

# SHOP MANUAL

**KOMATSU**

# PC180LC-3 PC180LLC-3 PC180NLC-3

MACHINE MODEL	SERIAL No.
<b>PC180LC-3</b>	<b>1001 and up</b>
<b>PC180LC-3K</b>	<b>K10001 and up</b>
<b>PC180LLC-3</b>	<b>1001 and up</b>
<b>PC180LLC-3K</b>	<b>K10001 and up</b>
<b>PC180NLC-3K</b>	<b>K10001 and up</b>

- This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may require. Materials and specifications are subject to change without notice.
- PC180 mount the S6D95L engine;  
For details of the engine, see the 95 Series Engine Shop Manual.

# CONTENTS

<b>10 ENGINE</b>	No. of page
11 STRUCTURE AND FUNCTION .....	11-1
12 TESTING AND ADJUSTING .....	12-1
13 DISASSEMBLY AND ASSEMBLY .....	13-1
<b>20 POWER TRAIN</b>	
21 STRUCTURE AND FUNCTION .....	21-1
23 DISASSEMBLY AND ASSEMBLY .....	23-1
24 MAINTENANCE STANDARD .....	24-1
<b>30 UNDERCARRIAGE</b>	
31 STRUCTURE AND FUNCTION .....	31-1
33 DISASSEMBLY AND ASSEMBLY .....	33-1
34 MAINTENANCE STANDARD .....	34-1
<b>60 HYDRAULIC SYSTEM</b>	
61 STRUCTURE AND FUNCTION .....	61-1
62 TESTING AND ADJUSTING .....	62-1
63 DISASSEMBLY AND ASSEMBLY .....	63-1
64 MAINTENANCE STANDARD .....	64-1
<b>80 ELECTRICAL SYSTEM</b>	
81 STRUCTURE AND FUNCTION .....	81-1
82 TESTING AND ADJUSTING .....	82-1

The affected pages are indicated by the use of the following marks. It is requested that necessary actions be taken to these pages according to the table below.

Mark	Indication	Action required
○	Page to be newly added	Add
●	Page to be replaced	Replace
( )	Page to be deleted	Discard

Pages having no marks are those previously revised or made additions.

### LIST OF REVISED PAGES

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
●	00-1	④		12-10	①		21-1	①		23-1	②		23-41	②
	00-2						21-2			23-2	②		23-42	②
●	00-2-1	④		13-1	②		21-4	①		23-3	②		23-43	②
●	00-2-2	④		13-2	②		21-5	①		23-4	②		23-44	②
●	00-2-3	④		13-3	②		21-5-1	①		23-5	②		23-45	②
	00-3			13-4	②		21-5-2	①		23-6	②		23-46	②
	00-4			13-5	②		21-6	①		23-7	②		23-47	②
	00-5			13-6	②		21-7			23-8	②		23-48	②
	00-6			13-7	②		21-8			23-9	②		23-49	②
	00-7			13-8	②		21-9			23-10	②			
	00-8			13-9	②		21-10			23-11	②		24-1	
	00-9			13-10	②		21-11			23-12	②		24-2	
	00-10			13-11	②		21-12			23-14	②		24-3	
	00-11	③		13-12	②		21-13			23-15	②		24-4	
	00-12	③		13-13	②		21-14			23-16	②		24-5	
	00-13	③		13-14	②		21-15			23-17	②		24-6	
	11-1	①		13-15	②		21-16			23-18	②			
	11-2			13-16	②		21-17			23-19	②		31-1	
	11-3			13-17	②		21-18			23-20	②		31-2	
	11-4			13-18	②		21-19			23-21	②		31-3	
	11-5			13-19	②		21-20			23-22	②		31-4	③
	11-6			13-20	②		21-22			23-23	②		31-5	③
	11-7	①		13-21	②		21-23			23-24	②		31-6	③
	11-8	①		13-22	②		21-24	①		23-25	②		31-7	③
	11-9	①		13-23	②		21-25	①		23-26	②		31-8	③
	11-10	①		13-24	②		21-26			23-27	②			
	11-11	①		13-25	②		21-27	①		23-28	②		33-1	②
	11-12	①		13-26	②		21-27-1	①		23-29	②		33-2	②
	11-13	①		13-27	②		21-27-2	①		23-30	②		33-3	②
	11-14	①		13-28	②		21-28	①		23-31	②		33-4	②
	12-1	①		13-29	②		21-29	①		23-32	②		33-5	②
	12-2	①		13-30	②		21-30			23-33	②		33-6	②
	12-3	①		13-31	②		21-31			23-34	②		33-7	②
	12-4	①		13-32	②		21-32			23-35	②			
	12-5	①		13-33	②		21-32-1	①		23-36	②		34-1	③
	12-6	①		13-34	②		21-32-2	①		23-37	②		34-2	
	12-7	①		13-35	②		21-33	①		23-38	②		34-3	
	12-8	①		13-36	②		21-34	①		23-39	②		34-4	③
	12-9	①								23-40	②		34-5	

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	34-6	③		61-43			62-36	①		63-12	②		63-68	②
	34-7	③		61-44			62-37	①		63-13	②		63-69	②
	34-8	③		61-45			62-38	①		63-14	②		63-70	②
	34-9	③		61-46			62-39	①		63-15	②		63-71	②
	34-10	③		61-47			62-40	①		63-16	②		63-72	②
	34-11	③		61-48			62-41	①		63-17	②		63-73	②
	34-12	③		61-49			62-42	①		63-18	②		63-74	②
	34-13	③		61-50			62-43	①		63-19	②		63-75	②
	34-14	③		61-51			62-44	①		63-20	②		63-76	②
	34-15	③		61-52			62-45	①		63-21	②			
				61-53			62-46	①		63-22	②		64-1	
	61-1	①		61-54			62-47	①		63-23	②		64-2	
	61-2	①		61-55			62-48	①		63-24	②		64-3	
	61-3	①		61-56			62-49	①		63-25	②		64-5	
	61-4	①		61-57			62-50	①		63-26	②		64-6	
	61-5	①		61-58			62-51	①		63-27	②		64-7	
●	61-5-1	④		61-59			62-52	①		63-28	②		64-8	
●	61-5-2	④					62-53	①		63-30	②		64-9	
	61-6			62-1	①		62-54	①		63-31	②		64-10	
	61-7			62-2	①		62-55	①		63-32	②		64-11	
	61-8			62-3	①		62-56	①		63-33	②		64-12	
	61-9			62-4	①		62-57	①		63-34	②			
	61-10			62-5	①		62-58	①		63-35	②		81-1	
	61-11			62-6	①		62-60	①		63-36	②		81-2	①
	61-12			62-7	①		62-61	①		63-37	②		81-3	①
	61-14			62-8	①		62-62	①		63-38	②		81-4	③
	61-15			62-9	①		62-63	①		63-39	②		81-4-1	③
	61-16			62-10	①		62-64	①		63-40	②		81-5	
	61-17			62-11	①		62-65	①		63-41	②		81-6	
	61-18			62-12	①		62-66	①		63-42	②		81-7	
	61-19			62-13	①		62-67	①		63-43	②		81-8	
	61-20			62-14	①		62-68	①		63-44	②		81-9	
	61-21			62-15	①		62-69	①		63-45	②		81-10	
	61-22			62-16	①		62-70	①		63-46	②		81-11	
	61-23			62-17	①		62-71	①		63-48	②			
	61-24	①		62-18	①		62-72	①		63-49	②		82-1	①
	61-25			62-19	①		62-73	①		63-50	②		82-2	①
	61-26			62-20	①		62-74	①		63-51	②		82-3	①
	61-27			62-21	①		62-75	①		63-52	②		82-4	①
	61-29			62-22	①		62-76	①		63-54	②		82-5	①
	61-30			62-23	①		62-77	①		63-55	②		82-6	③
	61-31			62-24	①					63-56	②		82-6-1	③
	61-32			62-25	①		63-1	②		63-57	②		82-7	①
	61-33			62-26	①		63-2	②		63-58	②		82-8	③
	61-34			62-27	①		63-3	②		63-59	②		82-9	③
	61-35			62-28	①		63-4	②		63-60	②		82-10	③
	61-36			62-29	①		63-5	②		63-61	②		82-11	③
	61-37			62-30	①		63-6	②		63-62	②		82-12	③
	61-38			62-31	①		63-7	②		63-63	②		82-13	③
	61-39			62-32	①		63-8	②		63-64	②		82-14	③
	61-40			62-33	①		63-9	②		63-65	②		82-15	③
	61-41			62-34	①		63-10	②		63-66	②		82-16	③
	61-42			62-35	①		63-11	②		63-67	②		82-17	③

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	82-18	③												
	82-19	③												
	82-20	③												
	82-21	③												
	82-22	③												
	82-23	③												
	82-24	③												
	82-25	③												
	82-26	③												
	82-27	③												
	82-28	③												
	82-29	③												
	82-30	③												
	82-31	③												
	82-32	③												
	82-33	③												
	82-34	③												
	82-35	③												
	82-36	③												
	82-37	③												
	82-38	③												
	82-39	③												
	82-40	③												
	82-41	③												
	82-42	③												



# WEIGHT TABLE



This weight table is a guide for use when transporting or handling components.

Unit: kg

Machine model	PC180LC-3	PC180LC-3K	PC180LLC-3	PC180LLC-3K	PC180NLC-3K
Serial numbers	1001 and up	K10001 and up	1001 and up	K10001 and up	K10001 and up
Engine assembly (Including PTO and main pump)	420	420	420	420	420
PTO	27	27	27	27	27
Main pump assembly	123	123	123	123	123
Radiator and oil cooler assembly	81	81	81	81	81
Hydraulic tank and fuel tank assembly (Excluding oil and fuel)	185	185	185	185	185
Track shoe assembly					
• Triple grouser shoe (610 mm)	1,425 x 2	1,425 x 2			
• Triple grouser shoe (710 mm)	1,565 x 2	1,565 x 2			
• Triple grouser shoe (810 mm)	1,705 x 2	1,705 x 2			
• Triple grouser shoe (910 mm)	1,845 x 2	1,845 x 2			
Revolving frame (Excluding counterweight)	1,200	1,200	1,200	1,200	1,200
Counterweight	2,900	2,900	2,900	2,900	2,900
Operator's cab	230	230	230	230	230
Swing circle assembly	212	212	212	212	212
Swing machinery assembly	102	102	102	102	102
Swing motor assembly	58	58	58	58	58
L.H. 6-spool control valve	37	37	37	37	37
R.H. 5-spool control valve	32	32	32	32	32
Center swivel joint	31	31	31	31	31
Track frame assembly	3,150	3,150			
• Track frame	2,040	2,040			
• Carrier roller	24 x 2	20 x 2			
• Track roller	37 x 14	33 x 14			
• Recoil spring assembly	103 x 2	103 x 2	103 x 2	103 x 2	103 x 2

Unit: kg

Machine model	PC180LC-3	PC180LC-3K	PC180LLC-3	PC180LLC-3K	PC180NLC-3K
Serial numbers	1001 and up	K10001 and up	1001 and up	K10001 and up	K10001 and up
• Idler assembly	116 x 2	98 x 2	116 x 2	98 x 2	98 x 2
• Sprocket	36 x 2	36 x 2	36 x 2	36 x 2	36 x 2
• Travel motor assembly	70 x 2	70 x 2	70 x 2	70 x 2	70 x 2
• Final drive assembly	550 x 2	550 x 2	550 x 2	550 x 2	550 x 2
Boom cylinder assembly	137 x 2	137 x 2	137 x 2	137 x 2	137 x 2
Arm cylinder assembly	165	165	165	165	165
Bucket cylinder assembly	106	106	106	106	106
Boom assembly	1,190	1,190	1,190	1,190	1,190
Arm assembly	470	470	470	470	450
Bucket assembly	540	540	540	540	540



# LIST OF LUBRICANT AND WATER

RESERVOIR	KIND OF FLUID	AMBIENT TEMPERATURE					CAPACITY (ℓ)	
		14 -10	32 0	50 10	68 20	86°F 30°C	Specified	Refill
Engine oil pan	Engine oil	SAE 30					12.5	10.5
		SAE 10W						
		SAE 10W-30						
		SAE 15W-40						
Swing machinery case Final drive case (each) PTO gear case	Engine oil						7.0	7.0
							4.0	4.0
							0.8	—
Carrier roller (1 piece) Track roller (1 piece) Idler (1 piece)	Engine oil	SAE 30					0.1	—
							0.16	—
							0.16	—
Hydraulic tank	Engine oil	SAE 10W					195	134
		SAE 10W-30						
		SAE 15W-40						
Fuel tank	Diesel fuel	ASTM D975 No.2					230	—
		※						
Cooling system	Water	Add antifreeze					18.5	—

※ ASTM D975 No.1

ASTM: American Society of Testing and Material

SAE: Society of Automotive Engineers

Specified capacity: Total amount of oil including oil for components and oil in piping.

Refill capacity: Amount of oil needed to refill system during normal inspection and maintenance.

## NOTE:

(1) When fuel sulphur content is less than 0.5%, change oil in the oil pan every periodic maintenance hours described in this manual.

Change oil according to the following table if fuel sulphur content is above 0.5%.

Fuel sulphur content	Change interval of oil in engine oil pan
0.5 to 1.0%	1/2 of regular interval
Above 1.0%	1/4 of regular interval

(2) When starting the engine in an atmospheric temperature of lower than 0°C, be sure to use engine oil of SAE10W, SAE10W-30 and SAE15W-40, even through an atmospheric temperature goes up to 10°C more or less in the day time.

(3) Use API classification CD as engine oil and if API classification CC, reduce the engine oil change interval to half.



---

# ENGINE

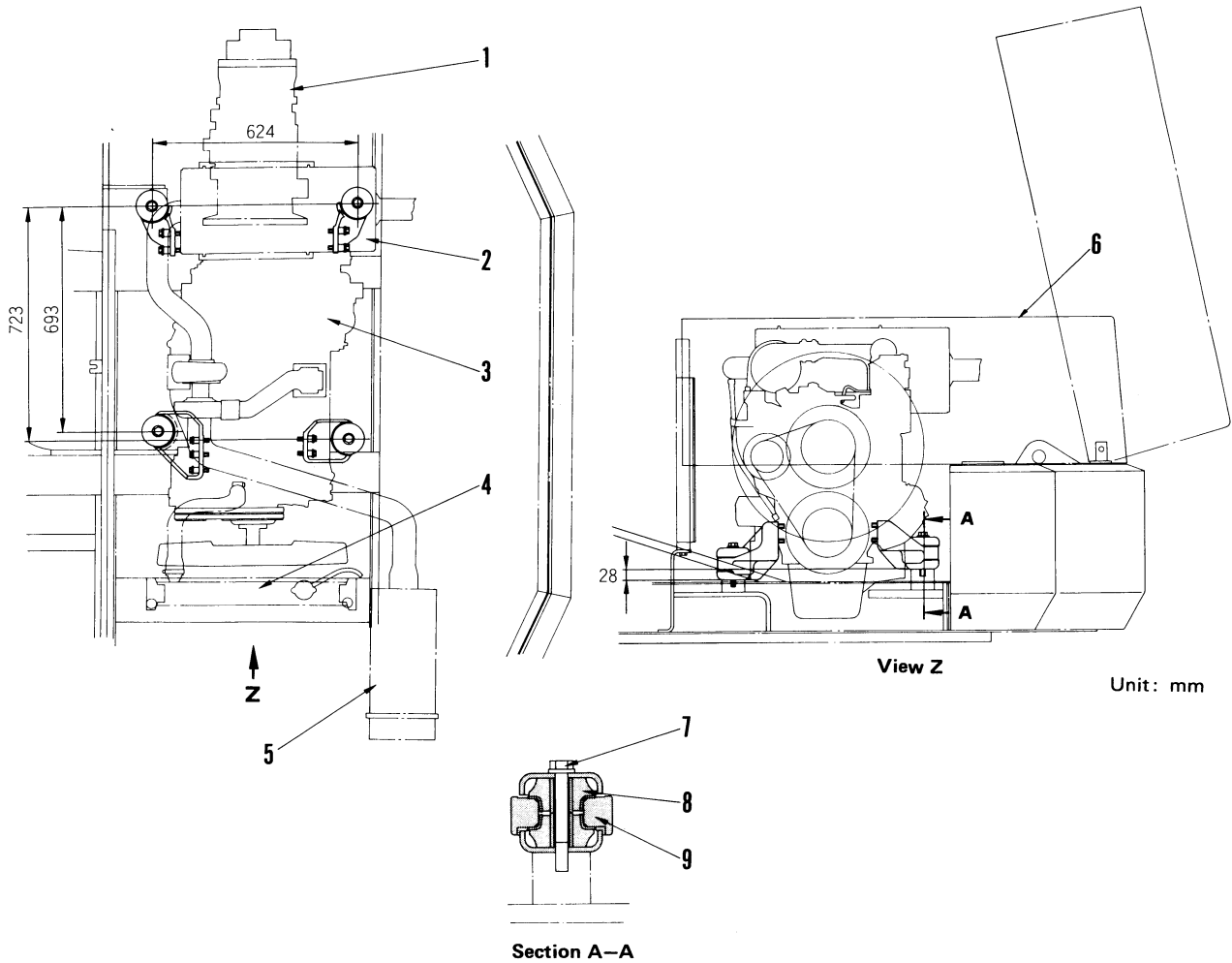
## 11 STRUCTURE AND FUNCTION

---



Engine mount .....	11-2
Radiator .....	11-3
PTO .....	11-4
Fuel tank and piping .....	11-5
Engine control .....	11-6
Auto-deceleration system .....	11-7

