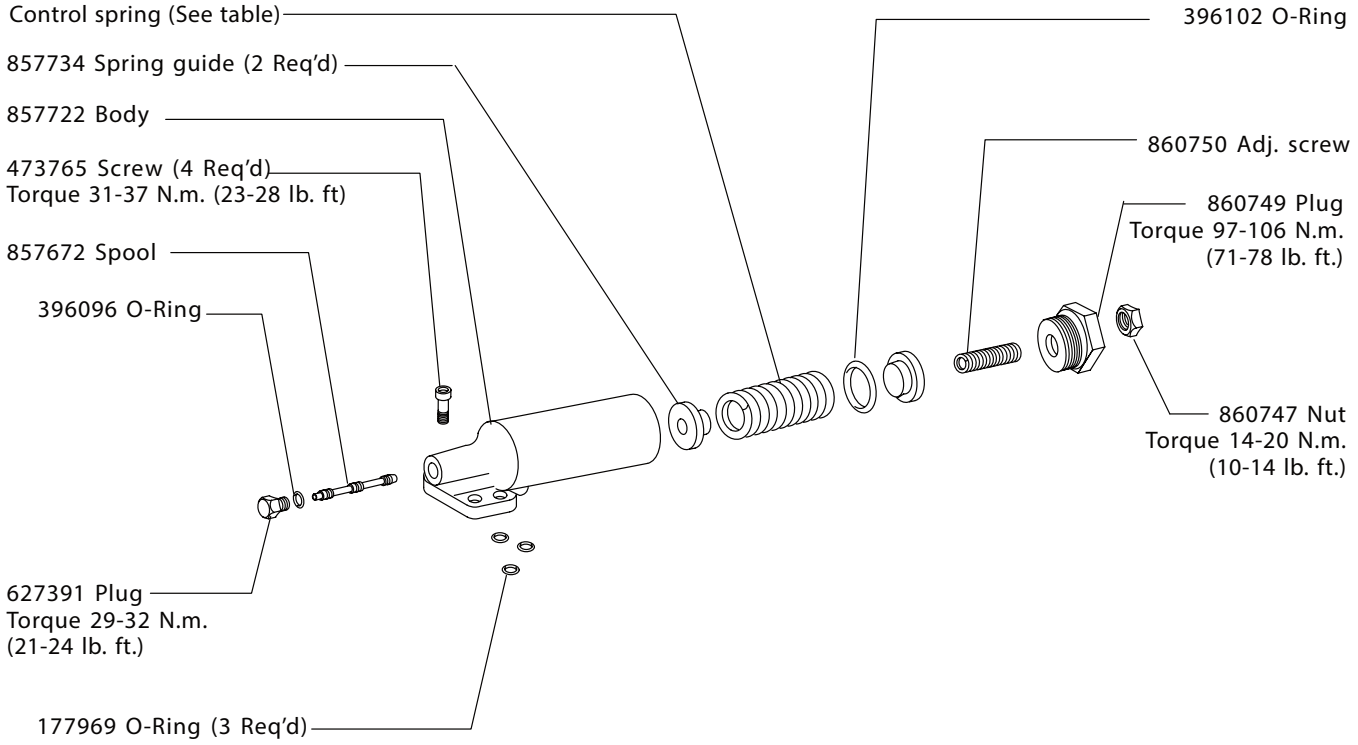
Load Sensing & Pressure Compensator Control C(M)*V



Control Type	Control Kit	Pressure range	Spring	Body	Orifice Plug
CV	02–125161	140–280 Bar	857681	857733	–
CVB	02–160591			928442	433543
CMV	02–306056	35–140 Bar	857675	857733	–

All parts shown are included in control kit. Kit must be set by user to circuit requirements.

