

Technical Manual

Operational Principle

ZX

190LC-6

190LCN-6

Hydraulic Excavator

ZX190LC-6 • 190LCN-6 HYDRAULIC EXCAVATOR TECHNICAL MANUAL OPERATIONAL PRINCIPLE

TODBS50-EN-00

Service Manual consists of the following separate Part No.
Technical Manual (Operational Principle) : Vol. No.TODBS50-EN
Technical Manual (Troubleshooting) : Vol. No.TTDBS50-EN
Workshop Manual : Vol. No.WDBS50-EN
Engine Manual : Vol. No.ETDC150-EN, EWDC150-EN

 **Hitachi Construction Machinery Co., Ltd.**

URL:<http://www.hitachi-c-m.com>

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

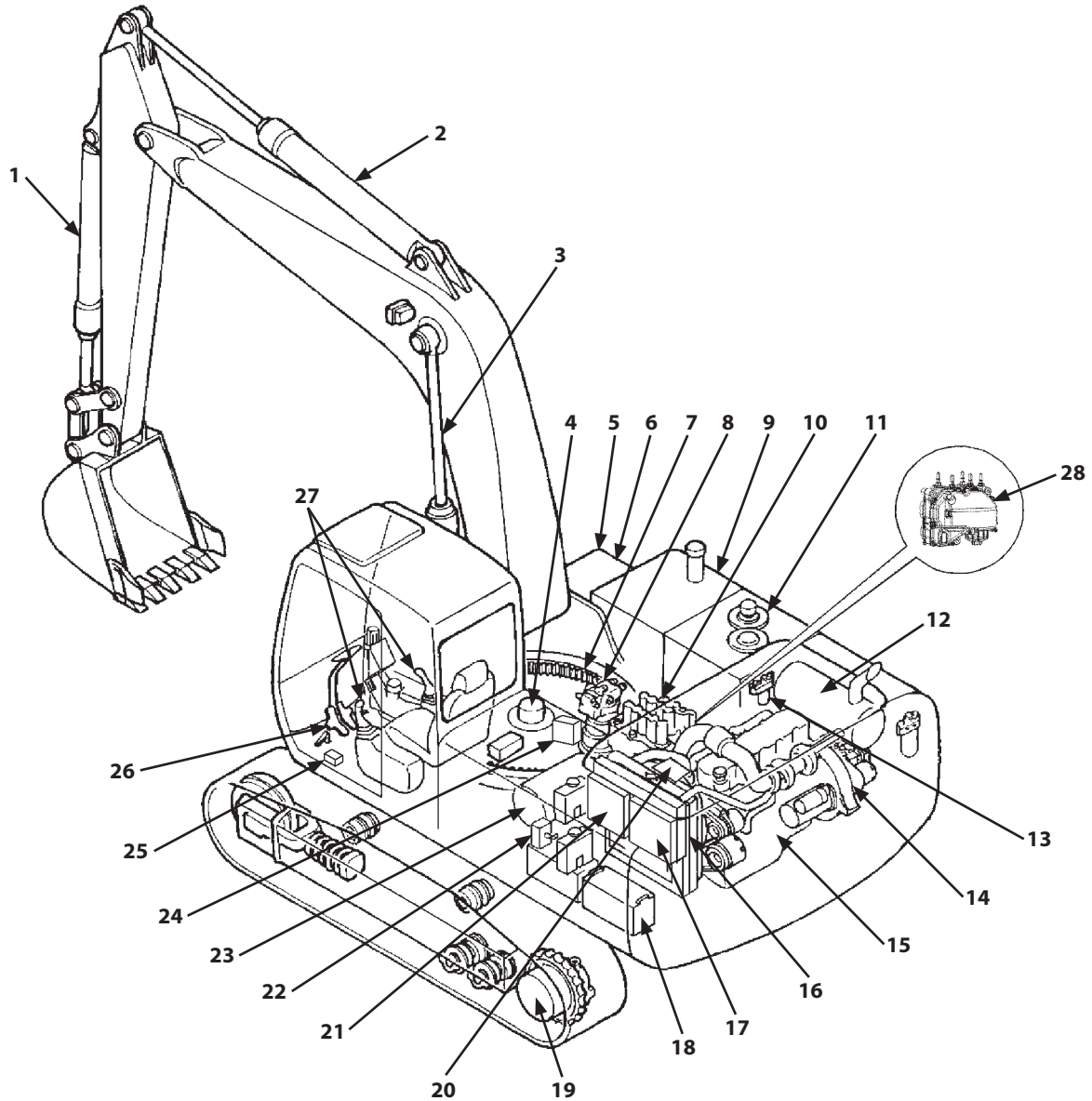
SYMBOL AND ABBREVIATION

Symbol / Abbreviation	Name	Explanation
TO	Technical manual (Operational principle)	Technical manual (Operational Principle).
TT	Technical manual (Troubleshooting)	Technical manual (Troubleshooting).
T/M	Technical manual	Technical manual.
W, W/M	Workshop manual	Workshop manual (Removal and Installation, Disassembly and Assembly).
MC	Main Controller	Main controller. MC controls the engine, pump, and valve according to the machine operating condition.
ECM	Engine Control Module	Engine controller. ECM controls fuel injection amount according to the machine operating condition.
VGS	Variable Geometry System controller	Variable turbo controller. VGS is an exhaust turbo charged system to supercharge the exhaust energy while running the engine at slow idle speed. VGS optimizes the turbine rotation, improves the performance at slow-speed torque and the acceleration, reduces fuel consumption, and reduces particulate matter (PM) by adjusting the nozzle opening of turbine housing.
GSM	Global System for Mobile communications controller	Communication controller. GSM is a type of wireless communication system, is used in more than on 100 countries around Europe and Asia, and becomes the factual global standards of the mobile telephone.
GPS	Global Positioning System	Global positioning system.
CAN	Controller Area Network	CAN communication. CAN is a serial communications protocol internationally-standardized by ISO (International Organization for Standardization).
A/C	Air Conditioner	Air conditioner.
OP, OPT	Option	Optional component.
MPDr.	Maintenance Pro Dr.	MPDr. is software that troubleshooting, monitoring, and adjustment.
A/I	Auto-Idle	Auto-idle.
WU	Warming-Up	Warming-up.
Li	Low (Slow) Idle	Slow idle engine speed.
ATT	Attachment	Attachment. Attachment is optional parts such as breaker, crusher, and pulverizer in this manual.
HI, Hi	High	Travel fast position.
LO, Lo	Low	Travel slow position.

SECTION 1 GENERAL

Group 2 Component Layout

Main Component



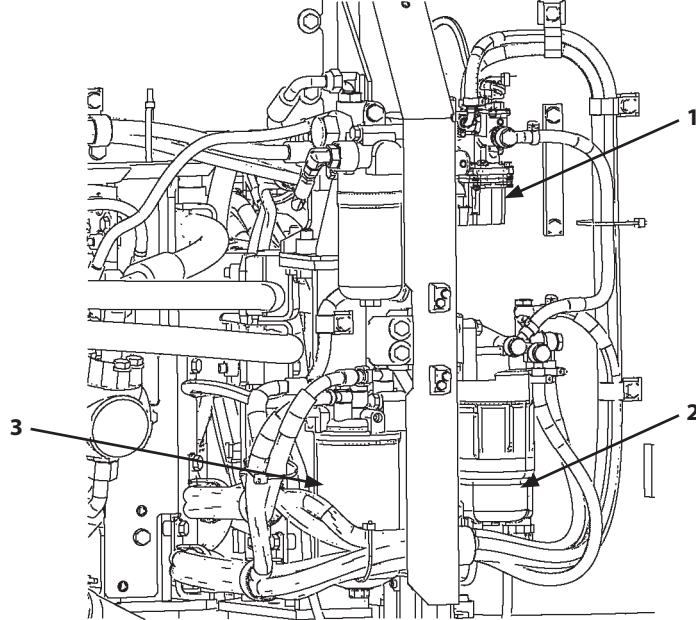
TDC1-01-02-010

- | | | | |
|--------------------|-------------------------------------|---|---|
| 1- Bucket Cylinder | 9- Fuel Tank | 17- Air Conditioner Condenser | 23- Air Cleaner |
| 2- Arm Cylinder | 10- Control Valve | 18- Battery | 24- Signal Control Valve |
| 3- Boom Cylinder | 11- Hydraulic Oil Tank | 19- Components Related with Travel Device (Refer to T1-2-14.) | 25- Pilot Shut-Off Solenoid Valve |
| 4- Center Joint | 12- Aftertreatment Device | | 26- Travel Pilot Valve |
| 5- Tool Box | 13- Pilot Filter/Pilot Relief Valve | | 27- Front Attachment /Swing Pilot Valve |
| 6- DEF Tank | 14- Pump Device | | 28- DEF Supply Module |
| 7- Swing Bearing | 15- Engine | | |
| 8- Swing Device | 16- Intercooler/Oil Cooler/Radiator | 20- Expansion Tank | |
| | | 21- Fuel Cooler | |
| | | 22- Battery Disconnect Switch | |

SECTION 1 GENERAL

Group 2 Component Layout

Around Pump Device



TDC4-01-02-001

1- Electric Fuel Pump

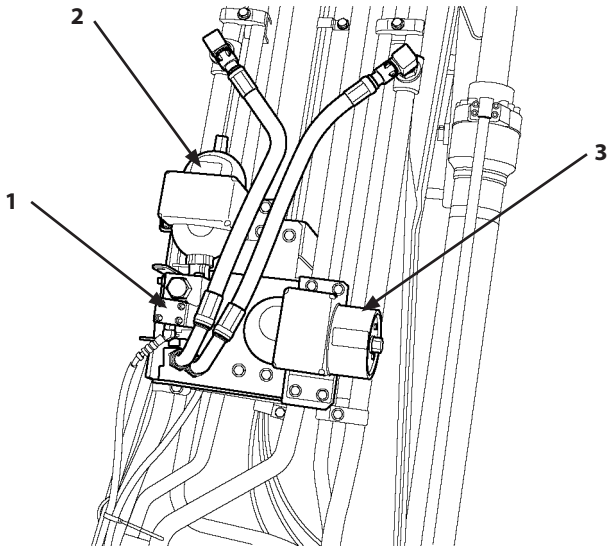
2- Fuel Pre-Filter

3- Fuel Main Filter

SECTION 1 GENERAL

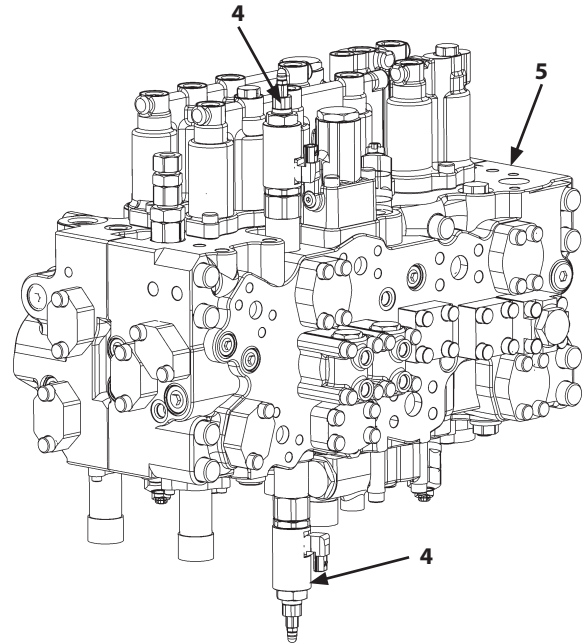
Group 2 Component Layout

Boom Upper Area



T1V1-01-02-030

Control Valve Upper Side, Lower Side



TDCK-01-02-005

- | | | |
|-------------------------------|------------------------------------|------------------|
| 1- Accumulator Control Valve | 3- Accumulator (High Pressure) | 5- Control Valve |
| 2- Accumulator (Low Pressure) | 4- Auxiliary Overload Relief Valve | |

SECTION 1 GENERAL

Group 3 Component Specifications

FRONT ATTACHMENT PILOT VALVE	Plunger Stroke	Ports 1, 3: 6.5 mm
		Ports 2, 4: 8.0 mm
TRAVEL PILOT VALVE	Plunger Stroke	Ports 1, 2, 3, 4: 4.6 mm
5-SPOOL SOLENOID VALVE UNIT	Type	5-Spool Proportional Solenoid Valve
	Rated Voltage	DC 24 V
	Coil Resistance	22 Ω
2-SPOOL SOLENOID VALVE UNIT (for Aftertreatment Device Regeneration Control)	Type	2-Spool Proportional Solenoid Valve
	Rated Voltage	DC 24 V
	Coil Resistance	22 Ω
AUXILIARY FLOW CONBINER CONTROL SOLENOID VALVE (Option)	Rated Voltage	DC 24 V
	Coil Resistance	59.7 Ω
AUXILIARY FLOW RATE CONTROL SOLENOID VALVE (Option)	Rated Voltage	DC 24 V
	Coil Resistance	22 Ω
SIGNAL CONTROL VALVE	Rated Pressure	3.72 MPa
PILOT SHUT-OFF SOLENOID VALVE	Type	ON/OFF Solenoid Valve
	Rated Voltage	DC 24 V
	Coil Resistance	49 Ω at 20 °C
OIL COOLER BYPASS CHECK VALVE	Cracking Pressure	490 kPa at 5 L/min

SECTION 2 SYSTEM

Group 2 Control System

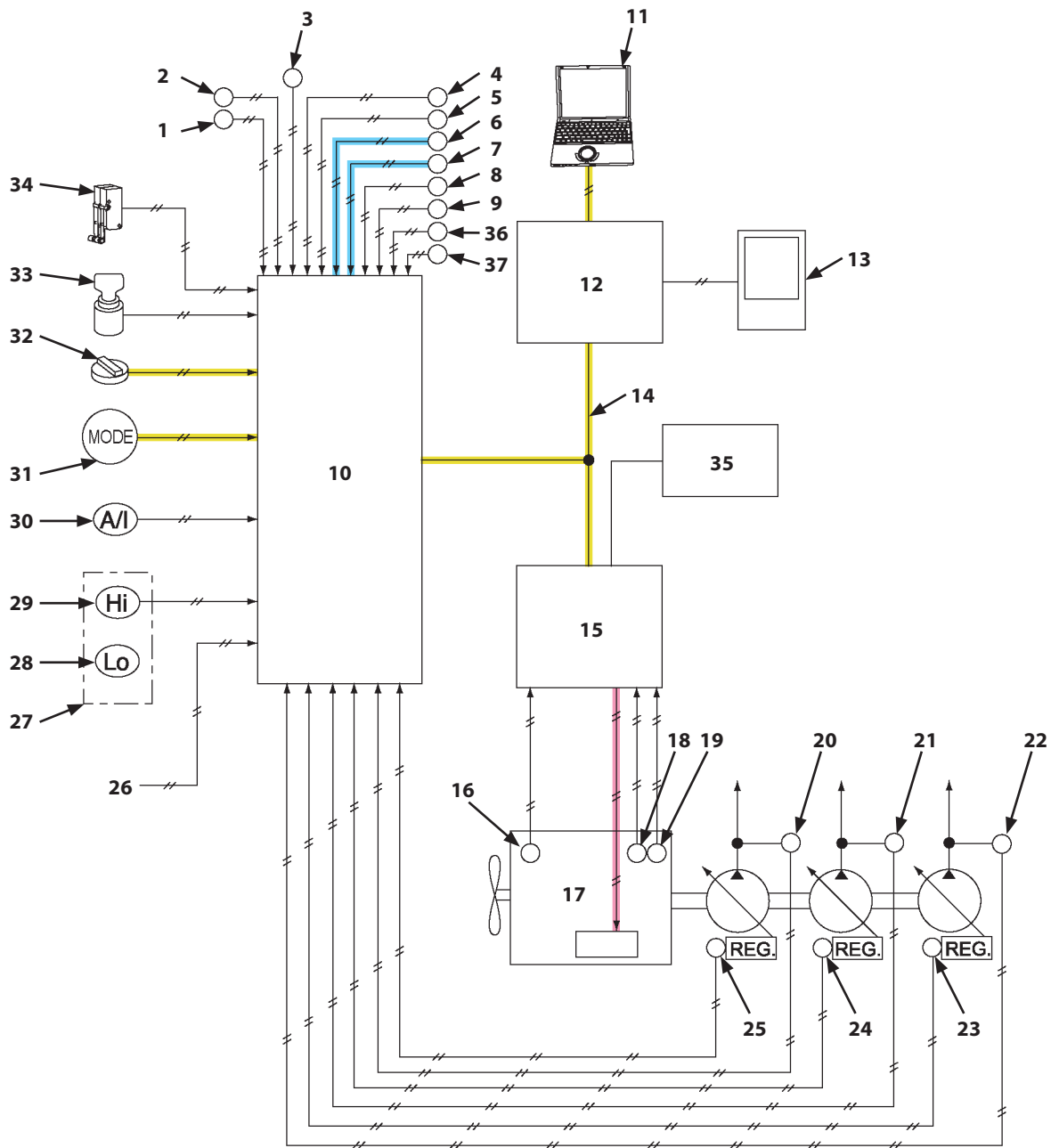
Outline

MC is used in order to control the machine operations. Signals from the engine control dial, various sensors, and various switches are sent to MC and processed in the logic circuit.

MC sends the signal equivalent to the target engine speed to ECM by using CAN communication in order to control the engine. (Refer to SYSTEM/Engine System.) In addition, MC drives the solenoid valve unit and torque control solenoid valve in order to control the pump and valve.

SECTION 2 SYSTEM

Group 2 Control System

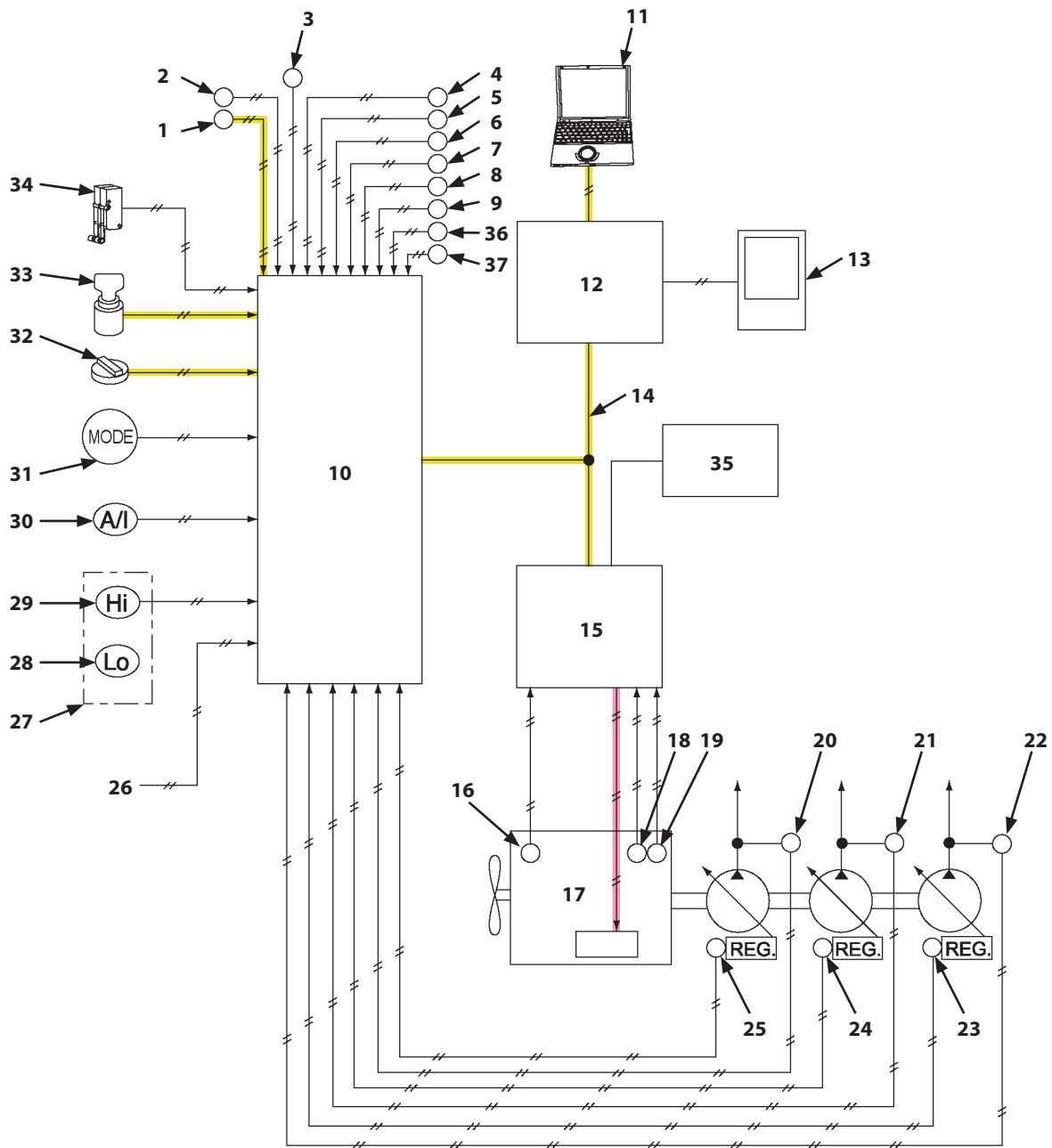


TDC1-02-02-004

- | | | | |
|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|
| 1- Hydraulic Oil Temperature Sensor | 9- Pressure Sensor (Auxiliary 2) (OP) | 20- Pump 1 Delivery Pressure Sensor | 27- Travel Mode Switch |
| 2- Pressure Sensor (Boom Raise) | 10- MC | 21- Pump 3 Delivery Pressure Sensor | 28- Slow Speed Position |
| 3- Pressure Sensor (Arm Roll-In) | 11- MPDR. | 22- Pump 2 Delivery Pressure Sensor | 29- Fast Speed Position |
| 4- Pressure Sensor (Bucket Roll-In) | 12- Monitor Controller | 23- Pump 2 Control Pressure Sensor | 30- Auto-Idle Switch |
| 5- Pressure Sensor (Swing) | 13- Monitor | 24- Pump 3 Control Pressure Sensor | 31- Power Mode Switch |
| 6- Pressure Sensor (Travel) | 14- CAN | 25- Pump 1 Control Pressure Sensor | 32- Engine Control Dial |
| 7- Pressure Sensor (Front Attachment) | 15- ECM | 26- Auto Shut-Down Signal | 33- Key Switch |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 16- Coolant Temperature Sensor | | 34- Pilot Shut-Off Switch |
| | 17- Engine | | 35- DCU |
| | 18- Cam Angle Sensor | | 36- Pressure Sensor (Arm Roll-Out) |
| | 19- Crank Speed Sensor | | 37- Pressure Sensor (Bucket Roll-Out) |

SECTION 2 SYSTEM

Group 2 Control System

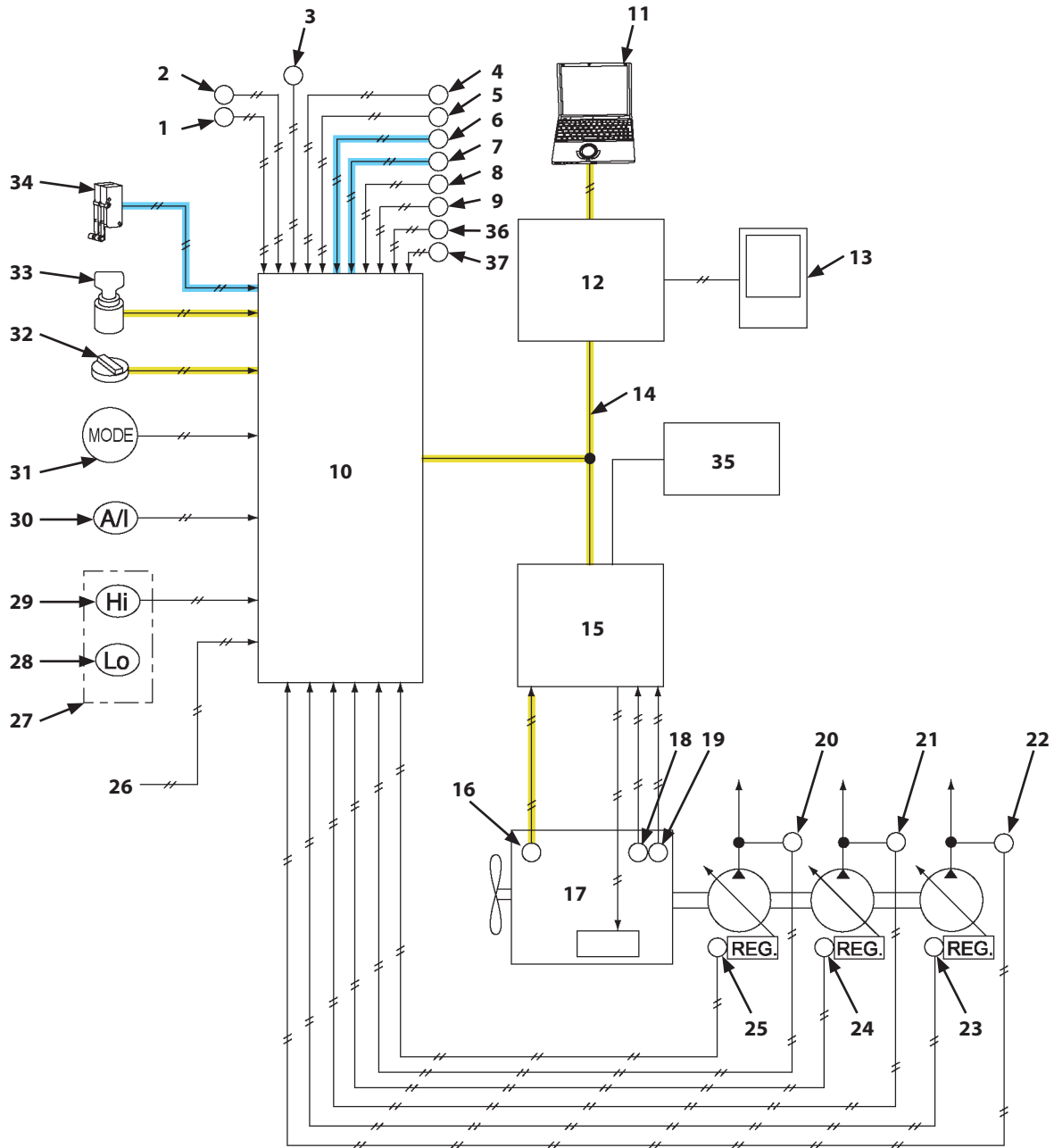


TDC1-02-02-009

- | | | | |
|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|
| 1- Hydraulic Oil Temperature Sensor | 9- Pressure Sensor (Auxiliary 2) (OP) | 20- Pump 1 Delivery Pressure Sensor | 27- Travel Mode Switch |
| 2- Pressure Sensor (Boom Raise) | 10- MC | 21- Pump 3 Delivery Pressure Sensor | 28- Slow Speed Position |
| 3- Pressure Sensor (Arm Roll-In) | 11- MPDr. | 22- Pump 2 Delivery Pressure Sensor | 29- Fast Speed Position |
| 4- Pressure Sensor (Bucket Roll-In) | 12- Monitor Controller | 23- Pump 2 Control Pressure Sensor | 30- Auto-Idle Switch |
| 5- Pressure Sensor (Swing) | 13- Monitor | 24- Pump 3 Control Pressure Sensor | 31- Power Mode Switch |
| 6- Pressure Sensor (Travel) | 14- CAN | 25- Pump 1 Control Pressure Sensor | 32- Engine Control Dial |
| 7- Pressure Sensor (Front Attachment) | 15- ECM | 26- Auto Shut-Down Signal | 33- Key Switch |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 16- Coolant Temperature Sensor | | 34- Pilot Shut-Off Switch |
| | 17- Engine | | 35- DCU |
| | 18- Cam Angle Sensor | | 36- Pressure Sensor (Arm Roll-Out) |
| | 19- Crank Speed Sensor | | 37- Pressure Sensor (Bucket Roll-Out) |

SECTION 2 SYSTEM

Group 2 Control System

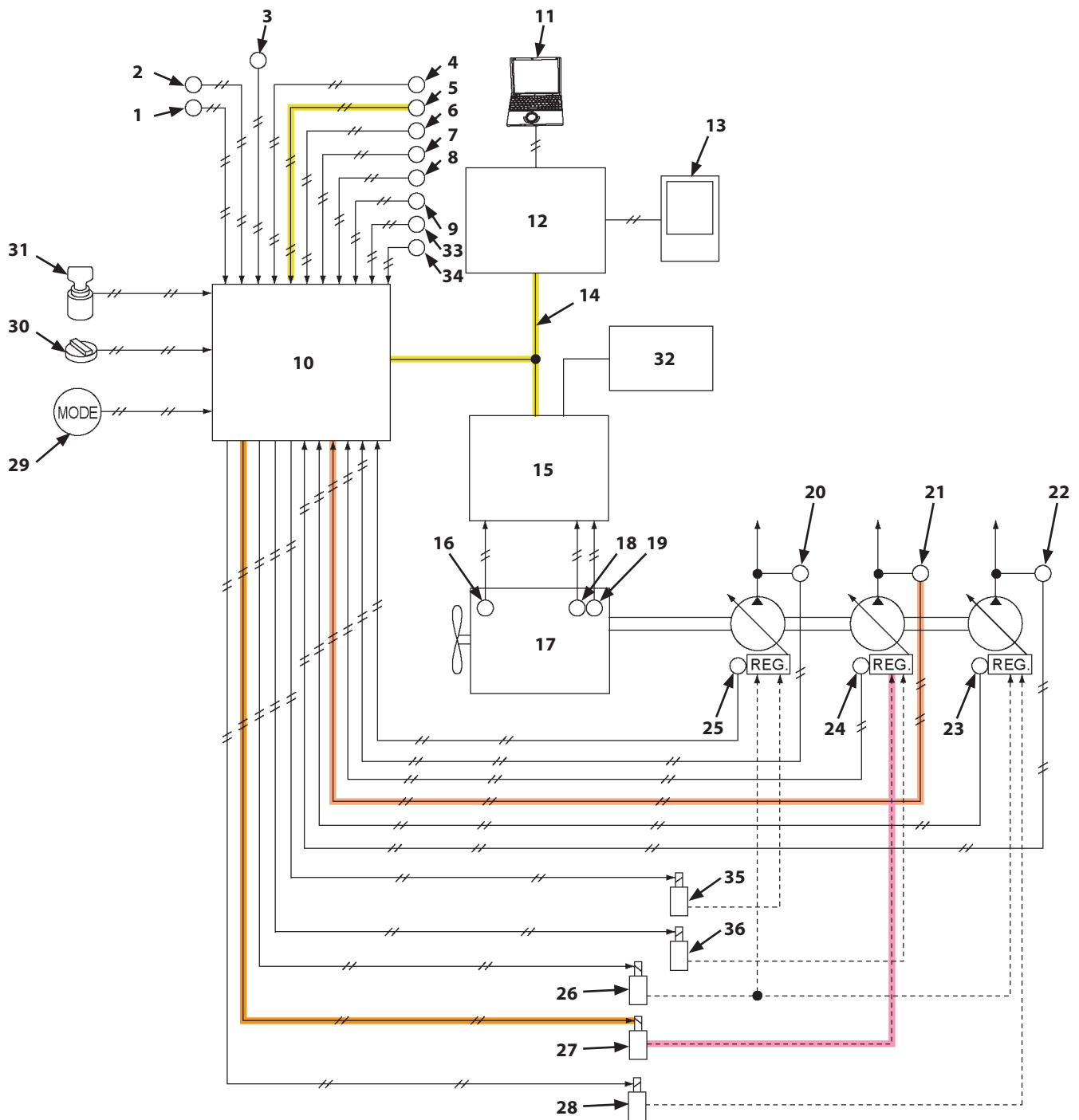


TDC1-02-02-015

- | | | | |
|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|
| 1- Hydraulic Oil Temperature Sensor | 9- Pressure Sensor (Auxiliary 2) (OP) | 20- Pump 1 Delivery Pressure Sensor | 27- Travel Mode Switch |
| 2- Pressure Sensor (Boom Raise) | 10- MC | 21- Pump 3 Delivery Pressure Sensor | 28- Slow Speed Position |
| 3- Pressure Sensor (Arm Roll-In) | 11- MPDr. | 22- Pump 2 Delivery Pressure Sensor | 29- Fast Speed Position |
| 4- Pressure Sensor (Bucket Roll-In) | 12- Monitor Controller | 23- Pump 2 Control Pressure Sensor | 30- Auto-Idle Switch |
| 5- Pressure Sensor (Swing) | 13- Monitor | 24- Pump 3 Control Pressure Sensor | 31- Power Mode Switch |
| 6- Pressure Sensor (Travel) | 14- CAN | 25- Pump 1 Control Pressure Sensor | 32- Engine Control Dial |
| 7- Pressure Sensor (Front Attachment) | 15- ECM | 26- Auto Shut-Down Signal | 33- Key Switch |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 16- Coolant Temperature Sensor | | 34- Pilot Shut-Off Switch |
| | 17- Engine | | 35- DCU |
| | 18- Cam Angle Sensor | | 36- Pressure Sensor (Arm Roll-Out) |
| | 19- Crank Speed Sensor | | 37- Pressure Sensor (Bucket Roll-Out) |

SECTION 2 SYSTEM

Group 2 Control System

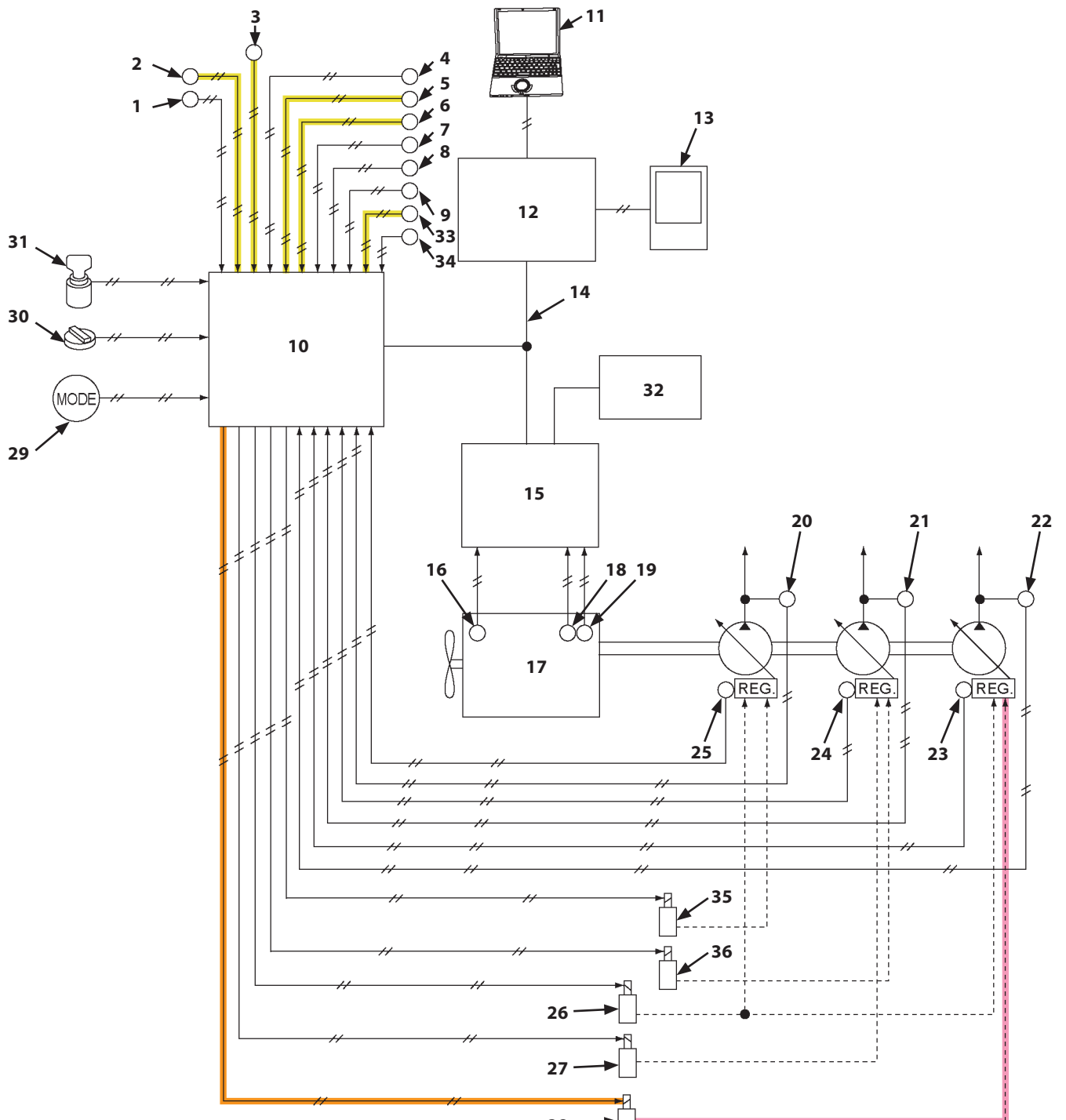


TDC1-02-02-020

- | | | | |
|---------------------------------------|-------------------------------------|---|---|
| 1- Hydraulic Oil Temperature Sensor | 10- MC | 22- Pump 2 Delivery Pressure Sensor | 29- Power Mode Switch |
| 2- Pressure Sensor (Boom Raise) | 11- MPDr. | 23- Pump 2 Control Pressure Sensor | 30- Engine Control Dial |
| 3- Pressure Sensor (Arm Roll-In) | 12- Monitor Controller | 24- Pump 3 Control Pressure Sensor | 31- Key Switch |
| 4- Pressure Sensor (Bucket Roll-In) | 13- Monitor | 25- Pump 1 Control Pressure Sensor | 32- DCU |
| 5- Pressure Sensor (Swing) | 14- CAN | 26- Pump 1 and 2 Torque Control Solenoid Valve | 33- Pressure Sensor (Arm Roll-Out) |
| 6- Pressure Sensor (Travel) | 15- ECM | 27- Pump 3 Torque Control Solenoid Valve | 34- Pressure Sensor (Bucket Roll-Out) |
| 7- Pressure Sensor (Front Attachment) | 16- Coolant Temperature Sensor | 28- Maximum Pump 2 Flow Rate Limit Control Solenoid Valve | 35- Maximum Pump 1 Flow Rate Limit Control Solenoid Valve |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 17- Engine | | 36- Maximum Pump 3 Flow Rate Limit Control Solenoid Valve |
| 9- Pressure Sensor (Auxiliary 2) (OP) | 18- Cam Angle Sensor | | |
| | 19- Crank Speed Sensor | | |
| | 20- Pump 1 Delivery Pressure Sensor | | |
| | 21- Pump 3 Delivery Pressure Sensor | | |

SECTION 2 SYSTEM

Group 2 Control System



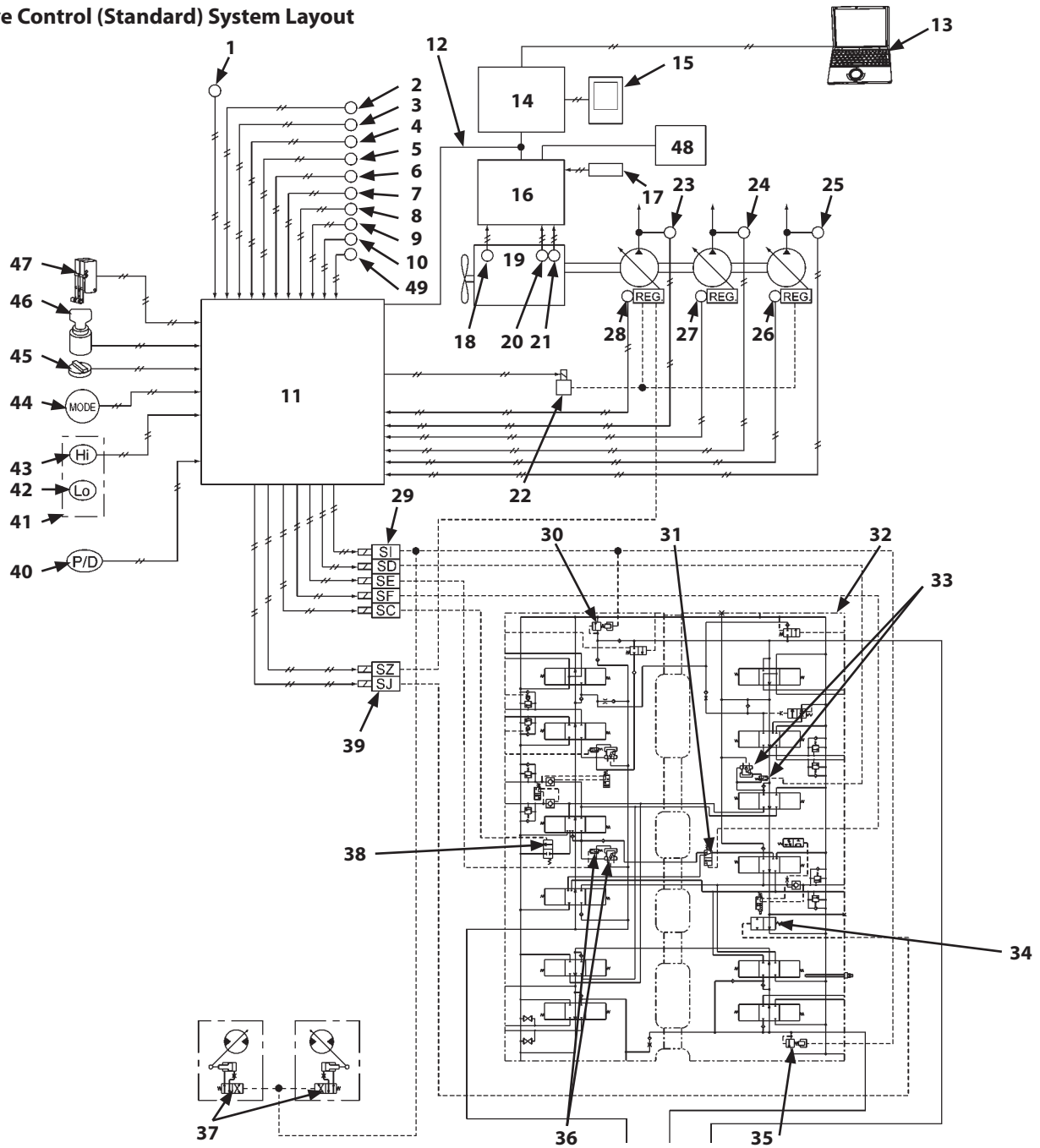
- | | | | |
|---------------------------------------|-------------------------------------|---|---|
| 1- Hydraulic Oil Temperature Sensor | 10- MC | 22- Pump 2 Delivery Pressure Sensor | 29- Power Mode Switch |
| 2- Pressure Sensor (Boom Raise) | 11- MPDr. | 23- Pump 2 Control Pressure Sensor | 30- Engine Control Dial |
| 3- Pressure Sensor (Arm Roll-In) | 12- Monitor Controller | 24- Pump 3 Control Pressure Sensor | 31- Key Switch |
| 4- Pressure Sensor (Bucket Roll-In) | 13- Monitor | 25- Pump 1 Control Pressure Sensor | 32- DCU |
| 5- Pressure Sensor (Swing) | 14- CAN | 26- Pump 1 and 2 Torque Control Solenoid Valve | 33- Pressure Sensor (Arm Roll-Out) |
| 6- Pressure Sensor (Travel) | 15- ECM | 27- Pump 3 Torque Control Solenoid Valve | 34- Pressure Sensor (Bucket Roll-Out) |
| 7- Pressure Sensor (Front Attachment) | 16- Coolant Temperature Sensor | 28- Maximum Pump 2 Flow Rate Limit Control Solenoid Valve | 35- Maximum Pump 1 Flow Rate Limit Control Solenoid Valve |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 17- Engine | | 36- Maximum Pump 3 Flow Rate Limit Control Solenoid Valve |
| 9- Pressure Sensor (Auxiliary 2) (OP) | 18- Cam Angle Sensor | | |
| | 19- Crank Speed Sensor | | |
| | 20- Pump 1 Delivery Pressure Sensor | | |
| | 21- Pump 3 Delivery Pressure Sensor | | |

