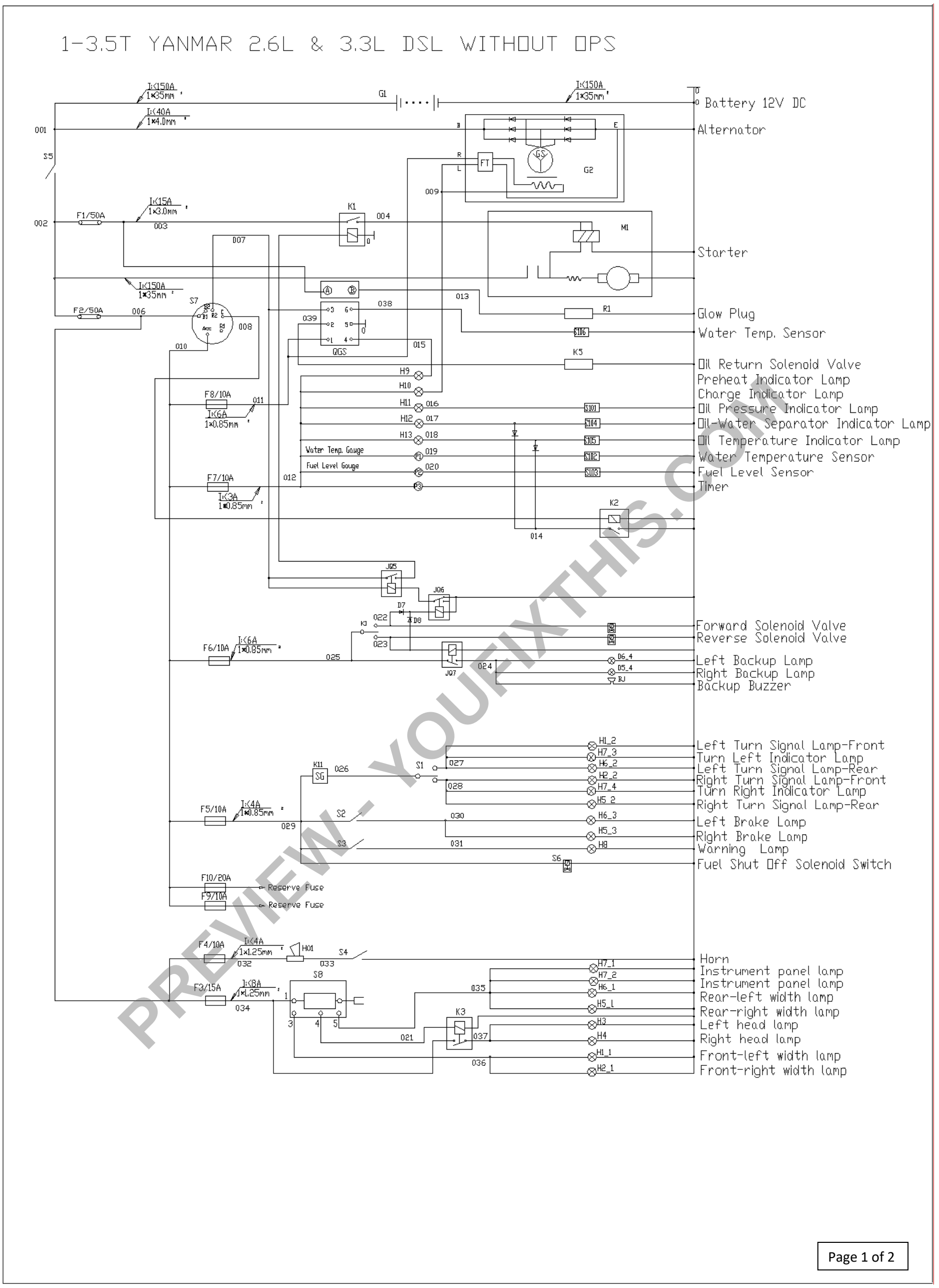
9.1 Schematics



PREVIEW - YOUFIXTHIS.COM

Page 1 of 2

Download full manual at youfixthis.com

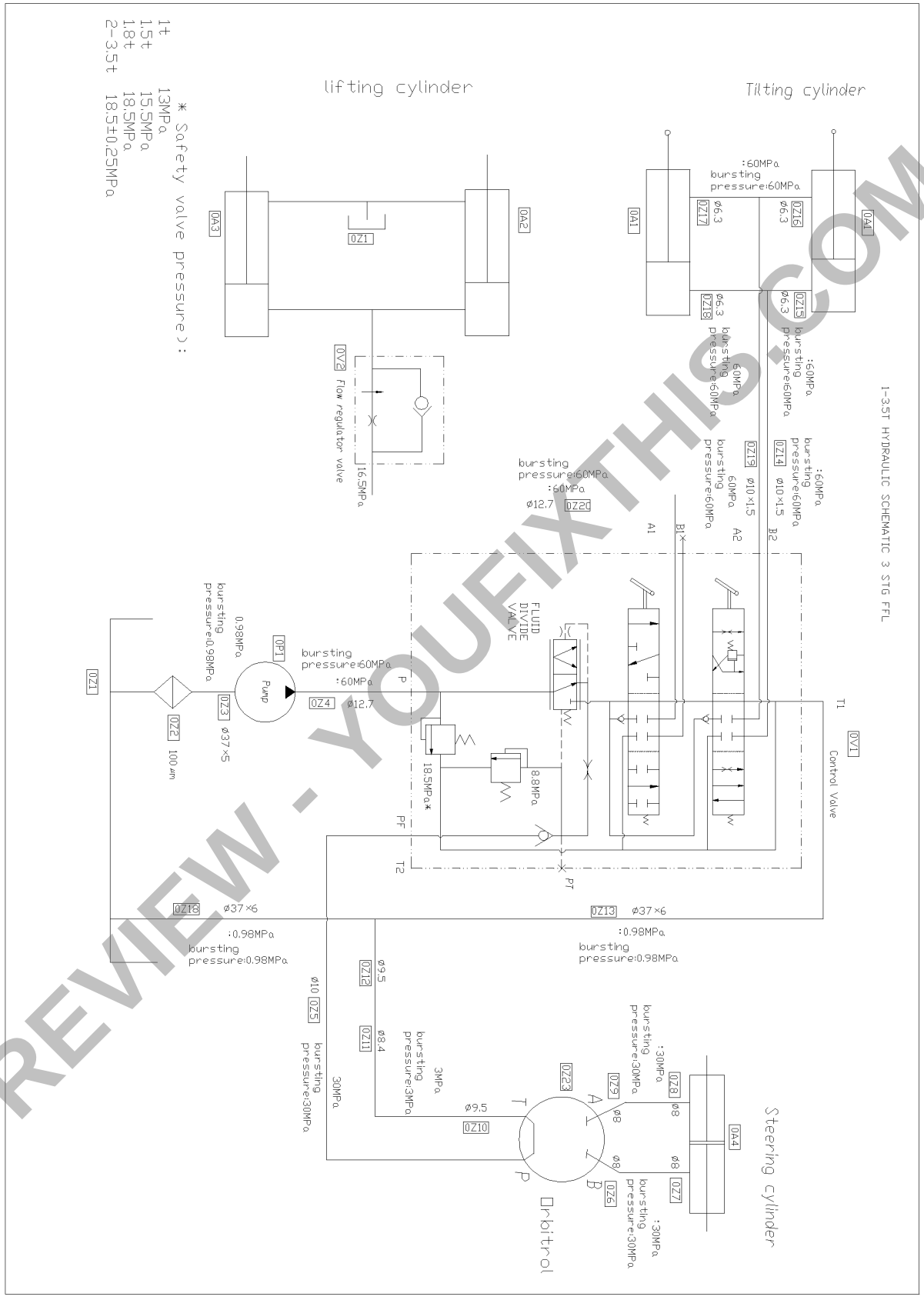


Fig. 7-6 (a) Hydraulic Schematic with Labels

Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

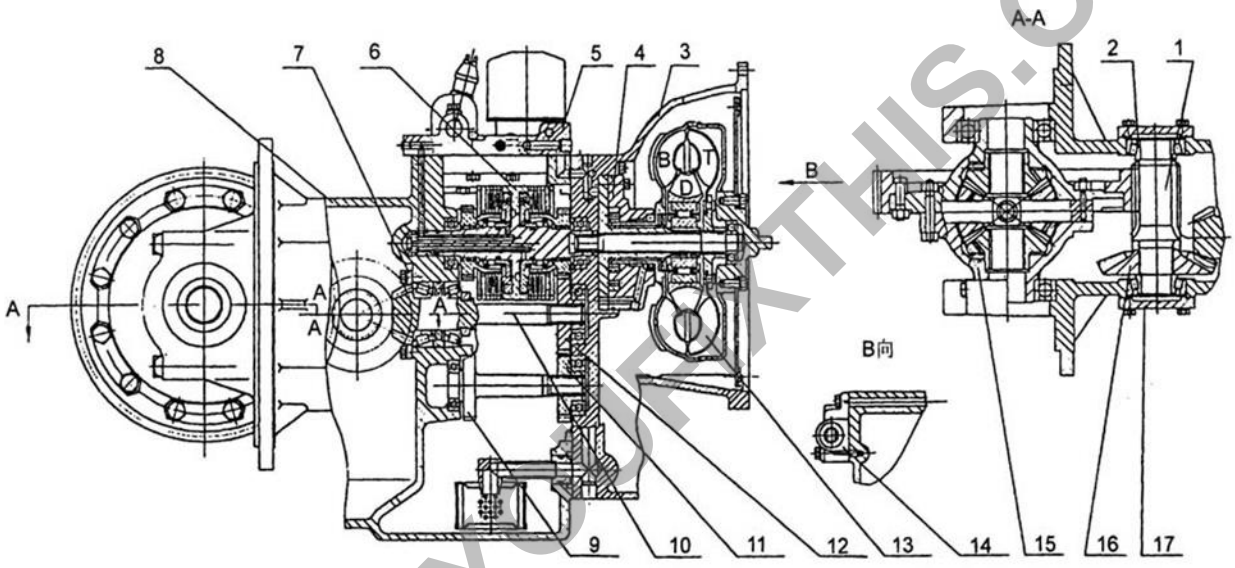
2.2. Summary

1.0-1.8t, 2.0-2.5t, 3.0-3.5t models use a hydrodynamic transmission gear box that consists of a hydrodynamic torque converter and power shift which has two shifts (forward/reverse).(Fig.2-1). It offers the following benefits:

（1）The hydrodynamic transmission gear-box can automatically adapt its output torque and rotation speed according to the external load;

（2）It can absorb and reduce the impact the engine and external load places on the transmission system;

（3）The inching valve allows for steady starts and small truck movements when the engine is in either low speed or high speed, is easy to operate, convenient, convenient, and decreases the amount of work on the part of the operator.



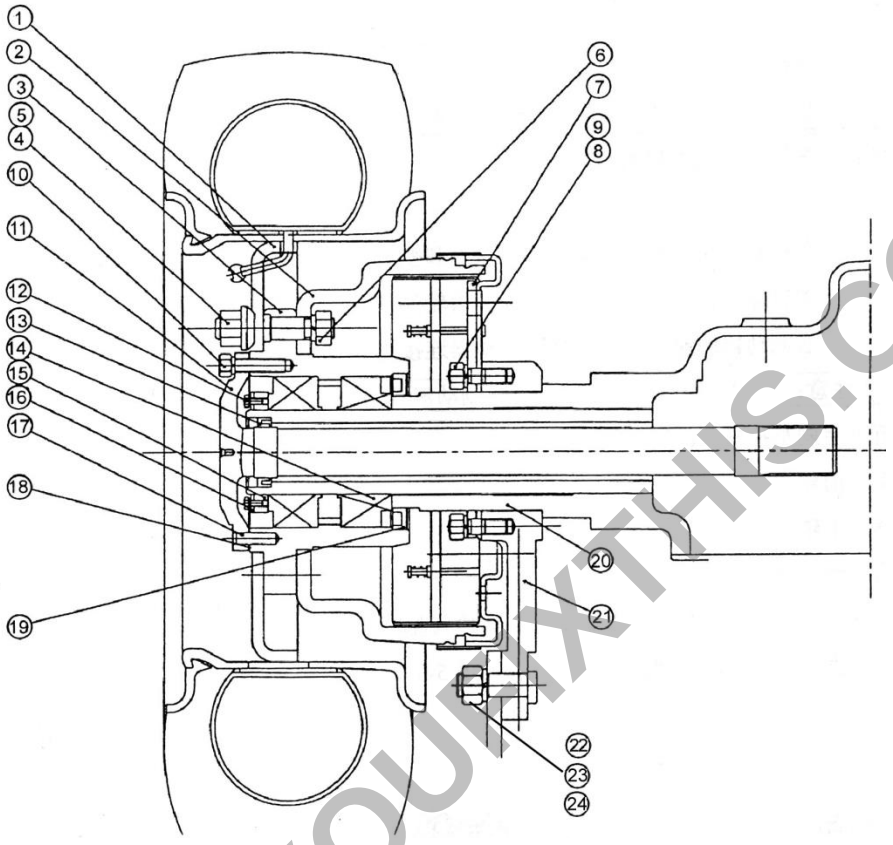
1.GEAR SHAFT	2.TAPERED ROLLER BEARINGS	3.TORQUE CONVERTER HOUSING	4.OIL-SUPPLY ASSEMBLY
5.COVER & CONTROL VALVE ASSEMBLY	6.CLUTCH ASSEMBLY	7.SUPPORT PLATE	8.HOUSING
9.IDLER SHAFT	10.OUTPUT SHAFT	11.IDLER	12.OUTPUT GEAR
13.HYDRAULIC TORQUE CONVERTER	14.INCHING VALVE ASSEMBLY	15.DIFFERENTIAL ASSEMBLY	16.SPIRAL BEVEL GEAR

Fig. 2-1 Hydrodynamic transmission gear-box

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3.3 Drive Axle Components



1.WHEEL RIM	2.BRAKE DRUM	3.HUB	4.NUT
5.HUB NUT	6.NUT	7.BRAKE DEVICE	8.WASHER
9.BOLT	10.DIFFERENTIAL SIDE SHAFT NUT	11.DIFFERENTIAL SIDE SHAFT	12.BOLT
13.OIL SEAL	14.TAPERED ROLLER BEARING	15.ADJUST NUT	16.LOCK NUT
17.PIN	18.PAPER GASKET	19.OIL SEAL	20.AXLE HOUSING
21.SUPPORT SLEEVE	22.WASHER	23.NUT	24.BOLT

Drive Axle < 02-01-2014 (2 pc Hub & Drum)

Tightening torque: N.m

Item #	1.5t-1.8t	2t-3.5t	Remarks
Support Plate Fixing Nut (#23)	260-347	324-373	Conical Surface On Wheel Hub Nut Doesn't Require Grease
Brake Drum Retaining Nut (#6)	260-347	324-373	
Brake Negatives Bolt (#9)	76-107	118-147	
Wheel Nuts (#4)	157-176	363-490	
Axle Bolt (#10)	38-50	58-78	

PREVIEW - YOUFIXTHIS.COM

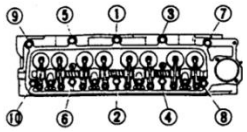
Download full manual at youfixthis.com

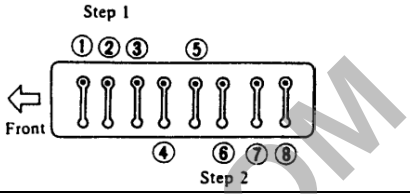
1.2.2. K21/K25 Maintenance

1.2.2.1 Retighten cylinder head

Tighten bolts in the sequence shown in 1st Fig., when engine is cold.

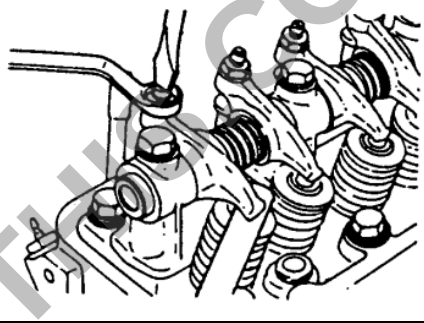
- Torque: 68.6 N•m
- In two steps, see 2nd fig.





