

SERVICE MANUAL

**CRAWLER EXCAVATOR
R180LC-3**

**H
Y
U
N
D
A
I**

CRAWLER TYPE EXCAVATOR [R180LC-3]

FOREWORD

SECTION 1

GENERAL

- Group 1 Safety Hints
- Group 2 Specifications

SECTION 2

STRUCTURE AND FUNCTION

- Group 1 Pump Device
- Group 2 Main Control Valve
- Group 3 Swing Device
- Group 4 Travel Device
- Group 5 RCV Lever
- Group 6 RCV Pedal

SECTION 3

HYDRAULIC SYSTEM

- Group 1 Hydraulic Circuit
- Group 2 Main Circuit
- Group 3 Pilot Circuit
- Group 4 Single Operation
- Group 5 Combined Operation

SECTION 4

ELECTRICAL SYSTEM

- Group 1 Component Location
- Group 2 Electrical Circuit
- Group 3 Monitoring System
- Group 4 Electrical Component Specification
- Group 5 Connectors

SECTION 5

MECHATROMICS SYSTEM

- Group 1 Outline
- Group 2 Mode selection System
- Group 3 Automatic Deceleration System
- Group 4 Engine Speed Up/Down Function
- Group 5 Power Boost System
- Group 6 Engine Speed Sensing Function

- Group 7 Battery Charge Warning Function
- Group 8 Travel Control System
- Group 9 Arm Half Flow System
- Group 10 Hydraulic Oil Temp Warning Function
- Group 11 Automatic Warming Up Function
- Group 12 Engine Overheat Prevention Function
- Group 13 Self Diagnostic Display System
- Group 14 Engine Control System
- Group 15 EPPR Valve
- Group 16 Prolix Switch
- Group 17 Hyper Dat(Optional)

SECTION 6

TROUBLESHOOTING

- Group 1 Before Troubleshooting
- Group 2 Hydraulic and Mechanical System
- Group 3 Electrical System(up to #0138)
- Group 4 Mechatronics System(up to #0138)
- Group 5 Electrical System By Hyper Dat
- Group 6 Mechatronics System Hyper Dat
- Group 7 Electrical System(#139 and up)
- Group 8 Mechatronics System(#139 and up)

SECTION 7

MAINTENANCE STANDARD

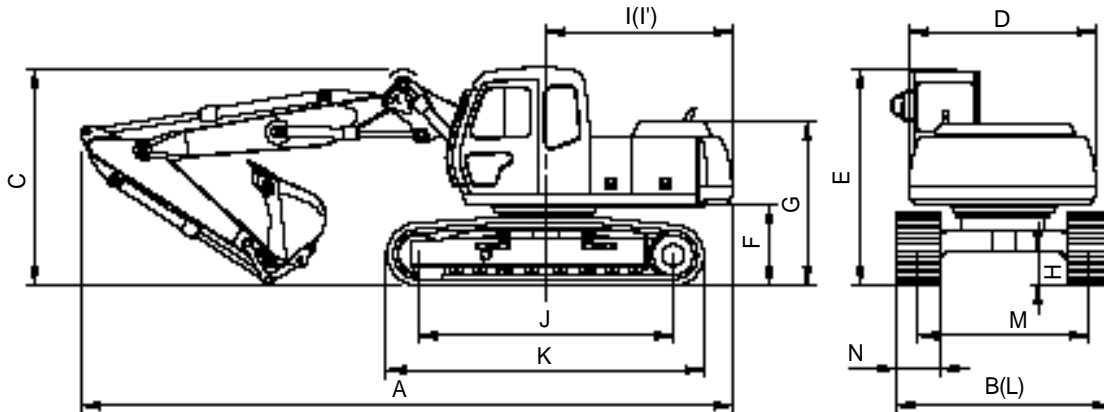
- Group 1 Operational Performance Test
- Group 2 Major Components
- Group 3 Track and Work Equipment

SECTION 8

DISASSEMBLY AND ASSEMBLY

- Group 1 Precaution
- Group 2 Tightening Torque
- Group 3 Pump Device
- Group 4 Main Control Valve
- Group 5 Swing Device
- Group 6 Travel Device
- Group 7 RCV Lever
- Group 8 Turning Joint
- Group 9 Boom, Arm and Bucket Cylinder
- Group 10 Undercarriage
- Group 11 Work Equipment

2) 5.0m(16'5") TWO PIECE BOOM(CYL TYPE) AND 2.2m(7'3") ARM

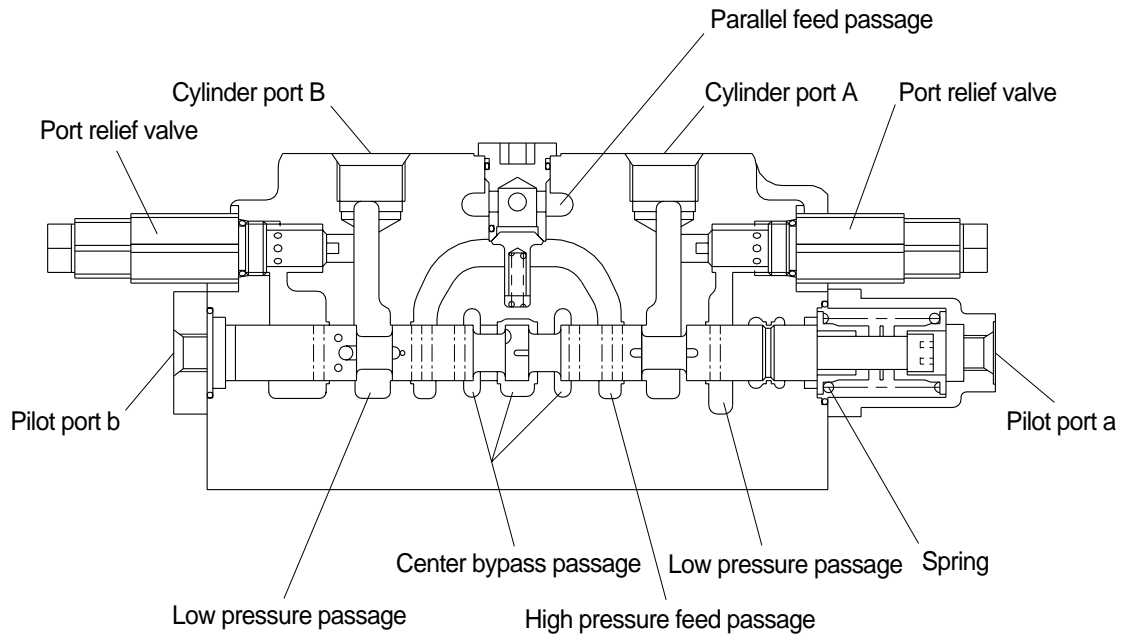


Description		Unit	Specification
Operating weight		kg(lb)	18270(40280)
Bucket capacity(PCSA heaped), standard		m ³ (yd ³)	0.70(0.92)
Overall length	A	mm(ft-in)	8500(27' 11")
Overall width, with 600mm shoe	B		2850(9' 4")
Overall height	C		2770(9' 1")
Superstructure width	D		2450(8' 0")
Cab height	E		2870(9' 5")
Ground clearance of counterweight	F		1050(3' 5")
Engine cover height	G		2110(6' 11")
Minimum ground clearance	H		450(1' 6")
Rear-end distance	I		2450(8' 0")
Rear-end swing radius	I'		2530(8' 4")
Distance between tumblers	J		3360(11' 0")
Undercarriage length	K		4150(13' 7")
Undercarriage width	L		2850(9' 4")
Track gauge	M		2250(7' 5")
Track shoe width, standard	N		600(24")
Travel speed(low/high)		km/hr(mph)	3.2/5.2(2.0/3.2)
Swing speed		rpm	11.5
Gradeability		Degree(%)	35(70)
Ground pressure(600mm shoe)		kg/cm ² (psi)	0.42(5.97)

3) OPERATIONAL DESCRIPTION OF CONTROL VALVE

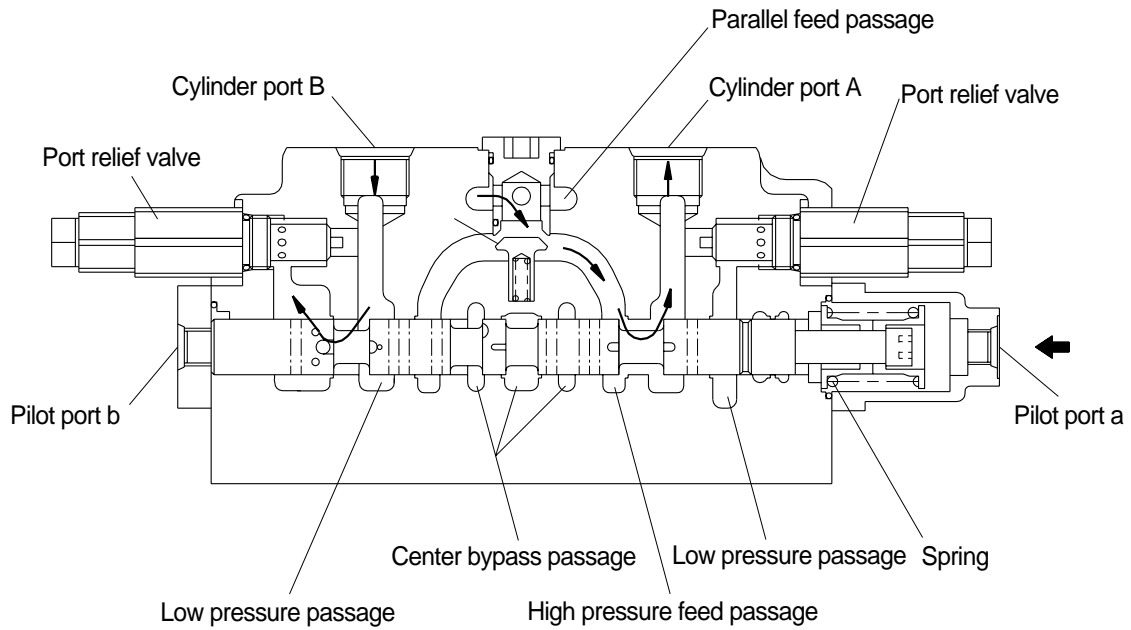
(1) Plunger operation

① Neutral position of plunger



In neutral, spring sets the plunger at the neutral position; the high pressure feed passage is shut off by the plunger; oil from the pump flows through the center bypass.

② Operation of plunger



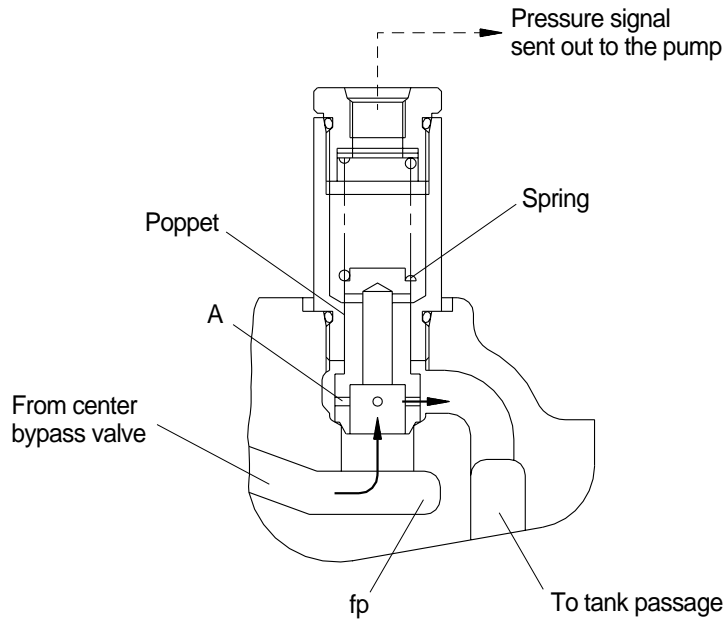
When actuated (pressure is applied to pilot port a), the plunger moves to the left, the center bypass is shut off; oil from the parallel feed passage opens the check valve C1 and flows into cylinder port A via the high pressure feed passage.

The return oil from cylinder port B flows into the tank via the low pressure feed passage.

※ Reversed when pressure is applied to pilot port b.

(2) Foot relief valve operation

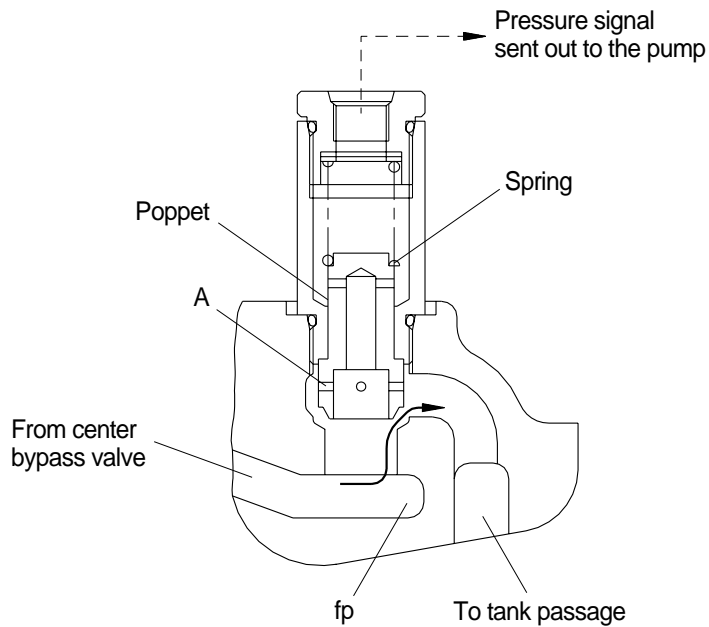
① f_p is lower than spring force



Oil from the center bypass valve flows into the tank via orifice(A) of poppet.

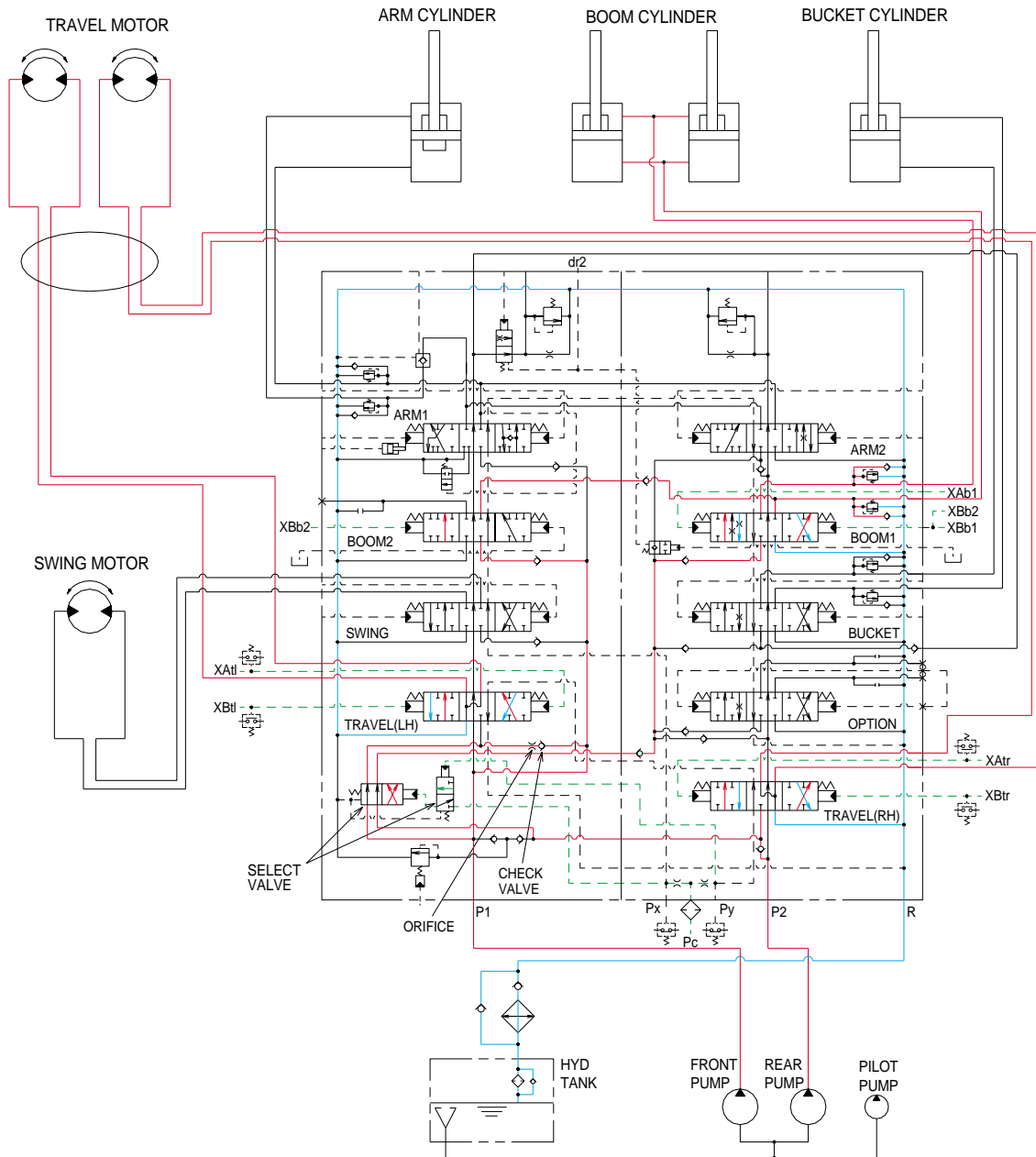
Pressure f_p generated by orifice(A) is led to the pump, to control the pump delivery flow.

② f_p is higher than spring force



If a large amount flows due to delayed pump response, etc., and pressure f_p reaches the preset spring force, then the poppet is lifted and functions as a relief valve.

7. COMBINED BOOM AND TRAVEL OPERATION

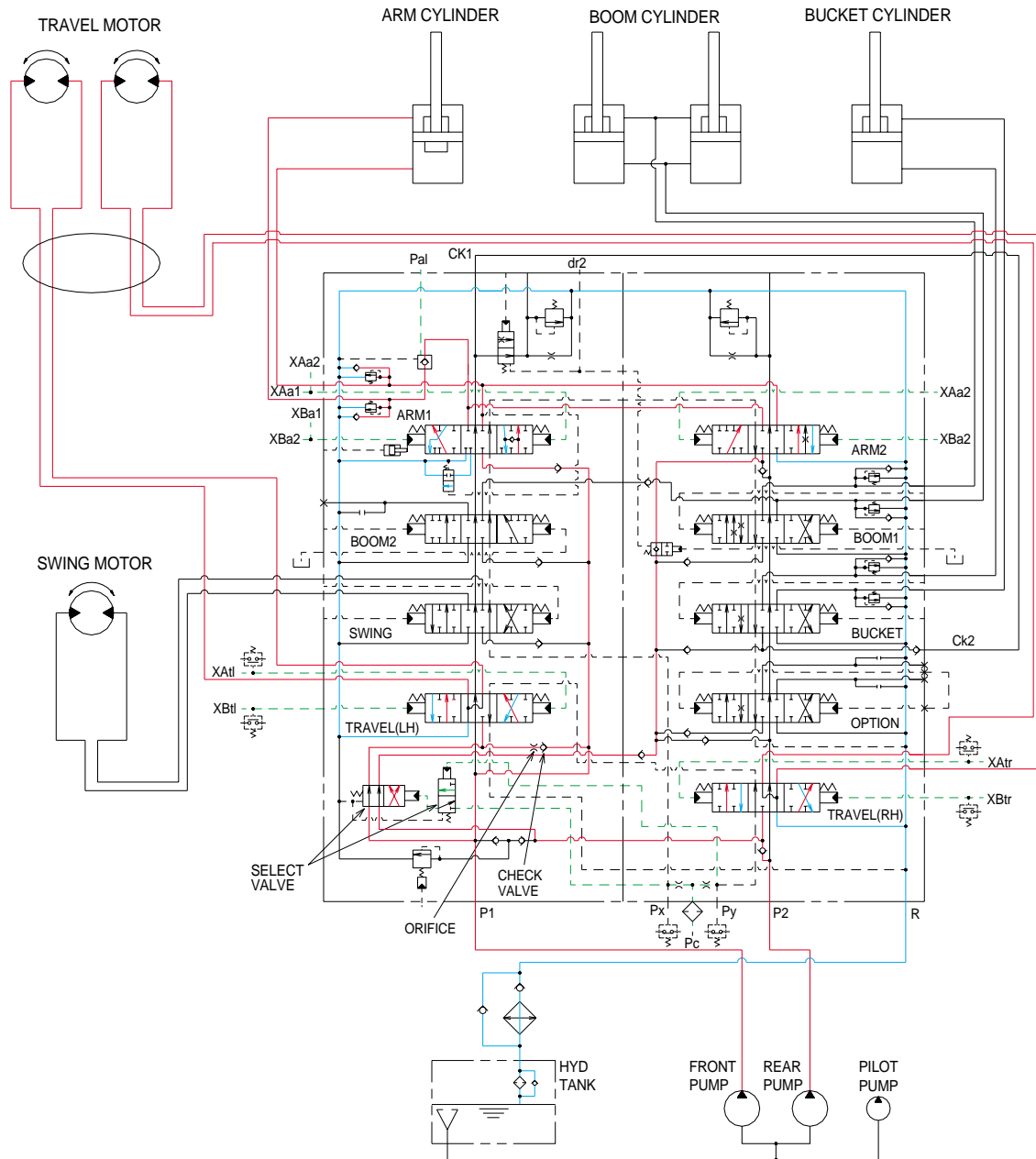


When the boom and travel (RH,LH) functions are operated, the boom and travel (RH,LH) spools and the select valve changed. The oil flows from rear pump through the travel (RH,LH) section of the main control valve to the right and left travel motor.

And the oil flows front pump through boom1 and 2 section of the main control valve to the boom cylinders.

Check valve the pressure in the travel circuit can be high while the boom pressure is low. When the travel circuit pressure drops lower than boom pressure, as when traveling downhill. boom priority and smoothness are maintained because of the orifice. In either case, the machine will continue to travel straight.

8. COMBINED ARM AND TRAVEL OPERATION

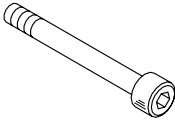
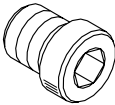
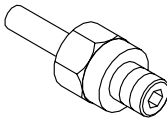
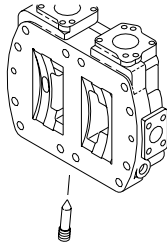


When the arm and travel (RH,LH) functions are operated, the arm and travel (RH,LH) spools and the select valve changed. The oil flows from rear pump through the travel(RH,LH) section of the main control valve to the right and left travel motor.

And the oil flows from front pump through arm1 and 2 sections of the main control valve to the arm cylinder.

Check valve the pressure in the travel circuit can be high while the arm pressure is low. When the travel circuit pressure drops lower than arm pressure, as when traveling downhill, arm priority and smoothness are maintained because of the orifice. In either case, the machine will continue to travel straight.

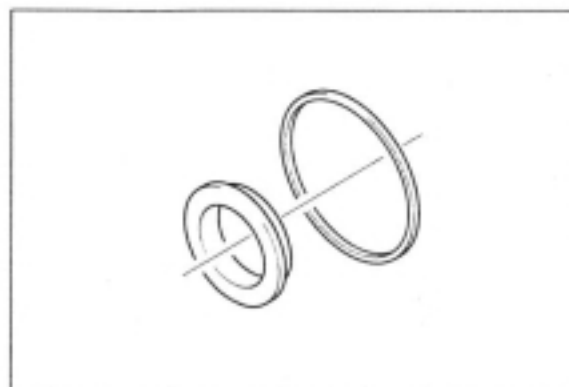
2) TIGHTENING TORQUE

Part name	Bolt size	Torque(8.8)		Torque(10.9)	
		kgf · m	lbf · ft	kgf · m	lbf · ft
	M 5	0.6	4.3	0.8	6
	M 6	1.0	7.1	1.4	10.1
	M 8	2.4	17.3	3.4	24.5
	M10	4.8	34.6	6.8	49.1
	M12	8.4	60.6	11.8	85.2
	M14	13.2	95.3	18.6	134
	M16	20.6	149	28.8	209
	M18	28.3	205	39.6	287
	M20	40.1	290	56.8	411
	Bolt size	kgf · m		lbf · ft	
	M12 × 1.5	2.0		14.5	
	M22 × 1.5	6.0		43.3	
	M26 × 1.5	7.0		50.6	
	M33 × 1.5	12.0		86.8	
	M12 × 1.5	3.0		21.7	
	M14 × 1.5	4.0		28.9	
	M10	2.5		18.1	

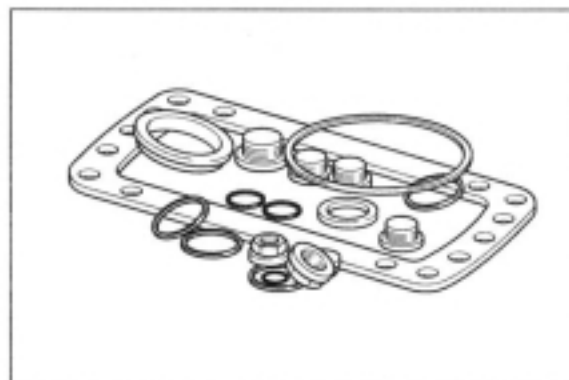
4. DISASSEMBLY AND ASSEMBLY

1) SEAL KITS AND SUB-ASSEMBLIES

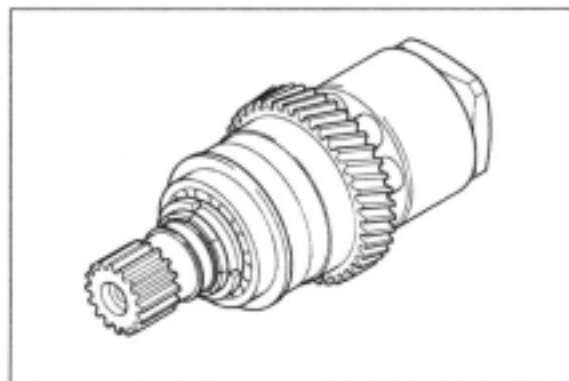
Seal kit for drive shaft.



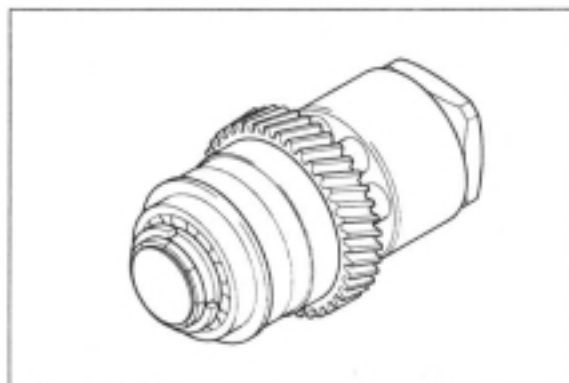
Outer seal kit



Rotary group 1, ready to install.



Rotary group 2, ready to install.

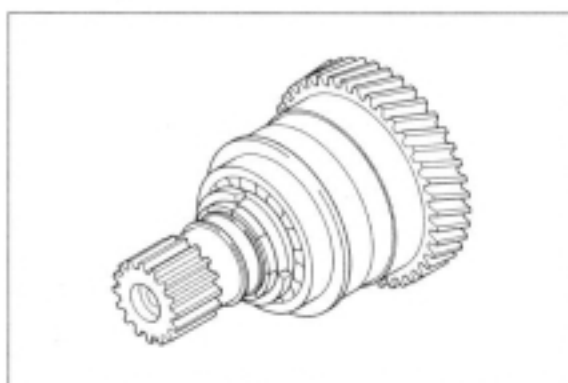


Rotary group, hydraulic section (order separately for rotary groups 1 and 2).

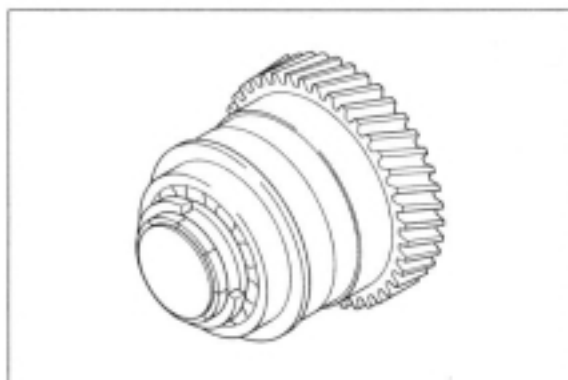


2) SUB-ASSEMBLIES

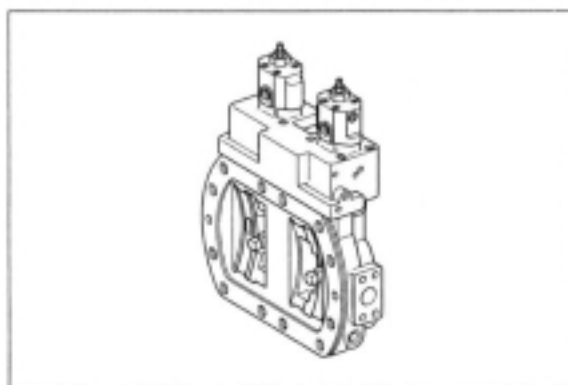
Rotary group 1, mechanical section, ready to install.



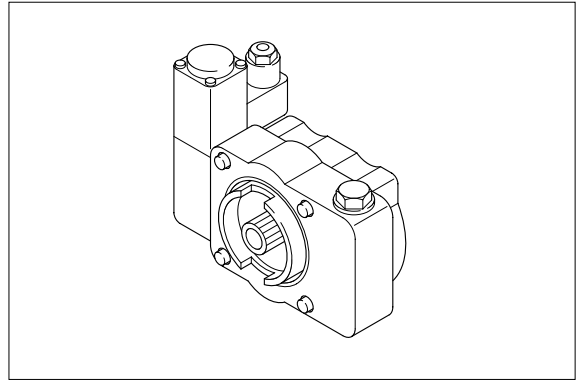
Rotary group 2, mechanical section, ready to install.



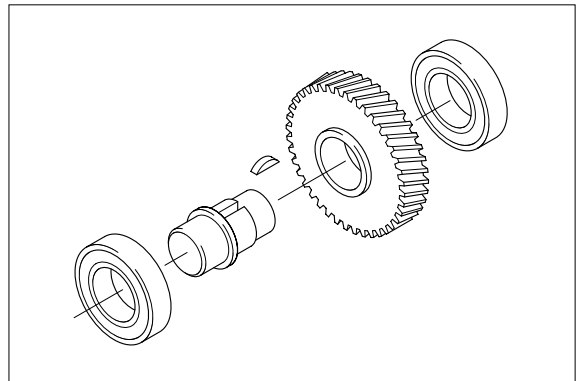
Control, pretested.



Auxiliary pump.

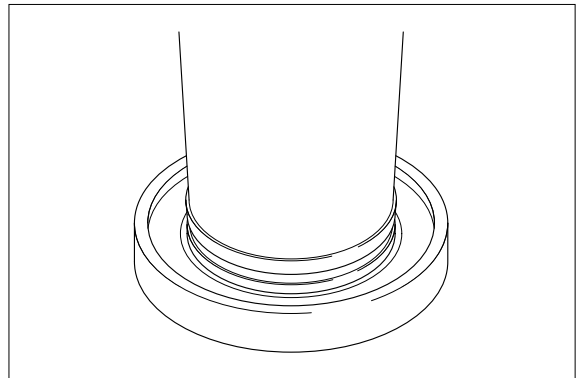


Auxiliary drive.

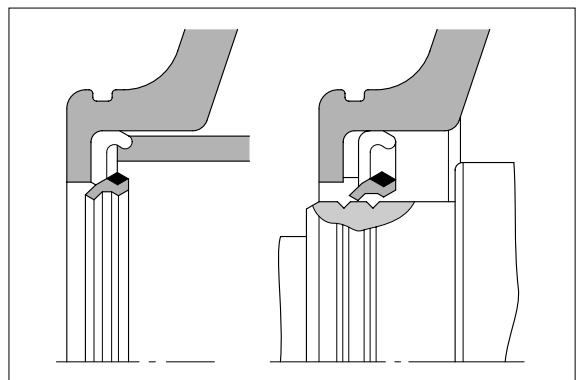


3) SEALING THE DRIVE SHAFT

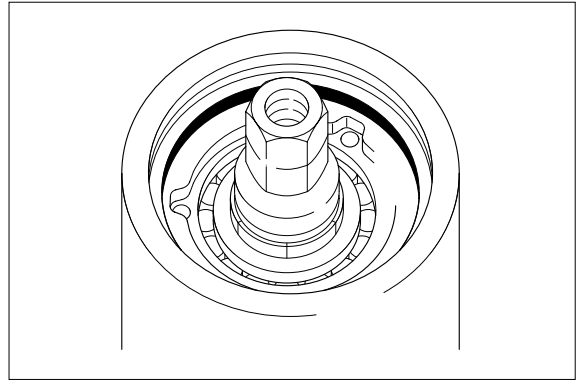
Press in shaft seal.



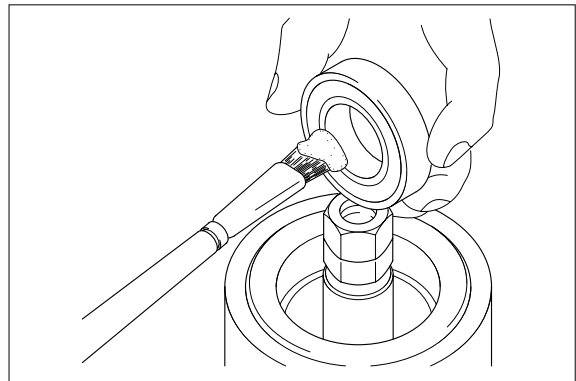
If the shaft is deeply grooved, insert shim behind seal.



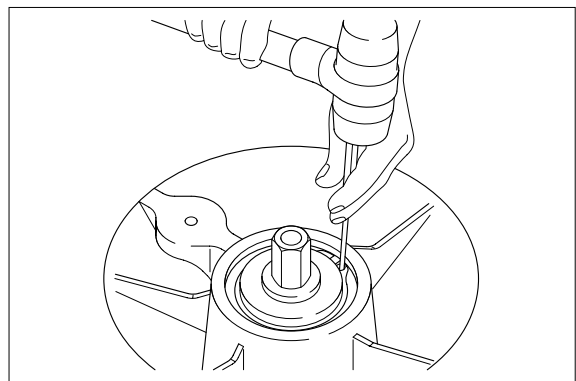
Fit new O-ring, make sure there is a snug fit.
Grease O-ring and lips of shaft seal.



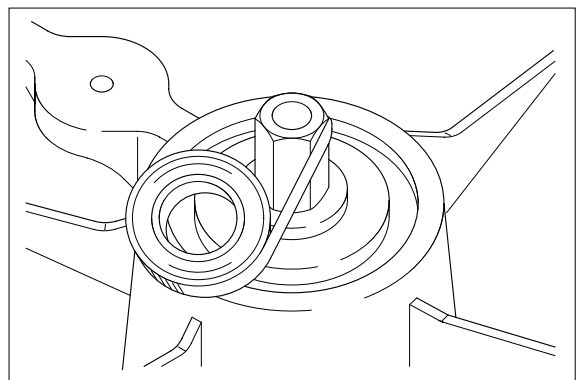
Fit front cover.



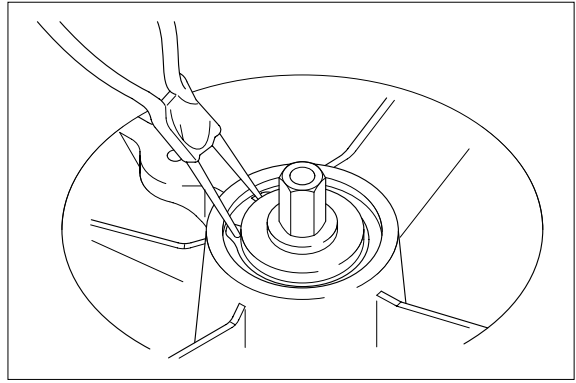
Fit circlip using a punch, then check that circlip is well seated!



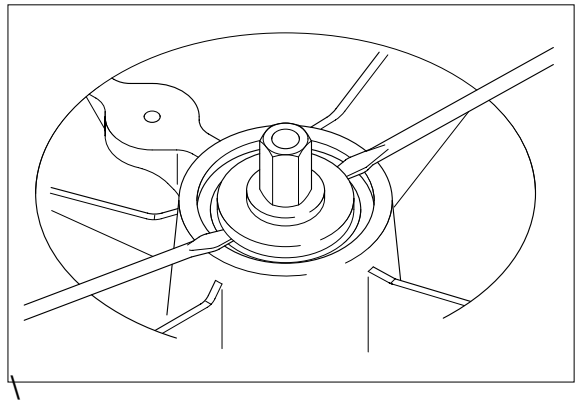
Remove protective cover.



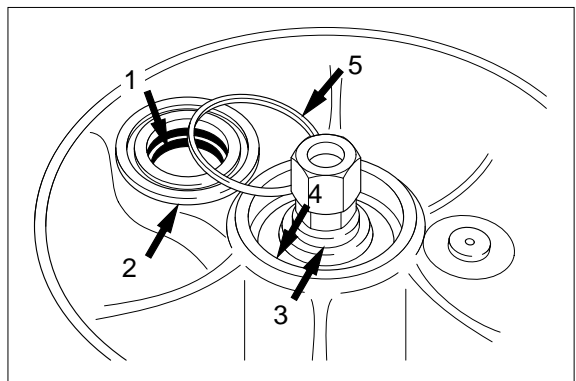
Free circlip and remove.



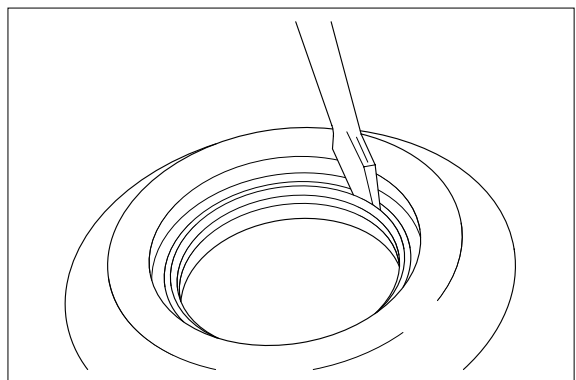
Prise off front cover.



Visual check : Shaft seal 1, cover 2, drive shaft 3, housing 4, O-ring 5.

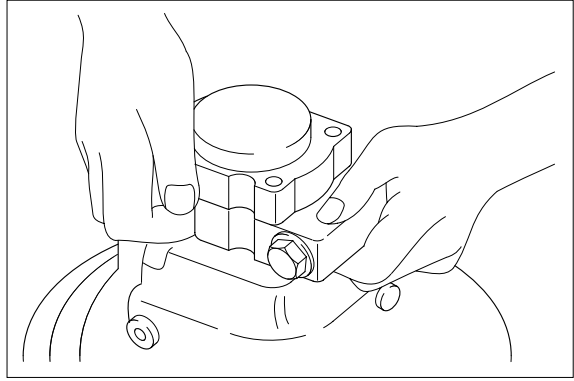


Remove old shaft seal.

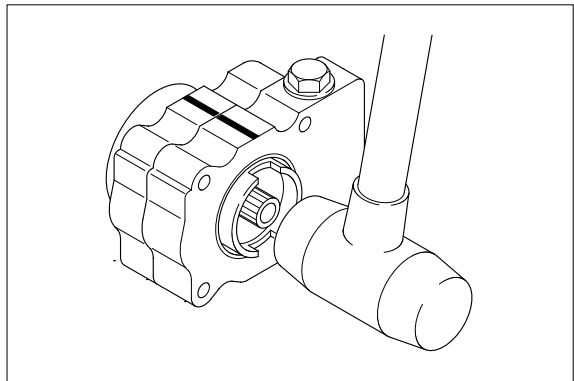


4) SEALING/REPLACING AUXILIARY PUMP

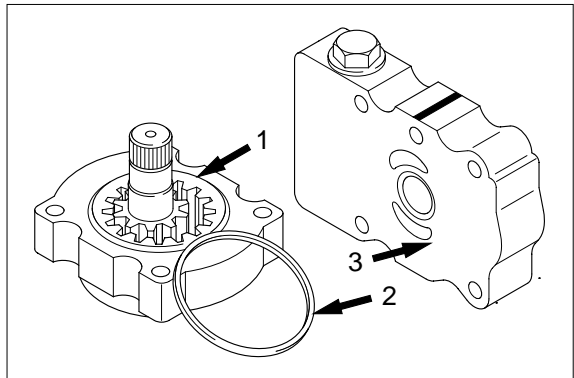
Free auxiliary pump and lift off.



Strip down auxiliary pump.

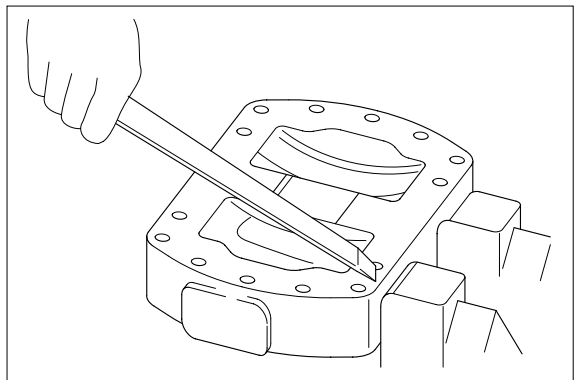


Visual check : groove(1), O-ring(2), sealing face(3).



5) SEALING CONTROL HOUSING

Remove gasket, clean sealing faces.



Diesel Engines

ABS	Agco-Sisu
Akasaka	Baudouin
BMW	Bukh
Caterpillar	CHN 25/34
Cummins	Daihatsu
Detroit	Deutz
Doosan-Daewoo	Fiat
Ford	GE
Grenaa	Guascor
Hanshin	Hatz
Hino	Honda
Hyundai	Isotta
Isuzu	Iveco
John-Deere	Kelvin
Kioti	Komatsu
Kubota	Liebherr
Lister	Lombardini
MAK	MAN B&W
Mercedes	Mercruiser
Mirrlees BS	Mitsubishi
MTU	MWM
Niigata	Paxman
Perkins	Pielstick
Rolls / Bergen	Ruggerini
Ruston	Scania
Shibaura	Sisu-Valmet
SKL	Smit-Bolnes
Sole	Stork
VM-Motori	Volvo
Volvo Penta	Westerbeke
Wichmann	Yanmar

Machinery

ABG	Airman
Akerman	Ammann
Astra	Atlas Copco
Atlas Weyha.	Atlet
Bell	Bendi
Bigjoe	Bobcat
Bomag	BT
Carelift	Case
Caterpillar	Cesab
Challenger	Champion
Claas	Clark
Combilift	Crown
Daewoo-Doosan	Demag
Deutz-Fahr	Dressta

Machinery

Drott	Dynapack
Extec	Faun
Fendt	Fiat
Fiatallis	Flexicoil
Furukawa	Gehl
Genie	Grove-gmk
Halla	Hamm
Hangcha	Hanix
Hanomag	Hartl
Haulpack	Hiab
Hidromek	Hino truck
Hitachi	Hyster
Hyundai	IHI
Ingersoll-rand	JCB
JLG	John-Deere
Jungheinrich	Kalmar
Kato	Kioti
Kleeman	Kobelco
Komatsu	Kramer
Kubota	Lamborghini
Landini	Liebherr
Linde	Link-belt
Manitou	Massey-Ferg.
Mccormick	MDI-Yutani
Mitsubishi	Moxy
Mustang	Neusson
New-Holland	Nichiyu
Nissan	OK
OM-Pimespo	others-tech
Pel-Job	PH-mining
Poclain	Powerscreen
Same	Samsung
Sandvik	Scania
Schaefer	Schramm
Sennebogen	Shangli
Shibaura	Steiger
Steinbock	Steyr
Still	Sumitomo
Super-pac	Tadano
Takeuchi	TCM
Terex	Toyota
Valpadana	Venieri
Versatile	Vogele
Volvo	Weidemann
Wirtgen	Yale
YAM	Yanmar