TDC1-02-02-042

SECTION 2 SYSTEM

Group 2 Control System

Valve Control (Standard) System Layout

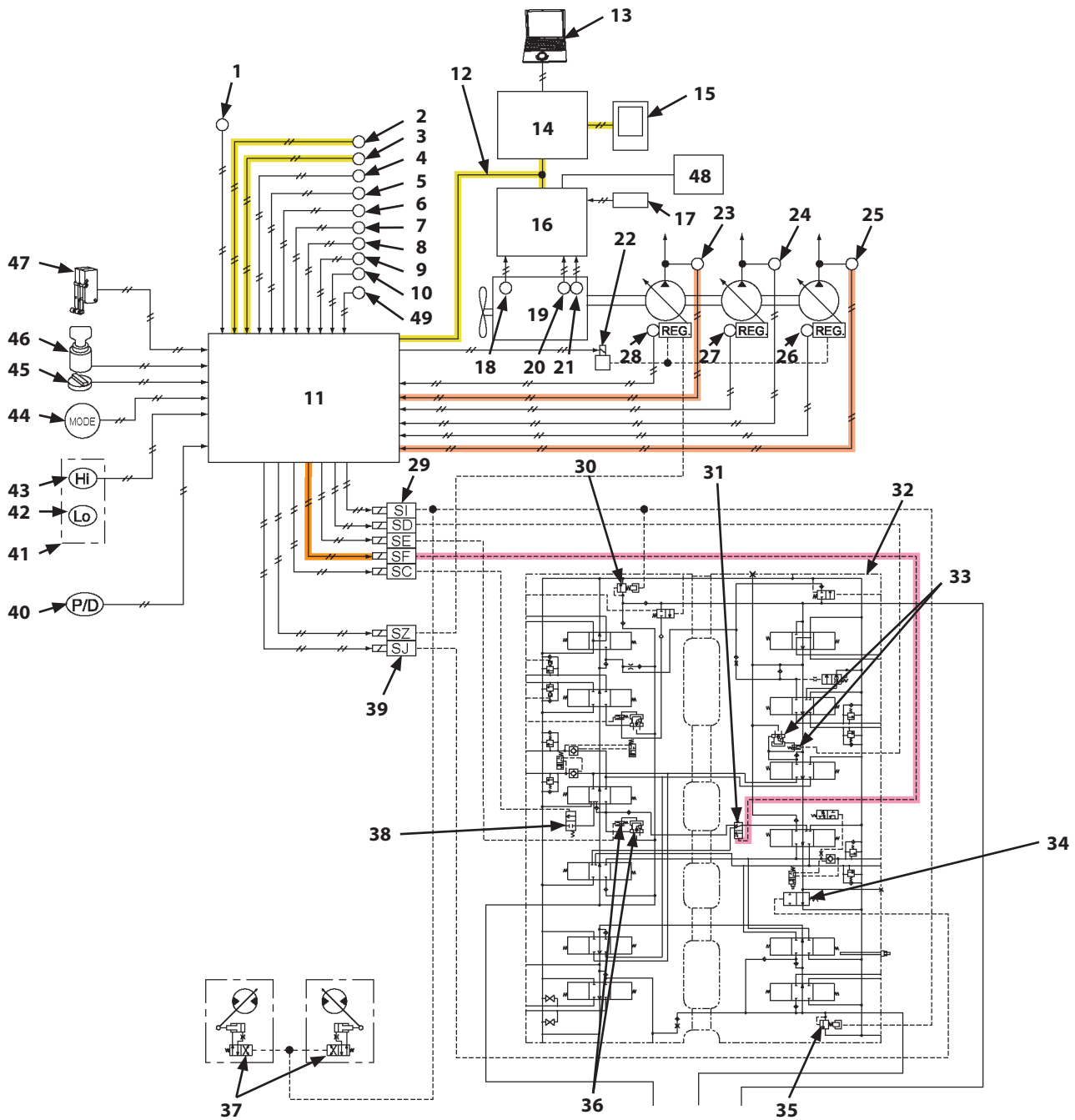


TDC1-02-02-026

- | | | | |
|---------------------------------------|--|-------------------------------------|---|
| 1- Hydraulic Oil Temperature Sensor | 12- CAN | 25- Pump 2 Delivery Pressure Sensor | 37- Travel Motor Displacement Angle Control Valve |
| 2- Pressure Sensor (Boom Raise) | 13- MPDR | 26- Pump 2 Control Pressure Sensor | 38- Arm Regenerative Valve |
| 3- Pressure Sensor (Arm Roll-In) | 14- Monitor Controller | 27- Pump 3 Control Pressure Sensor | 39- 2-Spool Solenoid Valve Unit |
| 4- Pressure Sensor (Bucket Roll-In) | 15- Monitor | 28- Pump 1 Control Pressure Sensor | 40- Power Digging Switch |
| 5- Pressure Sensor (Swing) | 16- ECM | 29- 5-Spool Solenoid Valve Unit | 41- Travel Mode Switch |
| 6- Pressure Sensor (Travel) | 17- Manual Regeneration Switch | 30- Main Relief Valve (P1, P2) | 42- Slow Speed Position |
| 7- Pressure Sensor (Front Attachment) | 18- Coolant Temperature Sensor | 31- Digging Regenerative Valve | 43- Fast Speed Position |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 19- Engine | 32- Control Valve | 44- Power Mode Switch |
| 9- Pressure Sensor (Auxiliary 2) (OP) | 20- Cam Angle Sensor | 33- Arm 2 Flow Rate Control Valve | 45- Engine Control Dial |
| 10- Pressure Sensor (Arm Roll-Out) | 21- Crank Speed Sensor | 34- Bypass Shut-Out Valve | 46- Key Switch |
| 11- MC | 22- Pump 1 and 2 Torque Control Solenoid Valve | 35- Main Relief Valve (P3) | 47- Pilot Shut-Off Switch |
| | 23- Pump 1 Delivery Pressure Sensor | 36- Arm 1 Flow Rate Control Valve | 48- DCU |
| | 24- Pump 3 Delivery Pressure Sensor | | 49- Pressure Sensor (Bucket Roll-Out) |

SECTION 2 SYSTEM

Group 2 Control System

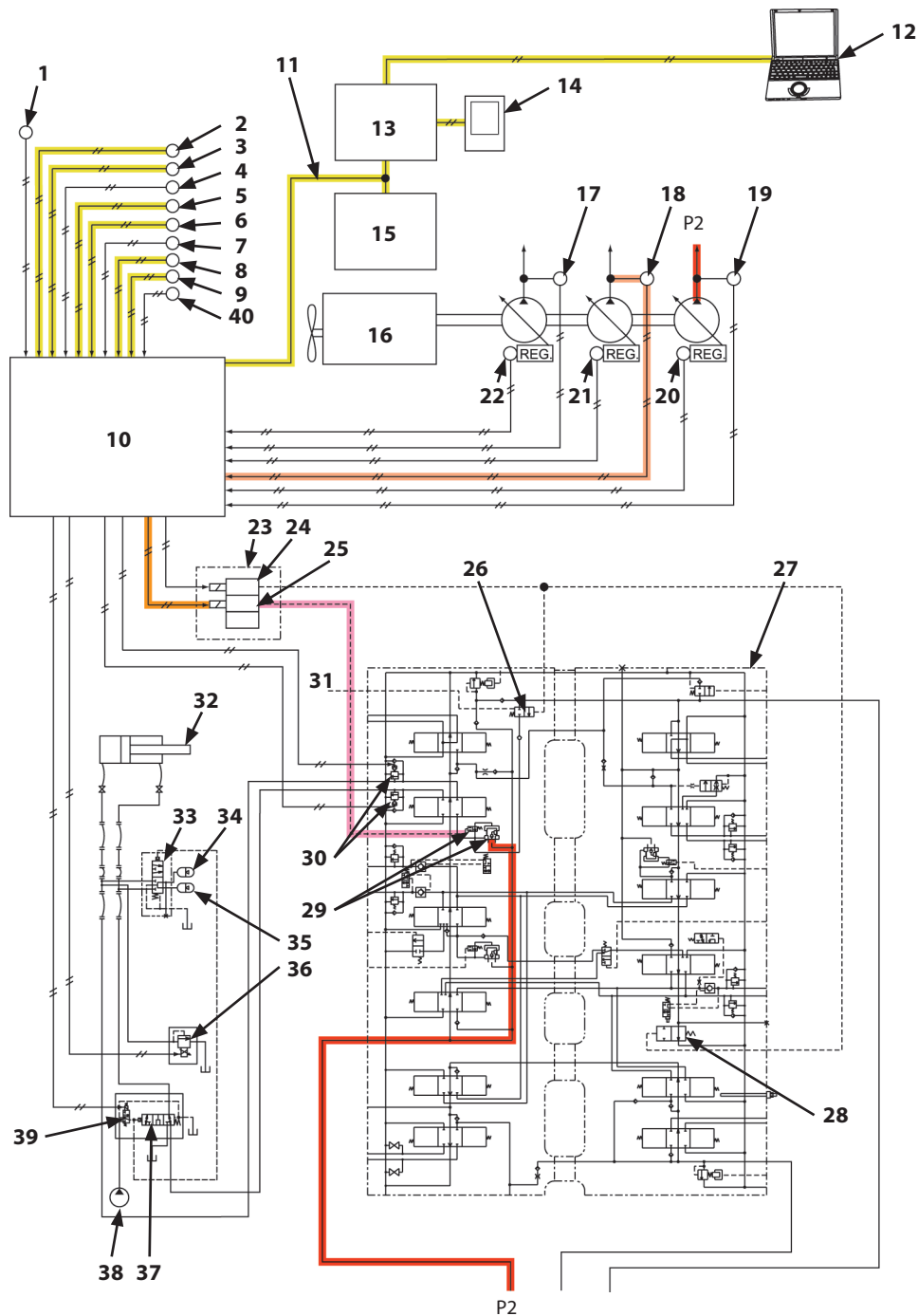


TDC1-02-02-031

- | | | | |
|---------------------------------------|--|-------------------------------------|---|
| 1- Hydraulic Oil Temperature Sensor | 12- CAN | 25- Pump 2 Delivery Pressure Sensor | 37- Travel Motor Displacement Angle Control Valve |
| 2- Pressure Sensor (Boom Raise) | 13- MPDR | 26- Pump 2 Control Pressure Sensor | 38- Arm Regenerative Valve |
| 3- Pressure Sensor (Arm Roll-In) | 14- Monitor Controller | 27- Pump 3 Control Pressure Sensor | 39- 2-Spool Solenoid Valve Unit |
| 4- Pressure Sensor (Bucket Roll-In) | 15- Monitor | 28- Pump 1 Control Pressure Sensor | 40- Power Digging Switch |
| 5- Pressure Sensor (Swing) | 16- ECM | 29- 5-Spool Solenoid Valve Unit | 41- Travel Mode Switch |
| 6- Pressure Sensor (Travel) | 17- Manual Regeneration Switch | 30- Main Relief Valve (P1, P2) | 42- Slow Speed Position |
| 7- Pressure Sensor (Front Attachment) | 18- Coolant Temperature Sensor | 31- Digging Regenerative Valve | 43- Fast Speed Position |
| 8- Pressure Sensor (Auxiliary 1) (OP) | 19- Engine | 32- Control Valve | 44- Power Mode Switch |
| 9- Pressure Sensor (Auxiliary 2) (OP) | 20- Cam Angle Sensor | 33- Arm 2 Flow Rate Control Valve | 45- Engine Control Dial |
| 10- Pressure Sensor (Arm Roll-Out) | 21- Crank Speed Sensor | 34- Bypass Shut-Out Valve | 46- Key Switch |
| 11- MC | 22- Pump 1 and 2 Torque Control Solenoid Valve | 35- Main Relief Valve (P3) | 47- Pilot Shut-Off Switch |
| | 23- Pump 1 Delivery Pressure Sensor | 36- Arm 1 Flow Rate Control Valve | 48- DCU |
| | 24- Pump 3 Delivery Pressure Sensor | | 49- Pressure Sensor (Bucket Roll-Out) |

SECTION 2 SYSTEM

Group 2 Control System

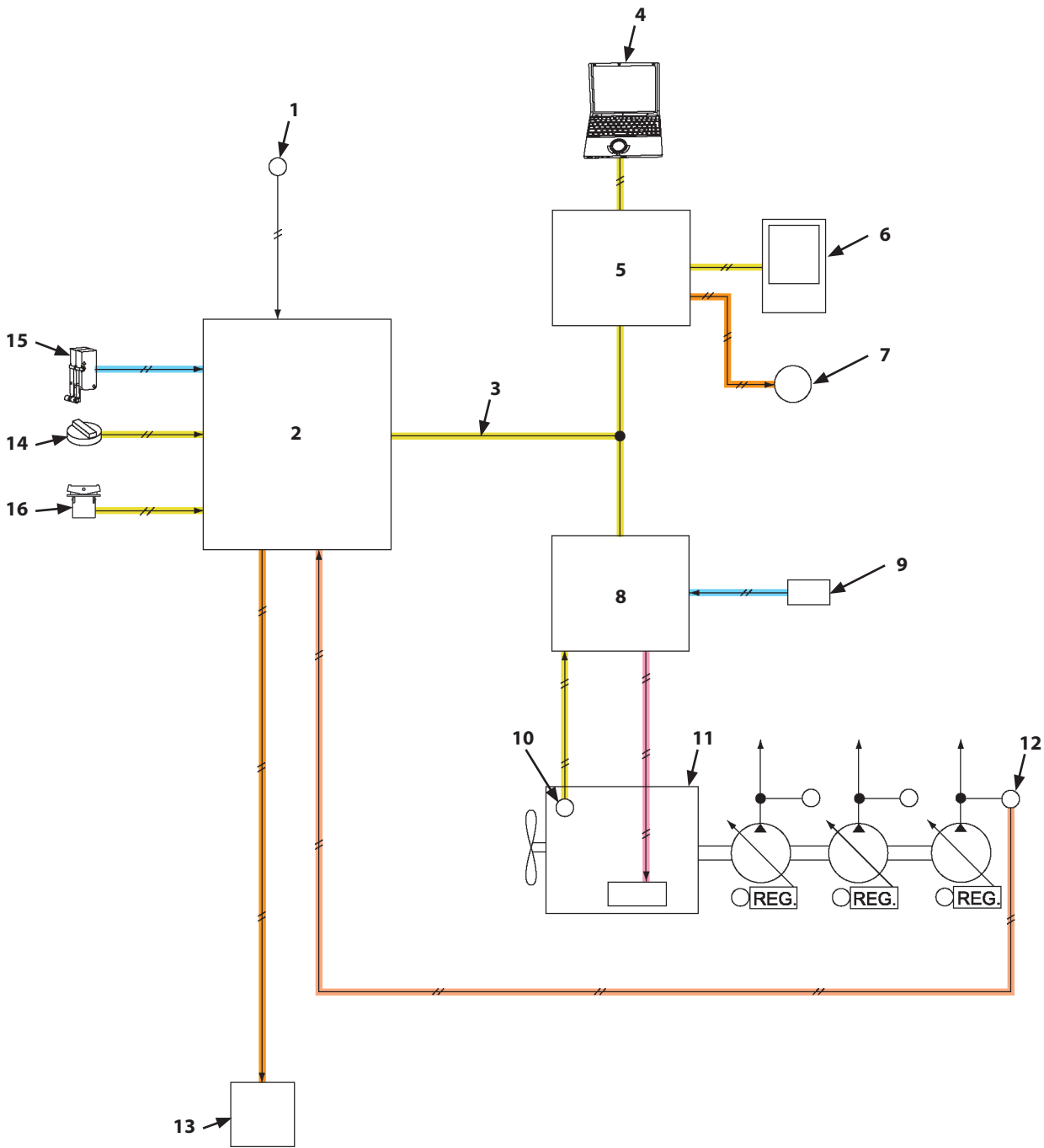


TDC1-02-02-036

- | | | | |
|---------------------------------------|-------------------------------------|--|---|
| 1- Hydraulic Oil Temperature Sensor | 12- MPDr. | 22- Pump 1 Control Pressure Sensor | 31- Travel Pilot Pressure |
| 2- Pressure Sensor (Boom Raise) | 13- Monitor Controller | 23- Auxiliary Control Solenoid Valve Unit | 32- Attachment |
| 3- Pressure Sensor (Arm Roll-In) | 14- Monitor | 24- Auxiliary Flow Combiner Control Solenoid Valve | 33- Accumulator Control Valve |
| 4- Pressure Sensor (Bucket Roll-In) | 15- ECM | 25- Auxiliary Flow Rate Control Solenoid Valve | 34- Accumulator (High Pressure) |
| 5- Pressure Sensor (Swing) | 16- Engine | 26- Auxiliary Flow Combiner Valve | 35- Accumulator (Low Pressure) |
| 6- Pressure Sensor (Travel) | 17- Pump 1 Delivery Pressure Sensor | 27- Control Valve | 36- Breaker Relief Solenoid Valve |
| 7- Pressure Sensor (Front Attachment) | 18- Pump 3 Delivery Pressure Sensor | 28- Bypass Shut-Out Valve | 37- Selector Valve |
| 8- Pressure Sensor (Auxiliary) (OP) | 19- Pump 2 Delivery Pressure Sensor | 29- Auxiliary Flow Rate Control Valve | 38- Pilot Pump |
| 9- Pressure Sensor (Arm Roll-Out) | 20- Pump 2 Control Pressure Sensor | 30- Overload Relief Valve (Auxiliary 1) | 39- Selector Valve Control Solenoid Valve |
| 10- MC | 21- Pump 3 Control Pressure Sensor | | 40- Pressure Sensor (Bucket Roll-Out) |
| 11- CAN | | | |

SECTION 2 SYSTEM

Group 2 Control System

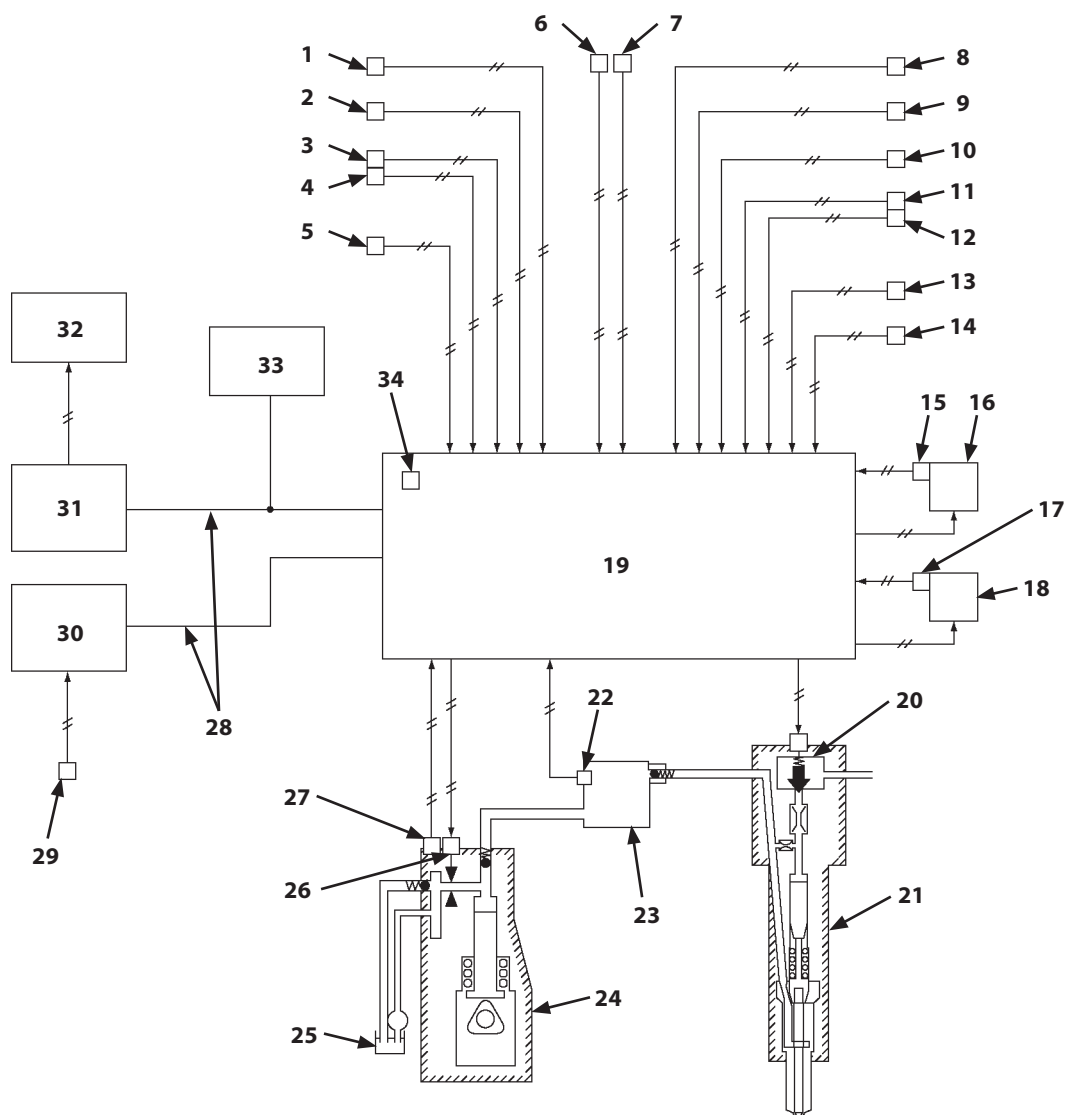


TDC1-02-02-044

- | | | | |
|-------------------------------------|-------------------------------|-------------------------------------|---------------------------|
| 1- Hydraulic Oil Temperature Sensor | 5- Monitor Controller | 10- Coolant Temperature Sensor | 14- Engine Control Dial |
| 2- MC | 6- Monitor | 11- Engine | 15- Pilot Shut-Off Switch |
| 3- CAN | 7- Buzzer | 12- Pump 1 Delivery Pressure Sensor | 16- Overload Alarm Switch |
| 4- MPDr. | 8- ECM | 13- Auto Shut-Down Relay | |
| | 9- Manual Regeneration Switch | | |

