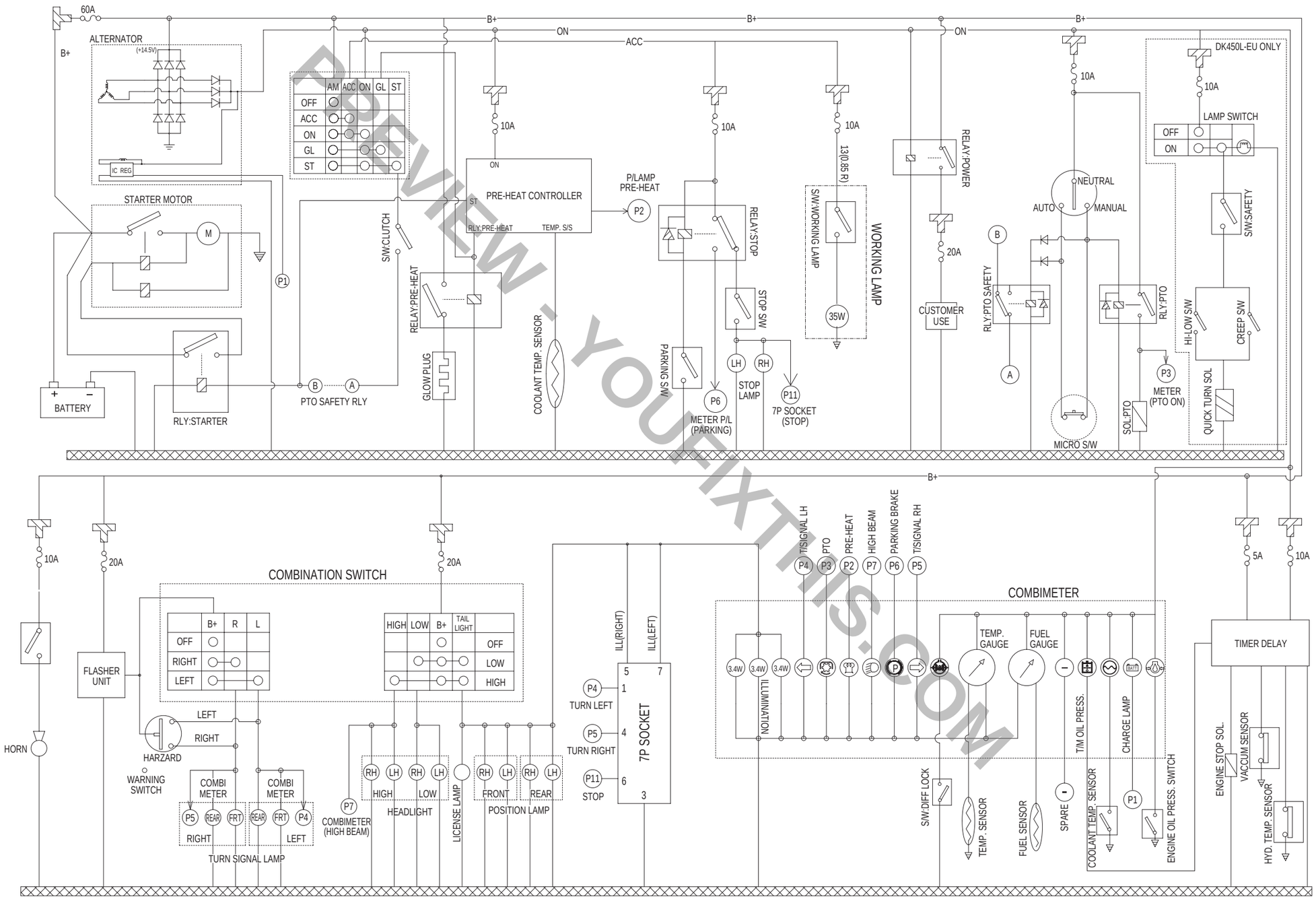
7. WIRING DIAGRAM



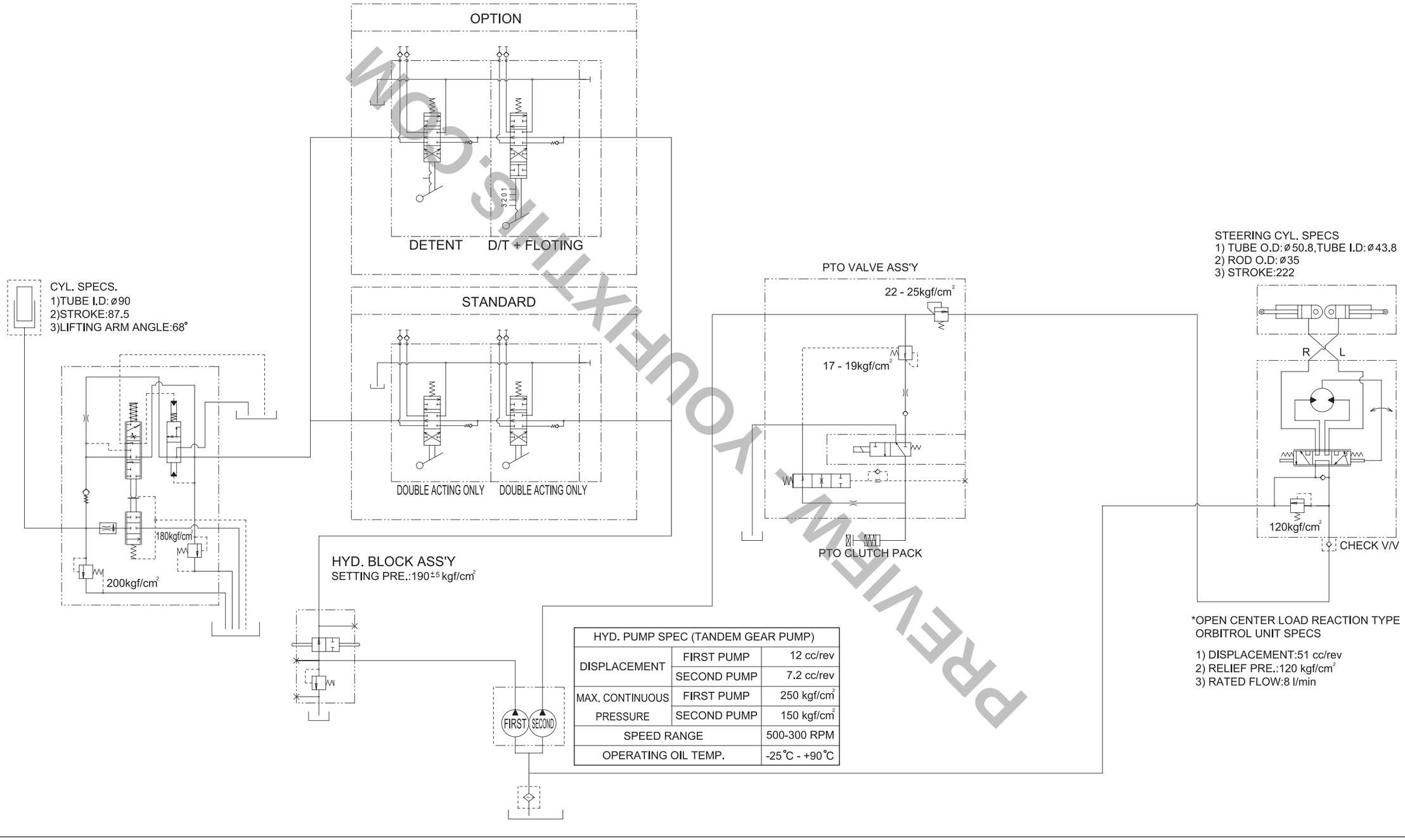
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

8. HYDRAULIC SYSTEM

8.1 HYDRAULIC CIRCUIT DIAGRAM

MODEL: DK35, DK40



HYD. PUMP SPEC (TANDEM GEAR PUMP)		
DISPLACEMENT	FIRST PUMP	12 cc/rev
	SECOND PUMP	7.2 cc/rev
MAX. CONTINUOUS PRESSURE	FIRST PUMP	250 kgf/cm²
	SECOND PUMP	150 kgf/cm²
SPEED RANGE		500-300 RPM
OPERATING OIL TEMP.		-25℃ - +90℃

*OPEN CENTER LOAD REACTION TYPE ORBITROL UNIT SPECS

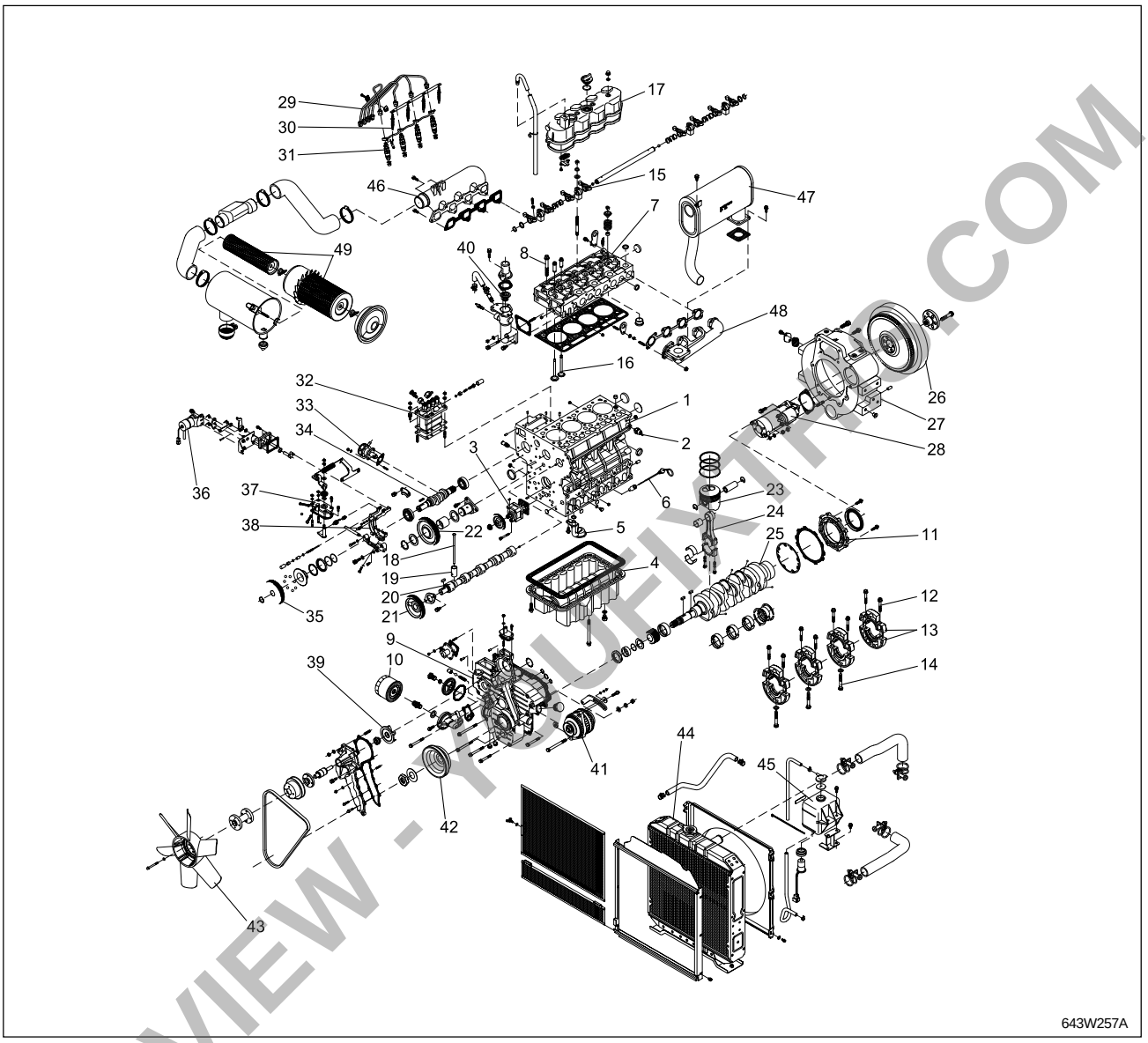
1) DISPLACEMENT:51 cc/rev
2) RELIEF PRE.:120 kgf/cm²
3) RATED FLOW:8 l/min

643W901A

PREVIEW - YOUFIXTHIS
Download full manual at youfixthis.com

3.3 CHECKING, DISASSEMBLING AND SERVICING

A. ENGINE DISASSEMBLED VIEW



(1) Cylinder Block
(2) Oil Pressure Switch
(3) Oil Pump
(4) Oil Pan
(5) Oil Strainer
(6) Oil Gauge
(7) Cylinder Head
(8) Head Bolt
(9) Gear case
(10) Oil Filter
(11) Main bearing Case Cover
(12) Bearing Case Bolt 1
(13) Main Bearing Case
(14) Bearing Case Bolt 2
(15) Rocker Arm
(16) Inlet, Exhaust Valve
(17) Cylinder Hear Cover
(18) Push Rod
(19) Tappet
(20) Camshaft
(21) Camshaft Gear
(22) Idle Gear
(23) Piston
(24) Connecting Rod
(25) Crankshaft
(26) Flywheel
(27) Flywheel Housing
(28) Starter
(29) Injection Pipe
(30) Glow Plug
(31) Nozzle
(32) Fuel Injection Pump
(33) Fuel Feed Pump
(34) Fuel Camshaft
(35) Fuel Camshaft Gear
(36) Engine Stop Solenoid
(37) Speed Control Plate
(38) Fork Lever (Governor)
(39) Impeller
(40) Thermostat
(41) Alternator
(42) Fan Drive Pulley
(43) Cooling Fan
(44) Radiator
(45) Reserve Tank Ass'y
(46) Inlet Manifold
(47) Muffler
(48) Exhaust Manifold
(49) Air Cleaner

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

E. TIGHTENING TORQUES

Item	Size x Pitch	N•m	kgf•m	lbf·ft
Cylinder head screws	M11 x 1.25	103.0 ~ 107.9	10.5 ~ 11.0	75.9 ~ 79.6
Head cover nuts	M10 x 1.25	8.8 ~ 10.8	0.9 ~ 1.1	6.5 ~ 8.0
* Bearing case screw 1	M9 x 1.25	46.1 ~ 51.0	4.7 ~ 5.2	34.0 ~ 37.6
* Bearing case screw 2	M10 x 1.25	68.6 ~ 73.6	7.0 ~ 7.5	50.6 ~ 54.2
* Flywheel screw	M12 x 1.25	98.1 ~ 107.9	10.0 ~ 11.0	72.3 ~ 79.6
* Connecting rod screws	M8 x 1.0	46.1 ~ 51.0	4.5 ~ 5.0	34.0 ~ 37.6
Rocker arm bracket studs	M10 x 1.25	48.1 ~ 55.9	4.9 ~ 5.7	35.4 ~ 41.2
Drain plug	M12 x 1.25	32.4 ~ 37.3	3.3 ~ 3.8	23.9 ~ 37.3
Glow plugs	M10 x 1.25	19.6 ~ 24.5	2.0 ~ 2.5	14.5 ~ 18.1
Oil switch	PT1/8	14.7 ~ 19.6	1.5 ~ 2.0	10.8 ~ 14.5
Nozzle locating screws	M20 x 1.5	49.1 ~ 68.7	5.0 ~ 7.0	36.2 ~ 50.6
Injection pipe nuts	M12 x 1.5	24.5 ~ 34.3	2.5 ~ 3.5	18.1 ~ 25.3

NOTE:

- *For *marked screw, bolts and nuts on the table, apply engine oil to their threads and seats before tightening.*
- *The letter "M" in Size x Pitch means that the screw, bolt or nut dimension stands for metric. The size is the nominal outside diameter in mm of the threads. The pitch is the nominal distance in mm between two threads.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

B. EXTERNAL COMPONENTS

a. Checking and Adjusting

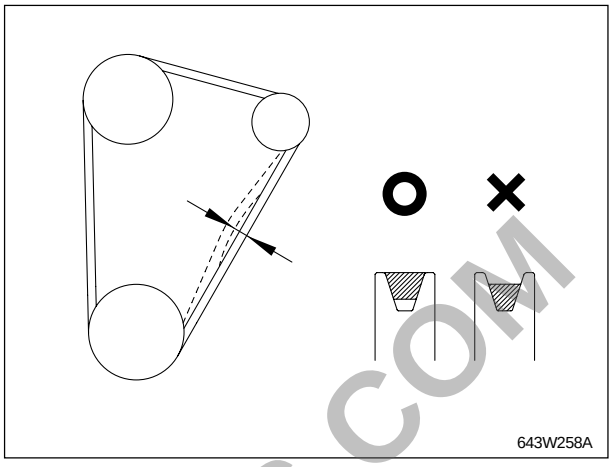
1) Fan belt

Measure the deflection, depressing the belt halfway between the fan drive pulley and the alternator pulley at 98 N (10 kgf, 22 lbs) of force.

If the deflection is not between the factory specifications, loosen the bolts and nuts, and relocate the alternator to adjust.

If the belt is damaged or worn (see figure), replace the belt.

Belt tension (deflection)	Factory spec	7 ~ 9 mm 0.28 ~ 0.35 in.



b. Disassembly and Assembly

1) Engine body

Drain the oil and the water, if disassemble the engine body.

1. Remove the muffler and exhaust manifold (7).
2. Remove the starter (9) and the oil pressure switch (8).
3. Pull out the oil gauge (6).
4. Remove the alternator (5) and the fan belt (1).
5. Remove the hour meter unit (2).
6. Loosen the oil filter (3) with a filter wrench and remove it and the oil filter flange (4).

(When reassembling)

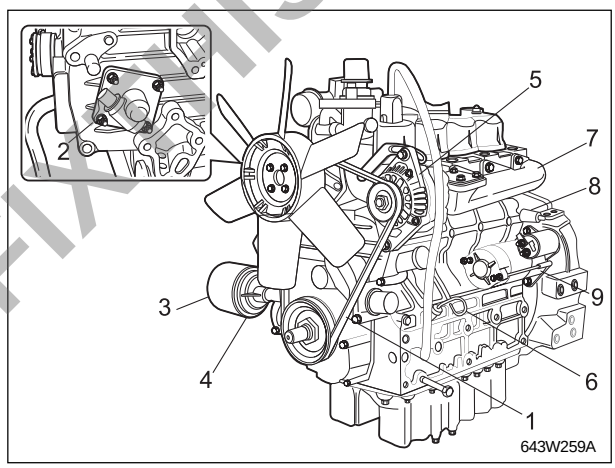
Apply liquid gasket (three bond 1,215 or equivalent) on the thread of the oil pressure switch (8).

Apply liquid gasket to the both sides of the hour meter gasket.

Apply oil to the O-ring and tighten the oil filter not with wrench but by hand.

Adjust the fan belt tension (See fan belt).

Tightening torque	Oil pressure switch	14.7 ~ 19.6 N·m 1.5 ~ 2.0 kgf·m 10.8 ~ 14.4 lbf·ft



(1) Fan Belt
(2) Hour Meter Unit
(3) Oil Filter
(4) Oil Filter Flange
(5) Alternator
(6) Oil Gauge
(7) Exhaust Manifold
(8) Oil Pressure Switch
(9) Starter

* This figure does not show Hour meter Unit (2) covered with the cooling fan.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3. DISASSEMBLING AND SERVICING

3.1 TROUBLESHOOTING

Symptom	Probable Cause	Solution
Engine Does Not Start	• Not fuel	Replenish fuel
	• Air in the fuel system	Vent air
	• Water in the fuel system	Change fuel and repair or flush fuel system
	• Fuel pipe clogged	Clean
	• Fuel filter clogged	Clean or replace
	• Excessively high viscosity of fuel or engine oil at low temperature	Use the specified fuel or engine oil
	• Fuel with low cetane number	Use the specified fuel
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut
	• Incorrect injection timing	Adjust
	• Fuel camshaft worn	Replace
	• Injection nozzle clogged	Clean or replace
	• Injection pump malfunctioning	Repair or replace
	• Fuel transfer pump malfunctioning	Repair or replace
	• Seizure of transfer pump malfunctioning piston, cylinder bore or bearing	Repair or replace
	• Compression leak from cylinder	Replace head gasket, tighten cylinder head screws, glow plug and nozzle holder
	• Improper valve seating, valve spring broken, valve seized	Repair or replace
	• Improper valve timing	Correct or replace timing gear
	• Piston ring and bore worn	Repair or replace
	• Excessive valve clearance	Adjust
(Starter Does Not Run)	• Battery discharged	Charge
	• Starter malfunction	Repair or replace
	• Starter switch malfunction	Repair or replace
	• Wiring disconnected	Connect
Engine Revolution is Not Smooth	• Fuel filter clogged or dirty	Clean or replace
	• Air cleaner clogged	Clean or replace
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut
	• Injection pump malfunctioning	Repair or replace
	• Incorrect nozzle opening pressure	Adjust
	• Nozzle stuck or clogged	Repair or replace
	• Fuel over flow pipe clogged	Clean
	• Governor malfunctioning	Repair

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3. SPECIFICATIONS

Model			DK35-EU	DK40-EU	DK450L-EU
Maximum PTO Power			28.3 PS	33.4 PS	35 PS
Engine GROSS Power			33.5 HP	40.4 HP	44.4 HP
Engine	Model		3A165D	4A200B	4A220L
	Type		Indirect injection, vertical, water-cooled, 4-cycle diesel		
	Number of cylinders		3	4	4
	Bore and stroke		87 × 92.4 mm 3.425 × 3.637 in.	83 × 92.4 mm 3.268 × 3.637 in.	87 × 92.4 mm 3.425 × 3.637 in.
	Total displacement		1,647 cm^3	1,999 cm^3	2,197 cm^3
	Rated revolution		2700 rpm		
	Injection timing		18° before T.D.C		
	Injection order		1 - 2 - 3	1 - 3 - 4 - 2	1 - 3 - 4 - 2
	Compression ratio		22 : 1		
	Lubricating system		Forced lubrication by trochoidal pump		
	Cooling system		Pressurized radiator, Forced circulation with water pump		
	Alternator		12 V, 50AMPS		
	Weight (Dry)		179 kg	205 kg	207 kg
Capacities	Fuel		40 ℓ (10.6 U.S.gal.)		
	Engine oil		5.8 ℓ (1.5 U.S.gal.)	7.0 ℓ (1.9 U.S.gal.)	7.0 ℓ (1.9 U.S.gal.)
	Engine coolant		7.0 ℓ (1.9 U.S.gal.)	8.9 ℓ (2.2 U.S.gal.)	8.9 ℓ (2.2 U.S.gal.)
	Transmission oil		44 ℓ (11.6 U.S.gal.)	←	←
	Front axle oil		7.8 ℓ (2.0 U.S.gal.)	←	←
Dimensions (with std. Tires)	Overall length (without 3p)		3,357 mm	3,365 mm	3,262 mm
	Overall length (with 3p)		3,468 mm	3,550 mm	3,450 mm
	Overall width (minimum tread)		1,440 mm 56.7 in.	1,505 mm 59.3 in.	1,430 mm 56.3 in.
	Overall height (Top of ROPS)		2,445 mm	2,465 mm	2,365 mm
	Overall height (Top of steering wheel)		1,530 mm	1,545 mm	1,465 mm
	Wheelbase		1,668 mm 65.7 in.	1,780 mm 70 in.	1,650 mm 65 in.
	Ground clearance		239 mm 9.4 in.	257 mm 10.1 in.	174 mm 6.9 in.
	Tread	Front	1,200 mm 47.2 in.	←	←
		Rear	1,151 mm 45.3 in.	1,151 mm 45.3 in.	1,151 mm 45.3 in.
			1,151 ~ 1,387 mm 45.3 ~ 54.6 in.	1,151 ~ 1,467 mm 45.3 ~ 57.8 in.	1,151 ~ 1,347 mm 45.3 ~ 53.0 in.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CONTENTS

CHAPTER 1 GENERAL INFORMATION 1-1

1. TRACTOR VIEW 1-3
2. TIGHTENING TORQUE FOR STANDARD BOLTS AND NUTS 1-4
   - 2.1 TIGHTENING TORQUE 1-4
3. SPECIFICATIONS 1-6
4. IDENTIFICATION 1-8
   - 4.1 ENGINE NUMBER 1-8
   - 4.2 CHASSIS NUMBER OF THE TRACTOR(CHASSIS NUMBER OF THE MACHINE) 1-8
5. CAUTION BEFORE REPAIR 1-9
   - 5.1 BEFORE REPAIR OR INSPECTION 1-9
   - 5.2 ASSEMBLY AND DISASSEMBLY 1-9
   - 5.3 PARTS TO BE REPLACED 1-9
   - 5.4 PARTS 1-9
   - 5.5 ASBESTOS PARTS 1-10
   - 5.6 ELECTRICAL SYSTEM 1-10
   - 5.7 TUBES AND RUBBERS 1-11
   - 5.8 LUBRICANT 1-11
6. REGULAR CHECK LIST 1-12
7. OIL & WATER SUPPLY LIST 1-13

CHAPTER 2 ENGINE SYSTEM 2-1

1. GENERAL 2-3
   - 1.1 APPEARANCE 2-3
   - 1.2 SPECIFICATIONS 2-4
   - 1.3 PERFORMANCE CURVE 2-5
   - 1.4 DIMENSIONS 2-6
   - 1.5 GENERAL WARNING 2-6
2. STRUCTURE AND FUNCTION 2-7
   - 2.1 BODY 2-7
   - 2.2 LUBRICATING SYSTEM 2-11
   - 2.3 COOLING SYSTEM 2-13
   - 2.4 FUEL SYSTEM 2-15
3. DISASSEMBLING AND SERVICING 2-23
   - 3.1 TROUBLESHOOTING 2-23
   - 3.2 SERVICING SPECIFICATIONS 2-26
   - 3.3 CHECKING, DISASSEMBLING AND SERVICING 2-32

CHAPTER 3 MAIN BODY 3-1

1. EXTERIOR 3-3

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3.2 REAR COMBINATION LAMPS 4-9
3.3 FRONT COMBINATION LAMP 4-10
3.4 LICENSE LAMP 4-10
3.5 WORKING LAMP 4-11
4. FUSE BOX AND RELAY 4-13
4.1 FUSE BOX 4-13
4.2 RELAYS & UNITS 4-14
4.3 CONTROL UNIT 4-15
5. MOTORS 4-16
5.1 STARTER MOTOR 4-16
5.2 ALTERNATOR 4-16
6. BATTERY 4-16
7. WIRING DIAGRAM 4-17
8. TROUBLE SHOOTING 4-18

PREVIEW - YOUFIXTHIS.COM

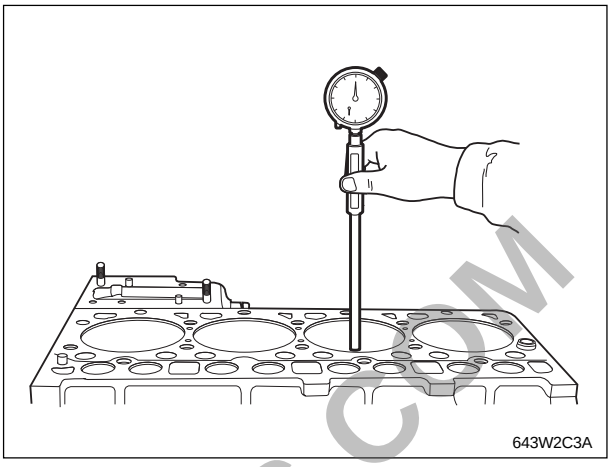
Download full manual at youfixthis.com

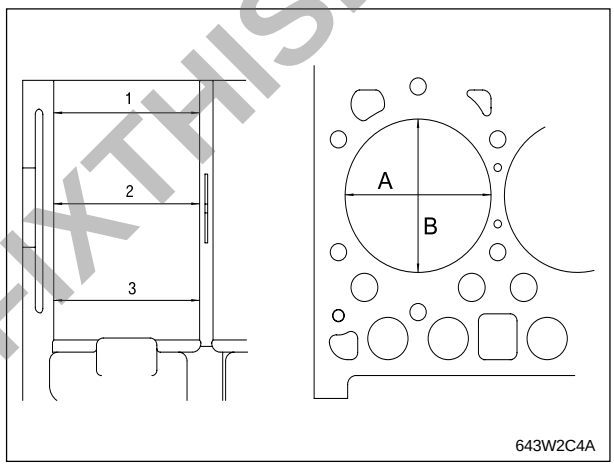
5) Cylinder bore

(A) Cylinder bore diameter

1. Measure the cylinder liner I.D. at sit positions shown in the figure to find the maximum wear.

4A200B	83.000 ~ 83.022 mm 3.2677 ~ 3.269 in.
3A165D 4A220L	87.000 ~ 87.022 mm 3.425 ~ 3.4261 in.





(A) Axial Direction

(B) Transverse Direction

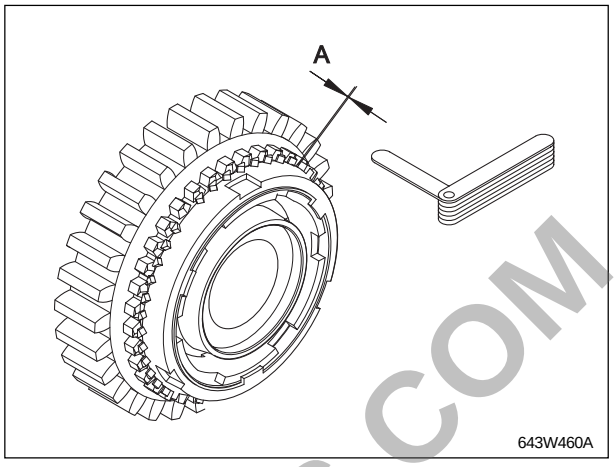
1,2,3 Measuring Points

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2. With synchronizer ring contacted with taper cone of the opposite gear, measure the clearance between synchro spline and opposite gear spline using clearance gage.

Sect.	Specified	Limit
Clearance between synchro and gear spline (A)	1.35 ~ 1.65 mm 0.053 ~ 0.065 in.	0.5 mm 0.02 in.



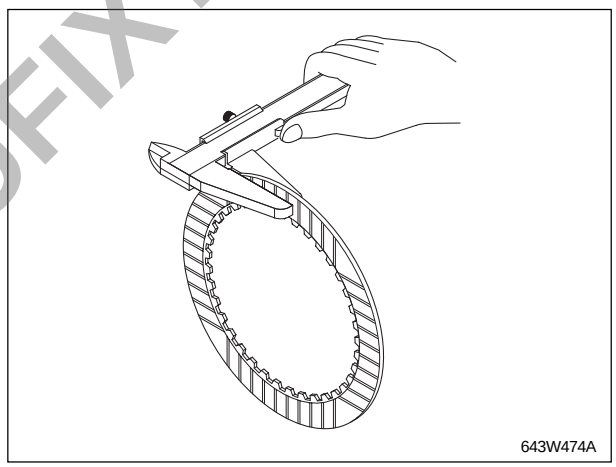
3. Apply O.D. of taper cone in gear with thin red lead, tighten synchronizer ring firmly, and check for contacted state.

Sect.	Specified	Limit
Contact rate between synchronizer ring and gear taper	More than 80%	More than 80%

e. Checking Clutch disc, Clutch plate, brake disc for wear state

1. Using venire calipers, measure the thickness of clutch disc, clutch plate and brake plate.
2. If exceeds allowable tolerance, replace it.

Sect.	Specified	Allowable Limit
Thickness of clutch disc	2.10 ~ 2.30 mm 0.083 ~ 0.091 in.	2.05 mm 0.081 in.
Thickness of clutch plate	1.45 ~ 1.55 mm 0.057 ~ 0.061 in.	1.40 mm 0.055 in.
Thickness of brake plate	2.90 ~ 3.10 mm 0.114 ~ 0.122 in.	2.60 mm 0.102 in.



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

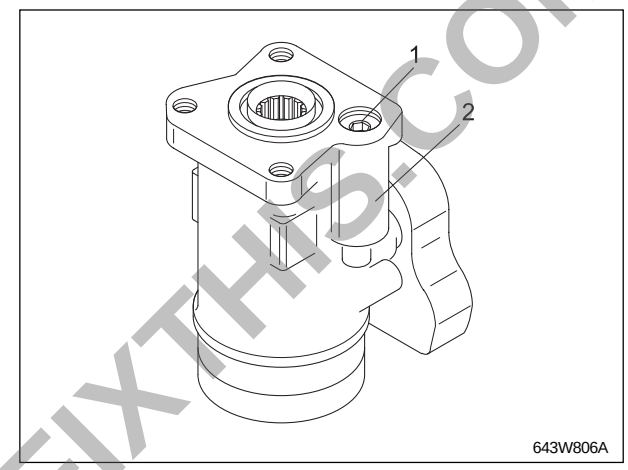
7.4 POWER STEERING UNIT

A. MAJOR SPEC.

Power Steering Unit Volume	51 cc/rev
Relief pressure	120 kgf/cm² 8.4 psi

B. STRUCTURE AND OPERATION

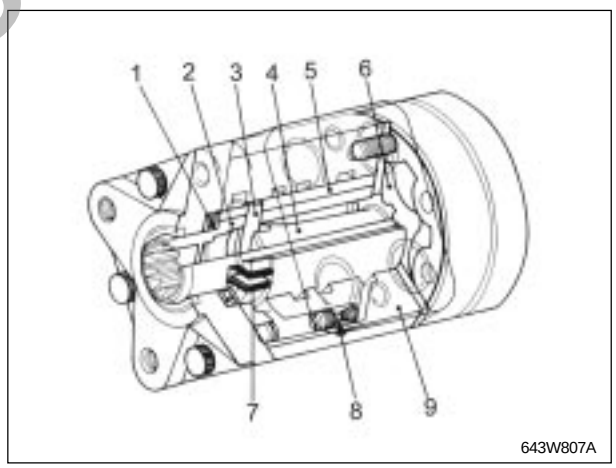
- Power steering controller consists of steering valve and relief valve.
- Steering valve is divided into control valve and metering device.



(1) Relief Valve (2) Steering Valve

a. Control Valve

The control valve consists of control valve housing (9), spool (2), and sleeve (5). The control valve is a rotary type and keeps in neutral by centering spring without valve control. If controlling the steering wheel, it takes a role of converting oil inflow direction to steering cylinder with Gerotor.



(1) Needle Bearing
(2) Spool
(3) Pin
(4) Drive
(5) Sleeve
(6) Rotor
(7) Centering Spring
(8) Ball
(9) Housing

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 289 pages

The full manual includes:

- All 289 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Kioti DK35-EU, DK40-EU, DK450L-EU Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual