PART NO. TOJBK40-EN-00

HITACHI

Reliable solutions

Technical Manual
Operational Principle

ZX
670LC-6
690LCH-6
690LCR-6

Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TOJBK40-EN
Technical Manual (Troubleshooting)	: Vol. No.TTJBK40-EN
Workshop Manual	: Vol. No.WJBK40-EN
Engine Manual	: Vol. No.ETJBK40-EN, EWJBK40-EN

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Engine Accessories

RADIATOR ASSEMBLY	Type	Parallel Type

	Radiator	Intercooler
Capacity	30 L	24 L
Air-Tight Test Pressure	100 kPa	–
Cap Opening Pressure	49 kPa	–

	Oil Cooler
Capacity	24 L
Air-Tight Test Pressure	1500 kPa
Cap Opening Pressure	–

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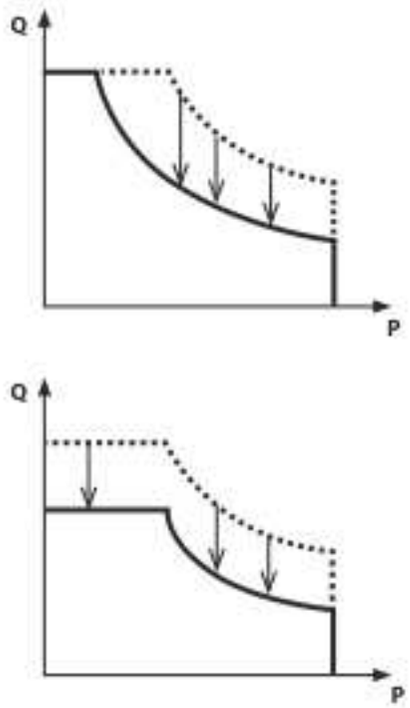
Overheat Prevention Control

Purpose:
The overheat prevention control prevents overheat by reducing the pump maximum flow rate and driving torque when the coolant and hydraulic oil temperature exceed the specified value.

Operation:

1. ECM (19) sends the signal of coolant temperature sensor (20) to MC (14) via CAN (18).
2. MC (14) calculates the target pump displacement angle, which reduces the pump driving torque by 7%, by using the signals from pump 1 delivery pressure sensor (26) and pump 2 delivery pressure sensor (27) when the coolant temperature becomes 99 °C or higher.
3. MC (14) compares the pump displacement angle calculated by pump 1 control pressure sensor (31) and pump 2 control pressure sensor (29) with the target pump displacement angle.
4. MC (14) drives pump 1 control solenoid valve (30) and pump 2 control solenoid valve (28) to accord the actual and target pump displacement angles.
5. MC (14) receives the signal from hydraulic oil temperature sensor (1).
6. MC (14) calculates the target pump displacement angle, which reduces the pump driving torque by 7%, by using the signals from pump 1 delivery pressure sensor (26) and pump 2 delivery pressure sensor (27) when the hydraulic oil temperature becomes 100 °C or higher.
7. MC (14) compares the pump displacement angle calculated by pump 1 control pressure sensor (31) and pump 2 control pressure sensor (29) with the target pump displacement angle.
8. MC (14) monitors the actual pump displacement angle for comparison with the target pump displacement angle, and drives pump 1 control solenoid valve (30) and pump 2 control solenoid valve (28) to decrease the pump displacement angle in order to decrease the maximum flow rate or pump driving torque.
9. When the following conditions are met, the overheat prevention control is terminated.

- Coolant temperature: 95 °C or less
- Hydraulic Oil Temperature: 95 °C or less



P- Pressure Q- Flow Rate

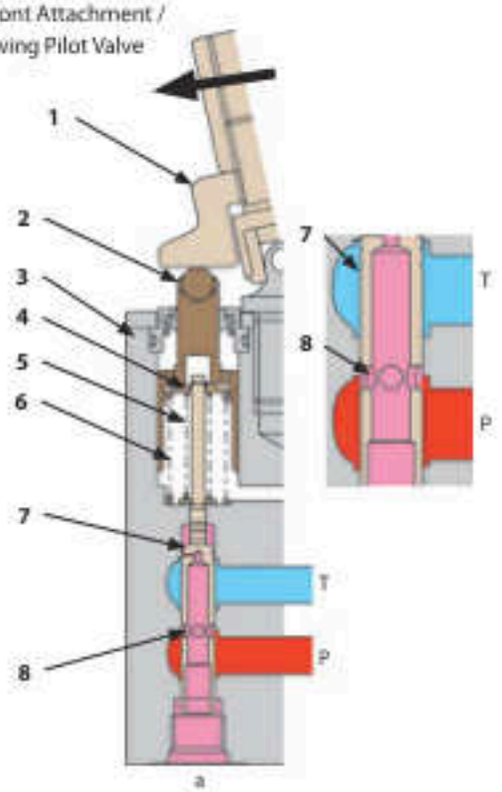
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CAN Circuit