SECTION 2 SYSTEM

Group 3 Engine System

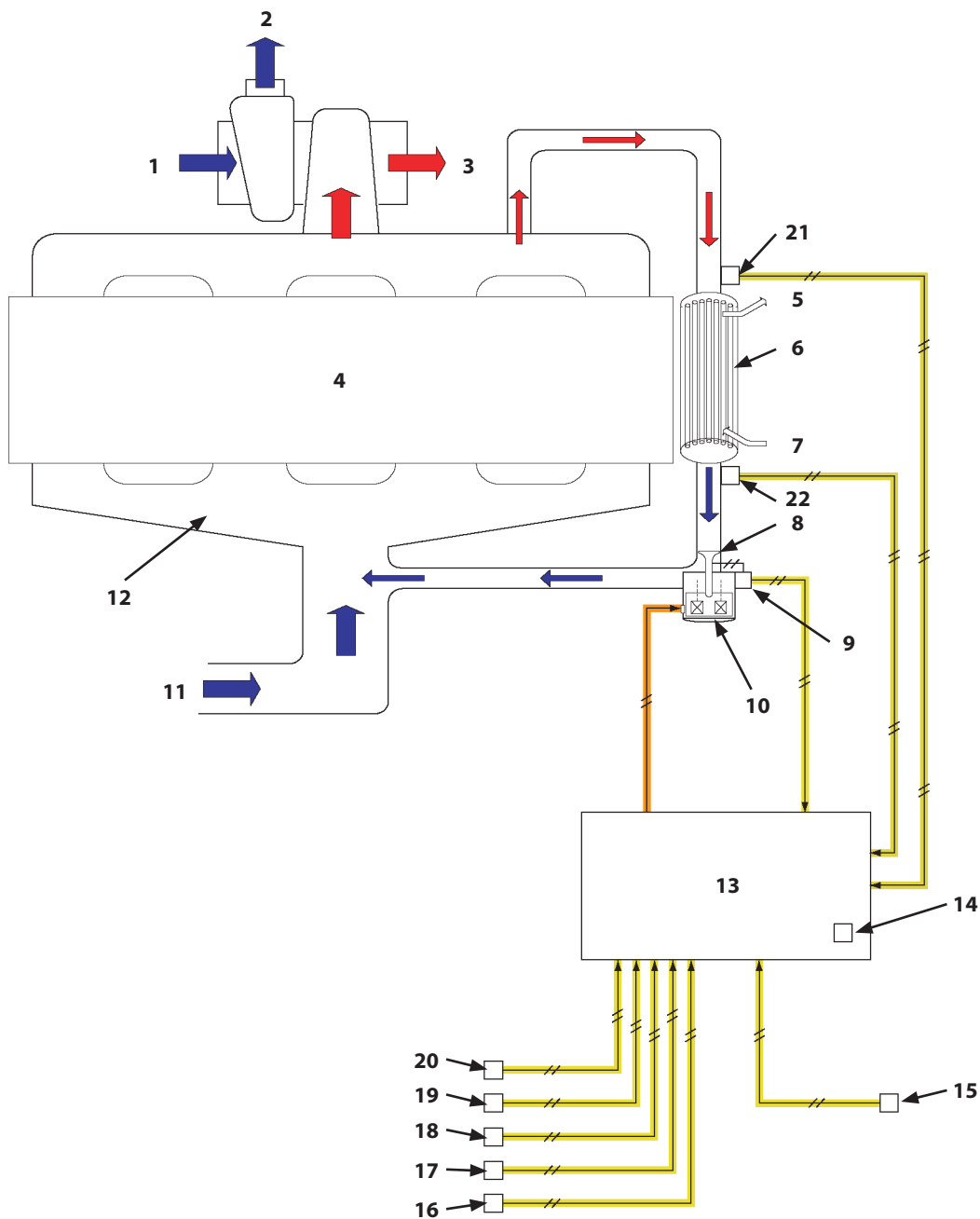


TDC2-02-03-009

- | | | | |
|---|--|-------------------------------------|---|
| 1- EGR Cooler Inlet Temperature Sensor | 7- DOC Outlet Exhaust Temperature Sensor | 16- EGR Motor | 27- Fuel Temperature Sensor |
| 2- EGR Cooler Outlet Temperature Sensor | 8- Crank Speed Sensor | 17- Intake Throttle Position Sensor | 28- CAN |
| 3- Intake-Air Temperature Sensor | 9- Cam Angle Sensor | 18- Intake Throttle | 29- Engine Oil Level Switch |
| 4- MAF Sensor | 10- Coolant Temperature Sensor | 19- ECM | 30- MC |
| 5- Intercooler Inlet Temperature Sensor | 11- Boost Pressure Sensor | 20- Two-Way Valve | 31- VGS Controller |
| 6- DOC Inlet Exhaust Temperature Sensor | 12- Boost Temperature Sensor | 21- Injector | 32- VGS Actuator |
| | 13- Engine Oil Pressure Sensor | 22- Common Rail Pressure Sensor | 33- DCU |
| | 14- Intake Manifold Temperature Sensor | 23- Common Rail | 34- Atmospheric Pressure Sensor (Inside of ECM) |
| | 15- EGR Motor Position Sensor | 24- Supply Pump | |
| | | 25- Fuel Tank | |
| | | 26- Suction Control Valve | |

SECTION 2 SYSTEM

Group 3 Engine System

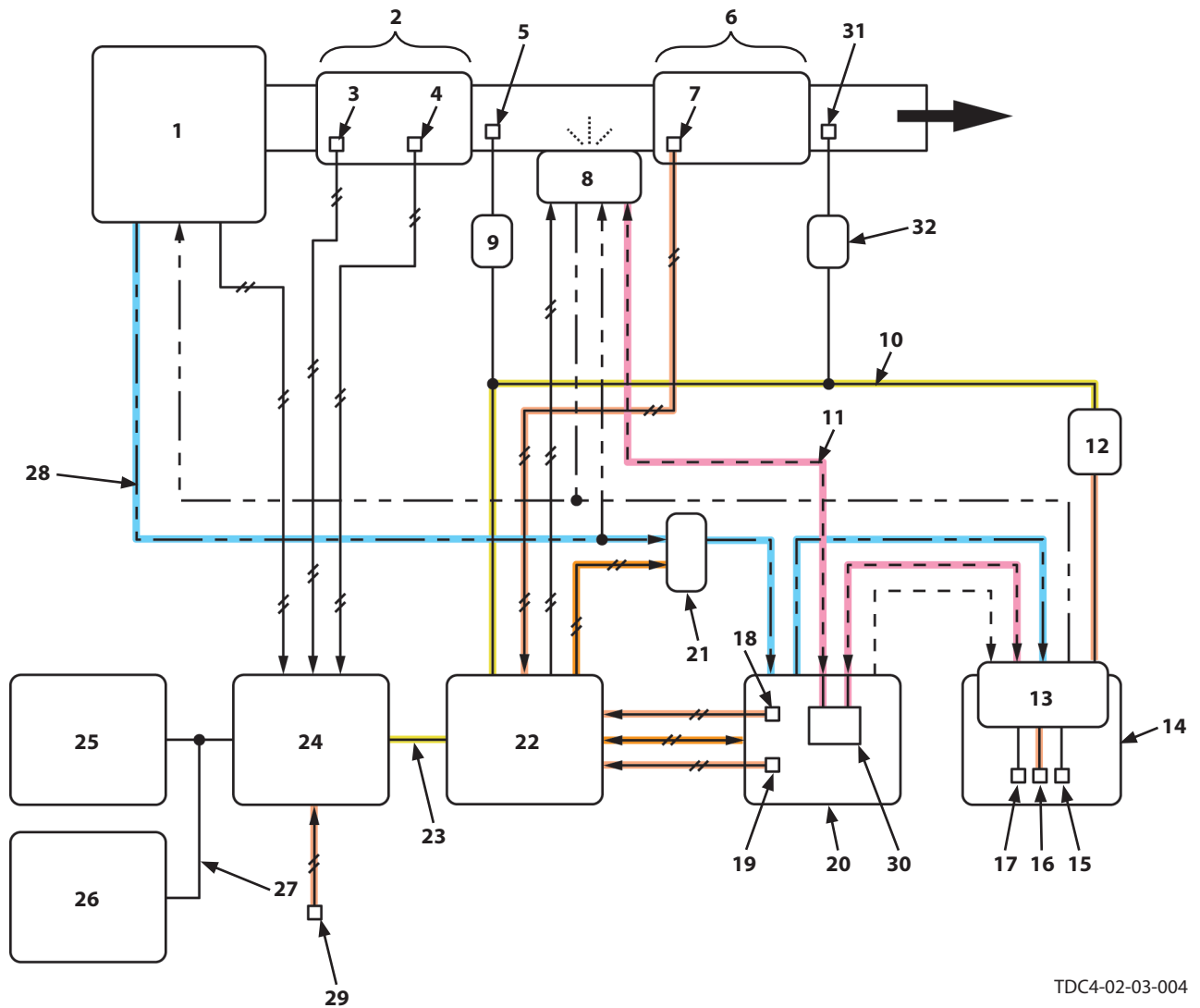


TDC2-02-03-013

- | | | | |
|---------------------------------------|---|---|--|
| 1- From Air Cleaner | 8- EGR Valve | 14- Atmospheric Pressure Sensor (Inside of ECM) | 19- Cam Angle Sensor |
| 2- To Intercooler | 9- EGR Motor Position Sensor | 15- MAF Sensor (Intake-Air Temperature Sensor) | 20- Crank Speed Sensor |
| 3- Exhaust (To Aftertreatment Device) | 10- EGR Motor | 16- Intake Manifold Temperature Sensor | 21- EGR Cooler Inlet Temperature Sensor |
| 4- Engine | 11- Intake-Air (From Suction Intercooler) | 17- Common Rail Pressure Sensor | 22- EGR Cooler Outlet Temperature Sensor |
| 5- Outlet of Coolant | 12- Intake Manifold | 18- Coolant Temperature Sensor | |
| 6- EGR Cooler | 13- ECM | | |
| 7- Inlet of Coolant | | | |

SECTION 2 SYSTEM

Group 3 Engine System



TDC4-02-03-004

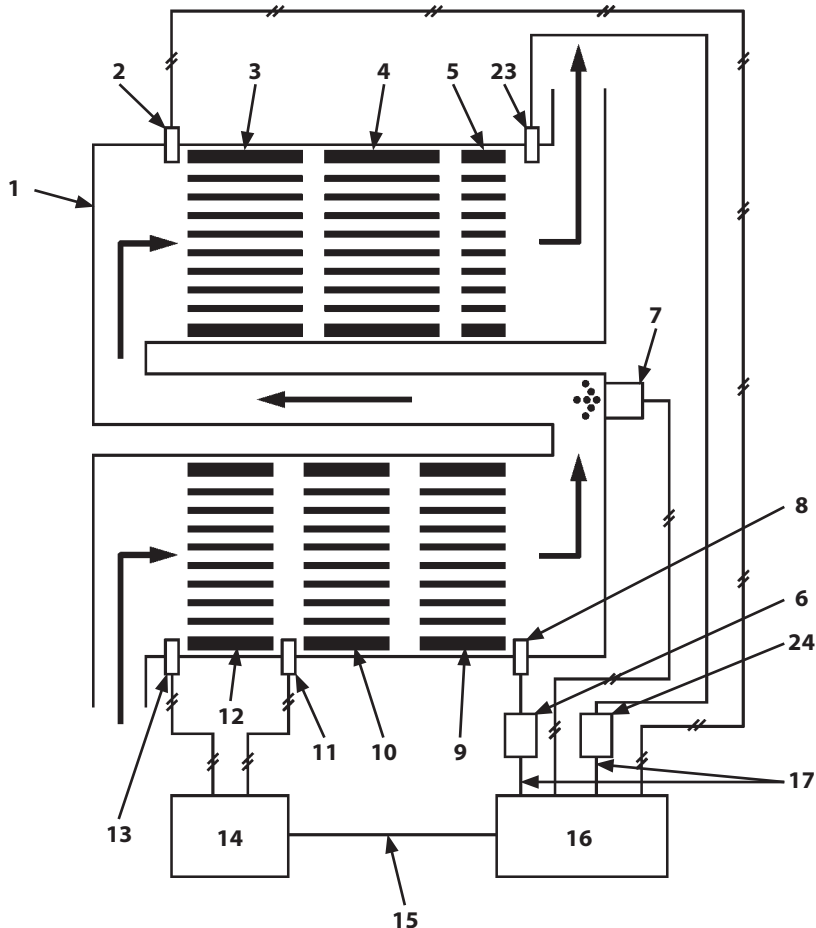
- | | | | |
|--|-----------------------------------|--|---------------------------------------|
| 1- Engine | 8- Dosing Module | 18- DEF Pressure Sensor | 28- Coolant Piping |
| 2- DOC (Diesel Oxidation Catalyst) | 9- Upstream NOx Sensor Controller | 19- DEF Supply Module Temperature Sensor | 29- MAF/Intake-Air Temperature Sensor |
| 3- DOC Inlet Exhaust Temperature Sensor | 10- Local-CAN | 20- DEF Supply Module | |
| 4- DOC Outlet Exhaust Temperature Sensor | 11- DEF Piping | 21- Coolant Control Valve | |
| 5- Upstream NOx Sensor | 12- DEF Sensor Unit Controller | 22- DCU | |
| 6- SCR Catalyst | 13- DEF Sensor Unit | 23- ISO-CAN | |
| 7- SCR Exhaust Temperature Sensor | 14- DEF Tank | 24- ECM | |
| | 15- DEF Tank Level Sensor | 25- Monitor Controller | |
| | 16- DEF Tank Temperature Sensor | 26- MC | |
| | 17- DEF Quality Sensor | 27- CAN0 | |
| | | | 30- Reverting Valve |
| | | | 31- Downstream NOx Sensor |
| | | | 32- Downstream NOx Sensor Controller |

SECTION 2 SYSTEM

Group 3 Engine System

Operation

1. Exhaust gas which burns in the engine cylinder flows into aftertreatment device (1).
2. Diesel oxidation catalysts (DOC) 1 (12), 2(10), and 3 (9) reduce harmful substances contained in exhaust gas such as carbon monoxide by initiating a chemical reaction.
3. DCU (16) controls dosing module (7) according to the signals from upstream NOx sensor (8).
4. Dosing module (7) injects DEF into aftertreatment device (1).
5. At this time, DEF breaks down into ammonia (NH₃) and carbon dioxide (CO₂).
6. SCR catalysts 1 (3) and 2 (4) initiate a chemical reaction of ammonia (NH₃) and NOx in exhaust gas, so that, NOx is broken down into nitrogen and water.
7. Diesel oxidation catalysts (DOC) 4 (5) breaks down ammonia (NH₃) into nitrogen (N₂) and water (H₂O).
8. As a result, NOx is reduced from exhaust gas and any remaining ammonia (NH₃) is removed.

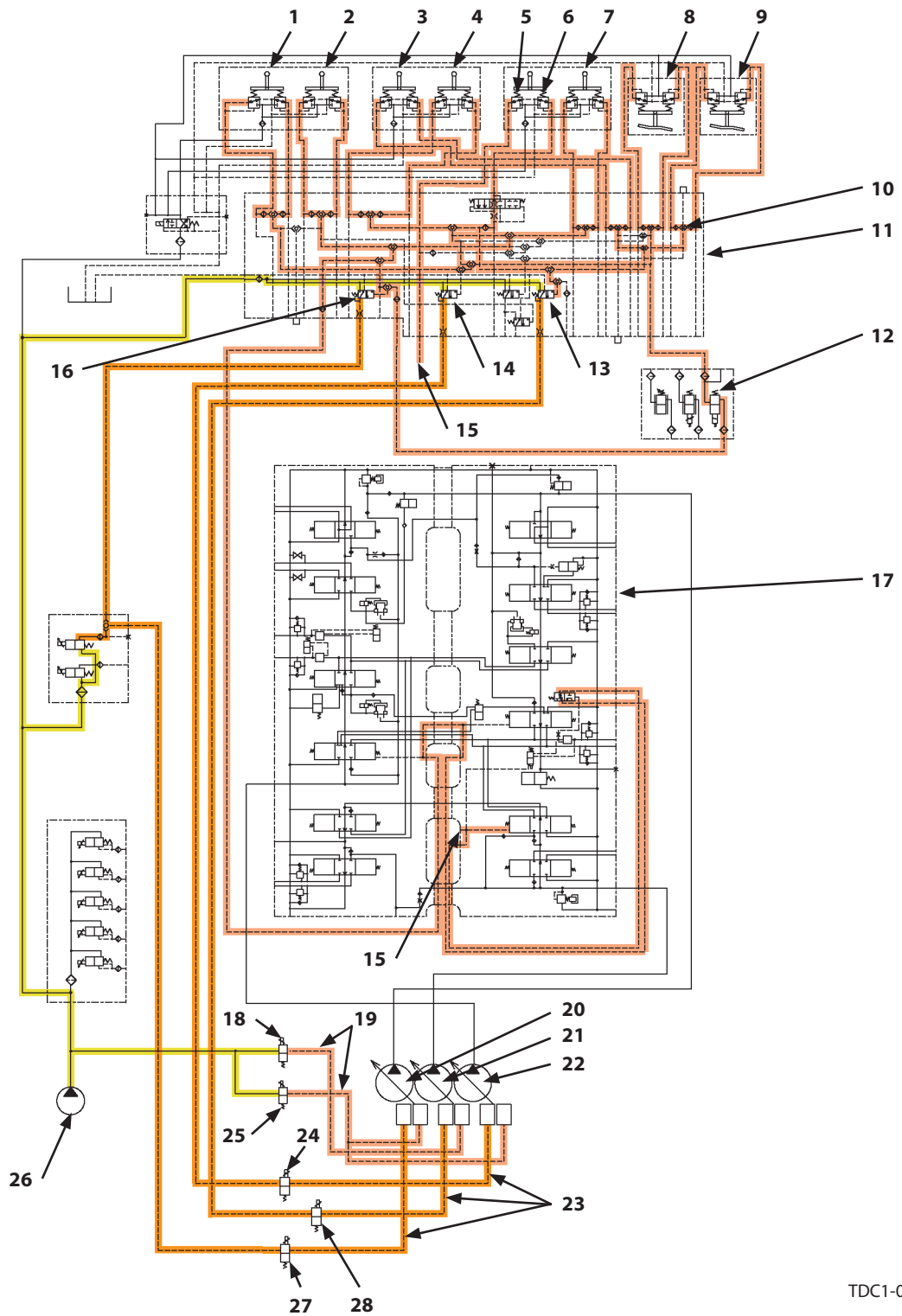


TDC4-02-03-008

- | | | | |
|--------------------------------------|---------------------------------------|---|--------------------------------------|
| 1- Aftertreatment Device | 6- Upstream NOx Sensor Controller | 11- DOC Outlet Exhaust Temperature Sensor | 16- DCU |
| 2- SCR Exhaust Temperature Sensor | 7- Dosing Module | 12- Diesel Oxidation Catalyst (DOC) 1 | 17- Local-CAN |
| 3- SCR Catalyst 1 | 8- Upstream NOx Sensor | 13- DOC Inlet Exhaust Temperature Sensor | 23- Downstream NOx Sensor |
| 4- SCR Catalyst 2 | 9- Diesel Oxidation Catalyst (DOC) 3 | 14- ECM | 24- Downstream NOx Sensor Controller |
| 5- Diesel Oxidation Catalyst (DOC) 4 | 10- Diesel Oxidation Catalyst (DOC) 2 | 15- ISO-CAN | |

SECTION 2 SYSTEM

Group 4 Hydraulic System

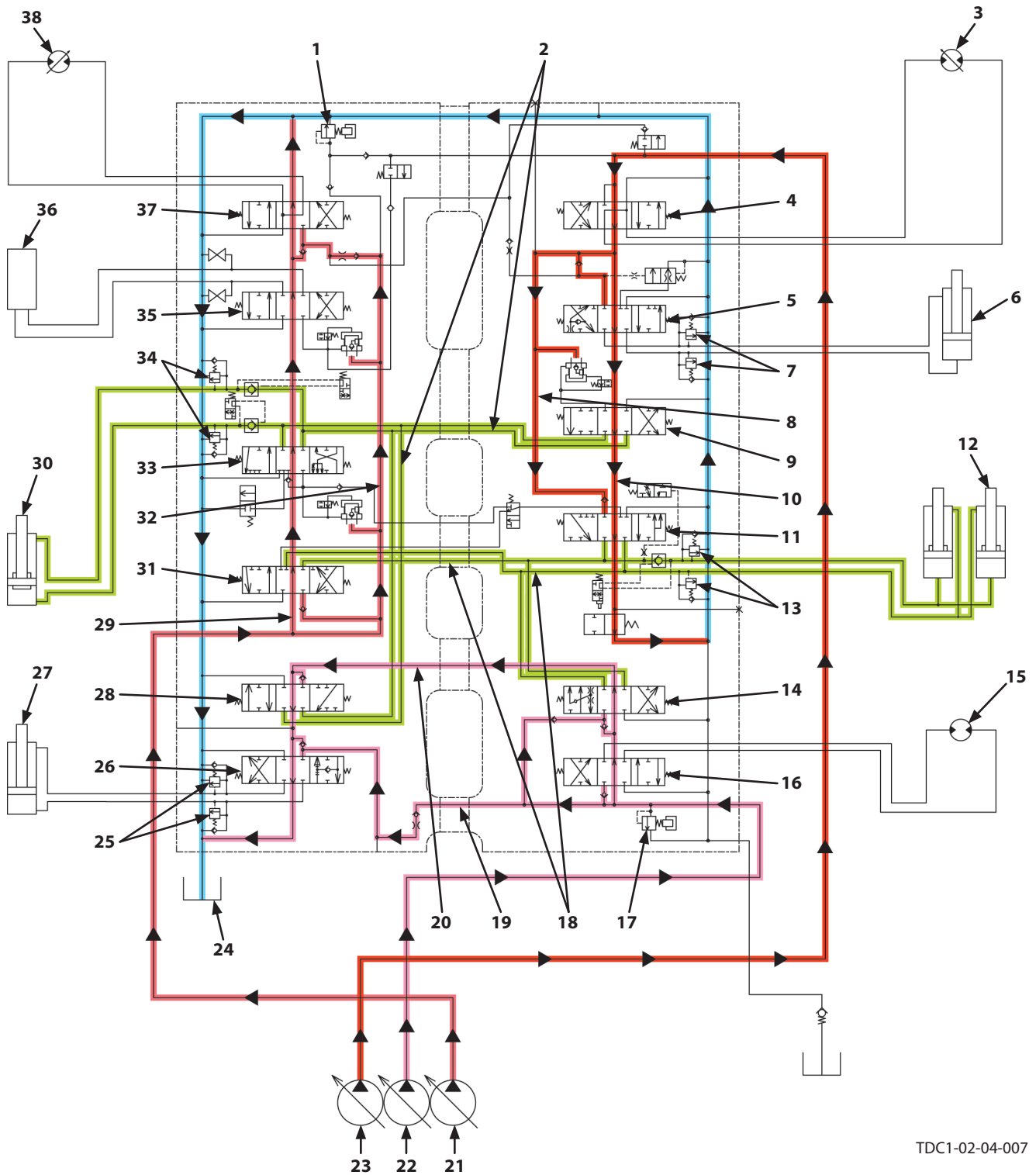


TDC1-02-04-002

- | | | | |
|----------------------------|---|--|---|
| 1- Travel (Left) | 11- Signal Control Valve | 16- Pump 1 Flow Rate Control Valve | 24- Maximum Pump 2 Flow Rate Limit Control Solenoid Valve |
| 2- Travel (Right) | 12- Auxiliary Flow Combiner Control Solenoid Valve (Optional) | 17- Control Valve | 25- Pump 1 and 2 Torque Control Solenoid Valve |
| 3- Swing | 13- Pump 3 Flow Rate Control Valve | 18- Pump 3 Torque Control Solenoid Valve | 26- Pilot Pump |
| 4- Arm | 14- Pump 2 Flow Rate Control Valve | 19- Torque Control Pressure Ppc | 27- Maximum Pump 1 Flow Rate Limit Control Solenoid Valve |
| 5- Boom Lower | 15- Boom Lower Pilot Pressure | 20- Pump 1 | 28- Maximum Pump 3 Flow Rate Limit Control Solenoid Valve |
| 6- Boom Raise | | 21- Pump 3 | |
| 7- Bucket | | 22- Pump 2 | |
| 8- Auxiliary 1 | | 23- Pump Control Pressure Pi | |
| 9- Positioning/Auxiliary 2 | | | |
| 10- Shuttle Valve | | | |

SECTION 2 SYSTEM

Group 4 Hydraulic System

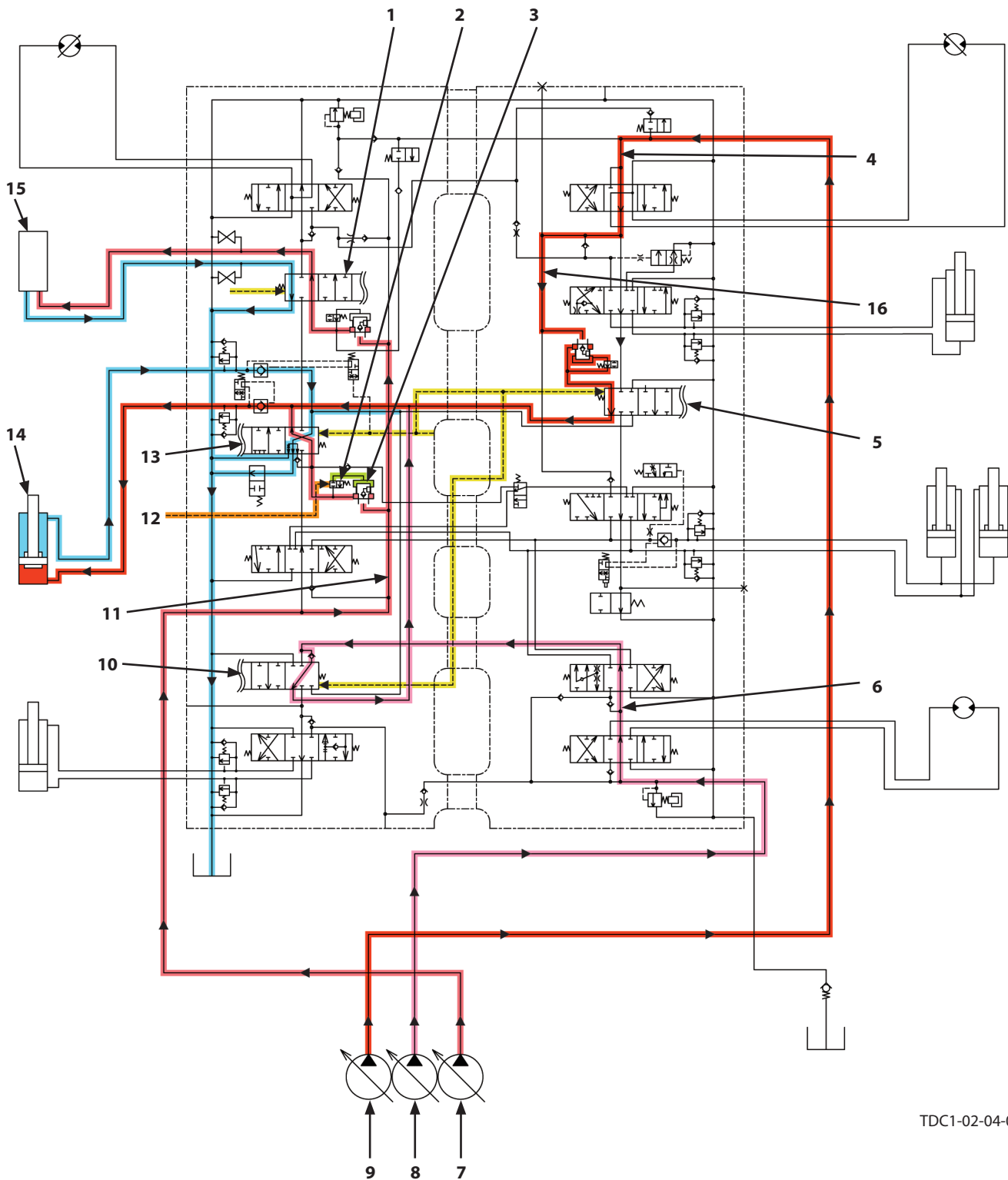


TDC1-02-04-007

- | | | | |
|--------------------------------|--------------------------------|-----------------------------------|-------------------------------|
| 1- Main Relief Valve (P1, P2) | 11- Boom 1 Spool | 21- Pump 2 | 31- Boom 2 Spool |
| 2- Flow Combiner Circuit (Arm) | 12- Boom Cylinder | 22- Pump 3 | 32- Parallel Circuit (Pump 2) |
| 3- Travel Motor (Right) | 13- Overload Relief Valve | 23- Pump 1 | 33- Arm 1 Spool |
| 4- Travel (Right) Spool | 14- Boom 3 Spool | 24- Hydraulic Oil Tank | 34- Overload Relief Valve |
| 5- Bucket Spool | 15- Swing Motor | 25- Overload Relief Valve | 35- Auxiliary 1 Spool |
| 6- Bucket Cylinder | 16- Swing Spool | 26- Positioning/Auxiliary 2 Spool | 36- Attachment |
| 7- Overload Relief Valve | 17- Main Relief Valve (P3) | 27- Positioning Cylinder | 37- Travel (Left) Spool |
| 8- Parallel Circuit (Pump 1) | 18- Flow Combiner Circuit (P3) | 28- Arm 3 Spool | 38- Travel Motor (Left) |
| 9- Arm 2 Spool | 19- Parallel Circuit (Pump 3) | | |
| 10- Neutral Circuit (Pump 1) | 20- Neutral Circuit (Pump 3) | | |

SECTION 2 SYSTEM

Group 4 Hydraulic System



TDC1-02-04-012

- | | | | |
|---|-----------------------------|--|-------------------------------|
| 1- Auxiliary 1 Spool | 4- Neutral Circuit (Pump 1) | 9- Pump 1 | 13- Arm 1 Spool |
| 2- Arm 1 Flow Rate Control Valve (Selector Valve) | 5- Arm 2 Spool | 10- Arm 3 Spool | 14- Arm Cylinder |
| 3- Arm 1 Flow Rate Control Valve (Poppet Valve) | 6- Neutral Circuit (Pump 3) | 11- Parallel Circuit (Pump 2) | 15- Attachment |
| | 7- Pump 2 | 12- Pilot Pressure from 5-Spool Solenoid Valve Unit (SE) | 16- Parallel Circuit (Pump 1) |
| | 8- Pump 3 | | |

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below

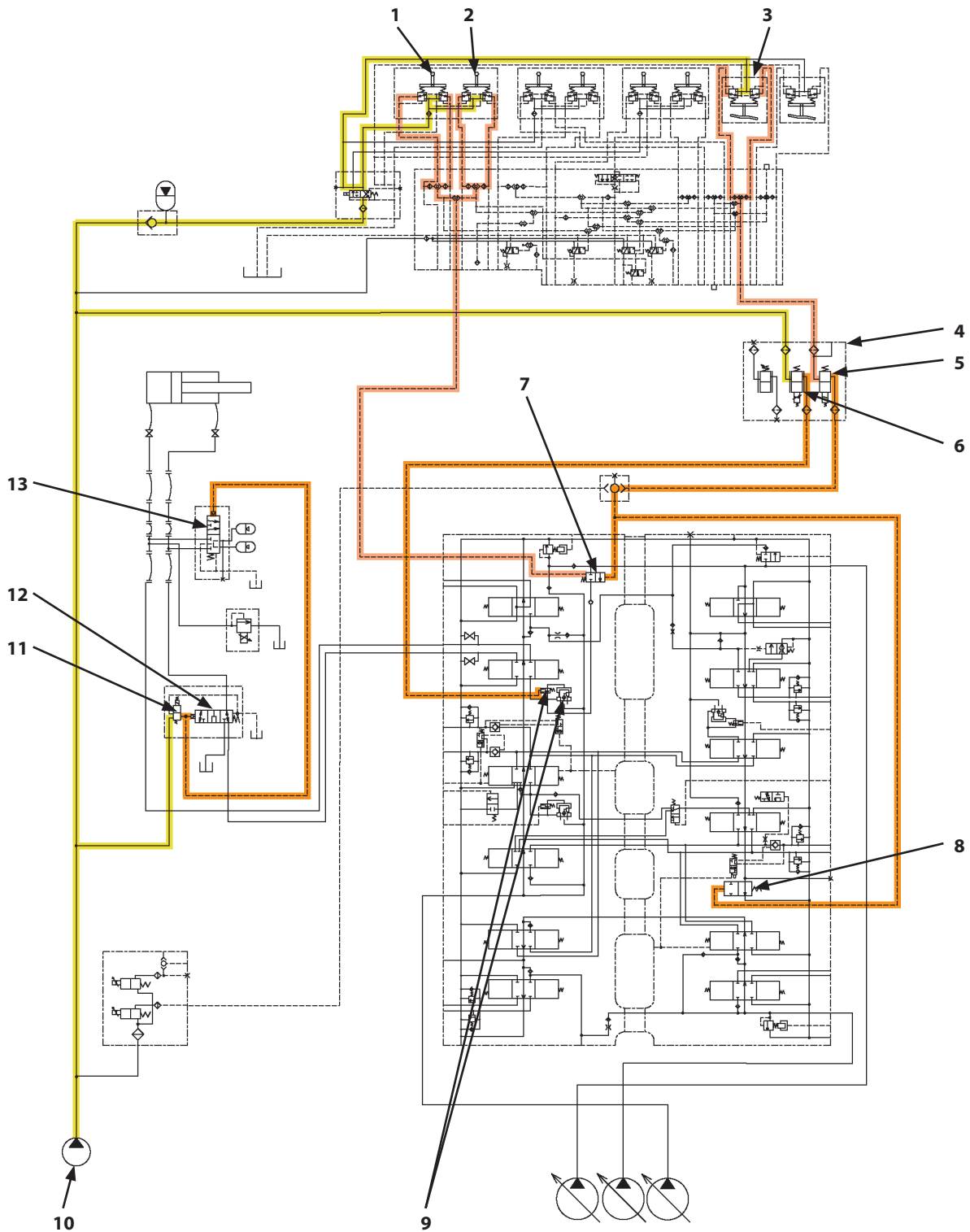


- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

SECTION 2 SYSTEM

Group 4 Hydraulic System



TDC1-02-04-017

- | | | | |
|--|---|--------------------------------------|---|
| 1- Travel (Left) | 5- Auxiliary Flow Combiner Control Solenoid Valve | 8- Bypass Shut-Out Valve | 11- Selector Valve Control Solenoid Valve |
| 2- Travel (Right) | 6- Auxiliary Flow Rate Control Solenoid Valve | 9- Auxiliary Flow Rate Control Valve | 12- Selector Valve |
| 3- Auxiliary 1 | 7- Auxiliary Flow Combiner Valve | 10- Pilot Pump | 13- Accumulator Control Valve |
| 4- Auxiliary Control Solenoid Valve Unit | | | |

SECTION 2 SYSTEM

Group 5 Electrical System

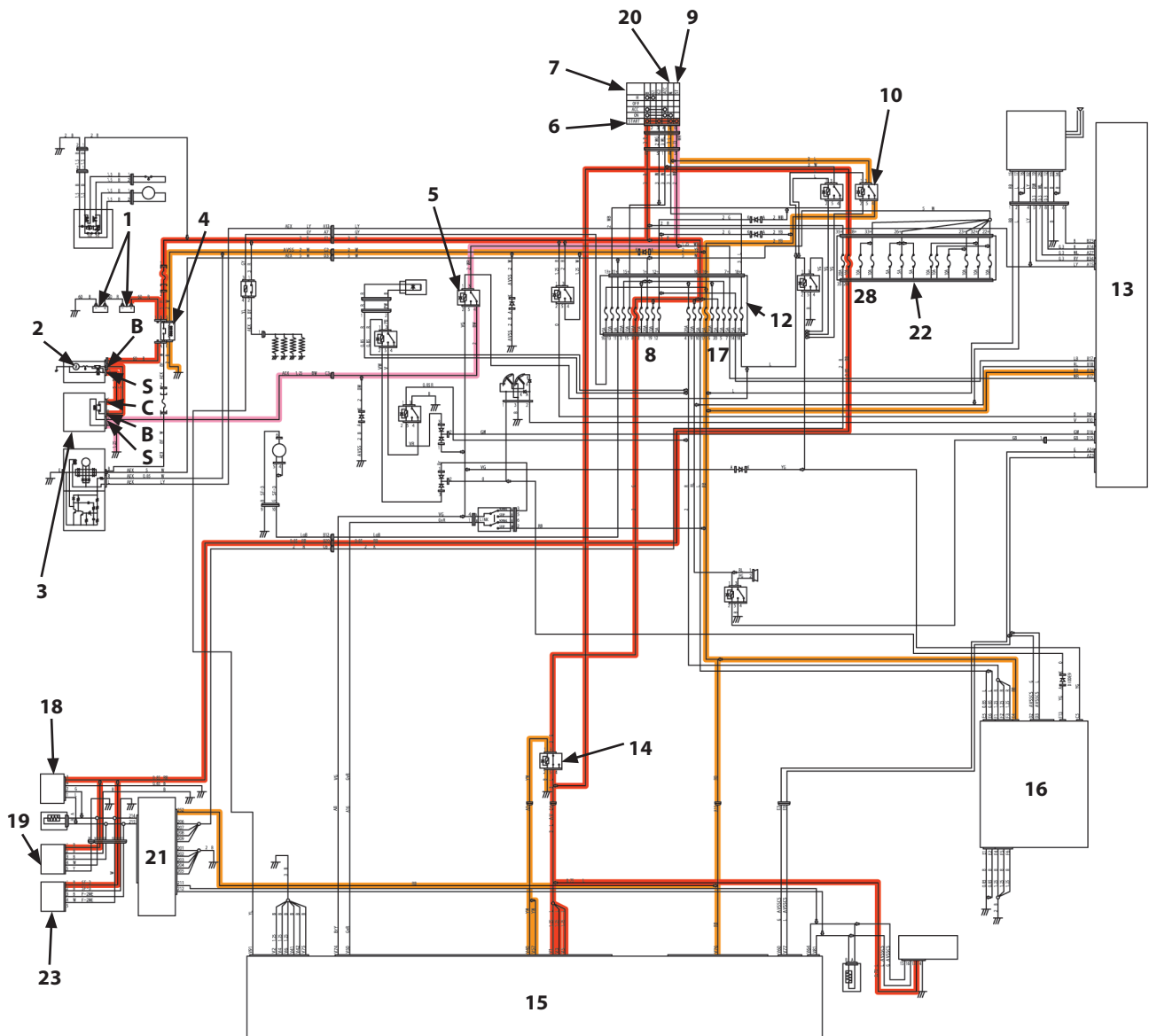
Outline

The electrical circuit is broadly divided into the main circuit, monitor circuit, accessory circuit, and control circuit.

- The main circuit consists of the engine and the accessory related circuits.
- The monitor circuit displays the machine operating conditions. The monitor circuit consists of the monitor controller, monitor, relays, and switches.
- The accessory circuit controls the various lights, the wiper, and the washer. The accessory circuit consists of the wiper/light controller, relays, and switches.
- The control circuit controls the engine, pump, and valve. The control circuit consists of the actuators such as solenoid valves, MC, ECM, sensors, and switches.
(Refer to SYSTEM/Control System.)

SECTION 2 SYSTEM

Group 5 Electrical System

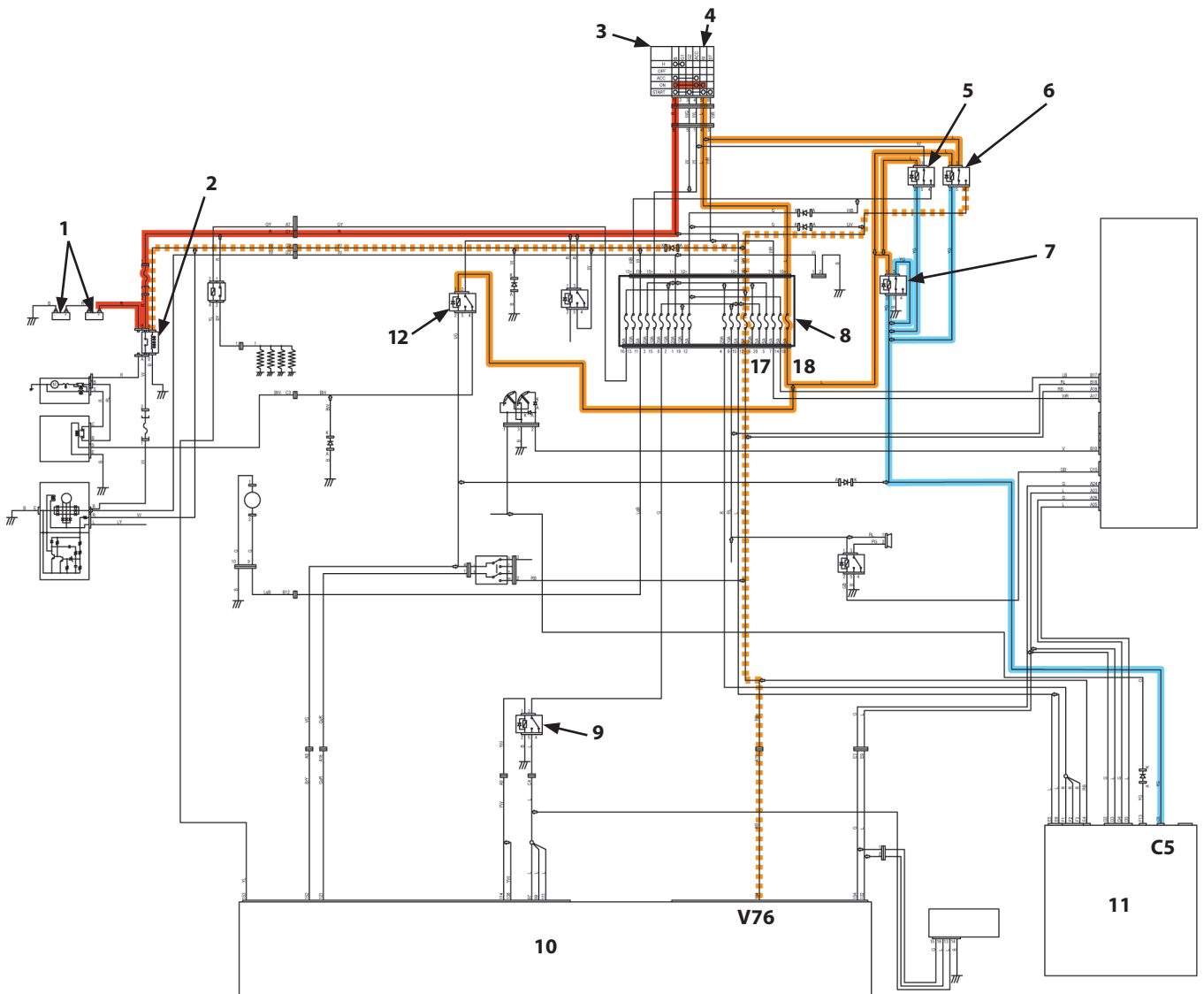


TDC4-02-05-001

- | | | | |
|----------------------|-----------------------------|------------------------|---------------------------|
| 1- Battery | 6- START Position | 13- Monitor Controller | 19- Upstream NOx Sensor |
| 2- Starter | 7- Key Switch | 14- ECM Main Relay | 20- Terminal M |
| 3- Starter Relay 1 | 9- Terminal ST | 15- ECM | 21- DCU |
| 4- Battery Relay | 10- Key Switch ON Cut Relay | 16- MC | 22- Fuse Box 2 |
| 5- Starter Cut Relay | 12- Fuse Box 1 | 18- DEF Sensor Unit | 23- Downstream NOx sensor |

SECTION 2 SYSTEM

Group 5 Electrical System



TDC4-02-05-009

- | | | |
|------------------|----------------------------|-----------------------|
| 1- Battery | 5- ACC Cut Relay | 9- ECM Main Relay |
| 2- Battery Relay | 6- Key Switch ON Cut Relay | 10- ECM |
| 3- Key Switch | 7- Auto Shut-Down Relay | 11- MC |
| 4- Terminal M | 8- Fuse Box 1 | 12- Starter Cut Relay |

SECTION 2 SYSTEM

Group 5 Electrical System

Accessory Circuit

The major functions and components in the accessory circuit are as follows.

- The work light circuit turns on the work light and boom light.
(Wiper/Light Controller, Switch Panel, Work Light Relay)
- The wiper circuit operates the wiper including intermittent operation and the washer.
(Wiper/Light Controller, Switch Panel, Wiper Relay, Washer Relay)
- The cab light circuit turns on/off the cab light by shifting the switch or by opening/closing the door.

SECTION 3

COMPONENT OPERATION

CONTENTS

Group 1 Pump Device

Outline	T3-1-1
Main Pump	T3-1-2
Regulator	T3-1-6
Solenoid Valve.....	T3-1-30
Pilot Pump	T3-1-32
Pump Delivery Pressure Sensor	T3-1-32
Pump Control Pressure Sensor.....	T3-1-32

Group 2 Swing Device

Outline	T3-2-1
Swing Reduction Gear	T3-2-2
Swing Motor	T3-2-3
Swing Parking Brake	T3-2-4
Valve Unit.....	T3-2-6

Group 3 Control Valve

Outline	T3-3-1
Hydraulic Circuit.....	T3-3-24
Flow Combiner Valve	T3-3-30
Main Relief Valve	T3-3-32
Overload Relief Valve (with Make-Up Function)....	T3-3-36
Regenerative Valve	T3-3-40
Anti-Drift Valve.....	T3-3-50
Flow Rate Control Valve.....	T3-3-54
Digging Regenerative Valve.....	T3-3-58
Boom Lower Meter-In Cut Valve.....	T3-3-60
Auxiliary Flow Combiner Valve and Bypass Shut-Out Valve.....	T3-3-62

Group 4 Pilot Valve

Outline	T3-4-1
Operation (Front Attachment/Swing and Travel Pilot Valves).....	T3-4-3
Operation (Auxiliary, Positioning Pilot Valves)	T3-4-11
Shockless Function (Only for Travel Pilot Valve)....	T3-4-16

Group 5 Travel Device

Outline	T3-5-1
Travel Reduction Gear	T3-5-2
Travel Motor	T3-5-4
Parking Brake.....	T3-5-6
Travel Brake Valve	T3-5-8
Overload Relief Valve.....	T3-5-12
Travel Mode Control	T3-5-14

Group 6 Signal Control Valve

Outline	T3-6-1
---------------	--------

Pilot Port.....	T3-6-2
Shuttle Valve	T3-6-7
Shockless Valve.....	T3-6-10
Pump 1 Flow Rate Control Valve, Pump 2 Flow Rate Control Valve, Pump 3 Flow Rate Control Valve.....	T3-6-14
Flow Combiner Valve Control Spool, Swing Parking Brake Release Spool	T3-6-16

Group 7 Others (Upperstructure)


Pilot Shut-Off Solenoid Valve.....	T3-7-1
Solenoid Valve.....	T3-7-3
Hose Rupture Valve	T3-7-8
Pilot Relief Valve	T3-7-14
Recirculation Valve	T3-7-15

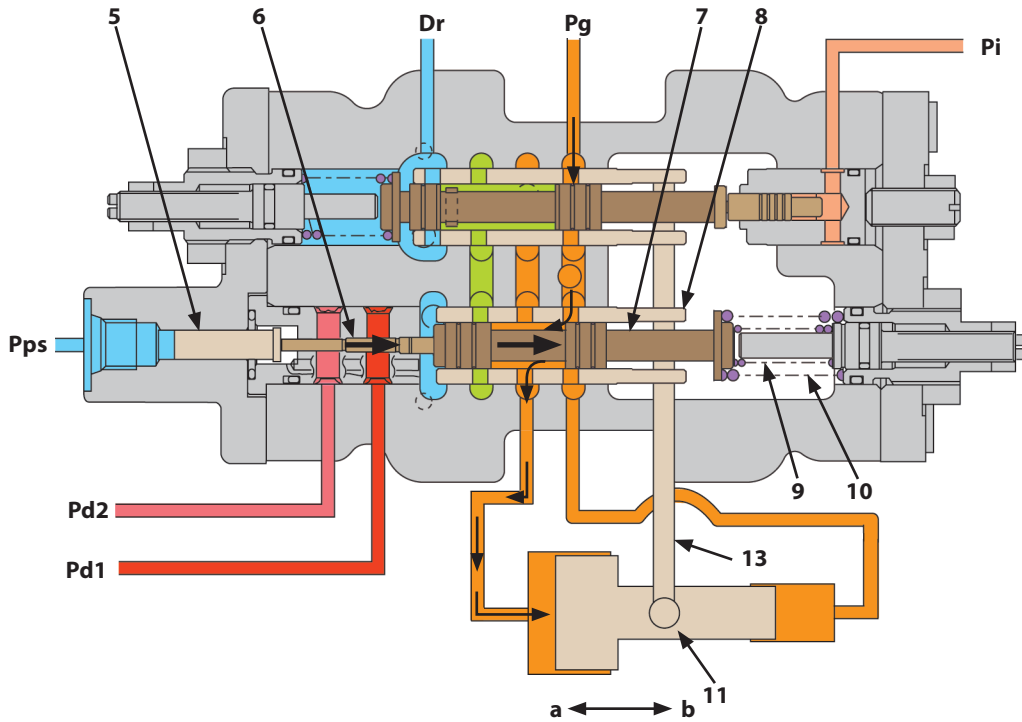
Group 8 Others (Undercarriage)

Swing Bearing	T3-8-1
Centerjoint	T3-8-2
Track Adjuster (Front Idler Integrated Type).....	T3-8-3

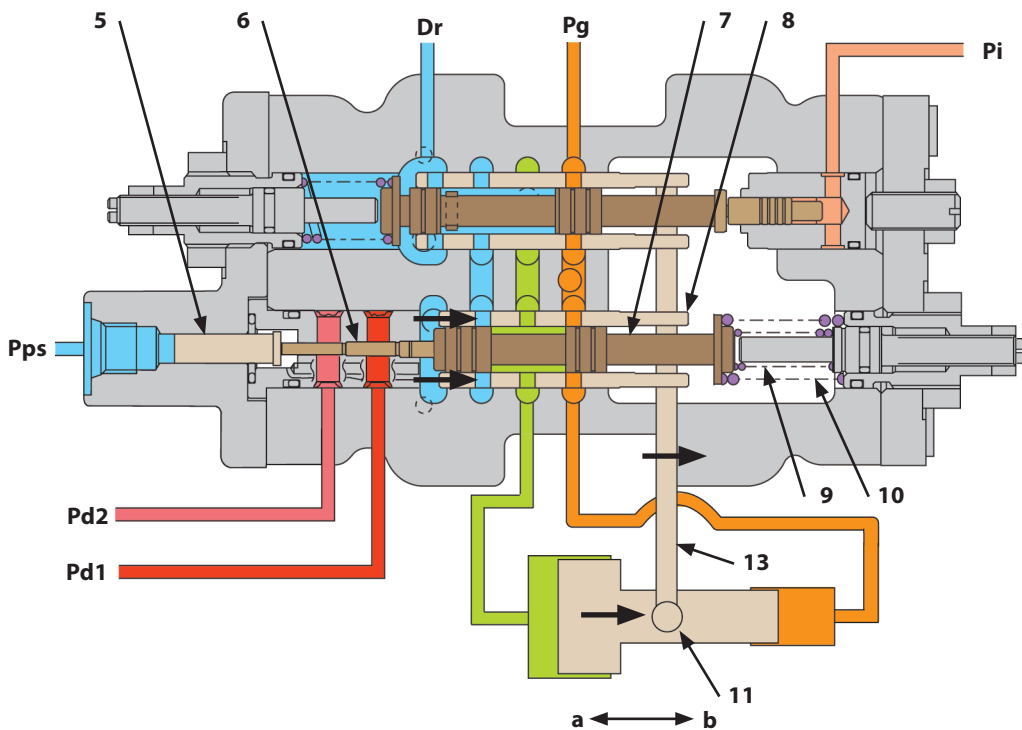
SECTION 3 COMPONENT OPERATION

Group 1 Pump Device

 NOTE: The illustration shows the pump1 regulator.



TPPP-03-01-013



TPPP-03-01-014

Pd1- Pump 1 Delivery Pressure
Pd2- Pump 2 Delivery Pressure

Dr- Returning to Hydraulic Oil Tank
Pi- Pump Control Pressure

Pps- Torque Control Pressure
Pg- Primary Pilot Pressure (From Pilot Pump)

a- Displacement Angle Increase
b- Displacement Angle Decrease

5- Load Piston 1
6- Load Piston 2

7- Spool B
8- Sleeve B

9- Inner Spring
10- Outer Spring

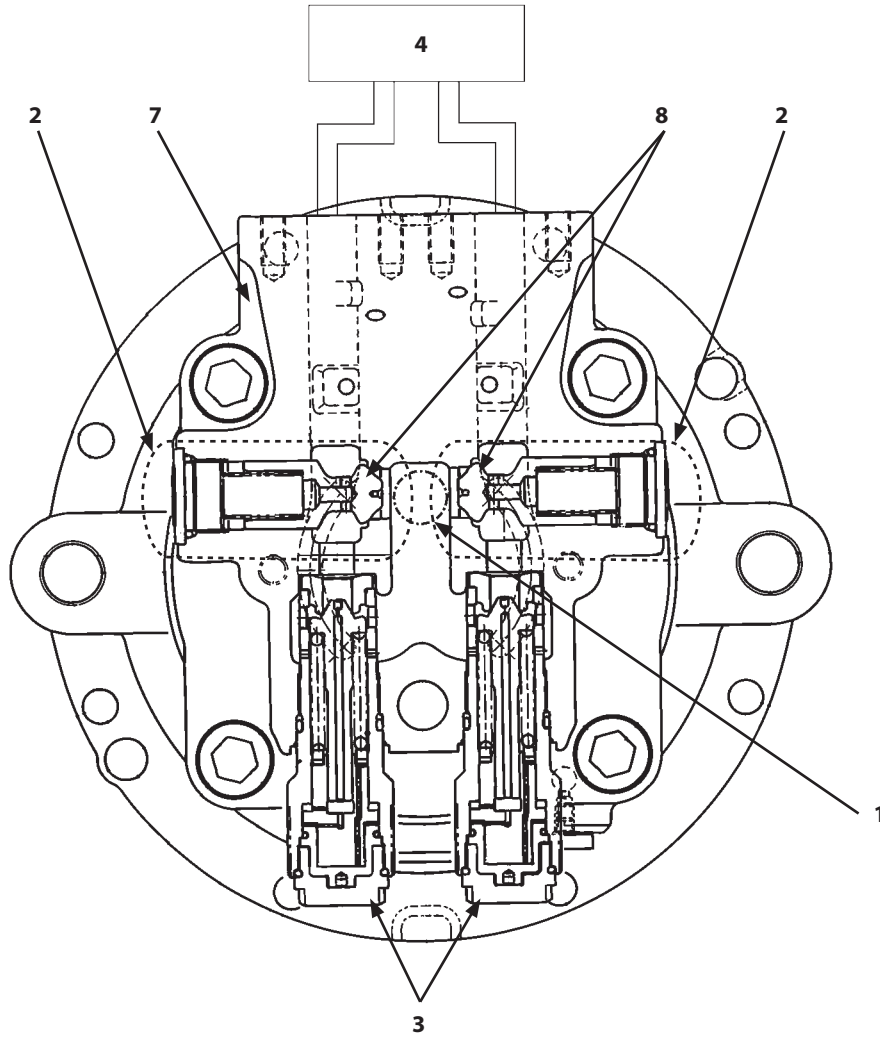
11- Servo Piston
13- Link

SECTION 3 COMPONENT OPERATION
Group 1 Pump Device

(Blank)

SECTION 3 COMPONENT OPERATION

Group 2 Swing Device

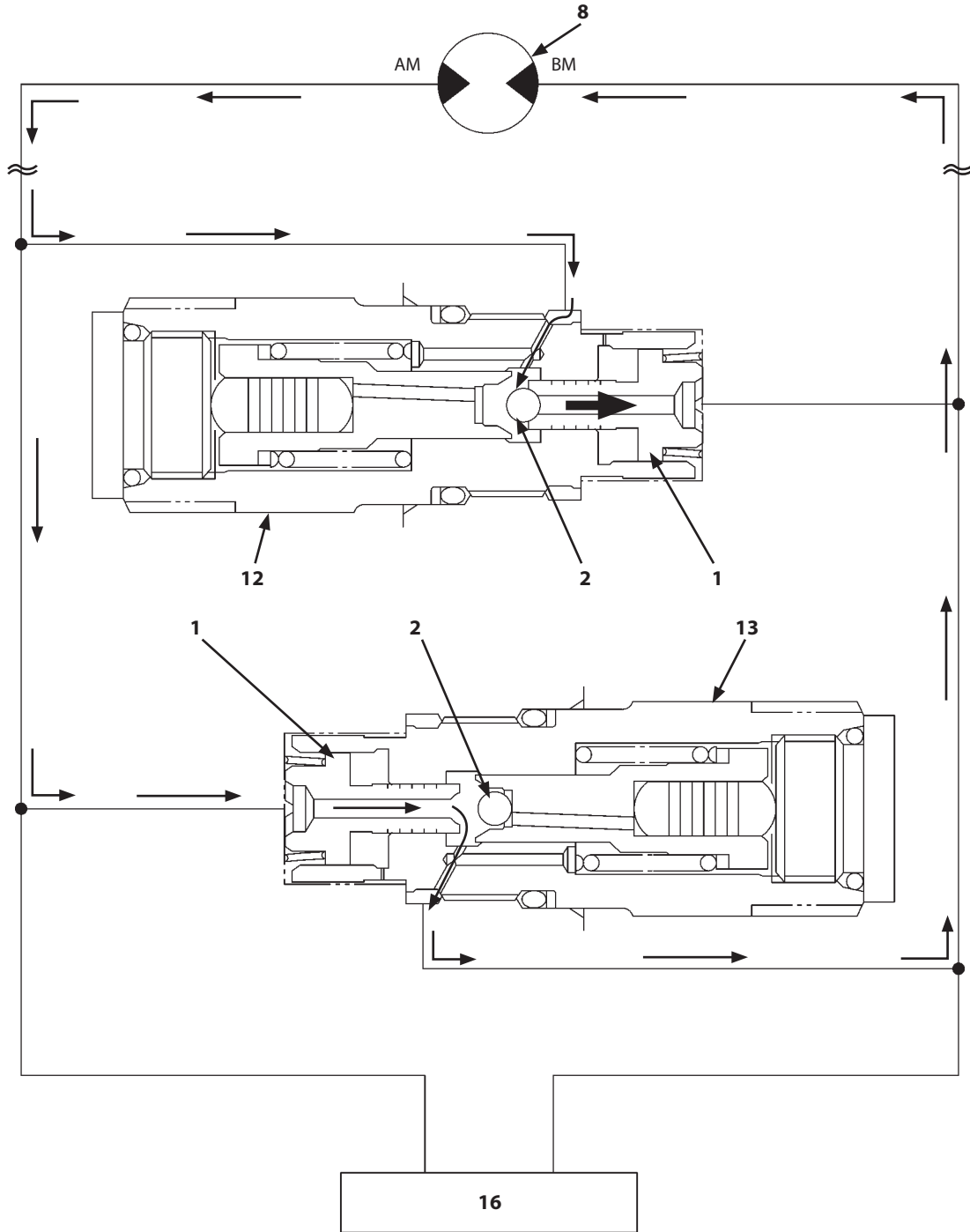


TDAA-03-02-007

- | | | |
|------------------|------------------|---------------|
| 1- Port M | 3- Relief Valve | 7- Valve Unit |
| 2- Make-Up Valve | 4- Control Valve | 8- Poppet |

SECTION 3 COMPONENT OPERATION

Group 2 Swing Device



T1V1-03-02-016

1- Poppet
2- Ball

8- Swing Motor
12- Combination Valve A

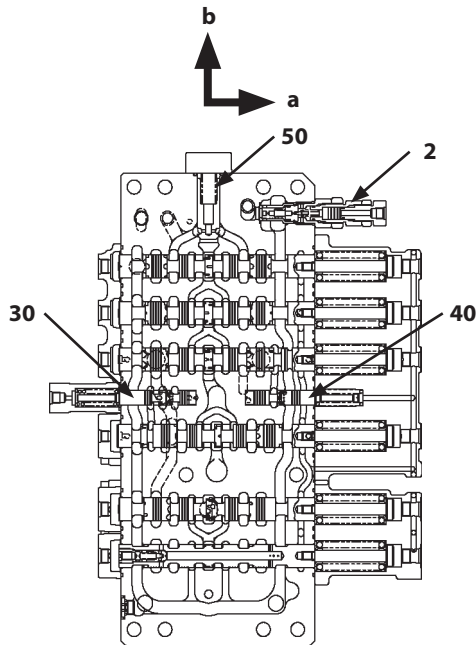
13- Combination Valve B

16- Control Valve

SECTION 3 COMPONENT OPERATION

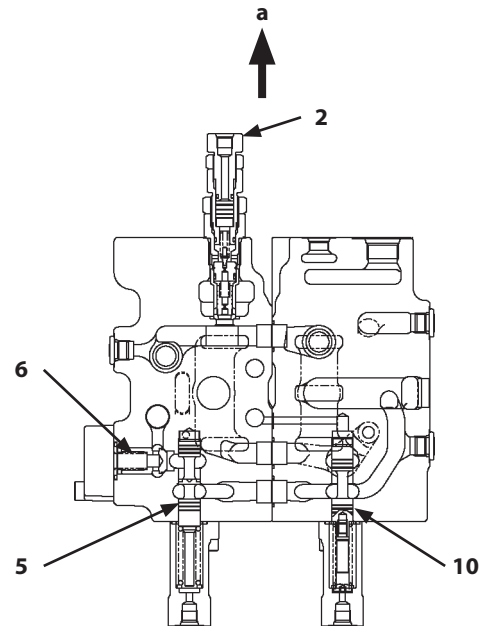
Group 3 Control Valve

Section B-B



TDA-03-03-009

Section C-C



TDA-03-03-010

a- Machine Upper Side

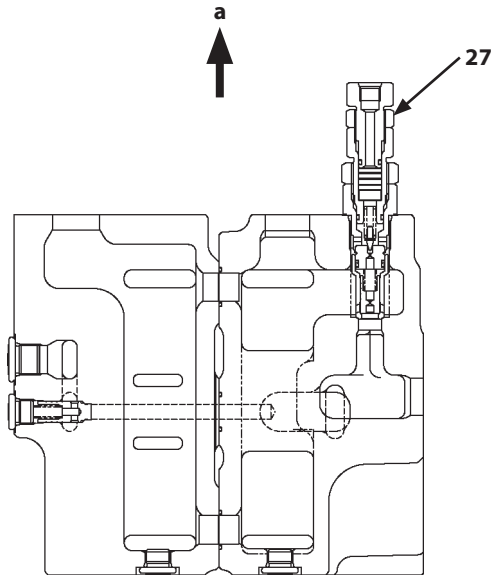
b- Machine Front Side

- | | | | |
|--|---|---|--|
| 1- Check Valve (Main Relief Circuit) | 15- Overload Relief Valve (Bucket: Rod Side) | 29- Load Check Valve (Boom 3 Parallel Circuit) | 41- Load Check Valve (Arm Regenerative Circuit) |
| 2- Main Relief Valve (P1, P2) | 16- Overload Relief Valve (Bucket: Bottom Side) | 30- Digging Regenerative Valve | 42- Arm Bottom Anti-Drift Valve (Check Valve) |
| 3- Check Valve (Main Relief Circuit) | 18- Load Check Valve (Boom 1 Parallel Circuit) | 31- Load Check Valve (Auxiliary 2 Parallel Circuit) | 43- Overload Relief Valve (Arm: Bottom Side) |
| 4- Load Check Valve (Travel (Left) Parallel Circuit) | 19- Boom Lower Meter-In Cut Valve | 32- Load Check Valve (Auxiliary 2 Tandem Circuit) | 44- Arm Rod Anti-Drift Valve (Selector Valve) |
| 5- Auxiliary Flow Combiner Valve | 20- Boom Anti-Drift Valve (Check Valve) | 33- Load Check Valve (Arm 3 Tandem Circuit) | 45- Arm Bottom Anti-Drift Valve (Selector Valve) |
| 6- Check Valve (Auxiliary Flow Combiner Circuit) | 21- Overload Relief Valve (Boom: Bottom Side) | 34- Overload Relief Valve (Positioning/Auxiliary 2) | 46- Arm Rod Anti-Drift Valve (Check Valve) |
| 7- Load Check Valve (Orifice) (Bucket) | 22- Overload Relief Valve (Boom: Rod Side) | 35- Overload Relief Valve (Positioning/Auxiliary 2) | 47- Overload Relief Valve (Arm: Rod Side) |
| 8- Check Valve (Bucket Tandem Circuit) | 23- Boom Anti-Drift Valve (Selector Valve) | 36- Load Check Valve (Boom 2 Parallel Circuit) | 48- Auxiliary Flow Rate Control Valve (Selector Valve) |
| 9- Check Valve (Flow Combiner Circuit) | 24- Bypass Shut-Out Valve | 37- Arm 1 Flow Rate Control Valve (Poppet Valve) | 49- Auxiliary Flow Rate Control Valve (Poppet Valve) |
| 10- Flow Combiner Valve | 25- Boom Regenerative Valve | 38- Arm 1 Flow Rate Control Valve (Selector Valve) | 50- Load Check Valve (Travel (Left) Tandem Circuit) |
| 11- Bucket Regeneration Cut Valve | 26- Load Check Valve (Boom 3 Tandem Circuit) | 39- Load Check Valve (Digging Regenerative Circuit) | 51- Pump 2 |
| 12- Bucket Regenerative Valve | 27- Main Relief Valve (P3) | 40- Arm Regenerative Valve | 52- Pump 3 |
| 13- Arm 2 Flow Rate Control Valve (Poppet Valve) | 28- Load Check Valve (Swing Tandem Circuit) | | 53- Pump 1 |
| 14- Arm 2 Flow Rate Control Valve (Selector Valve) | | | |

SECTION 3 COMPONENT OPERATION

Group 3 Control Valve

Section L-L



TDA-03-03-019

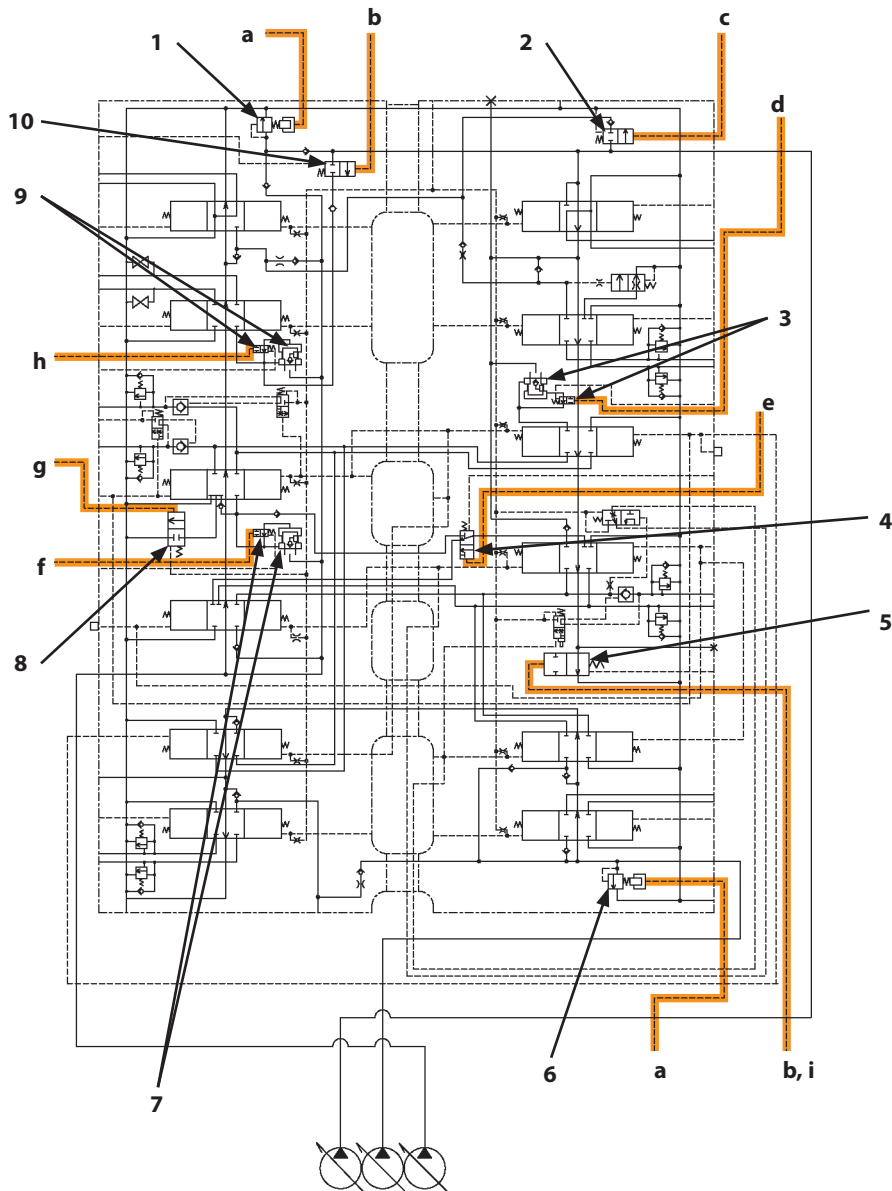
a- Machine Upper Side

- | | | | |
|--|---|---|--|
| 1- Check Valve (Main Relief Circuit) | 15- Overload Relief Valve (Bucket: Rod Side) | 29- Load Check Valve (Boom 3 Parallel Circuit) | 41- Load Check Valve (Arm Regenerative Circuit) |
| 2- Main Relief Valve (P1, P2) | 16- Overload Relief Valve (Bucket: Bottom Side) | 30- Digging Regenerative Valve | 42- Arm Bottom Anti-Drift Valve (Check Valve) |
| 3- Check Valve (Main Relief Circuit) | 18- Load Check Valve (Boom 1 Parallel Circuit) | 31- Load Check Valve (Auxiliary 2 Parallel Circuit) | 43- Overload Relief Valve (Arm: Bottom Side) |
| 4- Load Check Valve (Travel (Left) Parallel Circuit) | 19- Boom Lower Meter-In Cut Valve | 32- Load Check Valve (Auxiliary 2 Tandem Circuit) | 44- Arm Rod Anti-Drift Valve (Selector Valve) |
| 5- Auxiliary Flow Combiner Valve | 20- Boom Anti-Drift Valve (Check Valve) | 33- Load Check Valve (Arm 3 Tandem Circuit) | 45- Arm Bottom Anti-Drift Valve (Selector Valve) |
| 6- Check Valve (Auxiliary Flow Combiner Circuit) | 21- Overload Relief Valve (Boom: Bottom Side) | 34- Overload Relief Valve (Positioning/Auxiliary 2) | 46- Arm Rod Anti-Drift Valve (Check Valve) |
| 7- Load Check Valve (Orifice) (Bucket) | 22- Overload Relief Valve (Boom: Rod Side) | 35- Overload Relief Valve (Positioning/Auxiliary 2) | 47- Overload Relief Valve (Arm: Rod Side) |
| 8- Check Valve (Bucket Tandem Circuit) | 23- Boom Anti-Drift Valve (Selector Valve) | 36- Load Check Valve (Boom 2 Parallel Circuit) | 48- Auxiliary Flow Rate Control Valve (Selector Valve) |
| 9- Check Valve (Flow Combiner Circuit) | 24- Bypass Shut-Out Valve | 37- Arm 1 Flow Rate Control Valve (Poppet Valve) | 49- Auxiliary Flow Rate Control Valve (Poppet Valve) |
| 10- Flow Combiner Valve | 25- Boom Regenerative Valve | 38- Arm 1 Flow Rate Control Valve (Selector Valve) | 50- Load Check Valve (Travel (Left) Tandem Circuit) |
| 11- Bucket Regeneration Cut Valve | 26- Load Check Valve (Boom 3 Tandem Circuit) | 39- Load Check Valve (Digging Regenerative Circuit) | 51- Pump 2 |
| 12- Bucket Regenerative Valve | 27- Main Relief Valve (P3) | 40- Arm Regenerative Valve | 52- Pump 3 |
| 13- Arm 2 Flow Rate Control Valve (Poppet Valve) | 28- Load Check Valve (Swing Tandem Circuit) | | 53- Pump 1 |

SECTION 3 COMPONENT OPERATION

Group 3 Control Valve

External Pilot Pressure Circuit



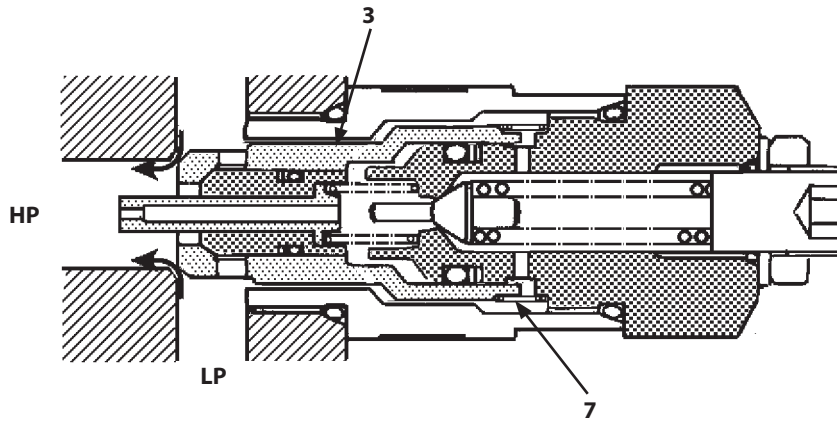
TDC1-03-03-009

- | | | | |
|--|--|---|--|
| a- Pilot Pressure from 5-Spool Solenoid Valve Unit (SI) | c- Pilot Pressure from Flow Combiner Valve Control Spool in Signal Control Valve | e- Pilot Pressure from 5-Spool Solenoid Valve Unit (SF) | h- Pilot Pressure from Auxiliary Flow Rate Control Solenoid Valve (Optional) |
| b- Pilot Pressure from Auxiliary Flow Combiner Control Solenoid Valve (Optional) | d- Pilot Pressure from 5-Spool Solenoid Valve Unit (SD) | f- Pilot Pressure from 5-Spool Solenoid Valve Unit (SE) | i- Pilot Pressure from 2-Spool Solenoid Valve Unit (SJ) |
| g- Pilot Pressure from 5-Spool Solenoid Valve Unit (SC) | | | |
| 1- Main Relief Valve (P1, P2) | 4- Digging Regenerative Valve | 7- Arm 1 Flow Rate Control Valve | 9- Auxiliary Flow Rate Control Valve |
| 2- Flow Combiner Valve | 5- Bypass Shut-Out Valve | 8- Arm Regenerative Valve | 10- Auxiliary Flow Combiner Valve |
| 3- Arm 2 Flow Rate Control Valve | 6- Main Relief Valve (P3) | | |

SECTION 3 COMPONENT OPERATION

Group 3 Control Valve

When Performing Make-Up Operation:



T178-03-03-050

HP- Actuator Circuit

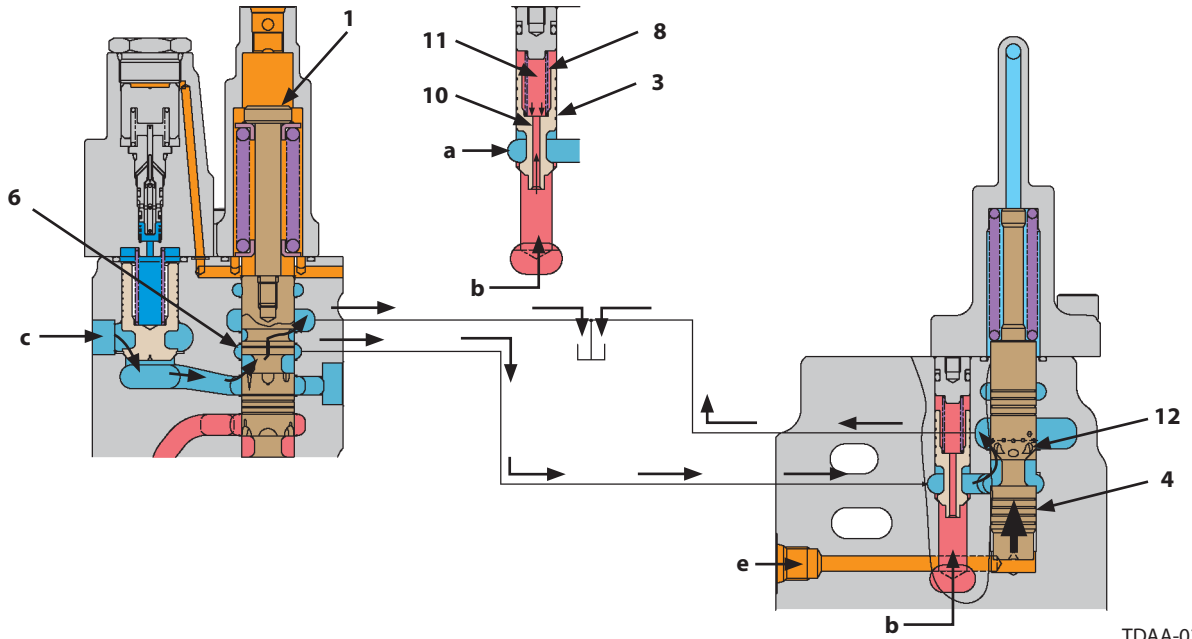
LP- Hydraulic Oil Tank

3- Sleeve

7- Spring C

SECTION 3 COMPONENT OPERATION

Group 3 Control Valve

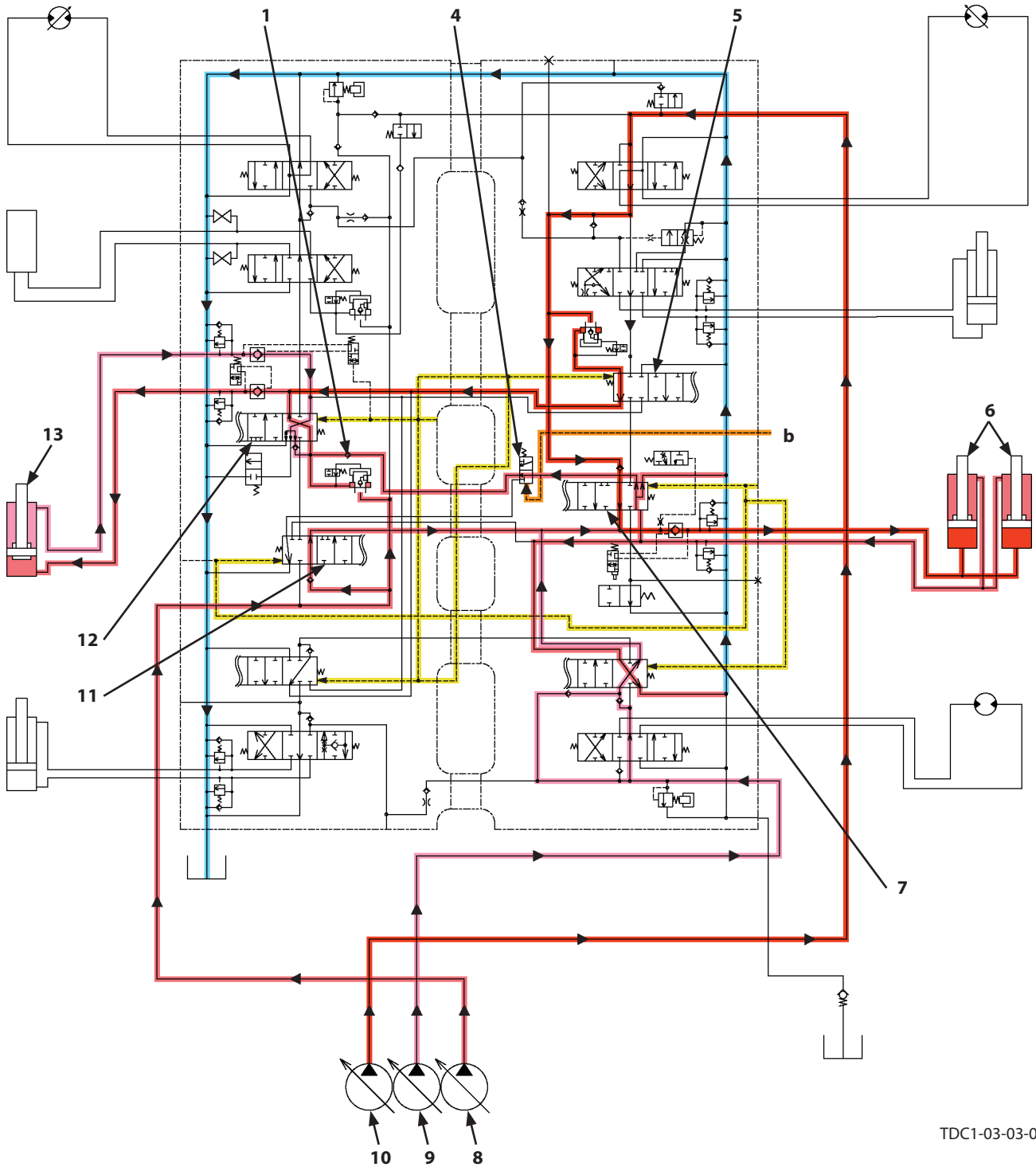


TDA-03-03-038

- | | | | |
|------------------------------|-----------------------------------|---|---|
| a- Pressure in Chamber A (6) | b- Pressure from Pump 2 (2) | c- Returning Oil from Arm Cylinder (5) Rod Side | e- Pilot Pressure from Solenoid Valve Unit (SC) |
| 1- Arm 1 Spool | 4- Spool (Arm Regenerative Valve) | 8- Spring | 12- Hole |
| 3- Check Valve | 6- Chamber A | 10- Orifice | |
| | | 11- Chamber B | |

SECTION 3 COMPONENT OPERATION

Group 3 Control Valve



TDC1-03-03-011

b- Pilot Pressure from 5-Spool Solenoid Valve Unit (SF)

- | | | | |
|---------------------------------------|------------------|------------|------------------|
| 1- Check Valve | 5- Arm 2 Spool | 8- Pump 2 | 11- Boom 2 Spool |
| 4- Spool (Digging Regenerative Valve) | 6- Boom Cylinder | 9- Pump 3 | 12- Arm 1 Spool |
| | 7- Boom 1 Spool | 10- Pump 1 | 13- Arm Cylinder |

SECTION 3 COMPONENT OPERATION

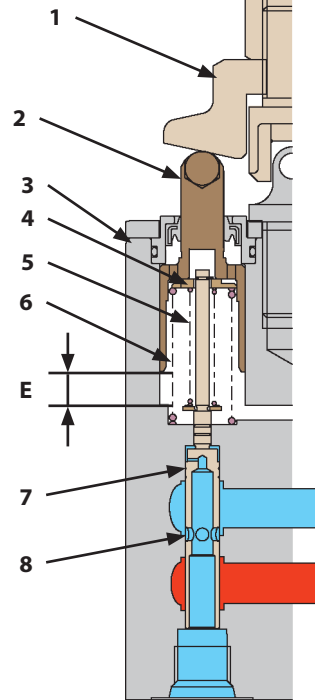
Group 4 Pilot Valve

Operation (Front Attachment/Swing and Travel Pilot Valves)

The spool (7) head is hanged from the upper surface of spring guide (4). Spring guide (4) is kept raised by return spring (6).

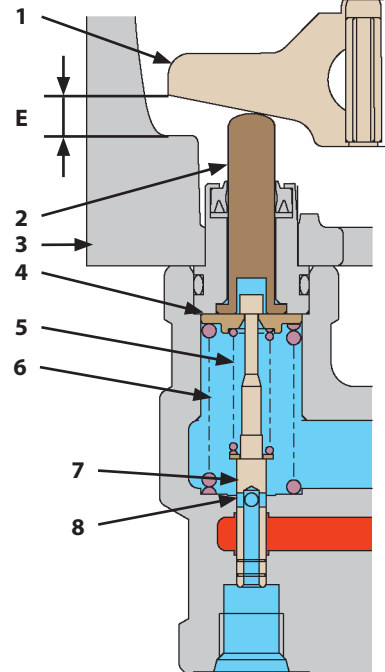
NOTE: Total lever strokes for front attachment/swing controls are determined by stroke dimension (E) of pusher (2). Total lever stroke for travel control is determined by stroke dimension (E) of cam (1).

Front Attachment/
Swing Pilot Valve



TDC1-03-04-002

Travel Pilot Valve



TPPP-03-04-010

1- Cam
2- Pusher

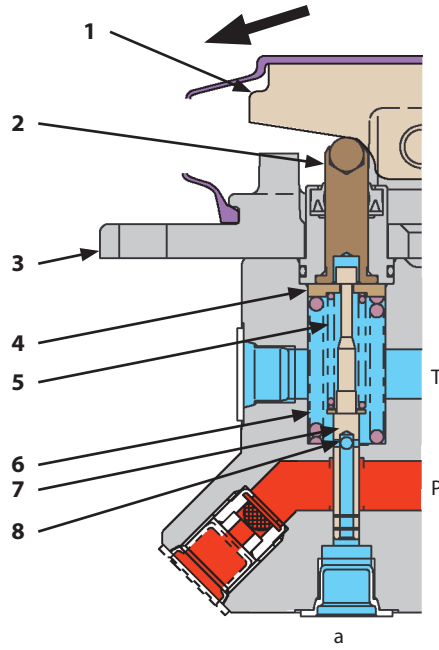
3- Casing
4- Spring Guide

5- Balance Spring
6- Return Spring

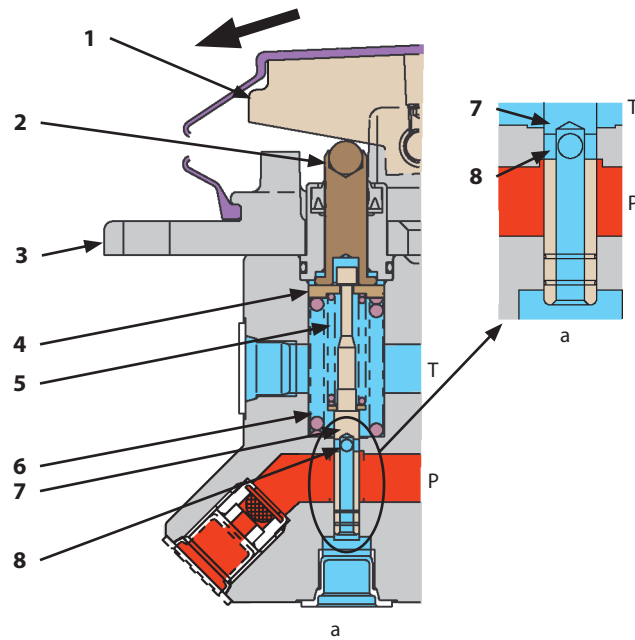
7- Spool
8- Hole

SECTION 3 COMPONENT OPERATION

Group 4 Pilot Valve



TDC1-03-04-005



TDAA-03-04-002

P- Port P

T- Port T

a- Output Port

1- Cam
2- Pusher

3- Plate
4- Spring Guide

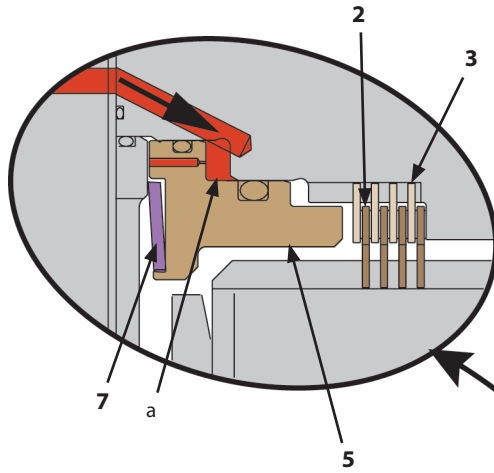
5- Balance Spring
6- Return Spring

7- Spool
8- Hole

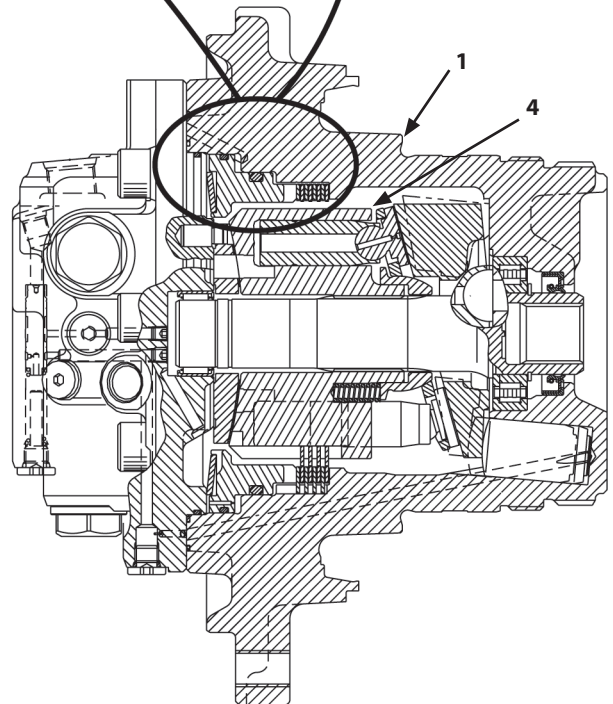
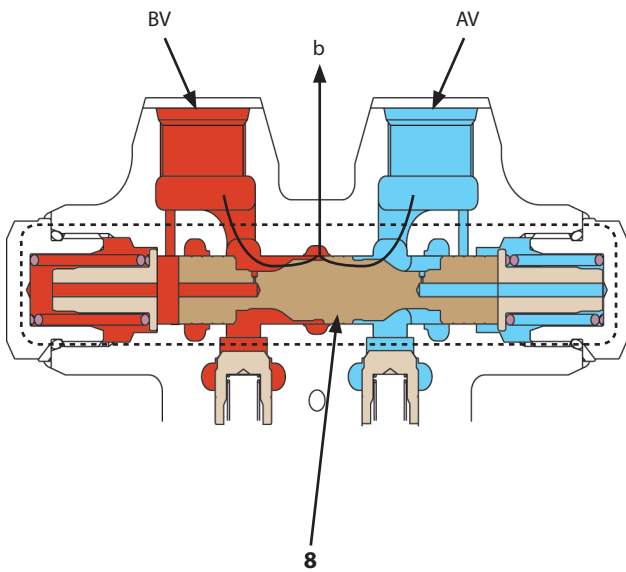
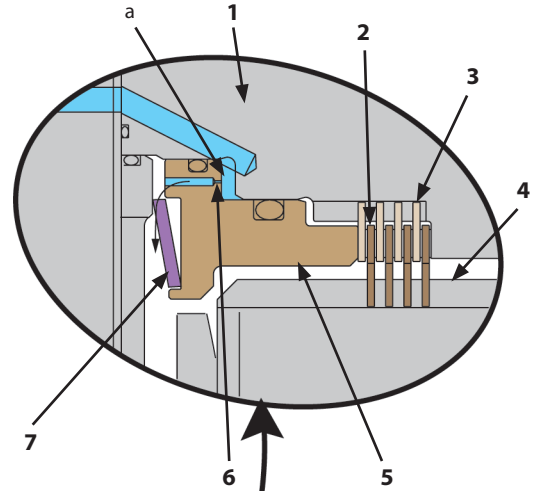
SECTION 3 COMPONENT OPERATION

Group 5 Travel Device

When brake is released:



When brake is applied:

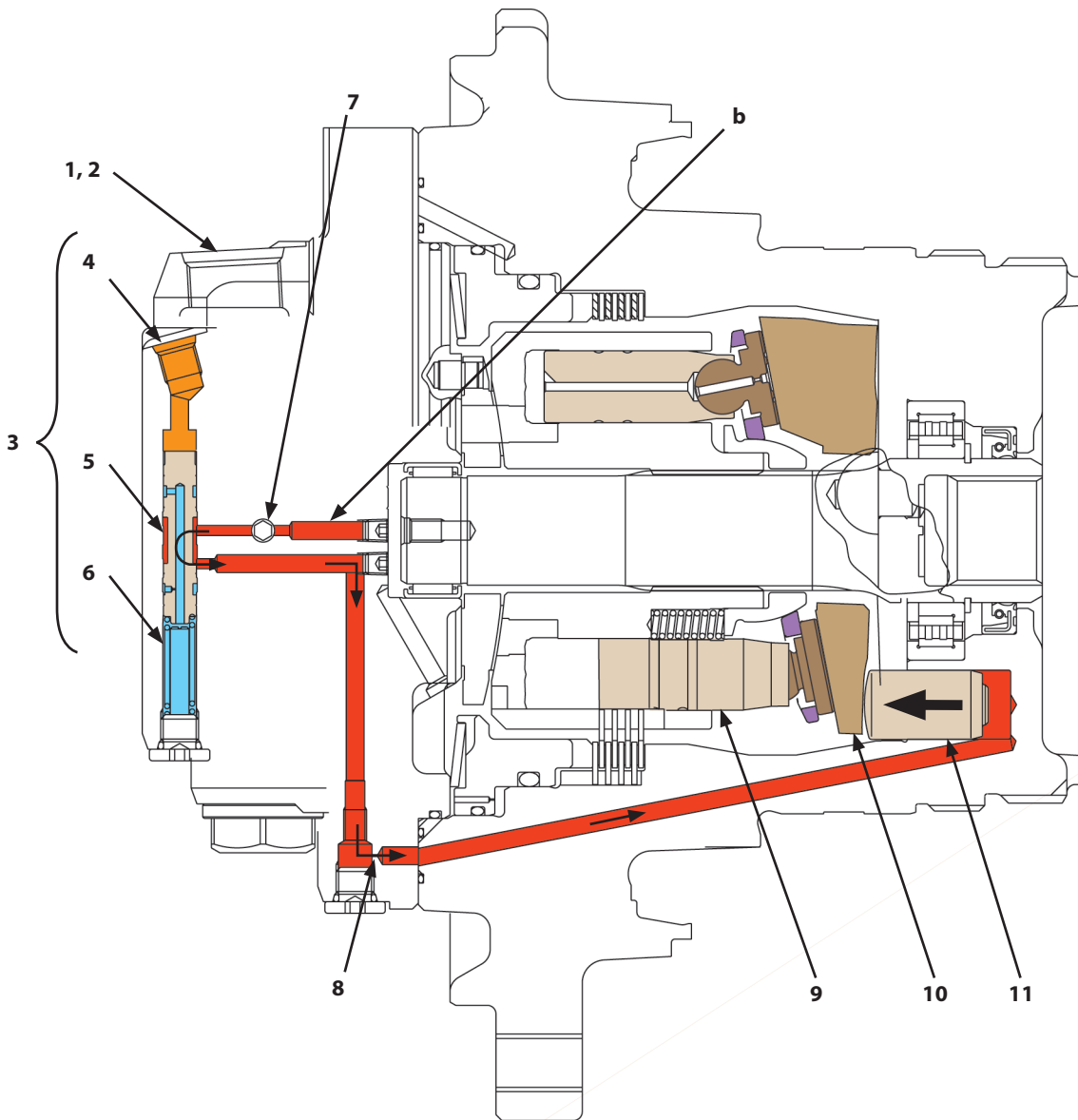


TDC4-03-05-001

- | | | | |
|--|--|-------------------------|-------------------------------|
| AV- Port AV
(Pressure oil from main pump) | BV- Port BV
(Pressure oil from main pump) | a- Brake Piston Chamber | b- To Brake Piston |
| 1- Housing | 3- Plate | 5- Brake Piston | 7- Disc Spring |
| 2- Friction Plate | 4- Rotor | 6- Orifice | 8- Counterbalance Valve Spool |

SECTION 3 COMPONENT OPERATION

Group 5 Travel Device



TDAA-03-05-007

b- Pressure oil from motor port
AM (2) or BM (1)

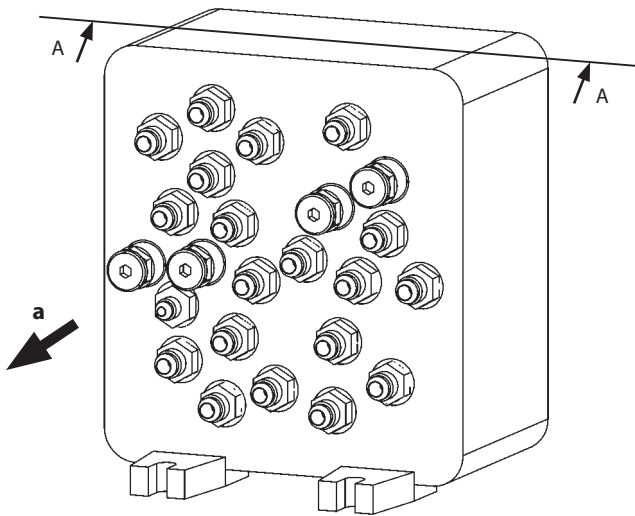
1- Motor Port BM
2- Motor Port AM
3- Travel Motor Displacement
Angle Control Valve

4- Pilot Port
5- Spool
6- Spring
7- Piston Control Shuttle Valve

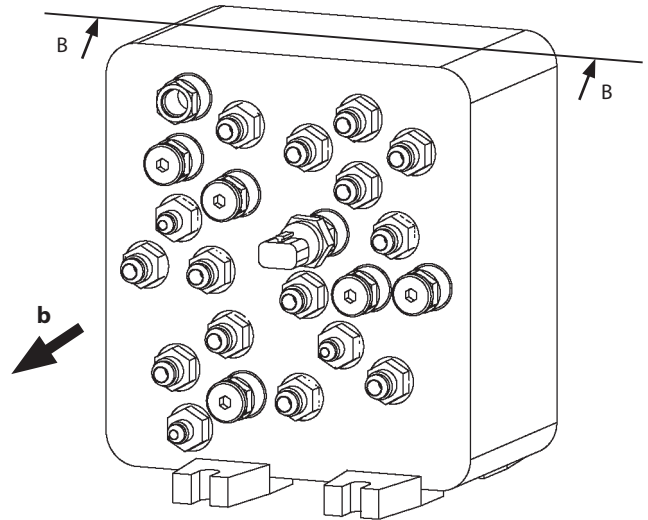
8- Orifice (for slow/fast speed)
9- Plunger
10- Swash Plate
11- Piston

SECTION 3 COMPONENT OPERATION

Group 6 Signal Control Valve



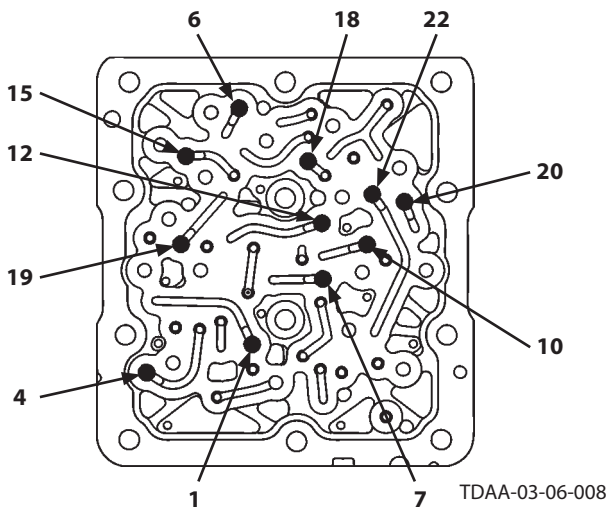
TDAA-03-06-003



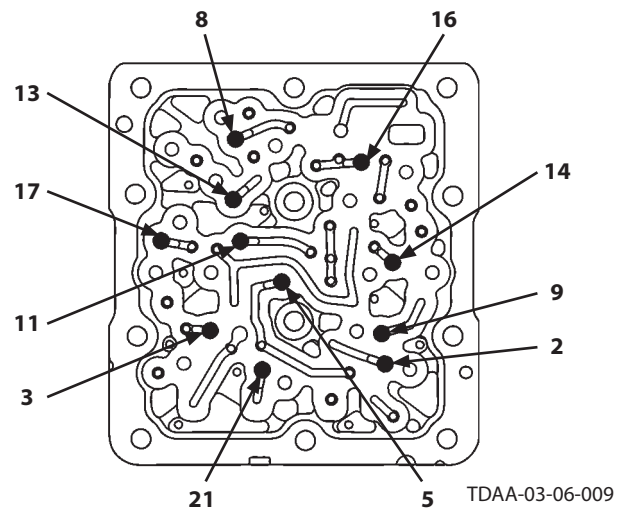
TDAA-03-06-011

Section A-A

Section B-B



TDAA-03-06-008



TDAA-03-06-009

a- Pilot Valve Side

b- Control Valve Side

- 1- Boom, Arm, Bucket, Travel (Right), Auxiliary 1
- 2- Travel (Left)
- 3- Travel (Left), Travel (Right)
- 4- Travel (Right)
- 5- Boom, Arm, Bucket, Travel (Right)
- 6- Arm
- 7- Boom Raise, Arm, Bucket, Travel (Right)
- 8- Boom Raise, Arm

- 9- Boom Raise, Arm, Travel (Left), Auxiliary 1
- 10- Boom Raise, Arm, Bucket
- 11- Boom, Arm, Bucket, Swing, Auxiliary 1
- 12- Boom Raise, Arm, Bucket, Swing, Auxiliary 1
- 13- Boom Raise, Swing, Positioning/Auxiliary 2
- 14- Bucket
- 15- Swing

- 16- Auxiliary 1
- 17- Positioning/Auxiliary 2
- 18- Swing, Auxiliary 1
- 19- Swing, Positioning/Auxiliary 2
- 20- Boom Raise, Swing, Positioning/Auxiliary 2
- 21- Boom, Arm, Bucket, Swing, Auxiliary 1, Positioning/Auxiliary 2
- 22- Boom Raise, Arm, Auxiliary 1

SECTION 3 COMPONENT OPERATION

Group 7 Others (Upperstructure)

Solenoid Valve

The solenoid valve consists of the 5-spool solenoid valve unit to control valve, the 2-spool solenoid valve unit to control aftertreatment device manual regeneration, and the auxiliary control solenoid valve unit (optional) to control auxiliary flow rate.

5-Spool Solenoid Valve Unit

The 5-spool solenoid valve unit controls the control valve and the valve in travel motor according to the signal from MC (main controller). (Refer to SYSTEM/Control System.)

The 5-spool solenoid valve unit consists of proportional solenoid valves (SC, SF, SE, SD, and SI).

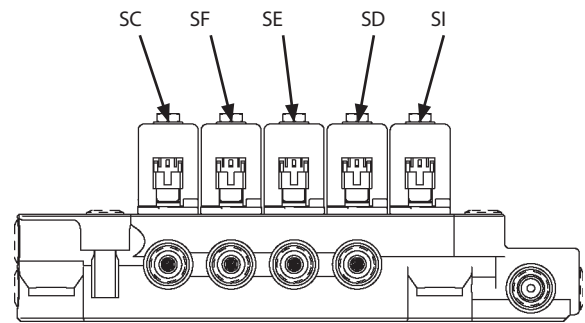
- SC : This valve controls the arm regenerative valve in control valve.
- SF : This valve controls the digging regenerative valve in control valve.
- SE : This valve controls the arm 1 flow rate control valve (selector valve) in control valve.
- SD : This valve controls the arm 2 flow rate control valve (selector valve) in control valve.
- SI : This valve increases pressure of the main relief valve in control valve and controls the travel motor displacement angle control valve.

2-Spool Solenoid Valve Unit (Aftertreatment Device Manual Regeneration Control)

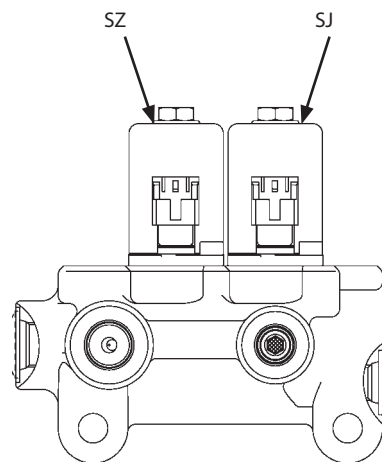
The 2-spool solenoid valve unit controls the pump and control valve according to the signal from MC (main controller). (Refer to SYSTEM/Control System.)

The 2-spool solenoid valve unit consists of proportional solenoid valves (SZ and SJ). (Refer to SYSTEM/Control System.)

- SZ : This valve controls the pump 1 regulator (delivery flow rate increase)
- SJ : This valve controls the bypass shut-out valve in control valve.



TDAA-03-07-001

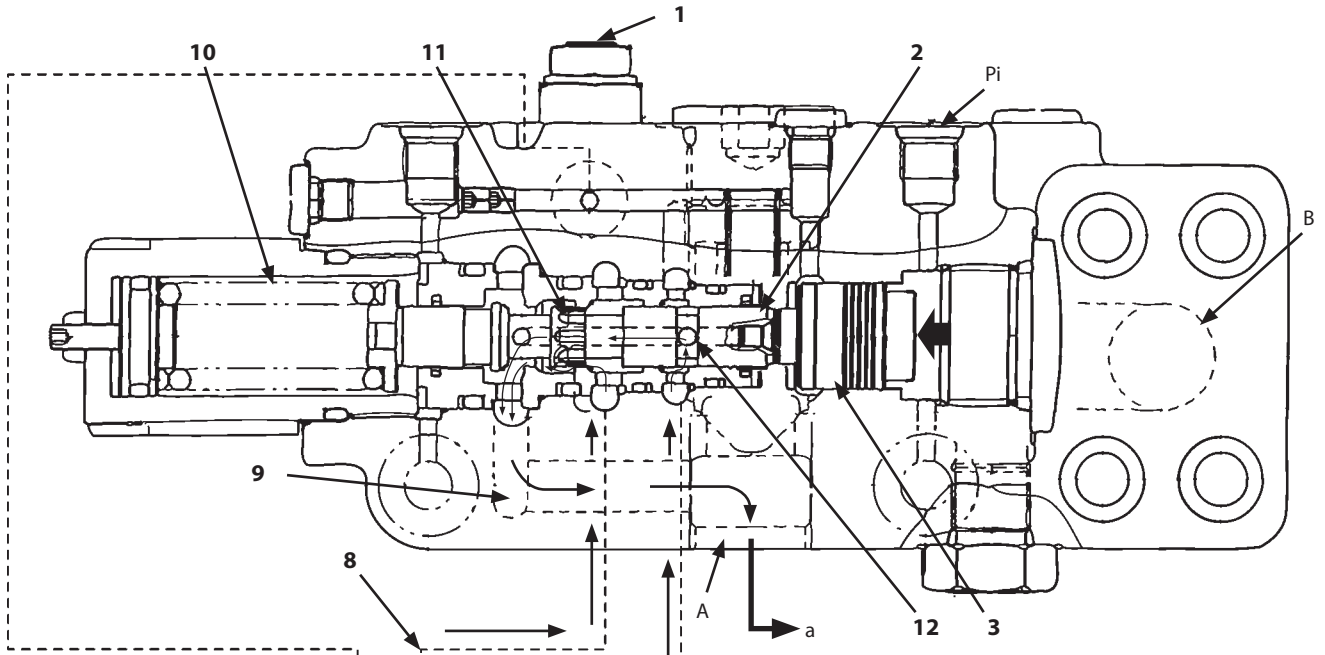


TDAA-03-07-002

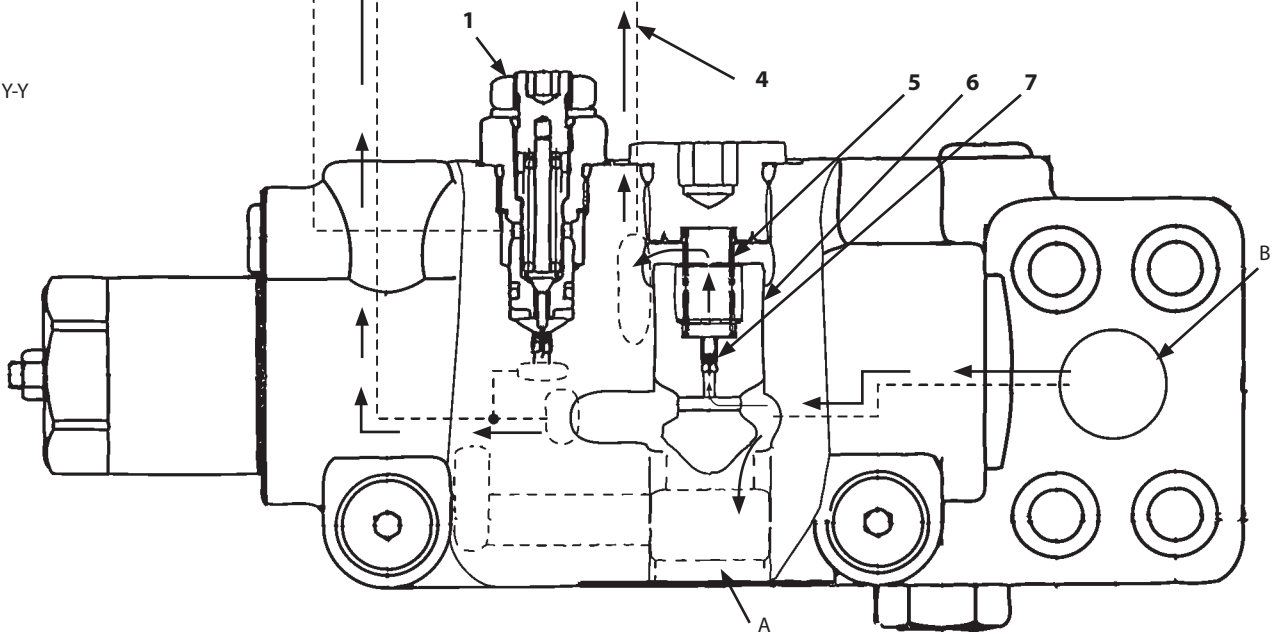
SECTION 3 COMPONENT OPERATION

Group 7 Others (Upperstructure)

Section X-X



Section Y-Y



TDAA-03-07-010

- | | | |
|-----------|-----------|---------------------------|
| A- Port A | B- Port B | a- To Control Valve Spool |
|-----------|-----------|---------------------------|
-
- | | | | |
|-----------------|--------------|--------------|-------------|
| 1- Relief Valve | 4- Passage C | 7- Orifice | 10- Spring |
| 2- Spool | 5- Spring | 8- Passage E | 11- Orifice |
| 3- Piston | 6- Poppet | 9- Passage D | 12- Hole |

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL