

INTRODUCTION

TO THE READER

- This manual is written for an experienced technician to provide technical information needed to maintain and repair this machine.
 - Be sure to thoroughly read this manual for correct product information and service procedures.
 - If you have any questions or comments regarding the contents of this manual.

please contact:

Document Center
Hitachi Construction Machinery Co. Ltd.
TEL: 81-298-32-7173
FAX: 81-298-31-1162

ADDITIONAL REFERENCES

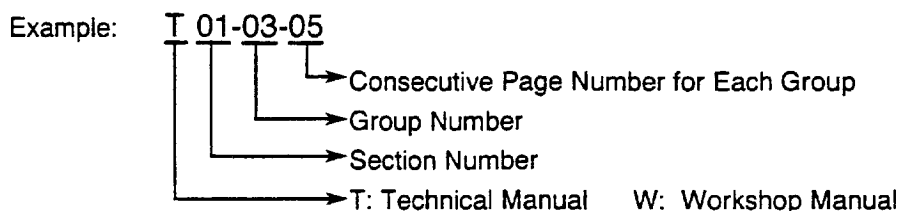
- Please refer to the materials listed below in addition to this manual.
 - The Operator's Manual
 - The Parts Catalog
 - Operation Manual of the Engine
 - Parts Catalog of the Engine
 - Hitachi Training Material

MANUAL COMPOSITION

- This manual consists of three portions: the Technical Manual (Operational Principle), the Technical Manual (Troubleshooting) and the Workshop Manual.
 - Information included in the Technical Manual (Operational Principle): technical information needed for redelivery and delivery, operation and activation of all devices and systems.
 - Information included in the Technical Manual (Troubleshooting): technical information needed for operational performance tests, and troubleshooting procedures.
 - Information included in the Workshop Manual: technical information needed for maintenance and repair of the machine, tools and devices needed for maintenance and repair, maintenance standards, and removal/installation and assemble/disassemble procedures.

PAGE NUMBER

- Each page has a number, located on the center lower part of the page, and each number contains the following information:



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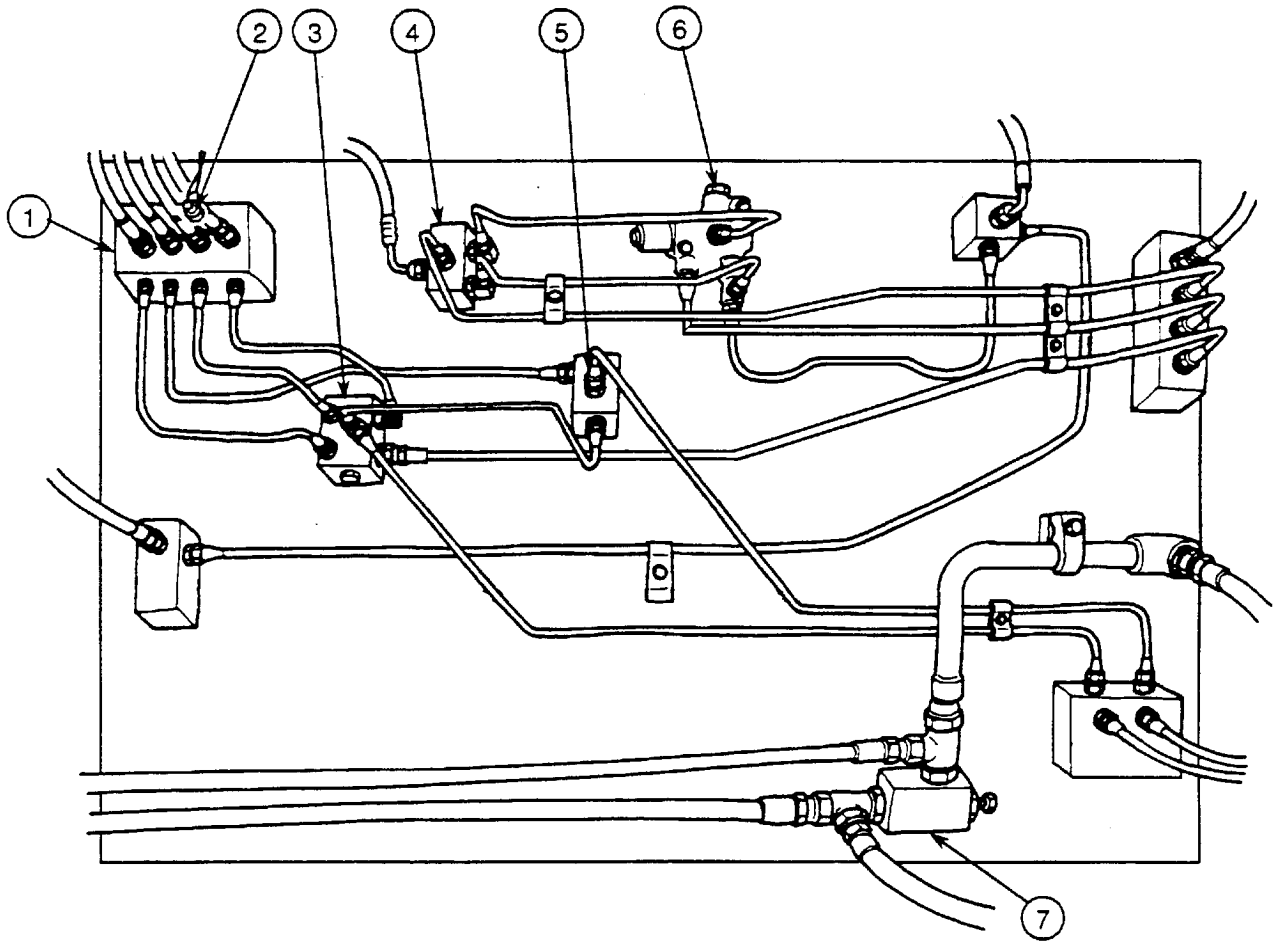


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GENERAL / Component Layout

PILOT PANEL



T117-01-02-013

- | | | | |
|---------------------------|-------------------------------|--|---|
| 1— Shuttle Valve | 3— Shuttle Valve | 5— Shuttle Valve | 7— Relief Valve
(Compressor Driving) |
| 2— Travel Pressure Switch | 4— Pressure Reducing
Valve | 6— Travel Mode Shift
Solenoid Valve | |

MEMO

A large rectangular area with a solid black border, containing 25 horizontal dotted lines for writing.

UPPERSTRUCTURE / Pump Device

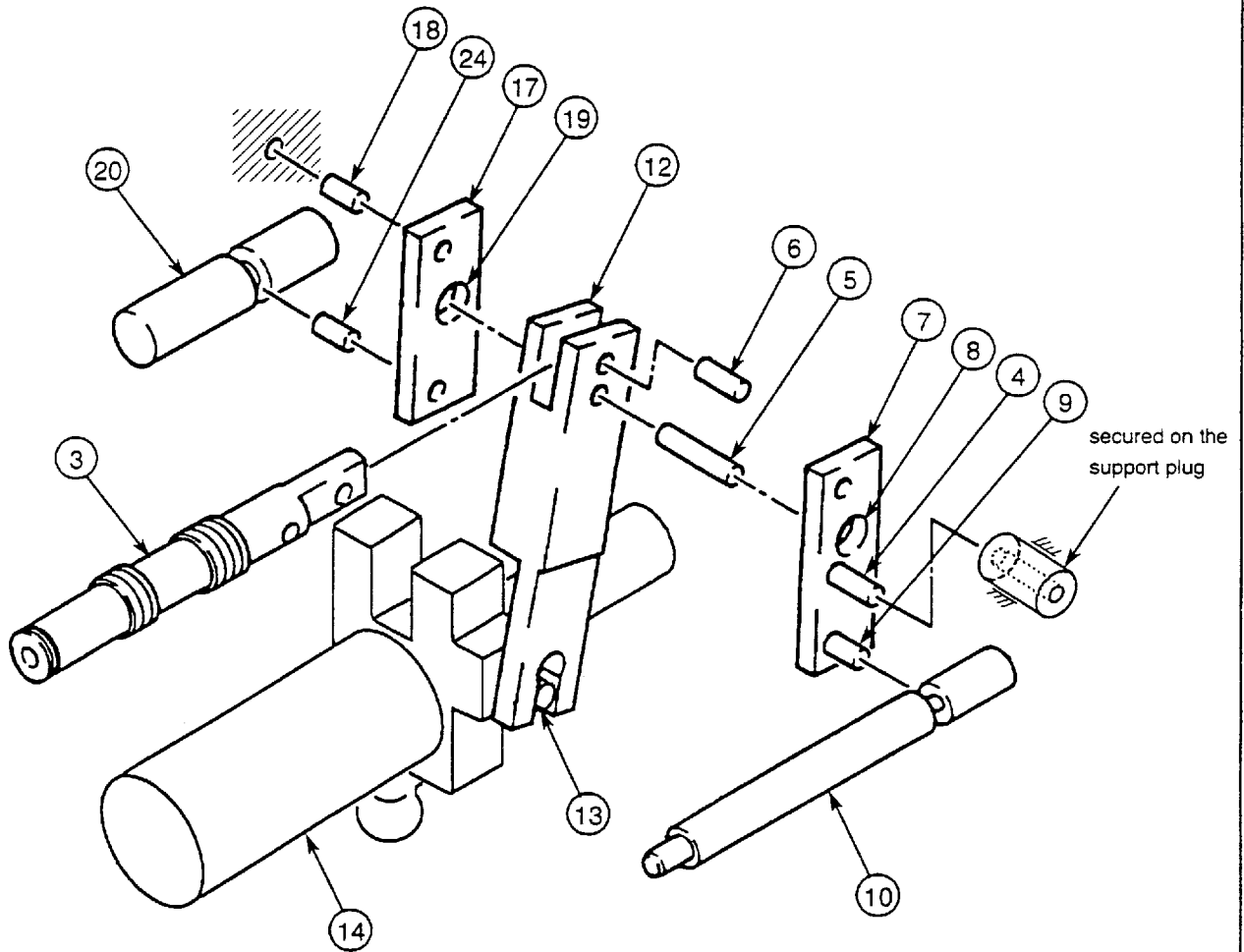
LINKAGE

The movement of pilot piston (10) is transmitted through pin (9) to lever 1 (7) that turns around pin (4) [secured on the support plug].

The movement of compensating rod (20) is transmitted through pin (24) to lever 2 (17) that turns around pin (18) [secured on the housing].

Pin (5) is installed into feedback lever (12). Each end of pin (5) is inserted in the holes on lever 1 (7) and lever 2 (17). If lever 1 (7) or lever 2 (17) is turned, pin (5) will come into contact with the holes of lever 1 (7) and lever 2 (17), and feedback lever (12) will turn around pin (14) secured on servo piston (14).

If servo piston (14) is moved, feedback lever (12) will be moved through pin (13) and will turn around pin (5) as both lever 1 (7) and lever 2 (17) will not move.



T117-02-01-009

3— Spool	7— Lever 1	12— Feedback Lever	18— Pin
4— Pin	8— Hole	13— Pin	19— Hole
5— Pin	9— Pin	14— Servo Piston	20— Compensation Rod
6— Pin	10— Pilot Piston	17— Lever 2	24— Pin

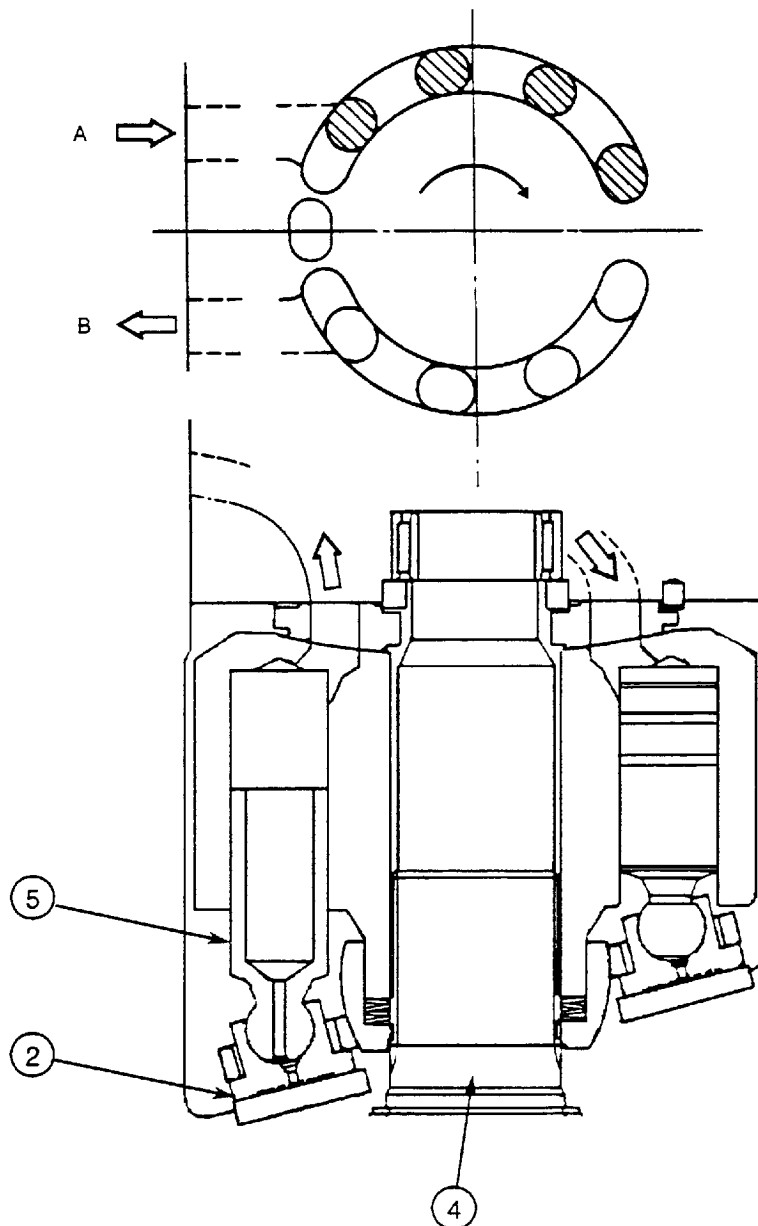
UPPERSTRUCTURE / Swing Device

Principles of Motor Operation

Swing speed varies depending on the amount of oil delivered from the pump.

When pressure oil is fed into the rotor bores via port (A), plungers (5) are pushed from the top dead center to the bottom dead center causing shoes (2) to slide along the swash plate, developing rotational force.

The rotational force is then transmitted to the swing reduction gear via shaft (4). As the rotor is rotated, plungers (5) are moved to port (B) side one by one, returning oil to the hydraulic oil tank. When pressure oil is fed via port (B), the motor rotates in the opposite direction.



T115-02-03-003

1- Shoe

4- Shaft

5- Plunger

UPPERSTRUCTURE / Pilot Valve

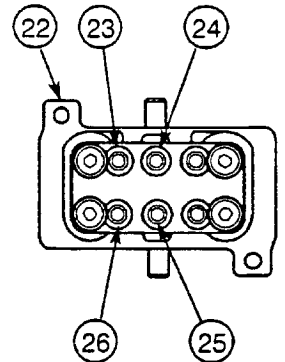
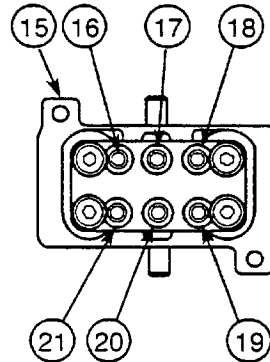
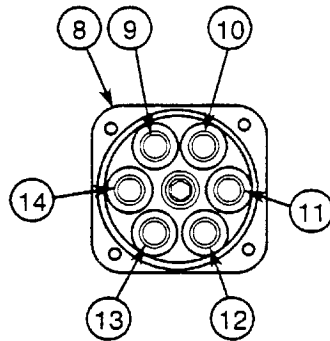
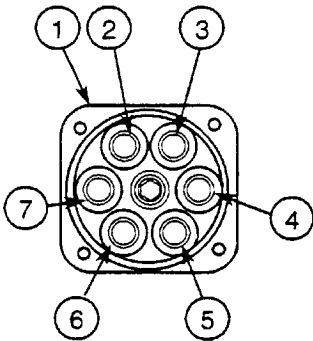
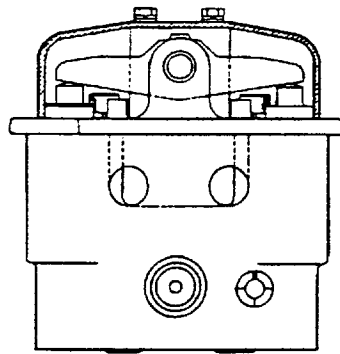
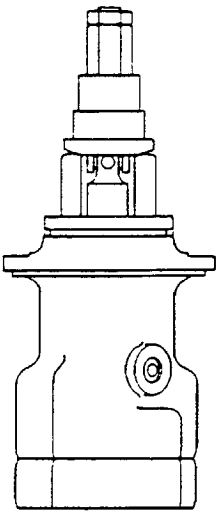
OUTLINE

The pilot valve functions to control pilot pressure oil, causing the control valve spools to move. When a control valve is operated, the pilot valve routes a pilot pressure, in proportion to the lever stroke, to the control valve to move the respective control valve spool.

The machine is equipped with the front/swing pilot valve, travel pilot valve, and bucket open/close pilot valve (the loader only). Construction and operation of all pilot valves are approximately the same as each other.

Front/Swing Pilot Valve

Travel Pilot Valve, Bucket Open/Close Pilot Valve



T115-02-05-002

T117-02-04-001

- 1— Left Pilot Valve
- 2— Tank Port
- 3— Right Swing Port
- 4— Arm Roll-In Port
- 5— Port P
- 6— Left Swing Port
- 7— Arm Roll-Out Port

- 8— Right Pilot Valve
- 9— Port P
- 10— Boom Lower Port
- 11— Bucket Roll-Out Port
- 12— Tank Port
- 13— Boom Raise Port
- 14— Bucket Roll-In

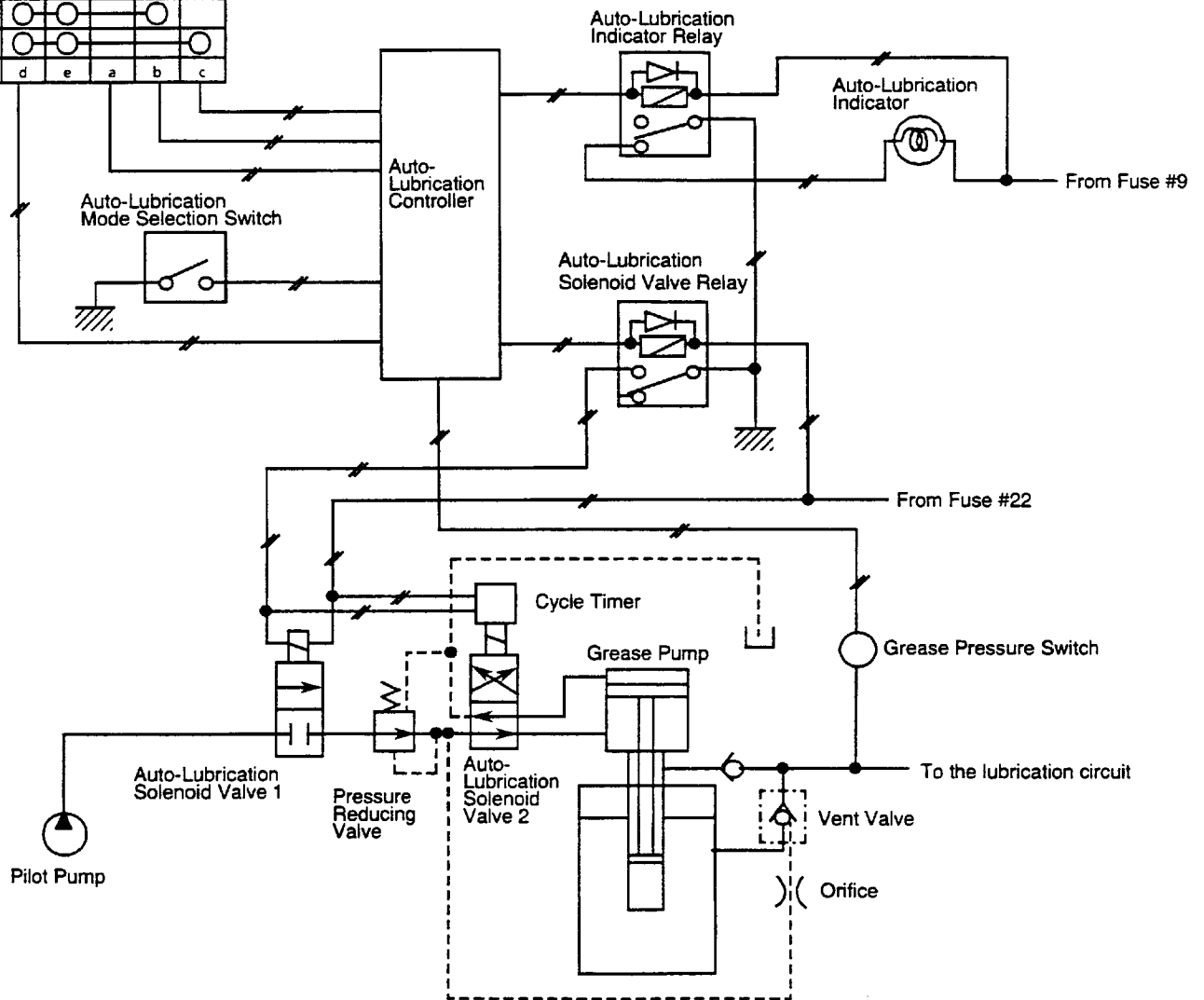
- 15— Travel Pilot Valve
- 16— Left Travel Forward
- 17— Port P
- 18— Left Travel Reverse
- 19— Tank Port
- 20— Right Travel Reverse
- 21— Right Travel Forward

- 22— Bucket Open/Close Pilot Valve
- 23— Bucket Open Port
- 24— Port P
- 25— Tank Port
- 26— Bucket Close Port

UPPERSTRUCTURE / Others

Auto-Lubrication Interval Switch

5 min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15 min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20 min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	d	e	a	b	c

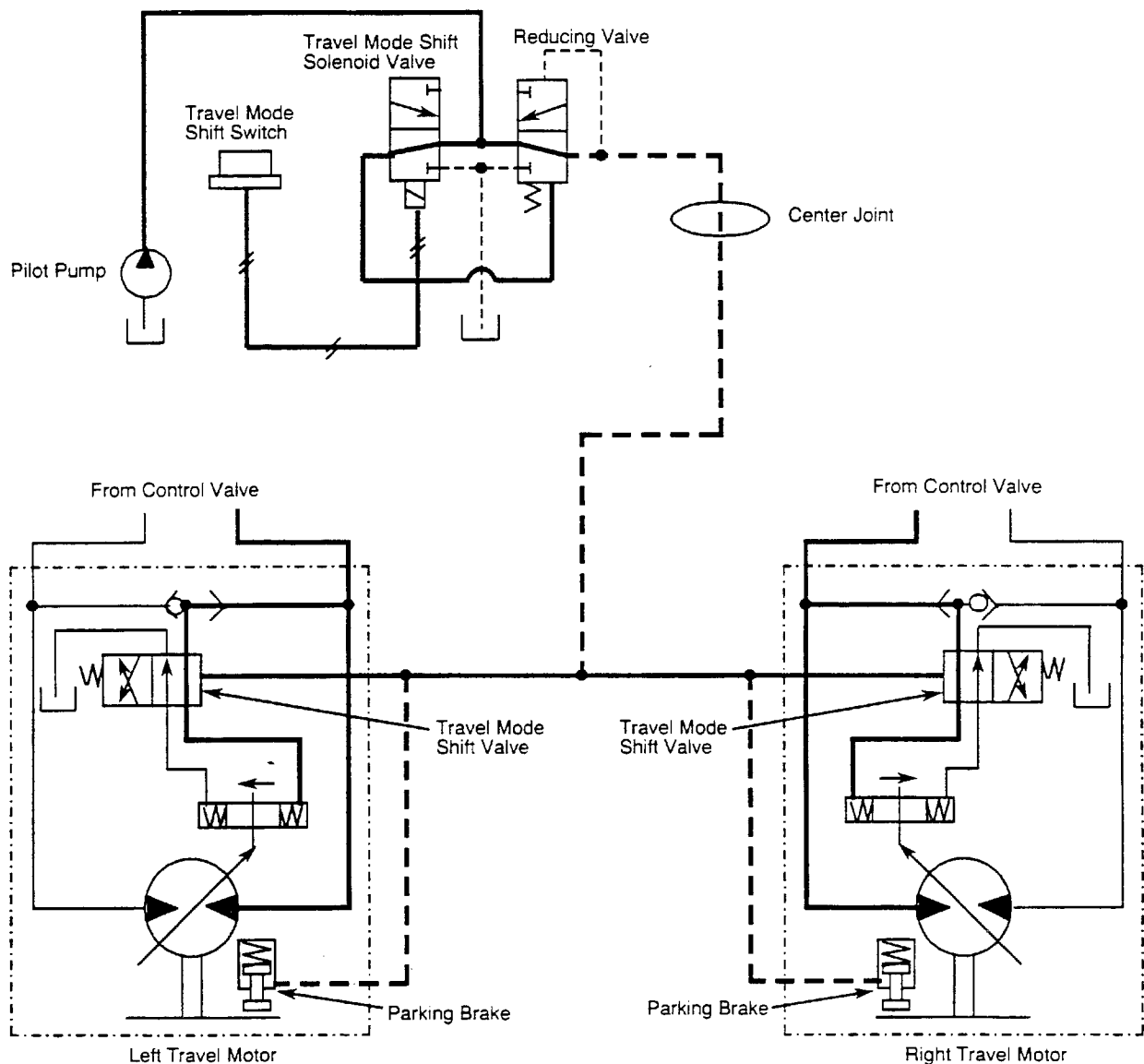


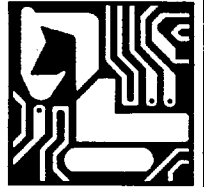
UNDERCARRIAGE / Travel Device

Fast Speed Mode

When the travel mode shift switch is turned ON (the fast speed mode), the travel mode shift solenoid valve is ON. For this reason, the pilot pressure acts on the spring side of the pressure reducing valve. Thus, the pilot pressure is not reduced at the pressure reducing valve and is directed and acts on the travel mode shift valve spool, shifting it.

As the spool shifts, the main pressure is exerted on the fast-speed-mode side of the tilt piston, reducing the travel motor displacement angle to the minimum (the fast speed mode).



**SECTION 04
SYSTEM****CONTENTS****Group 01- Electrical Circuit**

General	T04-01-01
Electric Power Supply Circuit ...	T04-01-02
Motor Control Circuit	T04-01-06
Motor Protection Circuit	T04-01-10

Group 02- Hydraulic Circuit

Main Circuit	T04-02-01
Pilot Circuit	T04-02-02
Others	T04-02-03
Single Operation	T04-02-04
Boom Priority Circuit	T04-02-05

Group 03- Control System

Outline	T04-03-01
Other Control System	T04-03-02

SYSTEM / Electrical System

The timer relay 2-42 functions to secure the operation of contactor 42, energizing the contactor 42 power-on coil 42C circuit for a set duration of time.

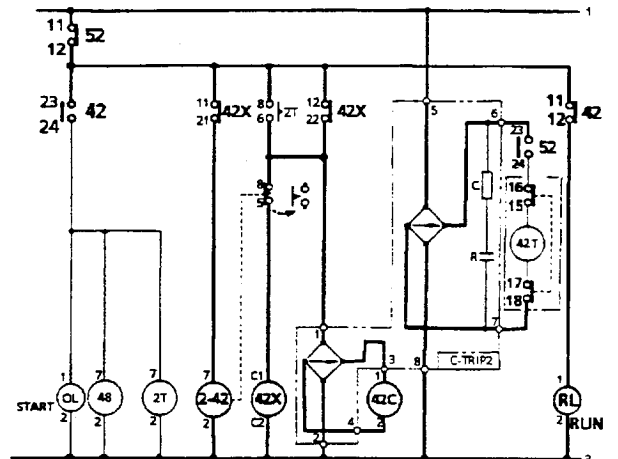
The counting of the set time is started when the relay 42X contact 42X(11-21) is closed. When the set time expires, the timer relay 2-42 opens its contact, turning off the relay 42X.

As the relay contact 42X(12-22) opens, the power supply to the contactor 42 power-on coil 42C is shut-off.

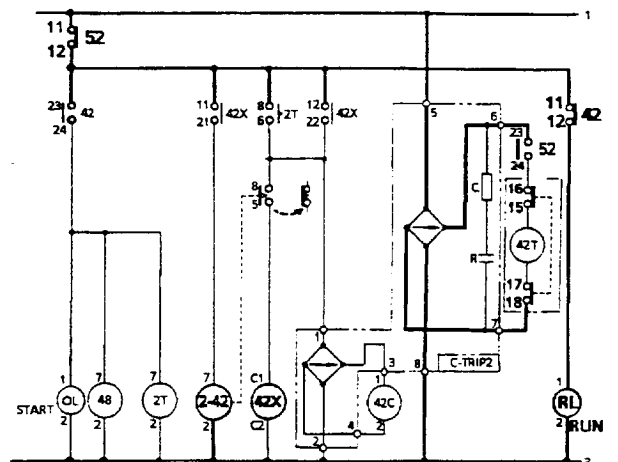
However, as the contactor 42 is a mechanical latch type, it is kept turned on.

When the relay 42X is turned off, the relay contact 42X(11-21) opens to reset the timer relay 2-42. The contact of the timer relay 2-42 is closed.

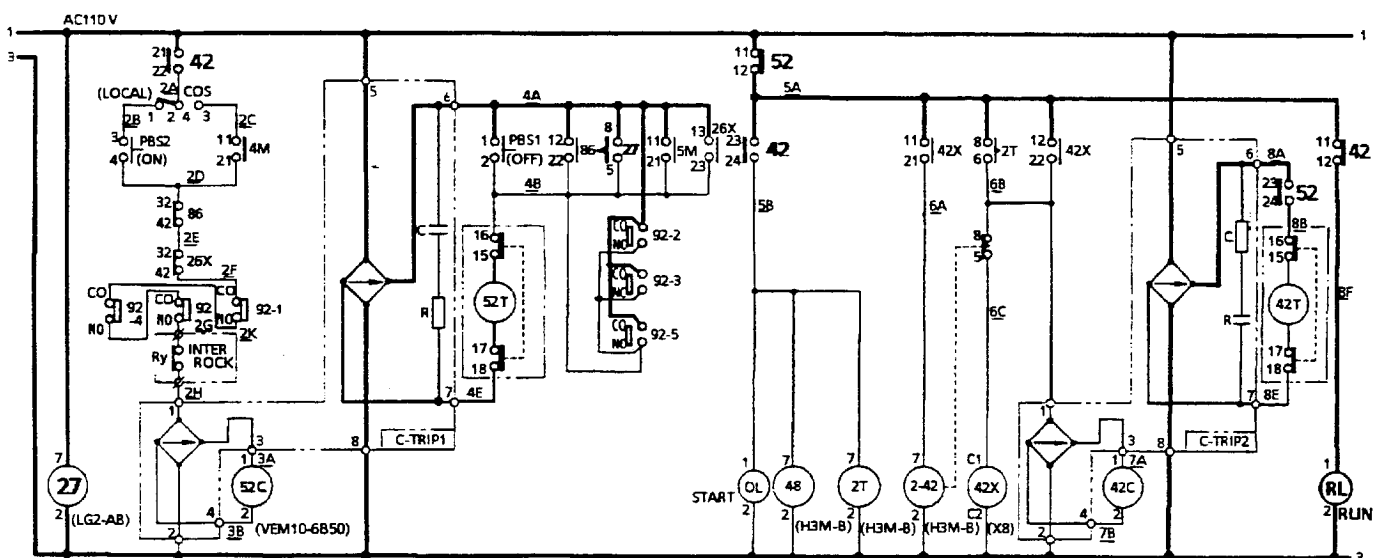
The motor starting procedure is completed, running the motor with the rated power source.



T117-04-01-015



T117-04-01-016



T117-04-01-017

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