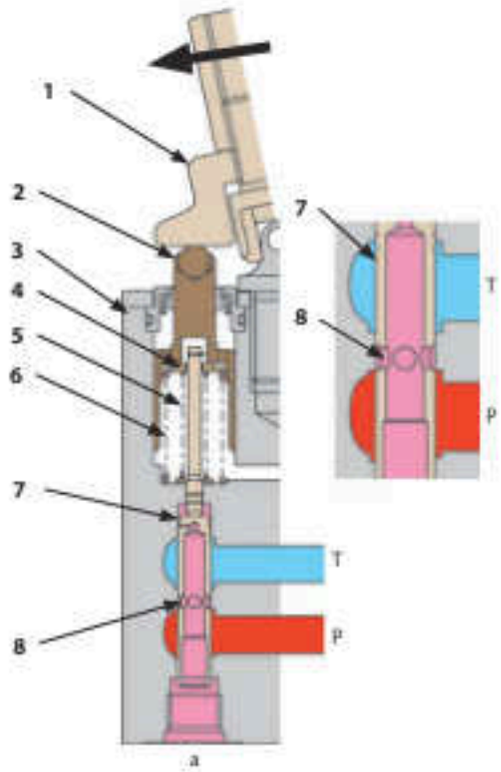
CAN (Controller Area Network) is ISO Standards of the serial communication protocol.
Four networks (CAN bus (4)), CAN 0 (1), CAN 1 (5), ISO-CAN (18), and Local-CAN (20) are equipped for this machine.
CAN 0 (1) and ISO-CAN (18) are used for the engine control. CAN 1 (5) is used for the accessories. Local-CAN (20) is used for the urea SCR system.
CAN bus (4) consists of two harnesses, CAN-H (High) (2) and CAN-L (Low) (3).
Each controller judges the CAN bus (4) level due to the potential difference between CAN-H (High) (2) and CAN-L (Low) (3).
Each controller arranges the CAN bus (4) level and sends the signal and data to other controllers.
Termination resistors (120 Ω) (17) are installed to both ends of CAN bus (4).

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Front Attachment / Swing Pilot Valve