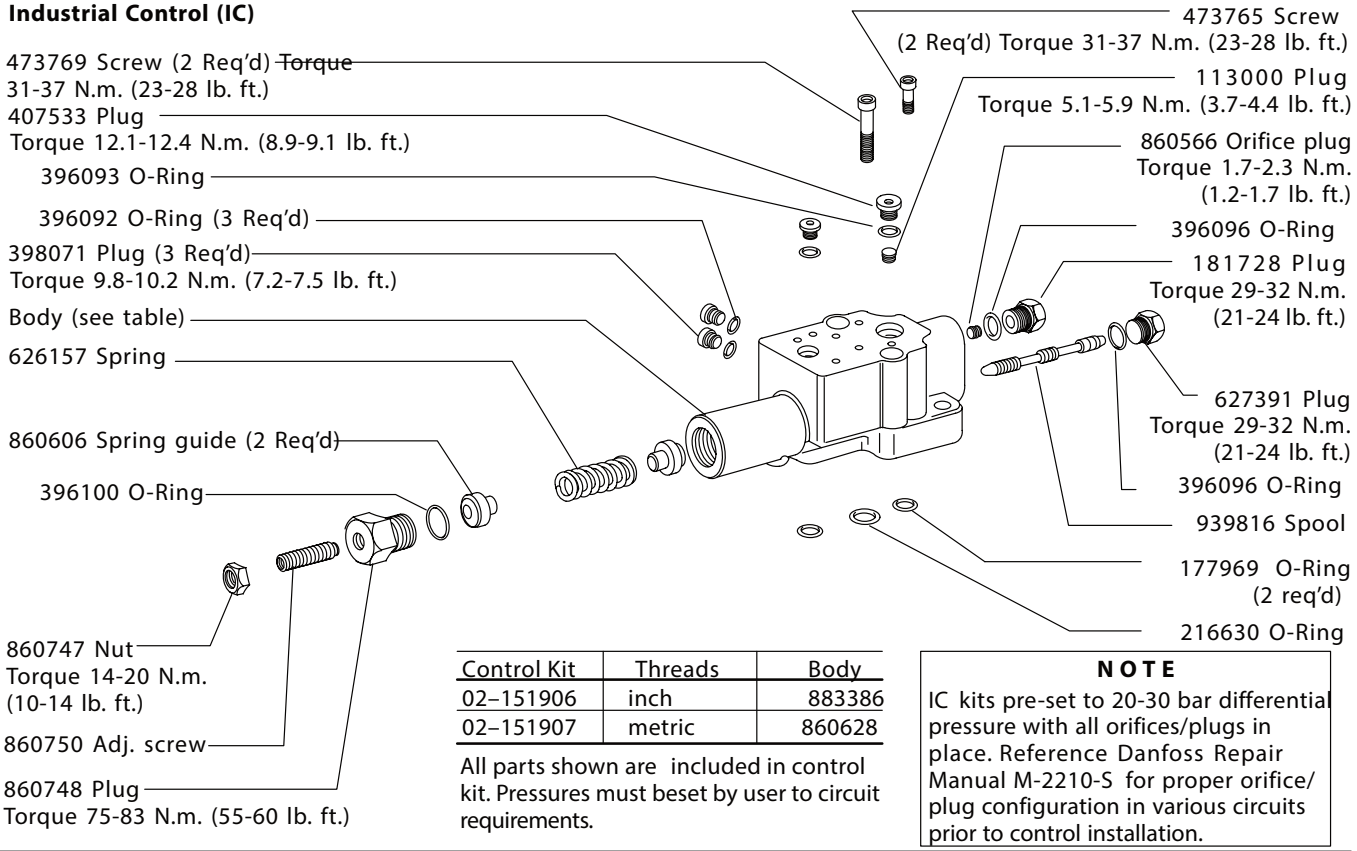
Pressure Compensator Control C & CM



Control Type	Control Kit	Pressure range	Spring
C	02–125160	70-250 Bar	857681
CM	02–125162	40-130 Bar	857675

All parts shown are included in control kit.
Pressures must be set by user to circuit requirements.

Industrial Control (IC)



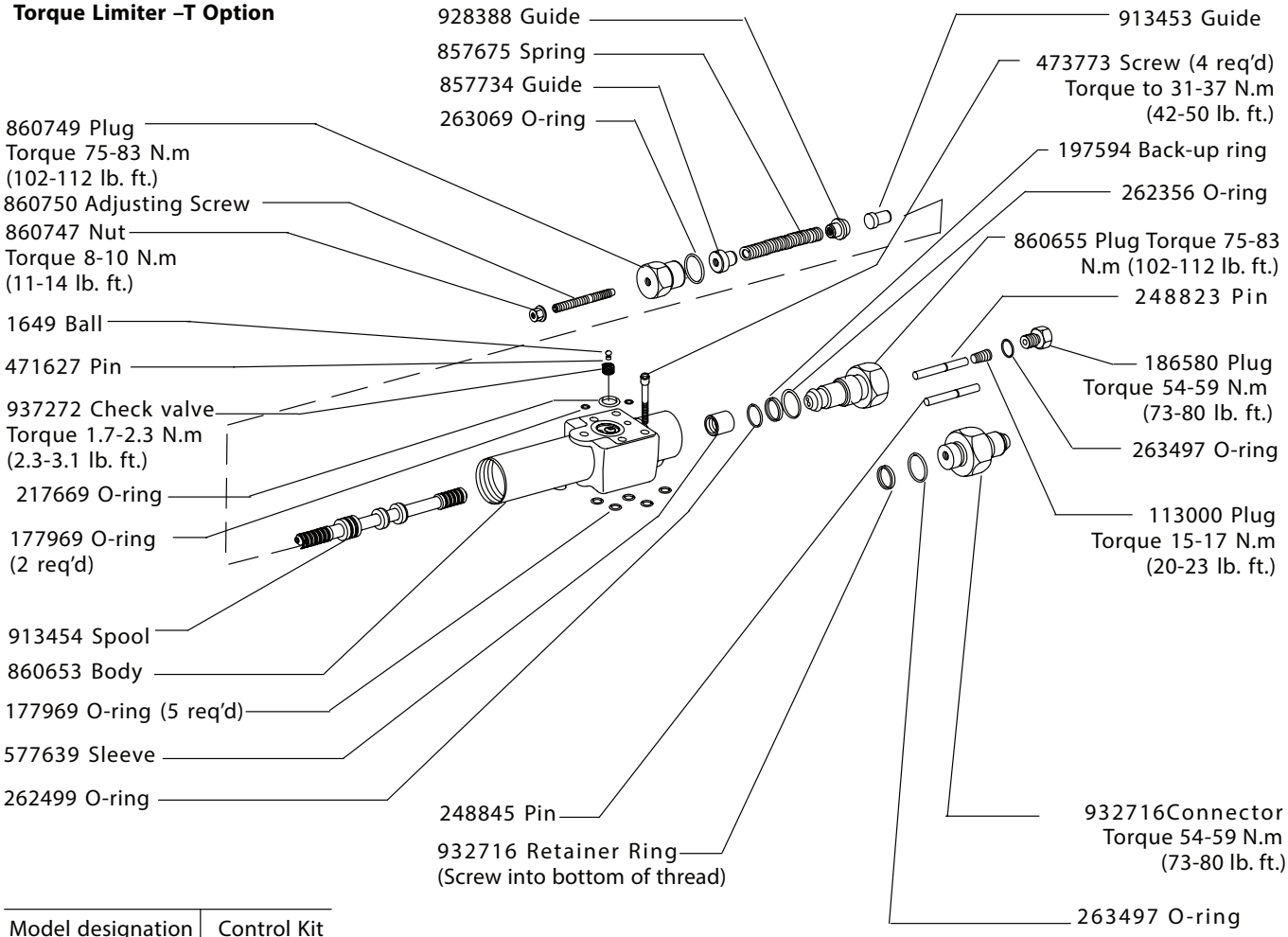
Control Kit	Threads	Body
02–151906	inch	883386
02–151907	metric	860628

All parts shown are included in control kit. Pressures must beset by user to circuit requirements.

NOTE

IC kits pre-set to 20-30 bar differential pressure with all orifices/plugs in place. Reference Danfoss Repair Manual M-2210-S for proper orifice/ plug configuration in various circuits prior to control installation.

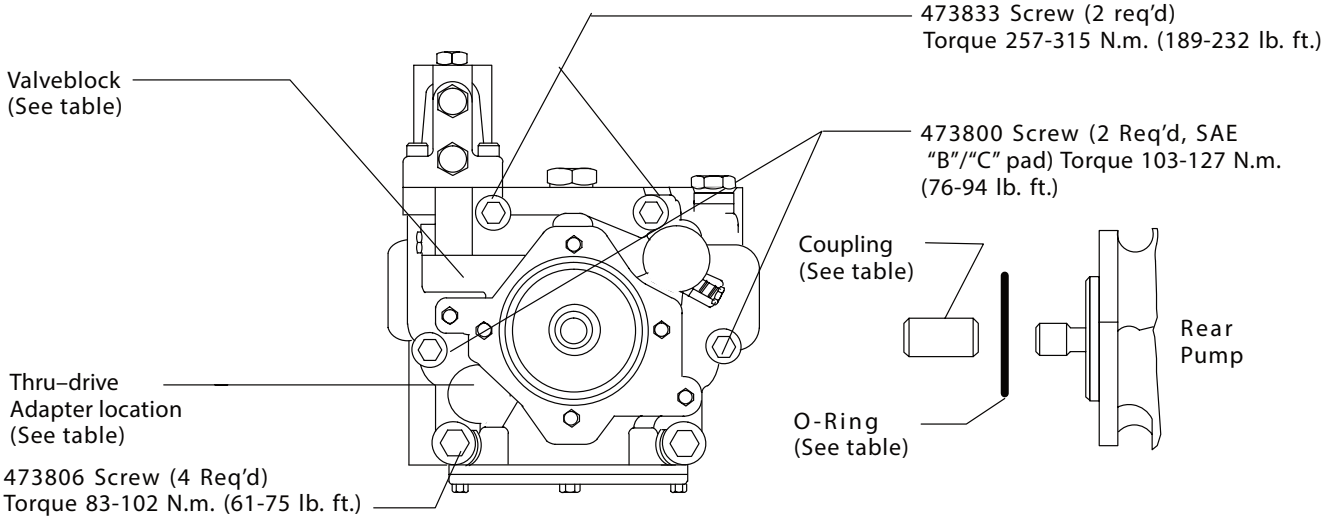
Torque Limiter –T Option



Model designation	Control Kit
C**T**-31	02–314944
C**T**S-31	02–335254

Torque summation parts

A Thru–drive

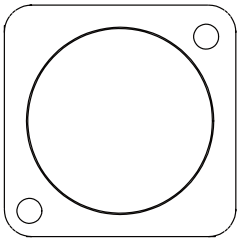


"A" Thru–drive

Model designation	Valve block w/ SAE "A" Pad	O-Ring	Coupling Type
LAF–11 –C*	928713	576601	877039
LAM–11 –C*	928714		
RAF–11 –C*	928736		
RAM–11 –C*	928737		
LAF–11 –CT	860843		
LAM–11 –CT	860844		
RAF–11 –CT	860834		
RAM–11 –CT	860835		

SAE–A, 2 –Bolt Cover Plate 939790

(Fits –031 Suffix Pumps)



*AF Units use Screw 170177 (2 req'd)

**AM Unitsuse Screw 470837 (2 req'd)

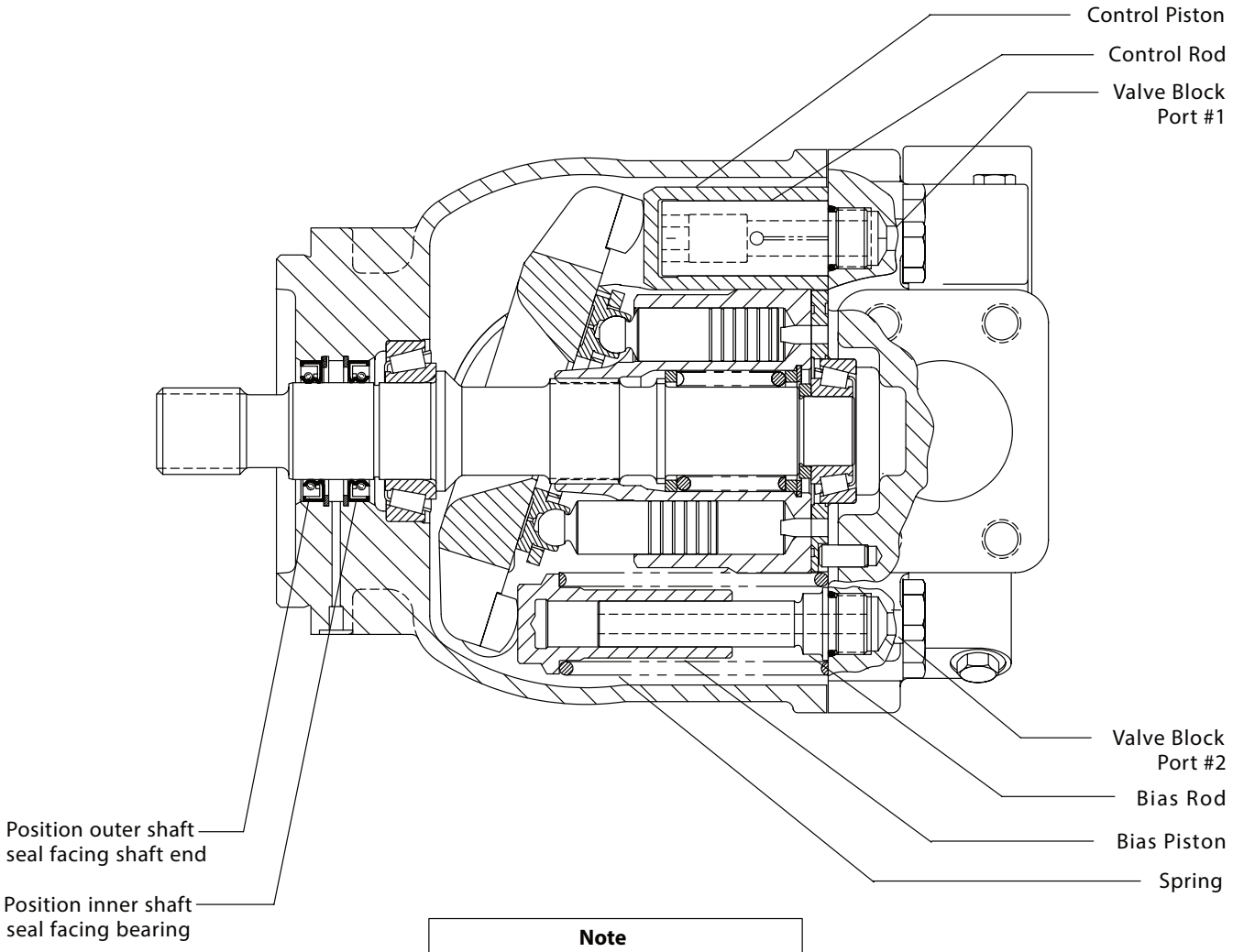
"B" & "C" Thru–drive Adapter

Model Designation	Adapter Pad Kit	Adapter Flange	O-Ring	CouplingTypes
*–*BF–11 –**–	876390	526670	401525	877040 SAE-B 13 tooth
*BM–11 –**–	876394	876393		877044 SAE-BB 15 tooth
*CF–11 –**–	876389	692934	353264	877045 SAE-C 14 tooth
CM–11 –	876392	876391		877046 SAE-CC 17 tooth

Notes:

1. "F" type equal SAE threads
2. "M" type equal metric threads
3. "B" and "C" thru-drives created from "A" thru-drive pump with "B" or "C" thru-drive adapter kit installed.
4. All screws/O-rings are included with each "kit" to convert from "A" to "B" or "C" thru-drive unit.

Typical Cross Section



Note

Parts are shown as installed for right hand rotation. For left hand rotation, install control rod and control piston in valve block port #2. Install bias rod, bias piston and spring in valve block port #2.

Pump Startup

Make sure the reservoir and circuit are clean and free of dirt and debris prior to filling with hydraulic fluid.

Fill the reservoir with filtered oil to a level sufficient to prevent vortexing at suction connection to pump inlet. It is good practice to clean the system by flushing and filtering using an external slave pump.

Before starting the pump, fill with fluid through one of the ports. This is particularly important if the pump is above the fluid level of the reservoir.

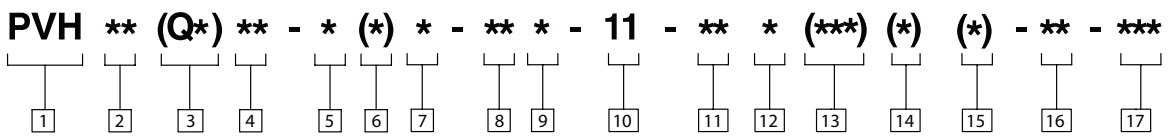
When initially starting the pump, remove all trapped air from the system. This can be accomplished by loosening the pump outlet fittings or connections before starting the pump, or by using an air bleed valve. All inlet connections must be tight to prevent air leaks.

Once the pump is started, it should prime within a few seconds. If the pump does not prime, check to make sure that there are no air leaks in the inlet line and connections. Also check to make sure that trapped air can escape at the pump outlet.

After the pump is primed, tighten the loose outlet connections, then operate for five to ten minutes (unloaded) to remove all trapped air from the circuit. If reservoir has a sight gage, make sure the fluid is clear—not milky.

Add fluid to the reservoir up to the proper fill level.

Model Code



1 Piston pump, variable displacement

2 Maximum geometric displacement

131 - 131.1 cm^3/r (8.0 in^3/r)
141 -141.6 cm^3/r (8.64 in^3/r)

3 Application style

Blank - Mobile application (rated speed & 250/280 bar (3600-4000 psi) pressures)
QI - Quiet industrial application (1500 - 1800 rpm & 250/280 bar (3600-4000 psi) pressures)
QP - Quiet power unit application (1800 rpm & 140 bar (2000 psi) max. pressures –R.H. rotation only)

4 Mounting flange, prime mover end

C - SAE "C" 4–bolt type (SAE J744-127-4)
C3 - Optional 4-bolt SAE-C pilot for vertical pump mounting

5 Shaft rotation, viewed at prime mover end

R - Right hand, clockwise
L - Left hand, counterclockwise

6 Configuration

Blank - Non-thru-drive (single pump)
A - SAE-A thru-drive pump, standard (SAE J744-82-2)
B - SAE-B thru-drive pump, optional (SAE J744-101-2/4)
C - SAE-C thru-drive pump, optional (SAE J744-127-2/4)
S - Adjustable maximum volume stop ("S" option not available on thru-drive and torque control pump models.)

7 Main ports

F - SAE 4-bolt flange ports (standard)
M - SAE 4-bolt pads with metric mounting bolt threads

8 Shaft-end type, at prime mover end

2 - SAE-C 14 tooth spline
3 - SAE-CC 17 tooth spline
12 - SAE-D 13 tooth spline
13 - SAE-CC straight keyed
16 - SAE-D straight keyed

9 Shaft seal, prime mover end

S - Single, one-way
D - Double, two-way

10 Pump design number

11 - (Subject to change. Installation dimensions unaltered for design numbers 10 to 19 inclusive.)

11 Pressure control type

C - Compensator, 140-280 bar (2000-4000 psi)
CM - Compensator, 35-140 bar (500-2000 psi)
IC - CETOP 3 interface compensator, 20 bar factory "differential" pressure setting (QI and QP models only)

12 Factory compensator pressure setting

Blank - Leave blank for "IC" controls only
7 - 70 bar (1015 psi) normal "CM7" setting (all pump sizes)
23 - 230 bar (3335 psi) normal "C23" setting (63, 81, 106, 141 models)
25 - 250 bar (3625 psi) normal "C25" setting (57, 74, 98, 131 models)

13 Optional pressure control functions

Blank - Leave blank for basic compensator controls of IC models.
V - Load sensing, 20 bar (290 psi) factory "differential" pressure setting
T - Torque limiting control (Used with sections and .
VT - Load sensing with torque limiting
VB - Load sensing with internal bleed down (0.15" dia. orifice)
VBT- Load sensing with internal bleed down and torque limiting

14 Torque limiting control pressure setting

Blank - Leave blank if no torque limiting control is used
4 - Standard minimum 40 bar setting of "T" torque control option

15 Torque limiting control summation

Blank - Standard torque control
S - Optional torque control with summation feature

16 Control design number

31 - All control options

17 Special feature suffix

031- Mounting with SAE-A, 2-bolt cover plate

Printed in U.S.A.

ENGINEERING
TOMORROW

Products we offer:

- Cartridge valves
- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydraulic integrated circuits (HICs)
- Hydrostatic motors
- Hydrostatic pumps
- Orbital motors
- PLUS+1® controllers
- PLUS+1® displays
- PLUS+1® joysticks and pedals
- PLUS+1® operator interfaces
- PLUS+1® sensors
- PLUS+1® software
- PLUS+1® software services, support and training
- Position controls and sensors
- PVG proportional valves
- Steering components and systems
- Telematics

Hydro-Gear
www.hydro-gear.com

Daikin-Sauer-Danfoss
www.daikin-sauer-danfoss.com

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electric components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market as well as the marine sector. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of applications. We help you and other customers around the world speed up system development, reduce costs and bring vehicles and vessels to market faster.

Danfoss Power Solutions – your strongest partner in mobile hydraulics and mobile electrification.

Go to www.danfoss.com for further product information.

We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

Local address:

Danfoss
Power Solutions (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss
Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss
Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss
Power Solutions Trading (Shanghai) Co., Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 2080 6201

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequent changes being necessary in specifications already agreed.
All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.