CRAWLER LOADER

TL126

WORKSHOP MANUAL

This manual should be read in combination with the TL26 Workshop Manual. For information not covered by this manual, refer to the corresponding descriptions in the TL26 Workshop Manual.

SERIAL NUMBER
TL126 : 21260001～

TAKEUCHI
TAKEUCHI MFG.CO.,LTD.

01.2000
16710

FOREWORD

This manual is intended for persons who engage in maintenance operations, and explains procedures for disassembly and reassembly of the machine, check and maintenance procedures, maintenance reference values, troubleshooting and outline specifications, etc. Please use this manual as a reference in service activities to improve maintenance techniques.
Further, please be adviced that items contained in this manual are subject to change without notice due to design modifications, etc.

MACHINE FRONT AND REAR, LEFT AND RIGHT

The end where the bucket is mounted is the front and the end with the travel motors is the rear. Also the right and left sides of the operator when he is seated in the driver's seat are the right and left sides of the machine.

MACHINE SERIAL NUMBER

The machine serial number is stamped on the identification plate. When sending reports and inquiries, and when ordering parts, etc., be sure to include this number.

MANUAL CONTROL

Information on those to whom this manual is distributed is recorded in the ledger in the section in charge at this company, so please decide on a person to be in charge of it and control it. When there are updates or additions, etc., we will notify the person in charge.

II. SPECIFICATIONS

FOREWORD

This section, SPECIFICATIONS, includes brief specifications and maintenance standards for this machine, and is organized around the data required for service operations. Please use this manual in checks of the machine before servicing, checks after servicing and when replacing parts.
We want, through future revisions of this manual, to improve it and make it as complete as we possibly can. We welcome any opinions or suggestions, which you may have that would help us. Please address all comments to the person in charge.

In regard to Standard Values and Allowable Values

The terms used in the items "Servicing Standards" and " Standards for Judging Performance" have the following meanings.

Standard Value ..... This indicates the standard value for the new machine at the time of shipping from the factory. It should be used as the target value for maintenance work after operation.

Allowable Value ..... The dimensions of parts change during use because of wear and deformation. Also, the performance of pumps, motors, and other hydraulic equipment drops, and this is the estimated value indicating the use limit for the respective part. It is decided under reference to the standard at the time of shipping, the results of various tests, etc. As the use conditions, the degree of repairs, etc. differ for each machine, these should be combined and used as reference for servicing standards and standards for judging performance.
*Do not use the standard values and the allowable values as standards for customer claims.

CONTENTS

SPECIFICATION TABLES

SPECIFICATIONS

Serial Number		21260001 ~
Type		Canopy
Standard Bucket Capacity (SAE Rated)	m^3	0.365
Weight in Transport Condition	kg	3010
Dimensions		
Overall Lenght: with bucket / without bucket	mm	3310/2630
Overall Width: with bucket / without bucket	mm	1675/1530
Overall Height	mm	2015
Minimum Ground Clearance	mm	275
Front Clearance Radius: with bucket / without bucket	mm	2055/1380
Rear Clearance Radius	mm	1500
Overall Width of Crawler	mm	1530
Overall Length of Crawler	mm	1830
Bucket Width	mm	1675
Angle of Departure	degree	26
Working Range		
Maximum Lift Height to Bucket Pin	mm	3025
Maximum Dumping Height	mm	2380
Maximum Dump Angle Fully Raised	degree	38
Maximum Bucket Rollback at Ground Level	degree	30
Reach Fully Raised	mm	705
Performance		
Bucket Force	kN (kgf)	25.3 (2575)
Travel Speed	km/h	0 ~ 8.5
Gradeability	degree	30
Ground Pressure	kPa (kgf/cm^2)	40.1 (0.409)
Tipping Load (SAE J732)	kg	1700
Operating Capacity (* SAE J818)	kg	595
Cycle Time		
Raise-Full Load (Lift Arm)	Sec.	4.2
Lower-No Load (Lift Arm)	Sec.	2.5
Dump-Full Load (Bucket)	Sec.	2.7
Curl-Full Load (Bucket)	Sec.	2.1

* Operating capacity to equal no more than 35% of tipping load.

SPECIFICATIONS OF DEVICE

Serial Number		21260001 ~
Engine		
Model		Isuzu 4JB1PAA-10
Type		4-Cycle Water Cooled Diesel
Number of Cylinders-Bore × Stroke	mm	4-93 × 102
Total Displacement	m*l*	2771
Compression Ratio		18.2
Dry Weight	kg	220
Performance		
Rated Output	kW/min^{-1} (PS/rpm)	45.2/2600 (61.5/2600)
Maximum Torque	N·m/min^{-1} (kgf·m/rpm)	171.6/1800 (17.5/1800)
Maximum No-load R.P.M.	min^{-1} (rpm)	2680 or less (2860 or less)
Minimum No-load R.P.M.	min^{-1} (rpm)	1050±50 (1050±50)
Specific Fuel Consumption	g/kW·h (g/PS·h)	231.2±13 (170±10)
Starter		12–2.2
Generator		12–35
Battery		12–80 (5HR)
HST Pump		
Model		PVM2828
Type		Variable Displacement, 2-Piston
Displacement	cm^3/rev	28.0 + 28.0
Delivery	*l* /min	72.8 + 72.8
Relief Valve Set Pressure	(kgf/cm^2)	34.5 (352)
Charge Relief Valve Set Pressure	MPa (kgf/cm^2)	1.9±0.07 (19.0±0.7)
Maximum Working Pressure	MPa (kgf/cm^2)	2.9 (30)
Gear Pump		
Model		PHBB2516RA101
Type		Gear
Displacement	cm^3/rev	25.4 + 16.0
Delivery	*l* /min	66.0 + 41.6
Weight	kg	66

Serial Number		21260001 ~
Control Valve		
Model		KVS-65-3
Number of Circuits		3
Main Relief Valve Set Pressure	MPa@*l*/min (kgf/cm² @*l* /min)	15.7 @60 (160 @60)
Port Relief Valve Set Pressure	MPa@*l*/min (kgf/cm² @*l* /min)	19.1 @60 (195 @60)
Weight	kg	10
Control Valve (Sub)		
Model		07632-0001A
Rated Flow	*l* /min	41.6
Relief Valve Set Pressure	MPa@*l*/min (kgf/cm² @*l* /min)	2.9 @40 (30 @40)
Weight	kg	10.3
Pilot Valve		
Model: R.H. / L.H.		TH40K-1105 / TH40K-1163A
Secondary Side Pressure	MPa (kgf/cm²)	0~2.9 (0 ~ 30)
Operating Angle: Single (Ports 1, 3)	degree	19
: Single (Ports 2, 4)	degree	19
: Simultaneous	degree	25
Weight	kg	4.8
Self-Level Valve		
Model		39055-DAS
Flow coefficient		QD/QA = 0.73
Rated Flow	*l* /min	57
Rated Pressure	MPa (kgf/cm²)	20.6 (210)
Maximum Working Pressure	MPa (kgf/cm²)	27.5 (280)
Weight	kg	4.5
Cylinder		
Arm		
Bore Diameter×Rod Diameter	mm	65×40
Stroke	mm	660
Fully Retracted Length (Pitch)	mm	1060
Cushion Mechanism		Rod Side
Weight	kg	28
Bucket		
Bore Diameter×Rod Diameter	mm	65×35
Stroke	mm	475
Fully Retracted Length (Pitch)	mm	730
Cushion Mechanism		——
Weight	kg	23

Serial Number		21260001 ~
Travel Motor		
Model		BM18B-20CTB
Type		Piston Motor
Total Displacement	cm^3/rev	704.9
Motor Displacement	cm^3/rev	35.0
Reduction Gear Ratio		1/20.142
Parking Brake Torque	N·m (kgf·m)	239 (24.4)
Parking Brake Release Pressure	MPa (kgf/cm^2)	0.88 (9.0)
Amount of Reduction Gear Lubricant	*l*	1.3
Weight	kg	90

WEIGHT TABLES

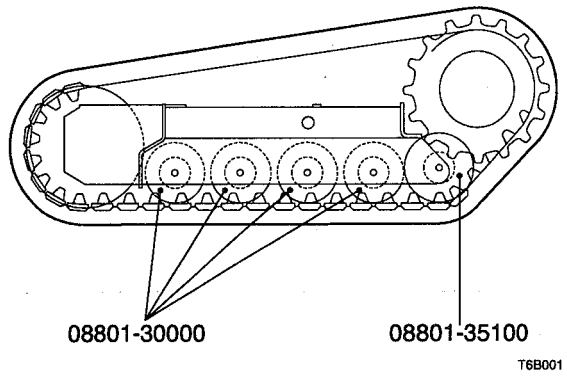
UNIT WEIGHT (Dry Weight)

Units: kg

Serial Number	21260001 ~
Type	Canopy
Engine Assembly	220
Radiator Assembly	20
Oil Cooler	7
HST Pump	66
Hydraulic Tank Assembly	110
Fuel Tank Assembly	101
Control Valve	10
Control Valve (Sub)	10.3
Pilot Valve	4.8X2
Self-Level Valve	4.5
Canopy Assembly	143
Lift Arm Assembly	396
Quick Attachment Assembly	51
Bucket	183
Arm Cylinder	28X2
Bucket Cylinder	23X2
Crawler Belt	146X2
Travel Motor	90X2
Sprocket	17.8X2
Track Roller Assembly	18.5X8
Track Roller Assembly	19.6X2
Idler Assembly	35.2X2
Track Adjuster Assembly	25.1X2

FLUID CAPACITIES

Serial Number		21260001 ~
Hydraulic Oil : Tank Level	*l*	50
Engine Oil : Upper Limit / Lower Limit	*l*	6.3/4.6
Travel Reduction Gear	*l*	1.3
Track Roller (08801-30000)	cc	180 (Engine Oil SAE 30)
Track Roller (08801-35100)	cc	140 (Mobil gear SHC 680)
Idler	cc	120 (Engine Oil SAE 30)
Fuel Tank	*l*	59
Engine Cooling System	*l*	12.5



RECOMMENDED LUBRICANTS

Item	Hydraulic Oil	Reduction Gears	Grease Fittings
Interval	Every 1,000 hrs.	(First 500 hrs.) Every 1,000 hrs.	Every 10 hrs. Every 50 hrs.
	Diesel engine oil API Class CE SAE 10W–30 or 10W–40	API GL-4 or GL-5 SAE 90	EP-2 Lithium-base grease

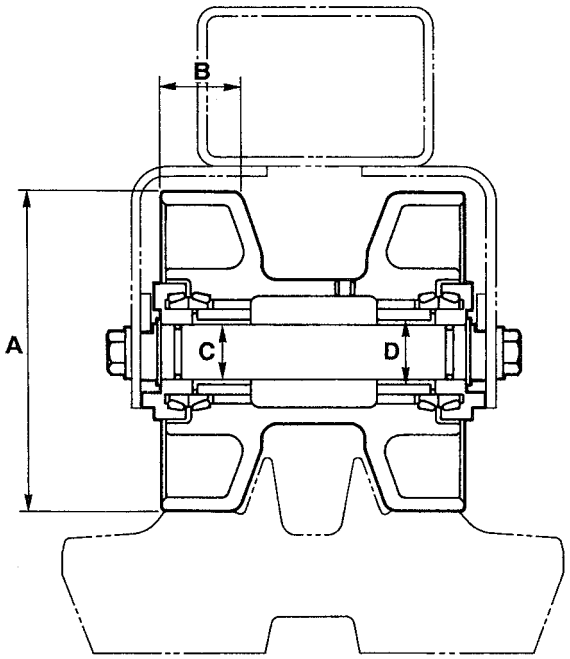
1. When the oil is dirty or has deteriorated, replace it at shorter intervals than called for above.
2. As much as possible, when supplying oil and grease, use the same brand of lubricant. When replacing hydraulic oil, be sure to replace it all at once. Do not mix different brands of hydraulic oil.

SERVICING STANDARDS

TRAVEL SYSTEM

Track Roller

■08801-30000

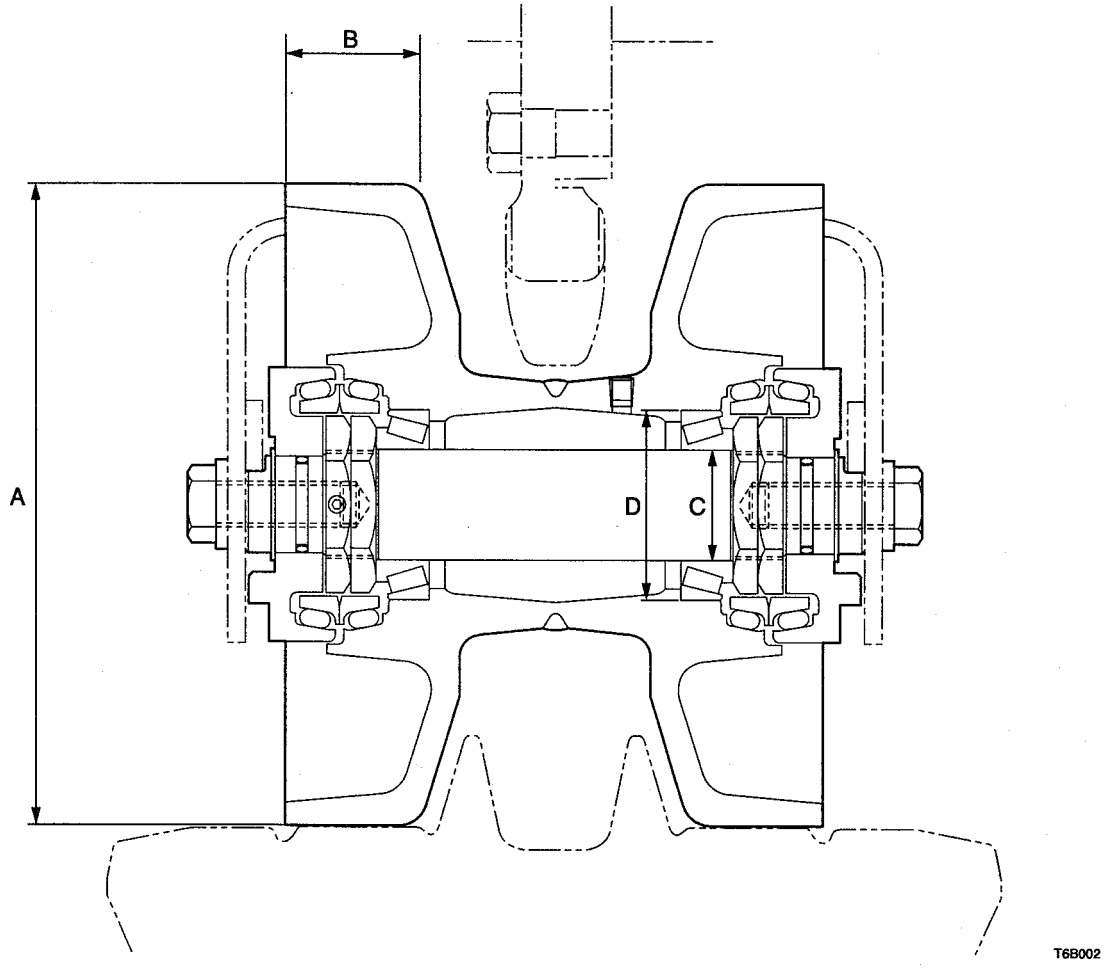


T5-B202

Units: mm

Code	Item	Designated Standard					Servicing Procedure
A	Tread Outer Diameter	Basic Dimension			Allowable Value		Replace
		200			194		
B	Width of Tread	48			45		
C	Shaft and Bushing Bore Diameter Clearance	Basic Dimension	Allowable Tolerance		Standard	Allowable	Replace
			Shaft	Hole			
		35	0 −0.25	——	0.100~ 0.275	——	
D	Roller and Bushing Outer Diameter Interference	39	+0.16 +0.12	+0.025 0	0.095~ 0.16	——	
	Shaft End Play	Standard Value			Allowable Value		
		0.7			1.2		

■08801-35100



Units: mm

Code	Item	Designated Standard					Servicing Procedure
A	Tread Outer Diameter	Basic Dimension			Allowable Value		Replace
		228			222		
B	Width of Tread	48			45		
C	Shaft and Bearing Bore Diameter Interference	Basic Dimension	Allowable Tolerance		Standard Fit	Allowable Fit	Replace
			Shaft	Hole			
		40	0 −0.016	0 −0.012	0.012~ 0.016	——	
D	Roller and Bearing Outer Diameter Interference	68	−0.014 −0.033	0 −0.016	0.002~ 0.033	——	
	Shaft End Play	Standard Value			Allowable Value		
		0.7			1.2		

STANDARDS FOR JUDGING PERFORMANCE

REFERENCE VALUE TABLE

Serial Number			21260001 ~	
Item		Unit	Standard Values	Allowable Values
Hydraulic Oil Pressure				
Travel		MPa (kgf/cm²)	$34.3^{+5.4}_{0}$ (350^{+55}_{0})	——
Lift Arm		MPa (kgf/cm²)	$15.7^{+1.0}_{0}$ (160^{+10}_{0})	——
Bucket		MPa (kgf/cm²)	$15.7^{+1.0}_{0}$ (160^{+10}_{0})	——
Charge Pressure		MPa (kgf/cm²)	2.5±0.3 (26.0±3)	——
Pilot Pressure		MPa (kgf/cm²)	3.5±0.5 (36.0±5)	——
Travel				
Travel Speed (5 rev.)		Sec.	8.5±0.6	10.0
Travel Speed (10m)		Sec.	4.1±0.5	5.0
Travel Curve		mm	125^{0}_{-125}	500
Natural Travel Drop	Engages Parking Brake	mm	0	——
	Releases Parking Brake	mm		
Cylinders				
Cylinder Speed				
Arm	Extended	Sec.	3.9±0.4	4.9
	Retracted	Sec.	2.5±0.4	3.3
Bucket	Extended	Sec.	2.8±0.4	3.6
	Retracted	Sec.	2.1±0.4	2.8
Natural Cylinder Drop				
Arm		mm	7^{0}_{-7}	14
Bucket		mm	5^{0}_{-5}	10
Bucket Tip		mm	60^{0}_{-60}	200
Levers				
Lever Operating Force				
Arm		N (kgf)	9.8±3.9 (1.0±0.4)	
Bucket		N (kgf)	9.8±3.9 (1.0±0.4)	
Travel		N (kgf)	9.8±3.9 (1.0±0.4)	
Lever Play				
Arm		mm	4^{0}_{-4}	
Bucket		mm	4^{0}_{-4}	
Travel		mm	4^{0}_{-4}	
Crawler				
Crawler Tension		mm	12.5 ~ 20	——
Level of Front Edge of Bucket		mm	10.0^{0}_{-10}	——

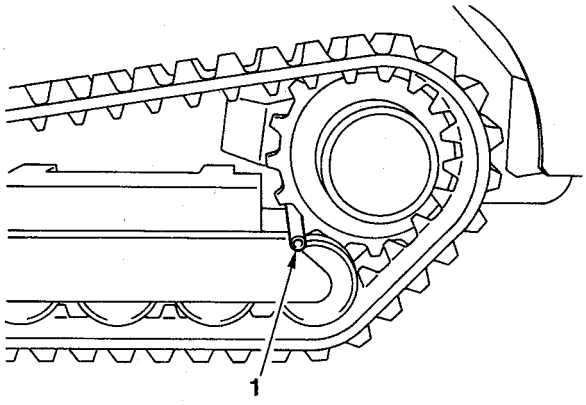
METHODS FOR INSPECTING PERFORMANCE

HYDRAULIC OIL PRESSURE

Travel

Measuring Method

- Engine : Rated R.P.M.
- Hydraulic Oil Temp. : 50°C ~ 60°C
- Insert the pressure gauge into the pressure detection port and fit pipe (1) over the travel motor sprocket to disable the motor. Next start up the hydraulic circuit to be tested and measure the relief pressure.
- To prevent the engine from stalling, connect the relief valve (2) between the drain port of the hydraulic pump and the charge port (3) of the control valve (sub).
  - Relief valve set pressure: 2.1 MPa (21 kgf/cm^2)



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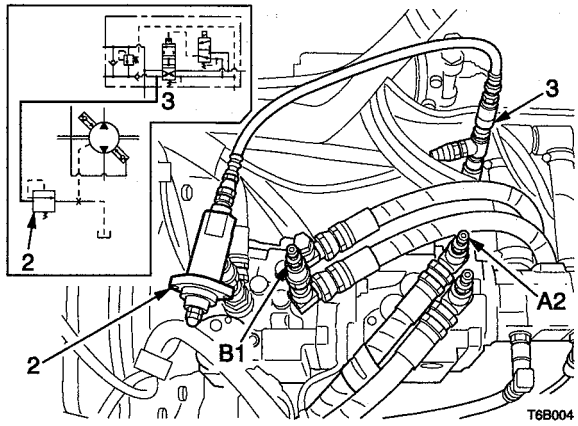
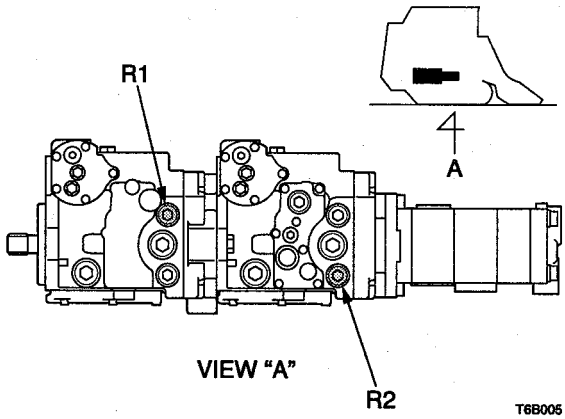


T6B004



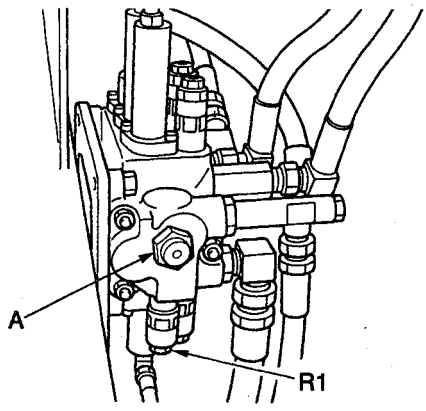
T6B005

Circuit	Pressure Detection Port		Relief Valve
	Port Position	Size	
Left Travel (forward)	B1	PF1/4	R1
Right Travel (forward)	A2	PF1/4	R2

Lift Arm, Bucket

Measuring Method

- Engine : Rated R.P.M.
- Hydraulic Oil Temp. : 50°C ~ 60°C
- Mount the pressure gauge on the pressure detection port, operate the desired hydraulic circuit and measure the relief pressure.

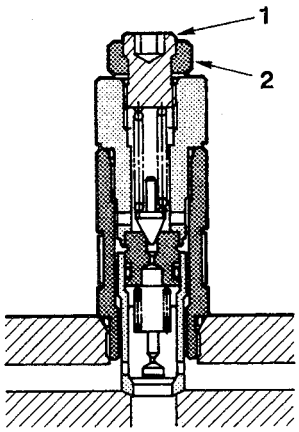


T6B006

Circuit	Pressure Detection Port		Relief Valve
	Port Position	Size	
Arm, bucket	A	PF1/4	R1

Adjusting Method

1. Loosen locknut (2), then begin adjusting pressure by turning setting screw (1).
   Turning clockwise ..... raises the set pressure.
   Turning counterclockwise .... lowers the set pressure.
2. In order to keep the setting screw from turning after pressure has been adjusted, tighten the locknut while at the same time holding the setting screw firmly in place.
3. Operate the relief valve once more to confirm that the pressure that has been set it stabilized.



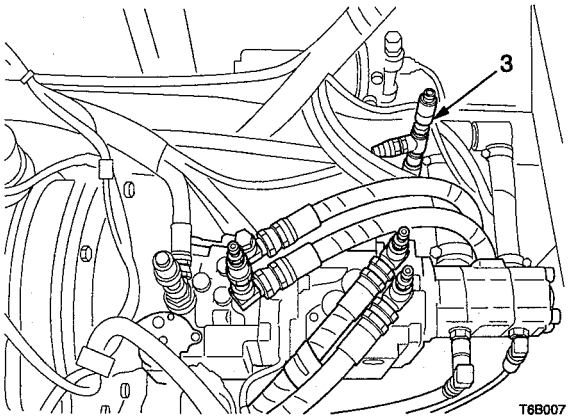
YI-D244

Measuring the charge pressure

Measuring Method

- Engine : Rated R.P.M.
- Hydraulic Oil Temp. : 50°C ~ 60°C
- Insert the pressure gauge into the pressure detection port to measure the charge pressure.

Pressure Detection Port	
Port Position	Size
3	PF1/4



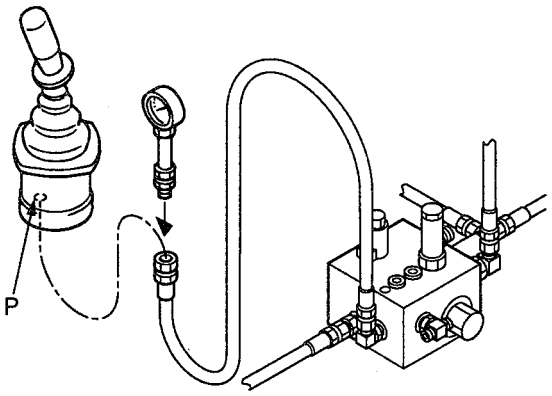
T6B007

Measuring the pilot pressure

Measuring Method

- Engine : Rated R.P.M.
- Hydraulic Oil Temp : 50°C ~ 60°C
- Remove the hose connecting the control valve (sub) and the pilot valve from the pilot valve, insert the pressure gauge into the hose and measure the pilot pressure.

Port Position	Size
P	PF1/4



T6B008

III. MACHINE CONFIGURATION

FOREWORD

This section, MACHINE CONFIGURATION, divides up the machine by its functions and summarizes the construction, operation, adjustment methods, disassembly and assembly methods and other points concerning each function. Please use this manual in all your inspection and service activities. The hydraulic equipments are described in detail in "IV. Hydraulic Units " so please refer to that manual.

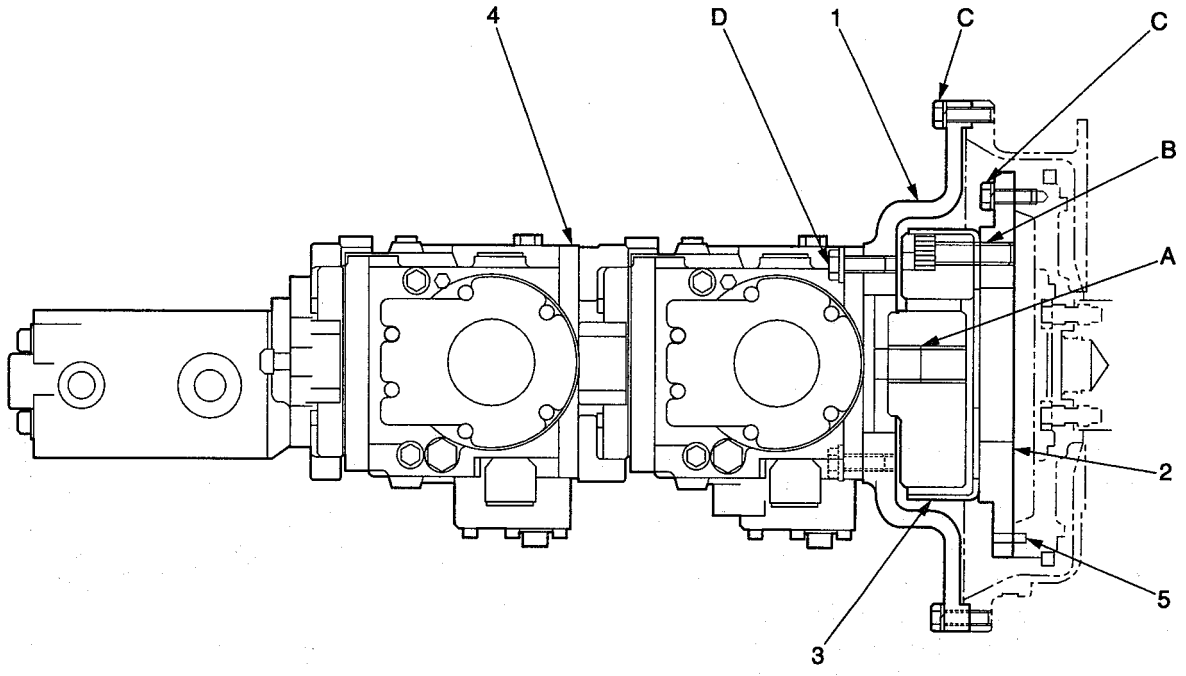
We want, through future revisions of this manual, to improve it and make it as complete as we possibly can. We welcome any opinions or suggestions which you may have that would help us. Please address all comments to the person in charge.

CONTENTS

DRIVE SYSTEM

CONSTRUCTION

Pump Coupling



T6C100

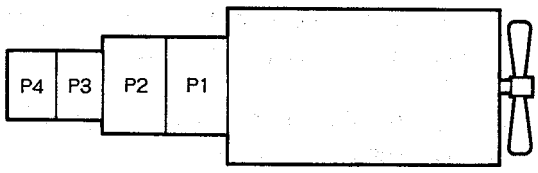
A: Fill with molybdenum disulfide grease.
B: Apply locking compound while taking care not to put it on the rubber part.
C: Tightening Torque: 54.9 N·m (5.6 kgf·m)
D: Tightening Torque: 102 N·m (10.4 kgf·m)

1. Housing
2. Flange
3. Coupling
4. HST Pump
5. Pin

The pump coupling connects the engine flywheel and the hydraulic pump's drive shaft. It is constructed so that it absorbs vibrations, torsions, impact and out of center of the engine and hydraulic pump.

- Refer to the table concerning the responsibility of each of the pumps shown in the drawing at right.

P1	Left Travel
P2	Right Travel
P3	Lift Arm, Bucket, Auxiliary
P4	Charge Pressure, Pilot Pressure



T5-C103

Purging Air from the HST Pump

⚠WARNING

When refitting the HST pump after repair or replacement, be sure to purge air before starting the operation. Failure to do so can cause injury or death due to unexpected machine movement.

1. Before installing the HST pump on the machine, fill the servo control chambers with hydraulic oil.
   a. Plug the pilot ports (X1), (X2), (X11) and (X12) temporarily.
   b. Supply hydraulic oil through the servo pressure gauge ports (M4), (M5), (M14) and (M15) to fill the servo control chambers.

2. Install the HST pump on the machine

3. Fill the hoses which are connected to the pilot ports (X1) and (X11) with hydraulic oil.
   - To fill, hold the hose openings at the same level as the pilot valves.
     Pouring oil with the hose openings held below the pilot valves may result in insufficient air purge, while pouring oil with the hose openings held above the pilot valves will make the oil flow from only the pilot valves into the tank.

4. Remove the plugs in the pilot ports (X1) and (X11) and immediately connect the respective hoses to those ports to prevent unnecessary loss of hydraulic oil.

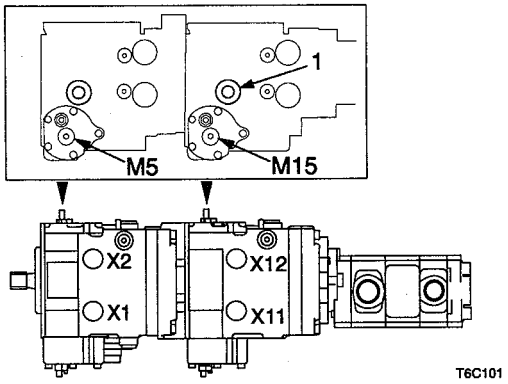
5. Remove the plugs in the pilot ports (X2) and (X12) and connect the respective hoses to those ports.

6. Connect the all remaining hoses to the pump.

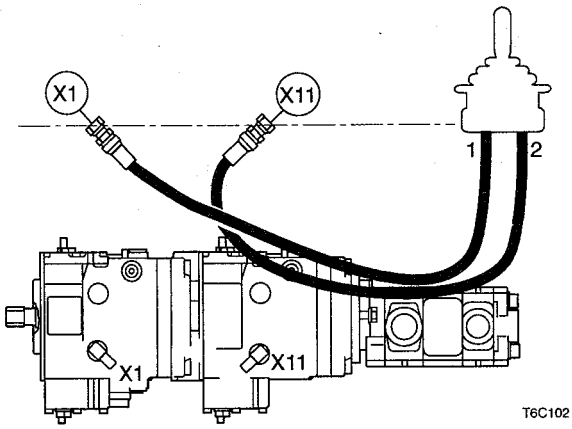
7. Supply hydraulic oil through the plug hole (1) to fill the pump casing.

8. Start and run the engine at idle for about 5 minutes to purge air from the pump casing.

9. Slowly move the control levers to purge air from the main and pilot lines.



T6C101



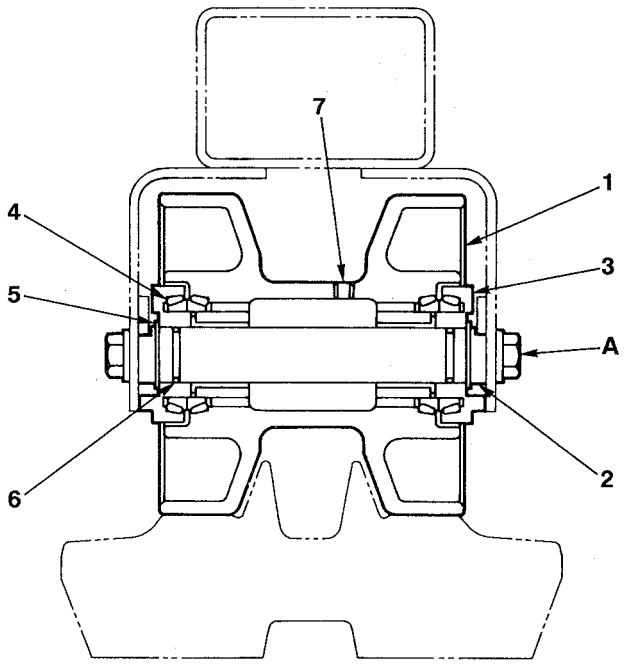
T6C102

TRAVEL SYSTEM

CONSTRUCTION

Track Roller

■ 08801-30000

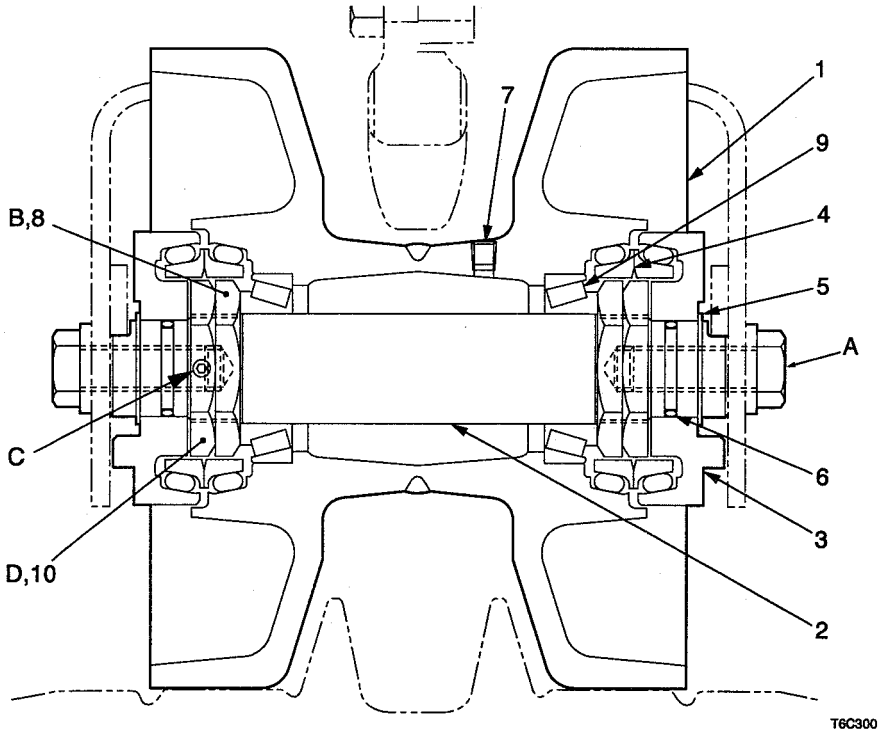


A: Tightening torque 241.2 N·m (24.6 kgf·m) [Apply thread lock]

T5-C302

1. Roller
2. Shaft
3. Cover
4. Floating Seal
5. Snap Ring
6. O-Ring
7. Oil Filler Plug

■ 08801-35100

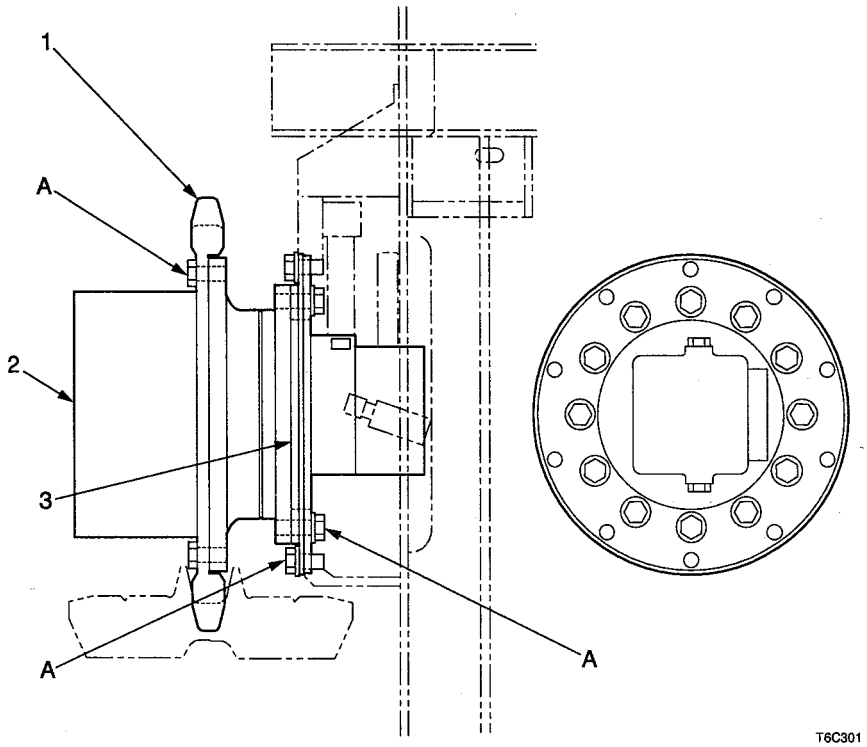


T6C300

A: Tightening torque 241.2 N·m (24.6 kgf·m) [Apply thread lock]
B: Tightening torque 55.9 N·m (5.7 kgf·m)
C: Tightening torque 6.7 N·m (0.68 kgf·m)
D: Tightening torque 69.6 N·m (7.1 kgf·m)

1. Roller
2. Shaft
3. Cover
4. Floating Seal
5. Snap Ring
6. O-Ring
7. Oil Filler Plug
8. Nut
9. Bearing
10. Nut

Travel Motor



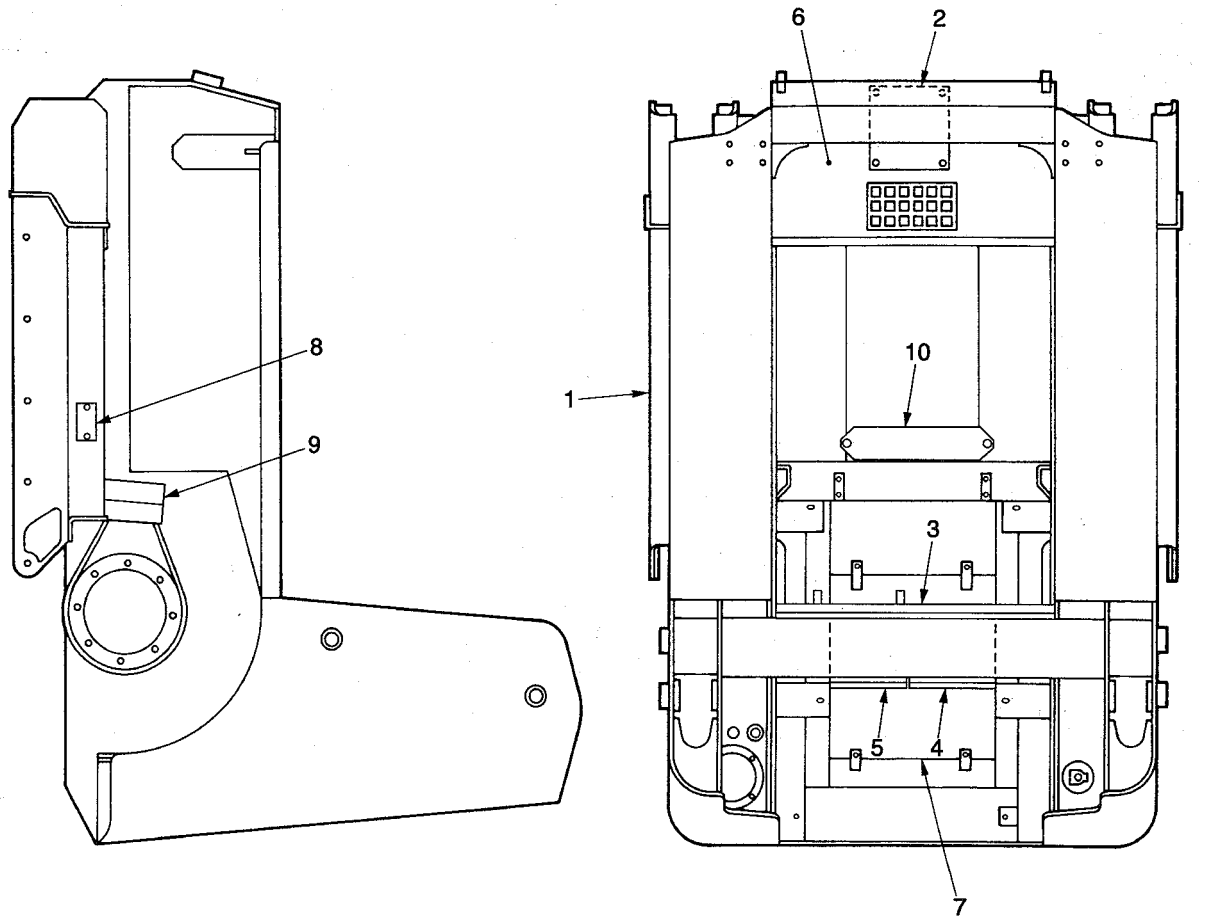
1. Sprocket
2. Travel Motor
3. Ring

A: Tightening torque 241.2 N·m (24.6 kgf·m) [Apply thread lock]

FRAME

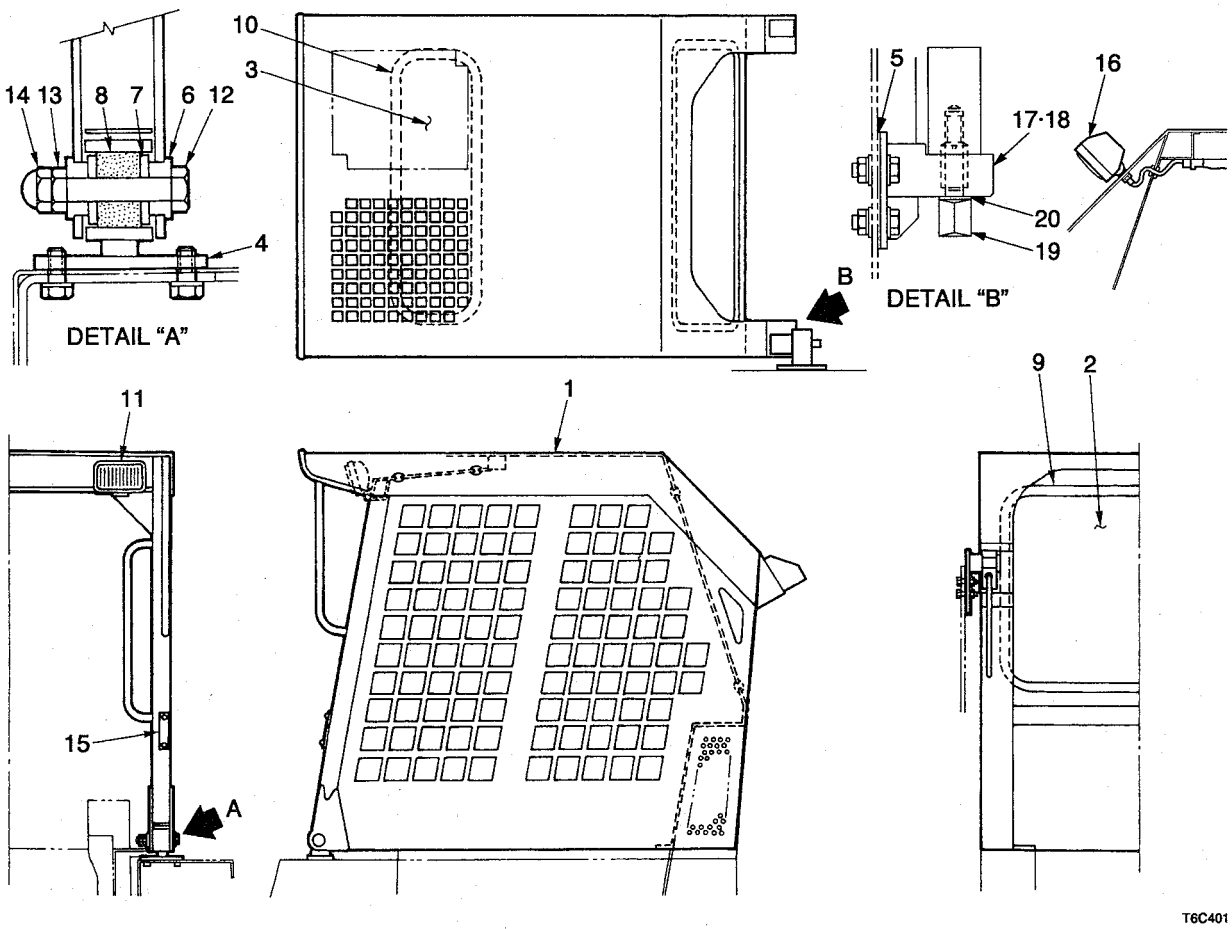
CONSTRUCTION

Frame



1. Frame
2. Cover
3. Plate
4. Plate
5. Plate
6. Floor Mat
7. Under Cover
8. Cover
9. Cover
10. Plate

Canopy

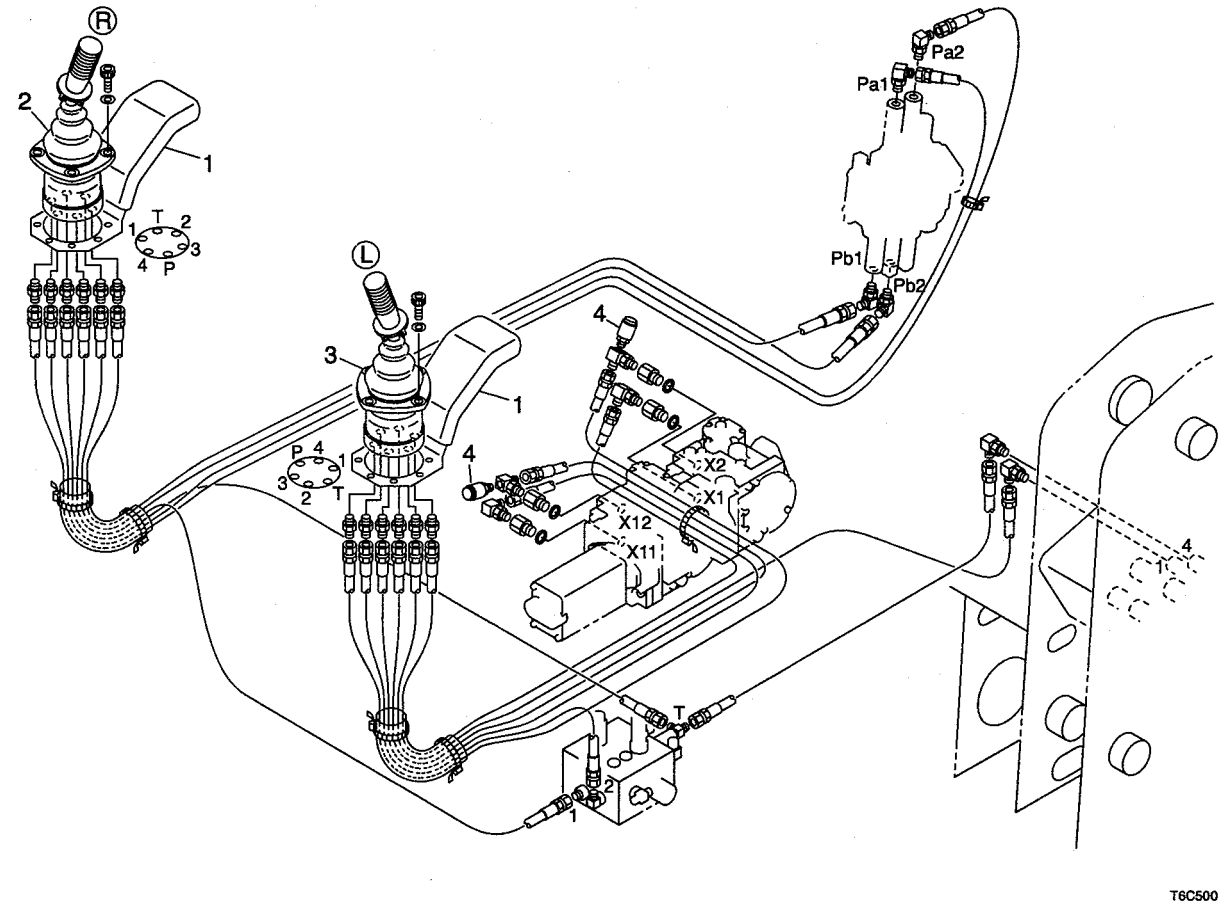


1. Canopy
2. Glass [rear]
3. Glass [roof]
4. Bracket
5. Shim
6. Collar
7. Washer
8. Cushion Rubber
9. H Rubber
10. H Rubber
11. Light
12. Bolt
13. Nut
14. Box Nut
15. Stopper
16. Light
17. Bracket
18. Bolt
19. Washer

CONTROL SYSTEM

CONSTRUCTION

Hydraulic Pilot Unit



T6C500

◆ Table of Commections ◆

Left Pilot Valve	1 ↔ X1	HST Pump
	2 ↔ X11	
	3 ↔ X2	
	4 ↔ X12	
	P ↔ 2	Control Valve (Sub)
	T ↔ 1	Tank
Control Valve (Sub)	T ↔ 4	
Right Pilot Valve	1 ↔ Pa2	Control Valve
	2 ↔ Pb1	
	3 ↔ Pb2	
	4 ↔ Pa1	
	P ↔ 1	Control Valve (Sub)
	T ↔ T	

1. Arm Rest
2. Right Pilot Valve
3. Left Pilot Valve
4. Pressure Switch