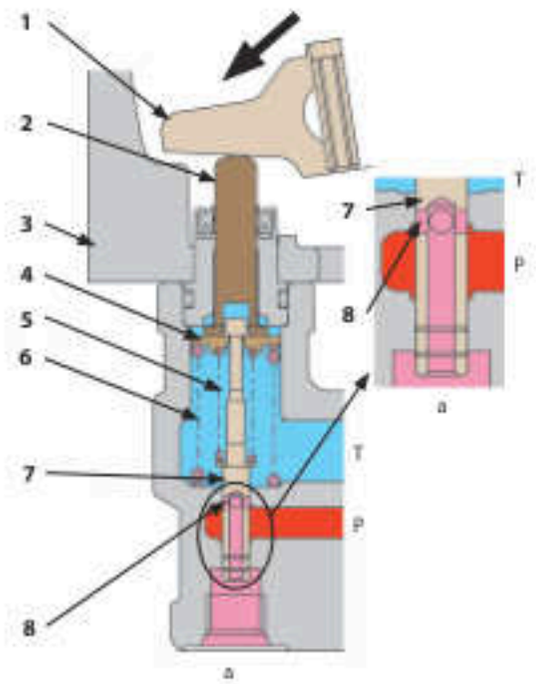


TPPP-03-04-007

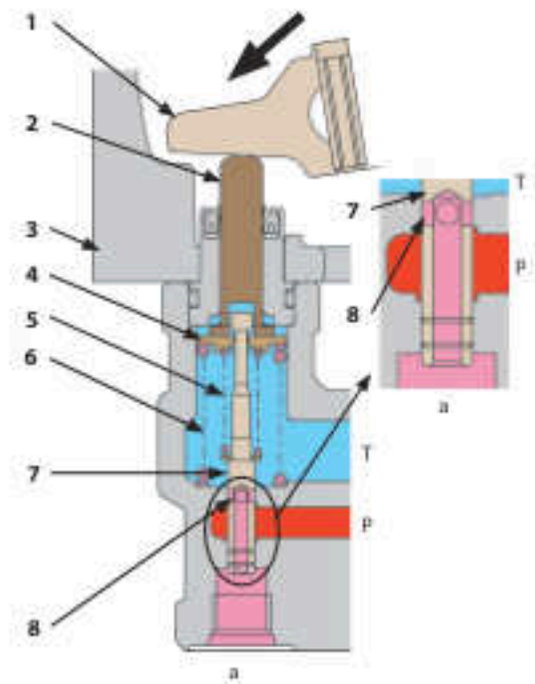


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Travel Pilot Valve



TPPP-03-04-012

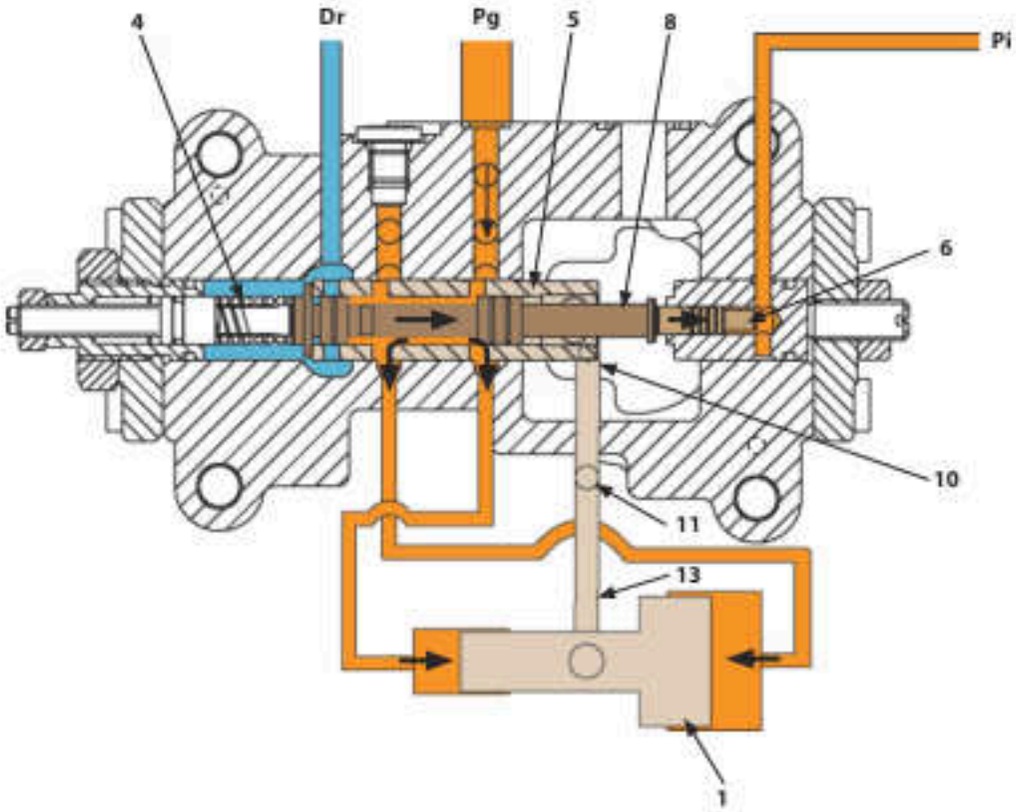


TPPP-03-04-013

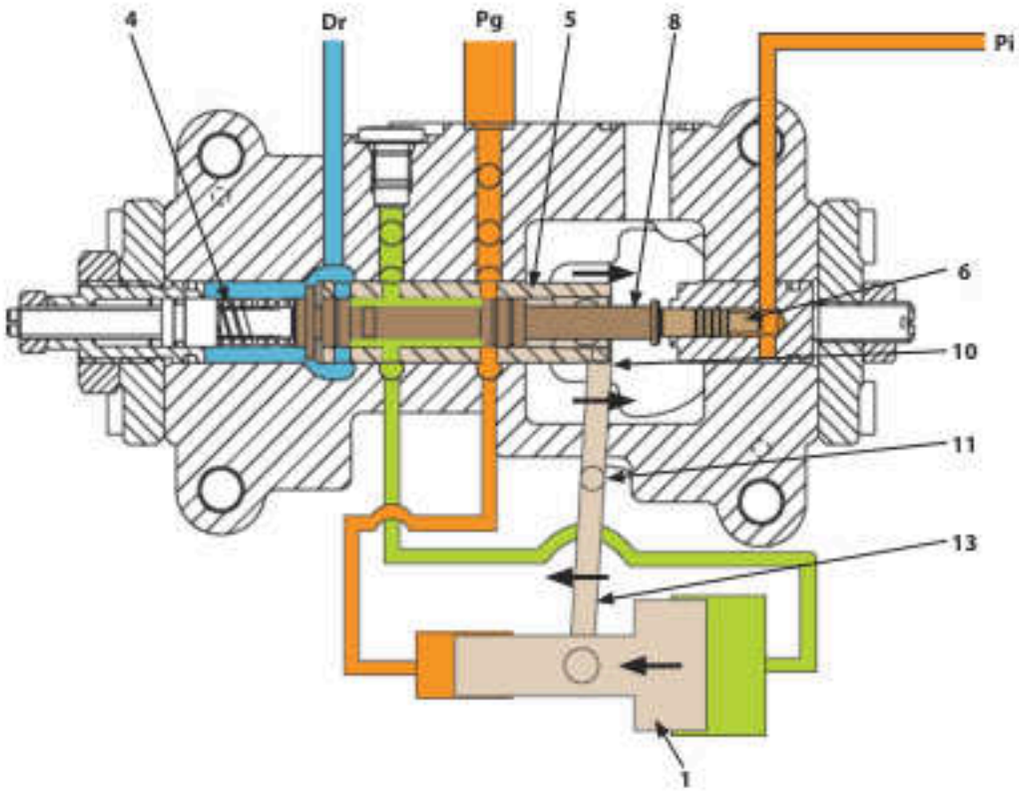
P- Port P
T- Port T
a- Output Port

1- Cam
2- Pusher
3- Casing
4- Spring Guide
5- Balance Spring
6- Return Spring
7- Spool
8- Hole

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TJBA-03-01-021



TJBA-03-01-022

Dr- Returning to Hydraulic Oil Tank
Pi- Flow Rate Control Pressure
Pg- Primary Pilot Pressure (From Pilot Pump)

1- Servo Piston
4- Spring
5- Sleeve
6- Piston
8- Spool
10- Pin
11- Pin
13- Link

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CONNECTORS (ONE NOx SENSOR) (MACHINE: UP TO SERIAL NO.60012)

CONNECTOR CHART

(NO COMMENTS CONNECTOR IS HARNESS SIDE)

<INSIDE OF CAB>

SEC_HORN — 7283-8220
CAN1 — Z02FGY — 7123-8520-40
OPTION — M06FW — 7123-6060
OPTION2 — C12FW — 7123-7920
OPT_SW — C03FW — 7123-7830
OPT_WIPER — C06FW — 7123-7860
FAN_REVERSE_SW — C04FB — 7123-7841-30
AUTO_LUB_SW — C06FBR — 7123-7862-80
AUX_2,AUX_3,12V_UNIT,IMMOBI,WARNING_LAMP, CAB_LAMP_REAR,QUICK_HITCH — CN02F — 7123-2825
SEAT,CAB_LAMP_FRONT, CAB_LAMP_FRONT+2 — CN03F — 7123-2835
POWER_DIG_SW — 174056-2
BACK_UP — Z02FBR — 7123-8521-80
D_BACK_UP — Z02MBR — 7222-8521-80

JOINT1 — DSD-06F-W
JOINT_E — 7123-6261-40
WIPER_STD BOOM_MODE_SW — C04FW — 7123-7840
CAB LIGHT — C03FW — 7123-7830
DOOR_SW — 6520-0564
HORN_SW — 174056-2
EC1 — C02MW — 7122-7820
ST_EC1 — C02FW — 7123-7820
EC2 — C02FW — 7123-7820
ST_EC2 — C02MW — 7122-7820
EM_EC1 — C02FW — 7123-7820
EM_EC2 — C02MW — 7122-7820
PILOT SHUT-OFF SOL — Z02FGY — 7123-8520-40
PILOT SHUT-OFF SW — Z03FGY — 7123-7730-40
ENG_STOP_SW — C06FB — 7123-7861-30
MANUAL REGENERATION_SW/H — C06FB — 7123-7861-30
EL_LEVER_OPTION — C12FW — 7123-7920

MC_A — 353031-2
MC_B — 353029-2
MC_C — 353027-1
MC_D — 1318758-1
MC_E — 1318756-1
MC_F — 1318757-1
T_WIPER_B — C02MB — 7122-7821-30
T_WIPER — C02FB — 7123-7821-30
SPEAKER — CN04F — 7123-2845

