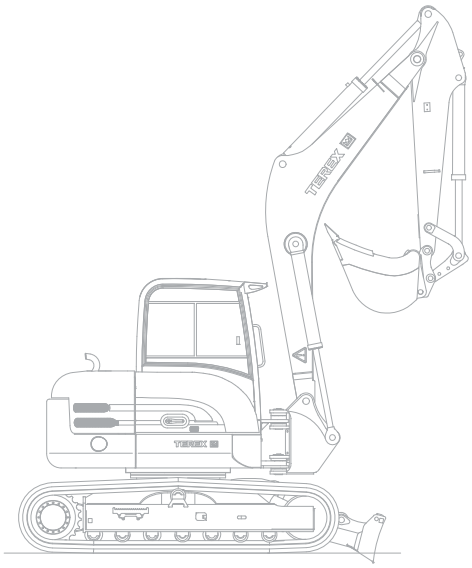
TEREX®

TC 60 SERVICE - MANUAL



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PRESSURE AND SETTING VALUES

Main pressure relief valve (high idle):	max. bar	165

LINE RELIEF PRESSURES

- travel left (valves in the motor):	bar	----
- travel right (valves in the motor):	bar	----
- slewing (valves at the slew motor):	bar	$\Delta P = 93 \pm 3$ bar; (high idle, service temperature, ΔP between M1 and M2)
- dipperstick:	bar	210 / 210
- bucket:	bar	210 / 210
- boom lift / lower:	bar	210 / 160
- breaker / slew bucket / grab rotation:	bar	----
- articulation:	bar	anti cavitation
- dozer blade:	bar	----

CYCLE TIMES

Boom up / down to the ground:	s	3.0 / 2.9
Dipperstick extend / retract:	s	2.6 / 2.9
Bucket extend / retract:	s	2.1 / 2.4
Slew speed (max.)	min^{-1}	10

LUBRICANTS

Engine oil:	see engine instruction book
Hydraulic oil:	see operation manual
Transmission oil:	MIL-L-2105 B or API-GL5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to DIN 51825. Dripping point over 170° C. With lithium.

MAINTENANCE PARTS

see operation manual

CAPACITIES

		ltr.	
Fuel:	approx.	30.0	diesel
Engine oil, engine and filter:	approx.	3.4 + 0.2	HD-oil (change)
Hydraulic oil, tank and system:	approx.	35.0	hydraulic oil
Hydraulic oil tank:	approx.	25.0	hydraulic oil (change)
Travel gear:	approx.	0.3	transmission oil, each
Slew gear:	approx.	0.1	transmission oil
Cooling agent:	approx.	4.2	water with anticorrosive and anti-freeze agent

The values stated are approximate.
The level indicator is always decisive.

DIESEL ENGINE

Manufacturer:		Mitsubishi
Type:		L 3 E - W 262 KL
Performance acc. to DIN 70020 + ECE-R24:	kW	13.0 at 2,250 min^{-1}
Construction:		3 cylinders in line
Cooling:		water / anti-freeze agent
Capacity:	cm^3	952
High idle:	min^{-1}	2.450 $^{+35}/_{-10}$
Low idle:	min^{-1}	1.020 $^{+50}$
Spec. fuel consumption (full load):	g/kWh	247
Fuel bleeding:		automatic
Tappet clearance - inlet / exhaust:	mm	0.25 (cold)
Injection timing:	°	17 before upper dead centre
Torque of cylinder head studs:	Nm	M 10: 75 - 85 M 8: 20 – 30
Electric fuel pump	bar	0,18
	l/min	0,37
Injection pressure (valve opening pressure):	bar	140
Further data:		see engine operating manual

ELECTRICAL SYSTEM

Voltage:	V	12
Battery:	V/Ah	12 / 74 / 680 (EN)
Generator:	V/A	12 / 40
Starter:	V/kW	12 / 1.7
Starting aid:		3 glow plugs, glow time controlled
Lighting:		working headlight H3

TRANSMISSION

Travel motors:		make/type	SOM MOR 15
Travel gears:		make/type	SOM PGR 132 N
Travel speed:	tortoise	km/h	0 to 2.7
	rabbit	km/h	0 to 4.5

EXCAVATOR AND TRAVEL HYDRAULICS

Hydraulic pump:	make	Haldex WP 09 A2
Flow rate:	l/min	33,6 + 19,2
Cut off valve:		pump integrated
Cut off pressure (high idle):	bar	125 $_{-5}$ (service temperature)
Pilot pressure (high idle):	bar	28 (service temperature)
Pressure reducing valve with accu	make	Hydac
Valve bank:	type	Rexroth 9 SX 10
Cross servo control stick:	type	Rexroth 4TH 5
Flow at additional circuit	l/min	at 100 bar ➔ approx. 33 at 140 bar ➔ approx. 30

SLEW DRIVE

Slew motor with gearbox:	make	SOM RCG-35
Slew pressure (valves at slew motor):	bar	155 (high idle and service temperature, measured **at pressure port P1**)

PRESSURE AND SETTING VALUES

Main pressure relief valve (high idle):	max. bar	180

LINE RELIEF PRESSURES

- travel left (valves in the motor):	bar	180 / 180
- travel right (valves in the motor):	bar	180 / 180
- slewing (valves at the slew motor):	bar	155 (high idle and service temperature, measured **at pressure port P1**)
- dipperstick:	bar	210 / 210
- bucket:	bar	210 / 210
- boom lift / lower:	bar	230 / 160
- breaker / slew bucket / grab rotation:	bar	----
- articulation:	bar	anti cavitation
- dozer blade:	bar	----

CYCLE TIMES

Boom up / down to the ground:	s	3.0 / 2.9
Dipperstick extend / retract:	s	2.6 / 2.9
Bucket extend / retract:	s	2.1 / 2.4
Slew speed (max.)	min^{-1}	10

LUBRICANTS

Engine oil:	see engine instruction book
Hydraulic oil:	see operation manual
Transmission oil:	MIL-L-2105 B or API-GL5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to DIN 51825. Dripping point over 170° C. With lithium.

MAINTENANCE PARTS

see operation manual

CAPACITIES

		ltr.	
Fuel:	approx.	30.0	diesel
Engine oil, engine and filter:	approx.	3.4 + 0.2	HD-oil (change)
Hydraulic oil, tank and system:	approx.	35.0	hydraulic oil
Hydraulic oil tank:	approx.	25.0	hydraulic oil (change)
Travel gear:	approx.	0.3	transmission oil, each
Slew gear:	approx.	0.1	transmission oil
Cooling agent:	approx.	4.2	water with anticorrosive and anti-freeze agent

The values stated are approximate.
The level indicator is always decisive.

DIESEL ENGINE

Manufacturer:		Mitsubishi
Type:		L 3 E - W 262 KL
Performance acc. to DIN 70020 + ECE-R24:	kW	13.0 at 2,250 min^{-1}
Construction:		3 cylinders in line
Cooling:		water / anti-freeze agent
Capacity:	cm^3	952
High idle:	min^{-1}	2.450 $^{+35}/_{-10}$
Low idle:	min^{-1}	1.020 $^{+50}$
Spec. fuel consumption (full load):	g/kWh	247
Fuel bleeding:		automatic
Tappet clearance - inlet / exhaust:	mm	0.25 (cold)
Injection timing:	°	17 before upper dead centre
Torque of cylinder head studs:	Nm	M 10: 75 - 85 M 8: 20 – 30
Electric fuel pump	bar	0,18
	l/min	0,37
Injection pressure (valve opening pressure):	bar	140
Further data:		see engine operating manual

ELECTRICAL SYSTEM

Voltage:	V	12
Battery:	V/Ah	12 / 74 / 680 (EN)
Generator:	V/A	12 / 40
Starter:	V/kW	12 / 1.7
Starting aid:		3 glow plugs, glow time controlled
Lighting:		working headlight H3

TRANSMISSION

Travel motors:		make/type	SOM MOR 15
Travel gears:		make/type	SOM PGR 132 N
Travel speed:	tortoise	km/h	0 to 2.7
	rabbit	km/h	0 to 4.5

EXCAVATOR AND TRAVEL HYDRAULICS

Hydraulic pump:	make	Haldex WP 09 A2
Flow rate:	l/min	33,6 + 19,2
Cut off valve:		pump integrated
Cut off pressure (high idle):	bar	125 $_{-5}$ (service temperature)
Pilot pressure (high idle):	bar	28 (service temperature)
Pressure reducing valve with accu	make	Hydac
Valve bank:	type	Rexroth 9 SX 10
Cross servo control stick:	type	Rexroth 4TH 5
Flow at additional circuit	l/min	at 100 bar ➔ approx. 33 at 140 bar ➔ approx. 30

SLEW DRIVE

Slew motor with gearbox:	make	Nachi PCR-01B-05A
Slew pressure (valves at slew motor):	bar	130 (high idle and service temperature, measured **at pressure port P1**)

PRESSURE AND SETTING VALUES

Main pressure relief valve (high idle):	max. bar	180

LINE RELIEF PRESSURES

- travel left (valves in the motor):	bar	180 / 180
- travel right (valves in the motor):	bar	180 / 180
- slewing (valves at the slew motor):	bar	155 (high idle and service temperature, measured **at pressure port P1**)
- dipperstick:	bar	210 / 210
- bucket:	bar	210 / 210
- boom lift / lower:	bar	230 / 160
- breaker / slew bucket / grab rotation:	bar	----
- articulation:	bar	anti cavitation
- dozer blade:	bar	----

CYCLE TIMES

Boom up / down to the ground:	s	3.0 / 2.9
Dipperstick extend / retract:	s	2.6 / 2.9
Bucket extend / retract:	s	2.1 / 2.4
Slew speed (max.)	min^{-1}	10

LUBRICANTS

Engine oil:	see engine instruction book
Hydraulic oil:	see operation manual
Transmission oil:	MIL-L-2105 B or API-GL5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to DIN 51825. Dripping point over 170° C. With lithium.

MAINTENANCE PARTS

see operation manual

CAPACITIES

		ltr.	
Fuel:	approx.	30.0	diesel
Engine oil, engine and filter:	approx.	3.4 + 0.2	HD-oil (change)
Hydraulic oil, tank and system:	approx.	35.0	hydraulic oil
Hydraulic oil tank:	approx.	25.0	hydraulic oil (change)
Travel gear:	approx.	0.3	transmission oil, each
Slew gear:	approx.	0.1	transmission oil
Cooling agent:	approx.	4.2	water with anticorrosive and anti-freeze agent

The values stated are approximate.
The level indicator is always decisive.

DIESEL ENGINE Tier 4

Manufacturer:		Mitsubishi
Type:		L 3 E - W 462 KL
Performance acc. to DIN 70020 + ECE-R24:	kW	13.1 at 2,250 min^{-1}
Construction:		3 cylinders in line
Cooling:		water / anti-freeze agent
Capacity:	cm^3	952
High idle:	min^{-1}	2.450 $^{+35}/_{-10}$
Low idle:	min^{-1}	1.020 $^{+50}$
Spec. fuel consumption (full load):	g/kWh	272
Fuel bleeding:		automatic
Tappet clearance - inlet / exhaust:	mm	0.25 (cold)
Injection timing:	°	15 before upper dead centre
Torque of cylinder head studs:	Nm	M 10: 75 - 85 M 8: 20 – 30
Electric fuel pump		
	l/min	0,9
Injection pressure (valve opening pressure):		
Further data:		see engine operating manual

ELECTRICAL SYSTEM

Voltage:	V	12
Battery:	V/Ah	12 / 74 / 680 (EN)
Generator:	V/A	12 / 40
Starter:	V/kW	12 / 1.7
Starting aid:		3 glow plugs, glow time controlled
Lighting:		working headlight H3

TRANSMISSION

Travel motors:		make/type	SOM MOR 15
Travel gears:		make/type	SOM PGR 132 N
Travel speed:	tortoise	km/h	0 to 2.4
	rabbit	km/h	0 to 4.2

EXCAVATOR AND TRAVEL HYDRAULICS

Hydraulic pump:	make	Haldex WP 09 A2
Flow rate:	l/min	31,5 + 18
Cut off valve:		pump integrated
Cut off pressure (high idle):	bar	125 $_{-5}$ (service temperature)
Pilot pressure (high idle):	bar	28 (service temperature)
Pressure reducing valve with accu	make	Hydac
Valve bank:	type	Rexroth 9 SX 10
Cross servo control stick:	type	Rexroth 4TH 5
Flow at additional circuit	l/min	at 100 bar ➔ approx. 33 at 140 bar ➔ approx. 30

SLEW DRIVE

Slew motor with gearbox:	make	Nachi PCR-01B-05A
Slew pressure (valves at slew motor):	bar	132 $^{\pm 4}$ (high idle and service temperature, measured at pressure port P1)

PRESSURE AND SETTING VALUES

Main pressure relief valve (high idle):	max. bar	180

LINE RELIEF PRESSURES

- travel left (valves in the motor):	bar	180 / 180
- travel right (valves in the motor):	bar	180 / 180
- slewing (valves at the slew motor):	bar	Δ P = 105 $^{\pm 3}$ bar; (high idle, service temperature, Δ P between M1 and M2)
- dipperstick:	bar	210 / 210
- bucket:	bar	210 / 210
- boom lift / lower:	bar	230 / 160
- breaker / slew bucket / grab rotation:	bar	----
- articulation:	bar	anti cavitation
- dozer blade:	bar	----

CYCLE TIMES

Boom up / down to the ground:	s	3.0 / 2.9
Dipperstick extend / retract:	s	2.6 / 2.9
Bucket extend / retract:	s	2.1 / 2.4
Slew speed (max.)	min^{-1}	10

LUBRICANTS

Engine oil:	see engine instruction book
Hydraulic oil:	see operation manual
Transmission oil:	MIL-L-2105 B or API-GL5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to DIN 51825. Dripping point over 170° C. With lithium.

MAINTENANCE PARTS

see operation manual

CAPACITIES

		ltr.	
Fuel:	approx.	30.0	diesel
Engine oil, engine and filter:	approx.	3.4 + 0.2	HD-oil (change)
Hydraulic oil, tank and system:	approx.	35.0	hydraulic oil
Hydraulic oil tank:	approx.	25.0	hydraulic oil (change)
Travel gear:	approx.	0.3	transmission oil, each
Slew gear:	approx.	0.1	transmission oil
Cooling agent:	approx.	4.2	water with anticorrosive and anti-freeze agent

The values stated are approximate.
The level indicator is always decisive.

DIESEL ENGINE Tier 4

Manufacturer:		Mitsubishi
Type:		S 3L 2 – W 463 KL (Tier 4)
Output acc. to DIN 70020 and ECE-R24:	kW	17.4 at 2,200 min^{-1}
Construction:		3 cylinders in line
Cooling:		water / anti-freeze agent
Capacity:	cm^3	1,318
Torque	Nm	78,4 at 1,800 min^{-1}
High idle:	min^{-1}	2,400 $^{+30}/_{-25}$
Low idle:	min^{-1}	1,160 $^{+25}$
Spec. fuel consumption (full load):	g/kWh	260
Fuel bleeding:		automatic
Tappet clearance - inlet / outlet:	mm	0.25 (cold)
Injection timing:	°	15° (before upper dead centre)
Engine oil pressure:	bar	1,0 at 1160 min^{-1}
Torque of cylinder head studs (in case of repair):	Nm	83 to 92 (M10)
Injection pressure		
Further data:		see engine operator's manual

ELECTRICAL SYSTEM

Voltage:	V	12
Battery:	V/Ah	12 / 74 / 680 (EN)
Generator:	V/A	12 / 50
Starter:	V/kW	12 / 1.7
Starting aid:		3 Glow plugs. Glow time: temperature independent preglowing: 6 sec continuous postglowing: 4,5 sec continuous
Lighting:		working headlamp H3, additional headlamp (optional)

TRANSMISSION

Travel motors with travel gear:	make/type	Nachi PHV-3B-35A
Travel speeds:	km/h	0 to 2.7 / 0 to 4.4

EXCAVATOR AND TRAVEL HYDRAULICS

Variable displacement pump:	make	Bosch Rexroth
	type	A 10 VNO 28
Flow rate:	cm^3/rev.	0 – 28 (max. 67 l/min)
Pilot pressure (high idle):	bar	30 (service temperature)
Valve bank:	type	9 SX 10
Cross servo control stick:	type	4 TH5
Travel pedal	type	4 TH5 NR
Control lever boom offset	type	Hydrocontrol HC-RCM
Control lever add.circuit	type	Hydrocontrol HC-RCM

SLEW DRIVE

Slew motor with gearbox:	make		Kayaba MSG-27P-10E-19
Slew pressure (valves at slew motor):	bar	180^{+5}	(• p between M1 and M2; high idle; service temperature)

PRESSURE AND SETTING VALUES

Pump safety relief valve:	bar	280	(high idle, service temperature)
Main relief valve - LS:	bar	250	(high idle, service temperature)
Stand-by (free flow circuit):	bar	24,2	(high idle, service temperature)
• p (P minus LS pressure)	bar	13,0	(high idle, service temperature)

LINE RELIEF PRESSURES

- slewing (valves at the slew motor):	bar	180^{+5}	(• p between M1 and M2, high idle, service temperature)
- dozer:	bar	---	
- travel left:	bar	---	
- travel left:	bar	---	
- bucket:	bar	270 / 270	
- boom lift / lower:	bar	270 / 160	
- boom offset:	bar	anti-cavitation	
- dipper stick:	bar	270 / 270	
- breaker / slew bucket / grab rotation:	bar	210 / 210	

CYCLE TIMES

Boom up / down - to the ground (without damping)	sec.	2.5 / 2.7
Dipper stick cylinder out / in:	sec.	2.2 / 2.5
Bucket cylinder open / close:	sec.	1.8 / 2.1
Slew speed	min^{-1}	10

LUBRICANTS

Engine oil:	see engine instruction book
Hydraulic oil:	see operation manual
Transmission oil:	MIL-L-2105 B or API-GL5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to DIN 51825. Dripping point over 170° C. With lithium.

MAINTENANCE PARTS see operation manual

CAPACITIES	ltr.		
Fuel:	approx.	40	diesel
Engine oil, engine and filter:	approx	5,7	HD oil (change)
Hydraulic oil, tank and system:	approx.	40	hydraulic oil
Hydraulic oil tank:	approx.	34	hydraulic oil (change)
Travel gear:	approx.	0.6	transmission oil, each
Slew gear:		lubrication by circulation of the hydraulic oil	
Cooling agent:	approx.	4.8	water with anti-corrosive and anti-freeze agent

The values stated are approximate.
The level indicator is always decisive.

DIESEL ENGINE

Manufacturer:		Mitsubishi
Type:		S 4L 2 – Y 263 KL – TIER II
Output acc. to DIN 70020 and ECE-R24:	kW	23.8 at 2,100 min^{-1}
Construction:		4 cylinders in line
Cooling:		water / anti-freeze agent
Capacity:	cm^3	1,758
Torque	Nm	105 at 1,500 min^{-1}
High idle:	min^{-1}	2,300 $^{}_{-50}$
Low idle:	min^{-1}	1,000 $^{+25}/_{-25}$
Spec. fuel consumption (full load):	g/kWh	258
Fuel bleeding:		automatic
Tappet clearance - inlet / outlet:	mm	0.25 (cold)
Compression ratio:	bar	27 - 30
Injection timing:	°	17 (before upper dead centre)
Engine oil pressure:	bar	3.5 ± 0.5 (high idle, service temperature)
Torque of cylinder head studs (in case of repair):	Nm	M 10 → 83 to 92
Injection pressure	bar	140 $^{+5}$
Further data:		see engine operator's manual

ELECTRICAL SYSTEM

Voltage:	V	12
Battery:	V/Ah	12 / 74 / 680 (EN)
Generator:	V/A	12 / 50
Starter:	V/kW	12 / 2.0
Starting aid:		Glow plugs, glow time controlled,
Lighting:		working headlamp H3, additional headlamp (optional)

TRANSMISSION

Travel motors with travel gear:		make/type	SOM PGR 402
Travel speed:	shift I	km/h	0 to 2.7
	shift II	km/h	0 to 4.6

EXCAVATOR AND TRAVEL HYDRAULICS

Variable displacement pump:	make	Rexroth
	type	A 10 VO 45 DFLR
Flow rate:	cm^3/min.	0 – 45 (0 - 94.5 l/min)
Pilot pressure (high idle):	bar	28 (service temperature)
Valve bank:	type	Rexroth 9 SX 12
Cross servo control stick:	type	Rexroth 4TH6

SLEW DRIVE

Slew motor with gearbox:	make	Kayaba MSG-27P-10E
Slew pressure (valves at slew motor):	bar	250^{+5} ($\bullet$ p= 200^{+5} between M1 and M2; high idle; service temperature)