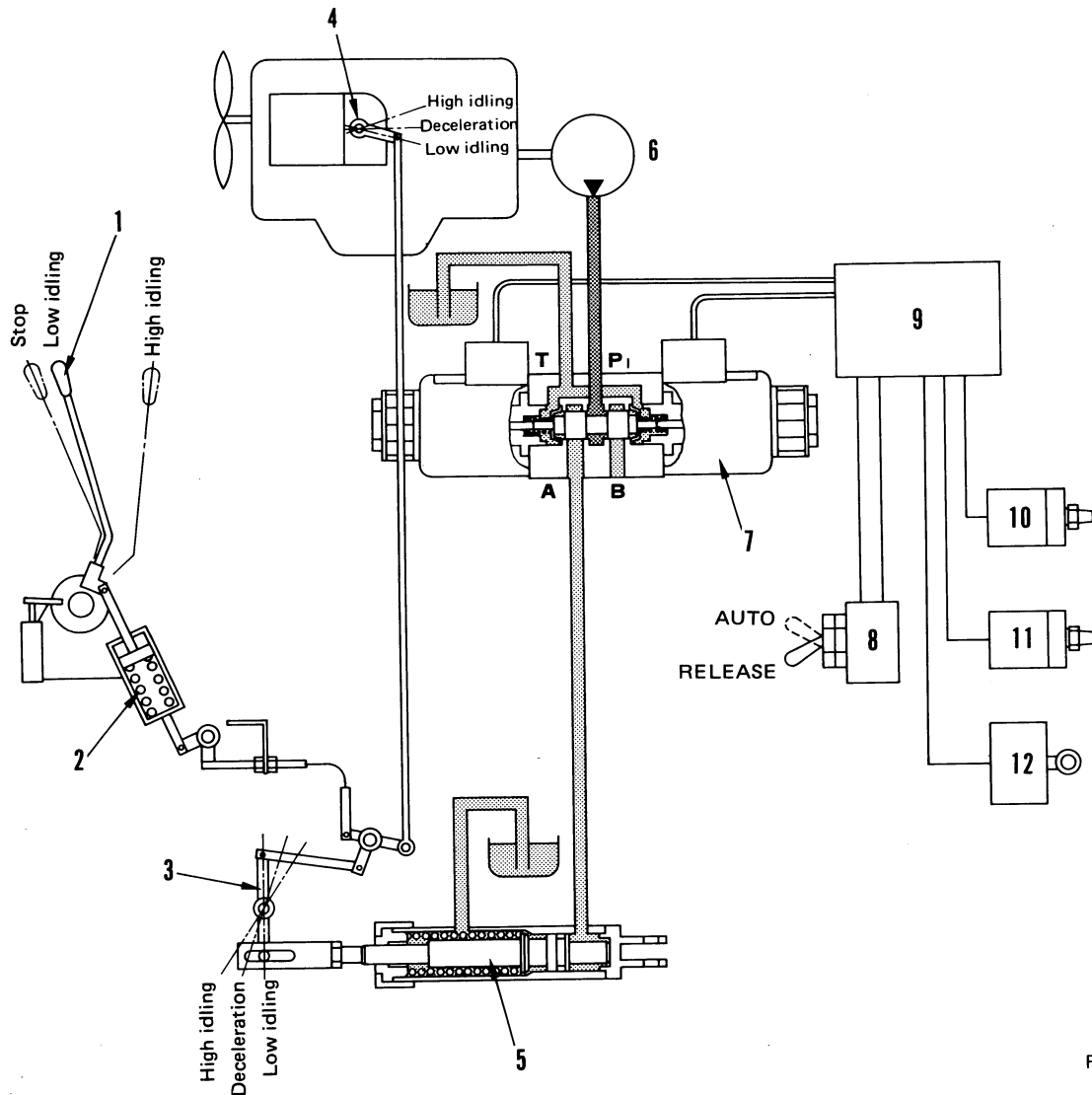
# ENGINE MOUNT



- The engine is mounted crosswise at the rear of the upper structure. The front and rear mounts are supported by rubber pads which absorb shock.

- |                   |                   |
|-------------------|-------------------|
| 1. Hydraulic pump | 6. Machine hood   |
| 2. Muffler        | 7. Mounting bolt  |
| 3. Engine         | 8. Rubber pads    |
| 4. Radiator       | 9. Engine support |
| 5. Air cleaner    |                   |

# AUTO-DECELERATION SYSTEM



F0202013

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| 1. Fuel control lever            | 7. Solenoid valve                    |
| 2. Loose spring                  | 8. Auto-deceleration switch          |
| 3. Intermediate shaft            | 9. Controller                        |
| 4. Engine governor control lever | 10. Pressure switch (work equipment) |
| 5. Deceleration cylinder         | 11. Pressure switch (swing)          |
| 6. Charging pump                 | 12. Limit switch (travel)            |

(1) OPERATION

1. Engine running, control levers at NEUTRAL

If the fuel control lever (1) is placed in the High idling position, the loose spring (2) and intermediate shaft (3) will move, and the engine governor control (4) will also try to move to the High idling position. However, the force of the spring inside the deceleration cylinder (5) is greater than the force of the loose spring, so the engine governor control (4) only moves to the half-throttle (deceleration) position (Fig. 1).

Engine speed at this point: approx. 1400 rpm (deceleration speed)

2. Engine running, control levers in OPERATION

If the control lever is operated with the fuel control lever (1) in High idling, the pressure switch (10), (11) and limit switch (12) which interlocks with the lever sends an electric signal to the solenoid valve (7) to operate it, then the oil from the charging pump (6) flows into the bottom side of the deceleration cylinder to push the piston.

By this operation, the spring in the deceleration cylinder (5) is compressed and the force which has been applied against the loose spring (2) is eliminated. Therefore the engine control governor (4) is moved by the force of the loose spring (2) through the cable and intermediate shaft (3) to the High idling position (Fig. 2).

3. Engine running, control levers reset from OPERATION to NEUTRAL

If all the control levers are returned to NEUTRAL while the engine is running, each pressure switch (10), (11) and limit switch (12) will turn off to return the corresponding solenoid valve. As a result, the oil from the charging pump does not flow into the boom side of the deceleration cylinder (5) and the pressure is eliminated, then the spring in the cylinder returns the piston, which in turn returns the engine governor control (4) to the decelerating position through the intermediate shaft (3) (Fig. 1). At this time, the fuel control lever (1) is kept at the set position regardless of the operation of the engine governor control (4). The engine governor control (4) is returned to the decelerating position about four seconds after the control levers are returned to NEUTRAL.

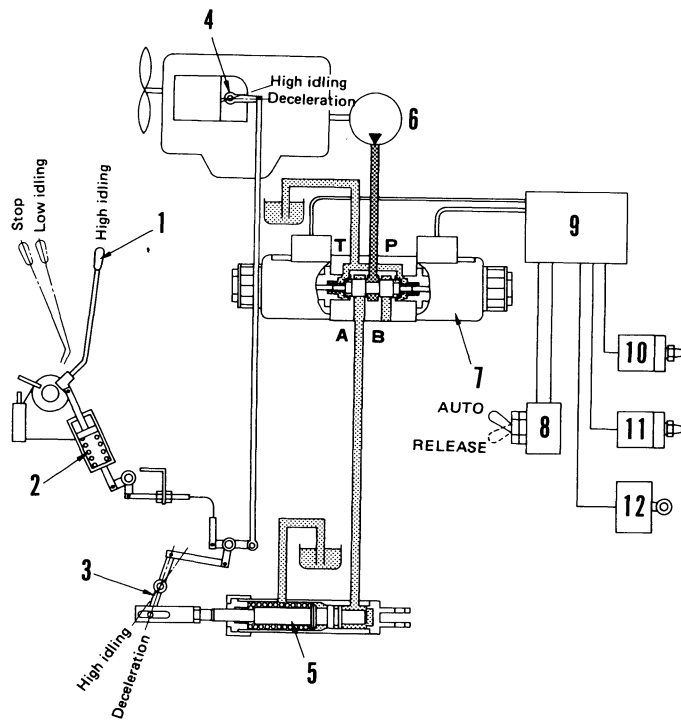


Fig. 1

F0202014

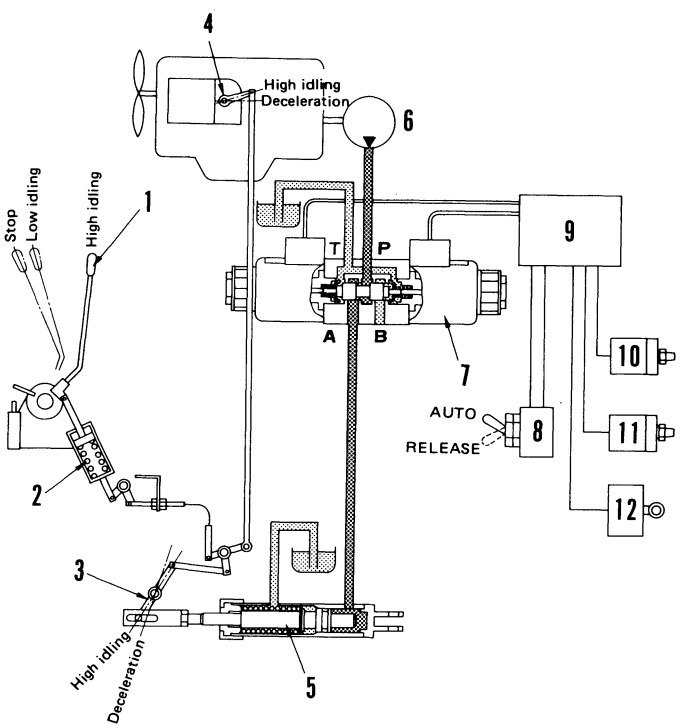
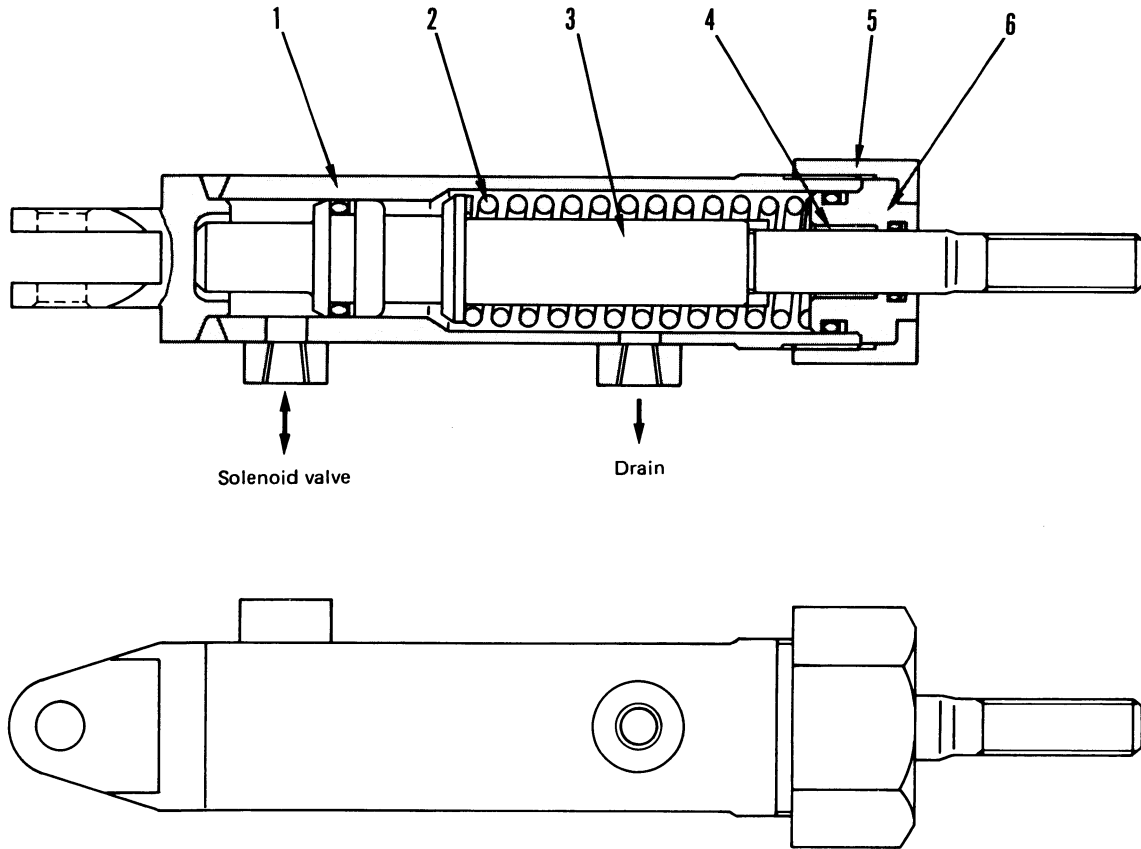


Fig. 2

F0202015

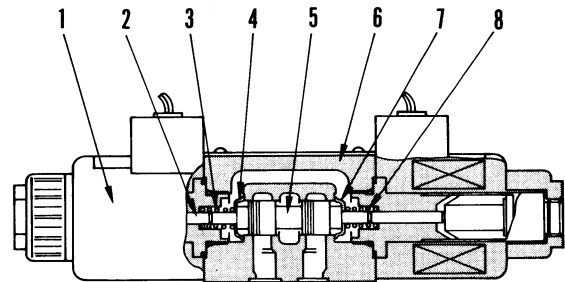
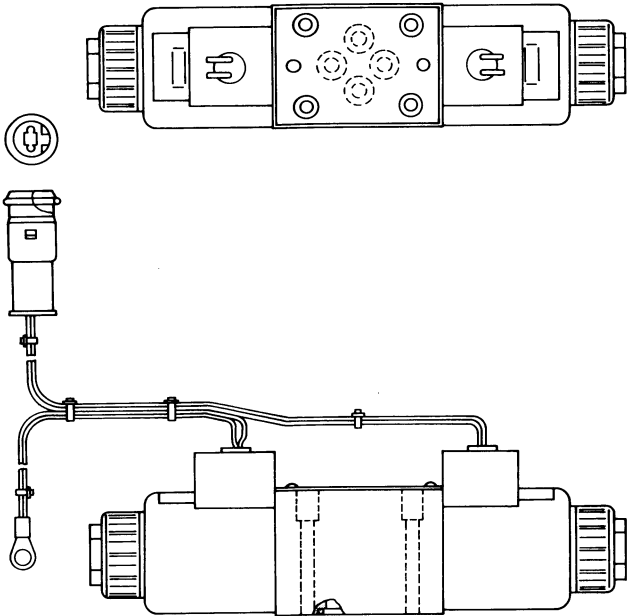
## 1. DECELERATION CYLINDER



F0202016A

- |                  |            |
|------------------|------------|
| 1. Cylinder      | 4. Bushing |
| 2. Return spring | 5. Nut     |
| 3. Piston        | 6. Stopper |

## 2. SOLENOIDE VALVE



F0202401

### (1) OUTLINE

- The solenoid valve installed to the bottom of the R.H. control valve is operated by an electric signal sent from the limit switch (which is interlocked with the travel control lever) or the pressure switch to stop and release the oil flow from the charging pump.

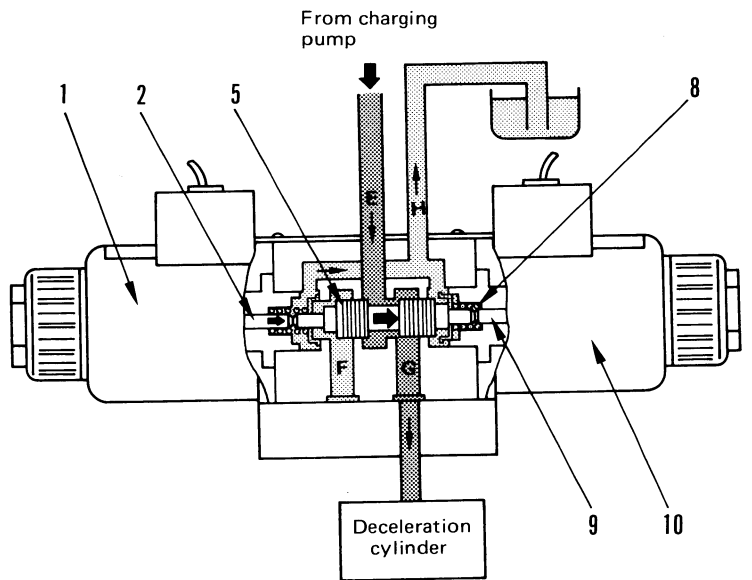
1. Solenoid assembly
2. Push-pin
3. Spring
4. Spring retainer
5. Spool
6. Valve body
7. Spring retainer
8. Spring



(2) OPERATION

1. Work equipment, travel, and swing control levers in OPERATION

If the control levers are set to OPERATION the pressure switch or the limit switch which interlocks with them will be operated to excite solenoid (1), then push-pin (2) will push spool (5) in the direction of the arrow (→) to close ports E and F and open ports F and H, E and G. As a result, the oil from the charging pump flows from port E to G to operate the deceleration cylinder.

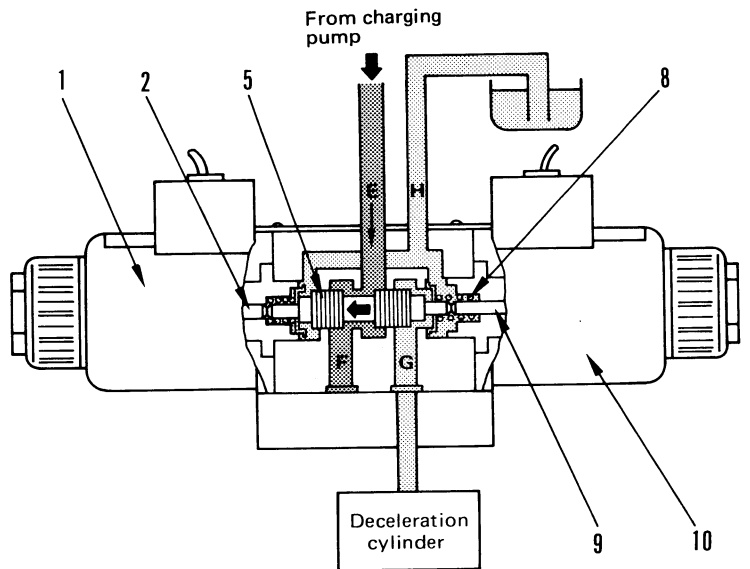


F0202402

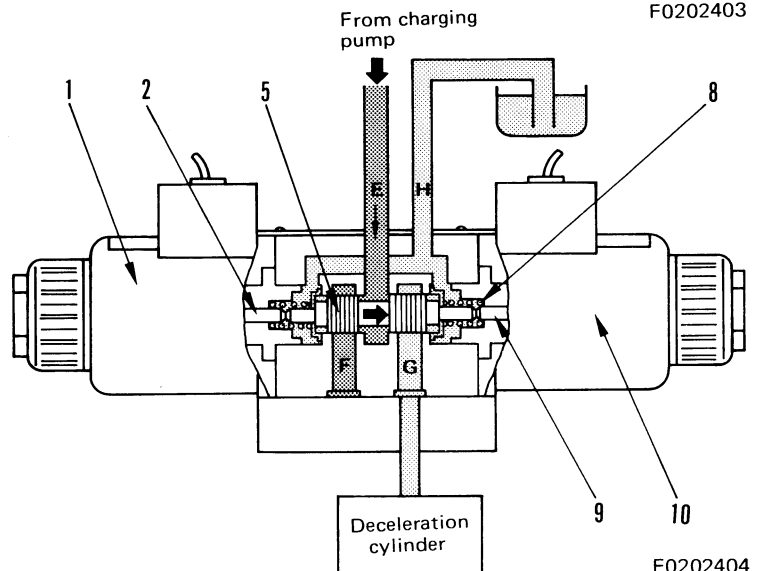
2. Work equipment, travel, and swing control levers at NEUTRAL

If the control lever is set to the neutral position, the pressure switch or the limit switch will turn off to turn off solenoid valve (1) and energize solenoid valve (10). As a result, spool (5) is pushed by push pin (9) in the direction of the arrow (←) and ports H and G are opened to drain some of the oil in the deceleration cylinder. (At this time, the engine speed is lowered to the first deceleration speed.)

At the same time, ports E and F are opened, and the oil from the charging pump flows into port F through port E and stops at the block. After 0.2 seconds, the controller operates solenoid valves (1) and (10) to push back spool (5) in the direction of the arrow (→), and each port is closed. The deceleration cylinder is stopped at a midway position. After four seconds, the controller operates solenoid valves (1) and (10) again to push spool (5) in the direction of the arrow (←) to open ports H and G. As a result, the oil in the deceleration cylinder is drained and the engine speed goes down to the second deceleration speed.

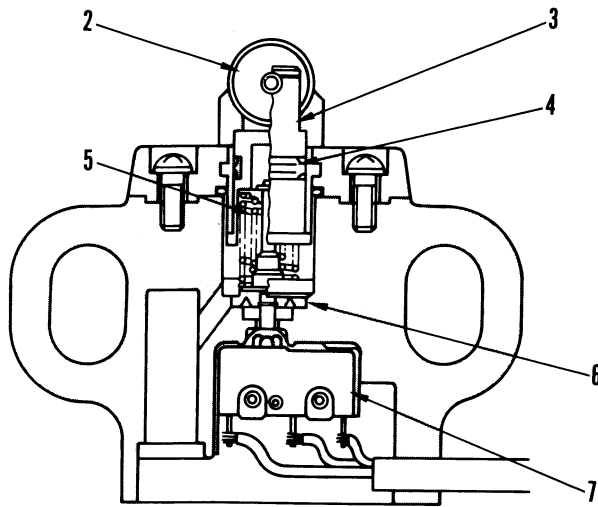
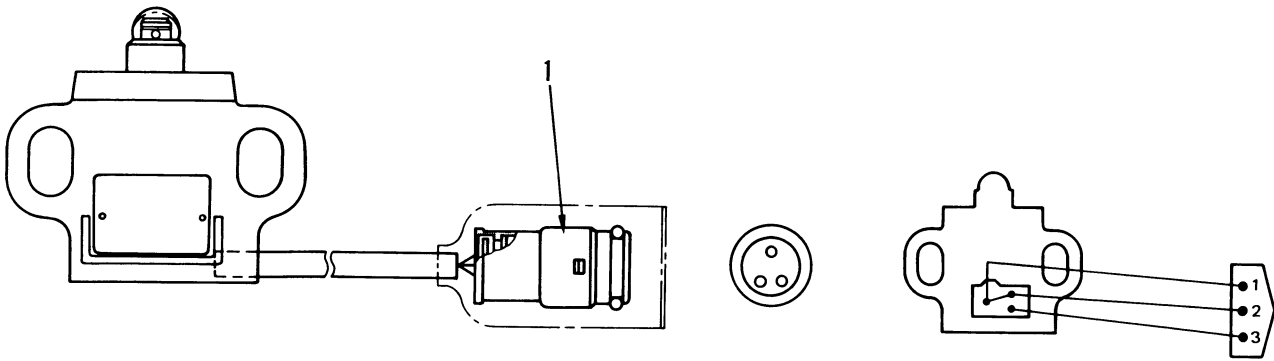


F0202403



F0202404

### 3. LIMIT SWITCH

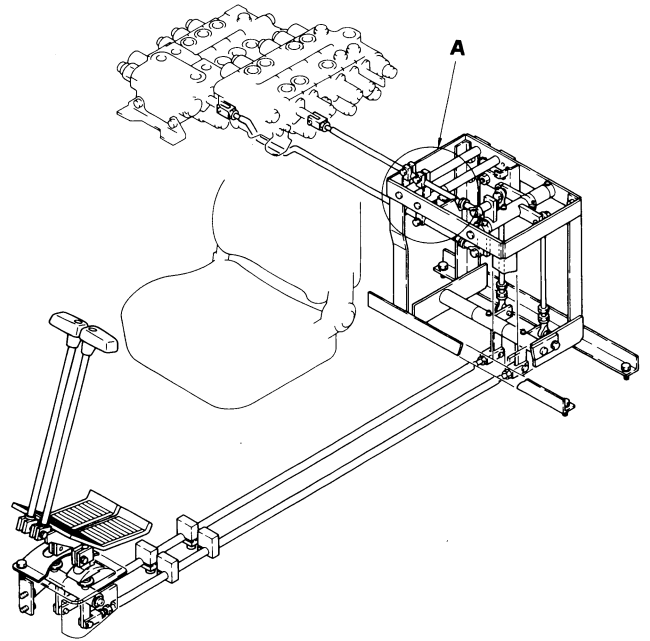


F0202023

- |              |                 |
|--------------|-----------------|
| 1. Connector | 5. Spring       |
| 2. Roller    | 6. Seal         |
| 3. Shaft     | 7. Limit switch |
| 4. Dust seal |                 |

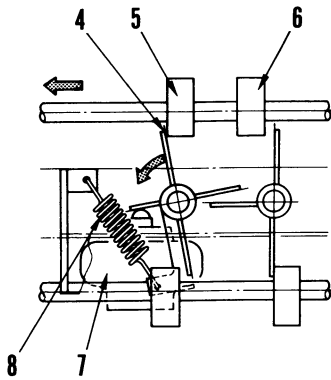
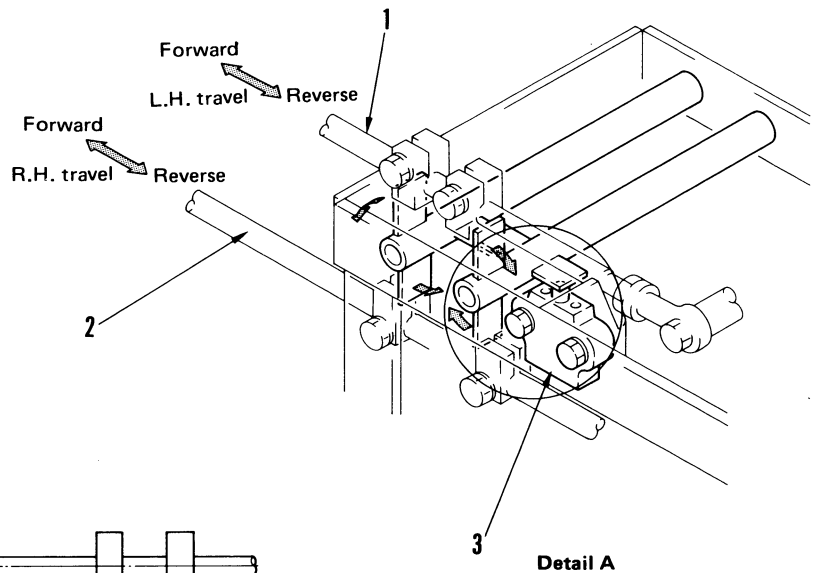
★ FOR MACHINES EQUIPPED WITH AUTO-DECELERATION SYSTEM

- A limit switch which energizes the solenoid for straight travel control is set in the control lever linkage.
- When the control lever is operated, the motion of the linkage rod will cause lever (4) to turn when pushed by boss (5). This will, in turn, actuate limit switch (7) to make contact (ON).  
When the control lever is moved back to the neutral position, rod (1) will move back to its original position. Lever (4) will be moved back by spring (8), causing limit switch (7) to break contact (OFF).
- Thus, the limit switch energizes the solenoid valve when the contact is made (ON), thereby controlling the pilot circuit.

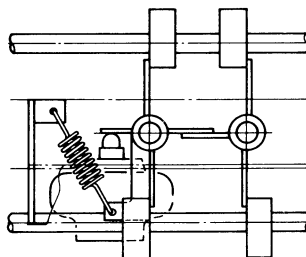


021KF014A

1. L.H. travel linkage rod
2. R.H. travel linkage rod
3. Limit switch
4. Lever
5. Boss
6. Boss
7. Limit switch
8. Spring



When making contact (ON)

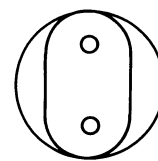
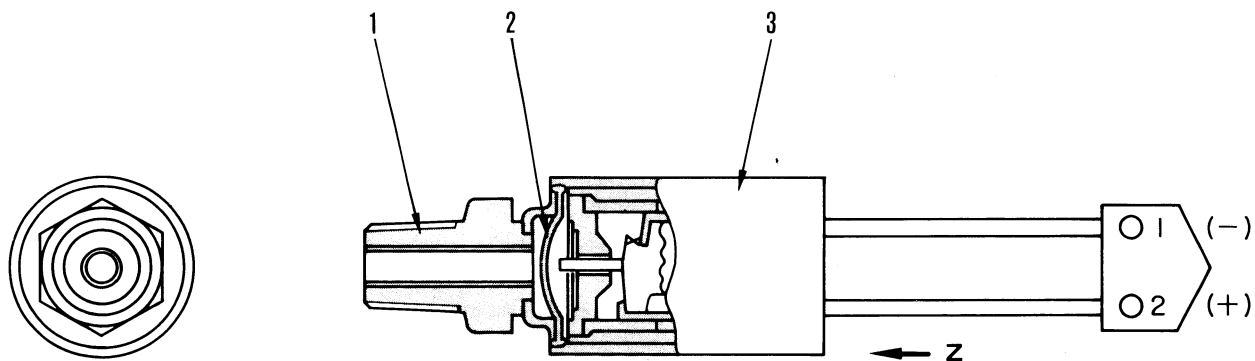


When braking contact (OFF)

F0202172

★ FOR MACHINES EQUIPPED WITH AUTO-DECELERATION SYSTEM

#### 4. OIL PRESSURE SWITCH

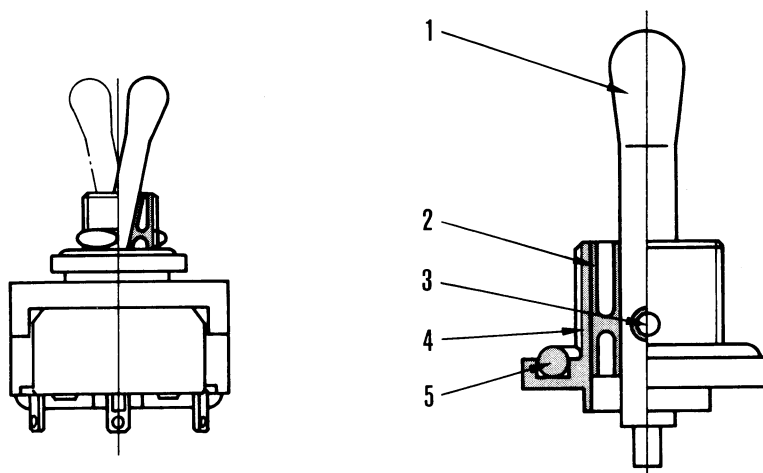


View Z

205F2024

- 1. Plug (PT1/8)
- 2. Diaphragm
- 3. Connector

#### 5. AUTO-DECELERATION SWITCH



205F2025

- 1. Knob
- 2. Seal
- 3. Shaft
- 4. Sleeve
- 5. O-ring