MAIN/H_1 — BP-002A
MAIN/H_2 — NMWP32FGY
A/C_1 — 6098-0514
A/C_2 — 7283-1100
RADIO — 174046-2
RADIO_AUX — C06FB — 7123-7861-30
MONITOR/H — C04FW — 7123-7840
SEC_D — C02MW — 7122-7820
SEC_H — C02FW — 7123-7820
MONITOR CONTROLLER_C — MX340125F1
MONITOR CONTROLLER_A — MX34028SF1
MONITOR CONTROLLER_B — MX34036SF1
MONITOR CONTROLLER_D — MX34016SF1
MONITOR CONTROLLER_G — MX38002FQ1

FUSE_BOX — 361897-0533
FUSE_BOX2 — 361897-0533
SW_BOX_1 — C10FW — 7123-7900
SW_BOX_2 — C12FB — 7123-7921-30
SW_BOX_3 — C16FB — 7123-7961-30
SW_BOX_4 — C16FW — 7123-7960
GSM/H — C08FW — 7123-7880
RELAY_BOX — 361897-0553
WIPER/LIGHT CONTROLLER_A — 174044-2
WIPER/LIGHT CONTROLLER_B — 174047-2
Dr — 7323-2064

R11,R14,R15 — 6098-1493
R12,R13,R16 — 6098-1493
DIODE1,3,6-10,11-13 — 7283-5028 — ASSY_7321-9822
DIODE2,4,5,14 — 6098-0022 — ASSY_6098-0126

<OUTSIDE OF CAB>

CAB/H_1 — BP-001C
ECM_1 — 2109432-2
ECM_2 — 2109431-2
CAB/H_2 — NMWP32MGY
MAIN_P/H — 6189-0714
PUMP/H,CV/H, ENG/H — 6188-0494
ENG_1 — NMWP32FGY
ENG_2,PUMP/H_2 — SWP16MGY — 7222-7564-40
ENG_3 — SWP14MGY — 7222-7544-40
ENG_4 — Y01MGY — 7222-4210-40
ENG_5 — 6188-0494

NOX/H — 6188-0495
NOX/H(PUMP) — 6189-0715
CAMERA_MAIN — 6189-7039
CAMERA_SUB — 6188-4776
CAMERA — TC57392
ATT — 6189-0714
TEMP_SENSOR — 54200206
DCU-CAN_RESISTOR — DT06-3S-CE05
VGS(TURBO)_C/U — SWP16FGY — 7123-7564-40

DCU_1 — 9-4486-01
DCU_2 — 9-4493-01
DEF SENSOR UNIT — 1-1719434-1
P1,P2 — EJ3FF — 173091-2
PC1,PC2,FUEL_P/S,BMU,BMD,AMC ,AMD,BKD,BKC,TR,S3,SA,SB — RW03FB — 7223-6536-30

STARTER RELAY 1 — 7123-1424-40
BOX/H — SWP6MGY — 7222-7464-40
COOLANT_LEVEL — Z02MGY — 7222-8520-40
SUPPLY_MODULE — 2-1703639-1
CAN,DCU_CAN — Z02FGY — 7123-8520-40
STARTER RELAY 1 — Y02FGY — 7123-4220-40
GLOW PLUG RELAY — 7323-3010
GLOW PLUG RELAY — 7323-3010
GLOW PLUG RELAY — 7323-2228
4SG,4SJ,4SF,4SC,FP,2SC,2SJ — 6189-0031

DIAG — Z08FGY — 7123-7780-40
ROOF_WASHER — Z02MBR — 7222-8521-80
HORN_H/L — 7283-8220
DEF SENSOR UNIT/H — Z06FGY — 7123-7760-40
TRAVEL_ALARM — SJD PH805-04028
SWING_ALARM — Z04FGY — 7123-7740-40
OPEN_AIR_S — 7283-7028-30
OIL_TEMP_S — 178390-2
WASHER — 7323-2228
FUEL_FEED_M — X02FB — 7123-6423-30
FUEL_PUMP — W02FW — 7223-1824-40
ENG_OIL_LEVEL_SW — 7123-7414-40
ISOCAN_RESISTOR — DT06-3S-CE05

CW_P/S — Z03FGY — 7123-7730-40
DOSING MODULE — COMPACT_CONN(B) — 1_928_404_072
WATER_SEPARATOR — 7283-7028-30
NOX_SENSOR_1 — 872-860-541
HEATER_VALVE — 6189-0682
AIR_COMPRESSOR — 4F017B-0001K
F/L_45A — 7322-4125-50
F/L_75A — 7322-4123-30
EXHAUST_TEMP 1(CSF)/S — 7282-7026-30
EXHAUST_TEMP 2(DOC)/S — 7282-7023-10
PRESSURE_SW — 6189-0094
ALTERNATOR — 7323-7414-40

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