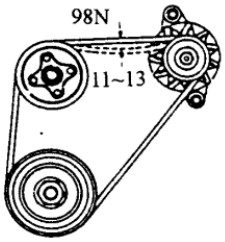
1.2.2.2 Adjust intake and exhaust valve clearance

（1）Start engine and run until warm, then turnoff.
（2）Remove valve rocker cover.
（3）Rotate crankshaft.
Set No.1 cylinder in top dead center on its compression stroke and then adjust valve clearance. Set No.4 cylinder in top dead center on its compression stroke, and adjust valve clearance.
Valve clearance (Hot) Intake & exhaust: 0.38mm



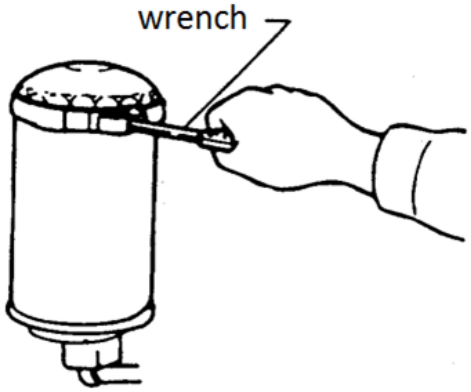
1.2.2.3 Check and Adjust Fan Belt for Tension

（1）Visually inspect for cracks, fraying, wear or oil residue. The belt should not touch the bottom of the pulley groove.
（2）Check belt deflection by pushing midway between pulleys.
Fan belt deflection:11mm-13mm
Pushing force: 98N m (?)



1.2.2.4 Change Engine Oil and Oil Filter

（1）Start engine and run until warm, then turn off.
（2）Remove oil filler cap and oil pan drain plug, allow oil to drain
（3）Clean and install oil pan drain plug with washer.
Oil pan drain plug: 29-39N•m
（4）Remove oil filter using the proper tool.
（5）Wipe oil filter mounting surface with a clean rag.
（6）Smear a little engine oil on rubber gasket of new oil filter.
（7）Install new oil filter. Hand-tighten ONLY. Do not use a wrench to tighten the filter.
（8）Refill engine with new engine oil, refer to Recommended Lubricants.
Check oil level with dipstick. Oil capacity: 3.6 L
（9）Start engine, inspect area around drain plug and oil filter for any sign of oil leakage.
If any leakage is evident, these parts must be re-installed.
（10）Run engine until it is warm.
Stop engine and wait a few minutes. Check oil level. If necessary, add engine oil.
When checking oil level, park the forklift on a level surface.



⚠Warning:
Be careful not to burn yourself, as the engine oil may be hot.
Oil that appears milky indicates the presence of coolant water, investigate the cause and take corrective action.
Oil with extremely low viscosity indicates dilution with gasoline.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3. Drive axle

3.1. Date

Drive Axle Type	Full Floating, Axle And Truck Body Direct Install, Front Wheel Driving
Tire Pressure	(7±0.2) X10^5Pa
Wheel Hub Rotation Starting Torque At Hub Bolt Nm	10-29
Axial Play Of Wheel Bearing Mm	Less 0.08

3.2. Trouble diagnoses and corrections

Condition	Probable Cause	Corrective Action
Abnormal Noises	• Loose Driving Axle And Body Connecting Bolts.	Tighten
	• Loose Wheel Nut	Tighten
	• Worn Or Damaged Wheel Hub Bearing.	Replace
	• Wheel Hub Bearing Not Properly Adjusted.	Adjust
	• Worn Axle Shaft Spline.	Replace
	• Insufficient Lubrication	Lubricate
Unstable Driving	• Loose Wheel Nut.	Tighten
	• Deformed Wheel.	Replace
	• Worn Or Damaged Wheel Hub Bearing.	Replace
	• Loose Driving Axle And Body Connecting Bolts.	Tighten
	• Wheel Hub Bearing Not Properly Adjusted.	Adjust
	• Improper Tire Pressure	Adjust
Oil Leakage	• Worn Or Damaged Axle Shaft Oil Seal.	Replace
	• Final Drive Improperly Installed.	Replace Gasket
	• Loose Drain Plug.	Tighten

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

1. Power System

1.1 Engines

Engine / Parameter	Dual Fuel (Gasoline)	
	K21（NISSAN）	**K25（NISSAN）**
Rated output	37 kW	44 kW
Rated rotate speed	2300 r/min	2500 r/min
Max. torque N·m/ Speed	142/1600 r/min	179/1600 r/min
Service weight	158 kg	161 kg
Forklift truck model	UT15/18P (K21 LPG) UT15/18P (K21 DUAL)	UT20/25/30/35P (K25 LPG) UT20/25/30/35P (K25 DUAL)

Engine / Parameter	Yanmar Diesel		
	4TNE92-HRJ	**4TNV94-BXPHZ**	**4TNE98-BQFLC**
Rated output	32.8 kW	34.6 kW	42.1 kW
Rated rotate speed	2450 r/min	2400 r/min	2300 r/min
Max. torque N·m/ Speed	149.4/1600 r/min	196(144.7)/1700r/min	186Nm/1700 r/min
Service weight	194 kg	235 kg	194 kg
Forklift truck model	UT15/18/20/25P (4TNE92)	UT30/35P (4TNV94)	UT30/35P (4TNE98)

Engine / Parameter	Diesel	
	NC485BPG	**A490BPG**
Rated output	30 kW	37 kW
Rated rotate speed	2600 r/min	2650 r/min
Max. torque N·m/ Speed	131/1820 r/min	148/1800-1900 r/min
Service weight	210 kg	260 kg
Forklift truck model	UT15/18P (NC485BPG)	UT20/25/30/35P (A490BPG)

For specifications, assembly, and service instructions see the ENGINE MAINTENANCE MANUAL.

Check engine exhaust after servicing. The values must be at or below those shown in the figure below:

Engine power (kW)	CO (g/kW·h)	HC (g/kW·h)	NO_2 (g/kW·h)	PT(particle) (g/kW·h)
18≦P<37	5.5	1.5	8	0.8
37≦P<75	5	1.3	7	0.4

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

1.3.2 The maintenance of 4TNE92/94L/98 diesel

Diesel fuel requires high quality maintenance of the air cleaner and fuel filter.

1.3.2.1 Clean and change the air cleaner

Dry paper model only.



Clean and change the filter according to the maintenance schedule. If operating in a dusty environment, the air cleaner should be cleaned more frequently. Replace filter as required.

1.3.2.2 Check the oil filter

Check and change the oil filter

（1）Remove the head of the sensor from the oil filter.

（2）Loosen the valve to drain the fuel.

（3）Remove the sensor from the oil filter or draining valve.

（4）Remove the oil filter.

（5）Connect the oil sensor to the new oil filter.

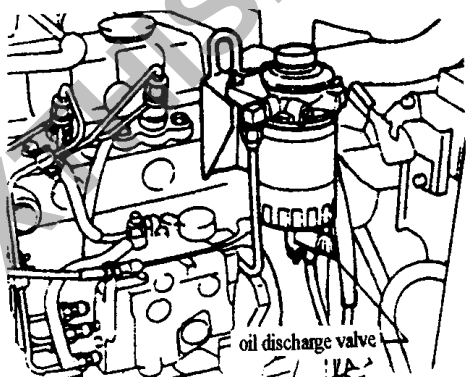
（6）Install the new oil filter.

The oil filter should only be tightened manually.

（7）Connect the sensor head.

（8）Remove air from the fuel system.

Follow same procedure as described in Step 2.2.4



Drain water

（1）Water should be drained according to the maintenance schedule, or when an alarm signals there is a problem.

（2）Remove air from the fuel system.

（3）Make sure there is a container under the oil filter.



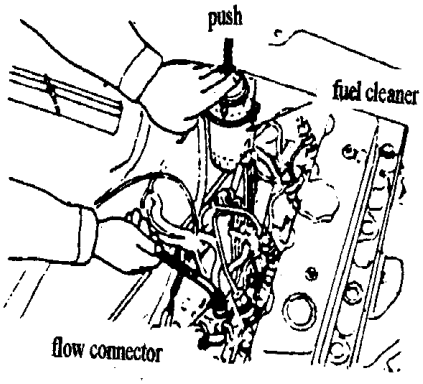
1.3.2.3 Filter the diesel oil

Used diesel oil should be filtered before it is added to the oil container.

1.3.2.4 Bleed the fuel of air

All air must be bled from the fuel. To avoid splashing oil, the bottom of the motor and pump should be wrapped by a piece of cloth.

If the motor still doesn't run after bleeding the air, loosen the ejection pipe; shake the star-up motor until fuel flows out of ejection pipe. Tighten the nut of the ejection pipe.

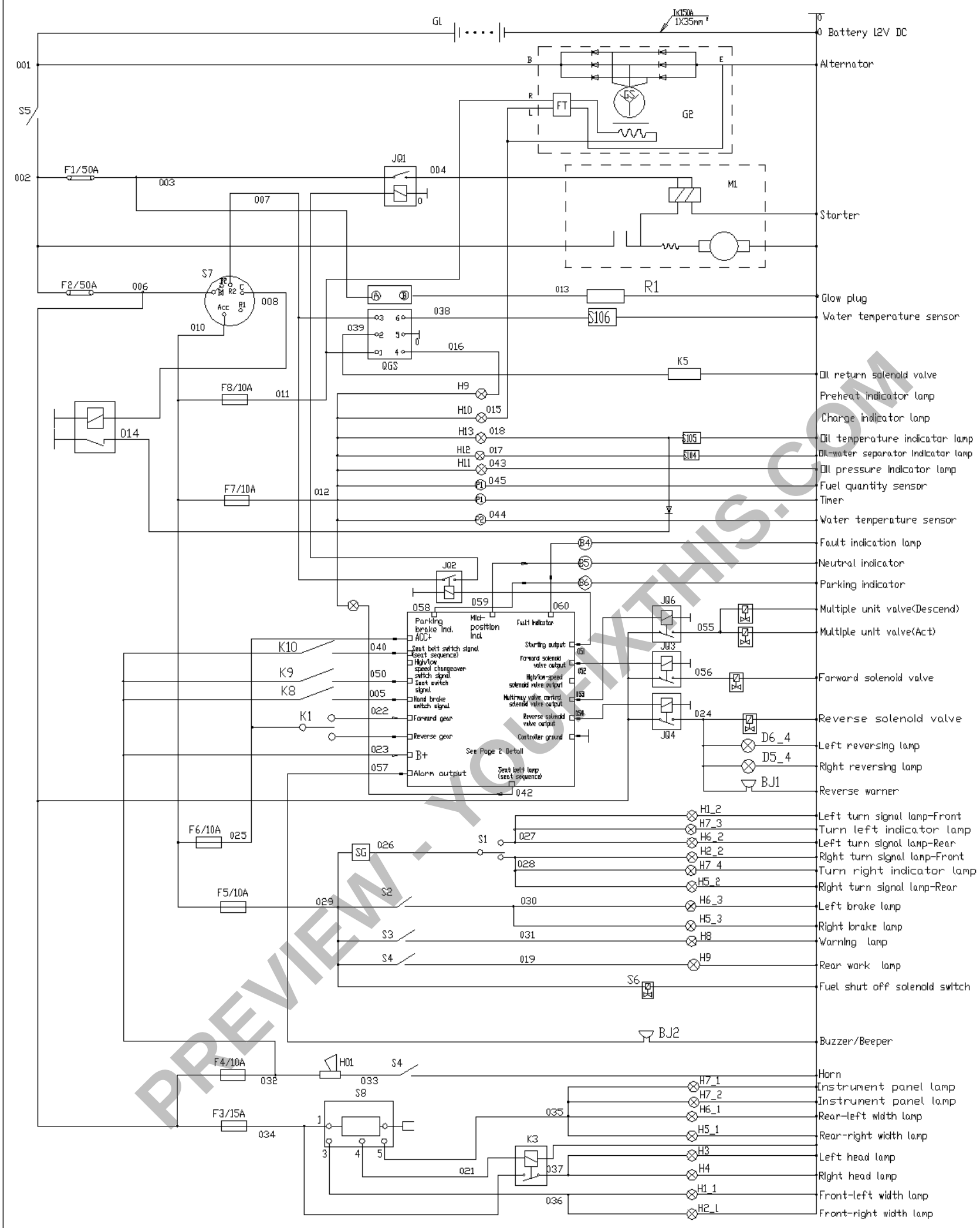


If the motor operates erratically, run two or three times at high speed.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

1-3.5T YANMAR 2.6L & 3.3L DSL WITH OPS



PREVIEW - YOUFIXTHIS.COM

PAGE 1 OF 2

Download full manual at youfixthis.com

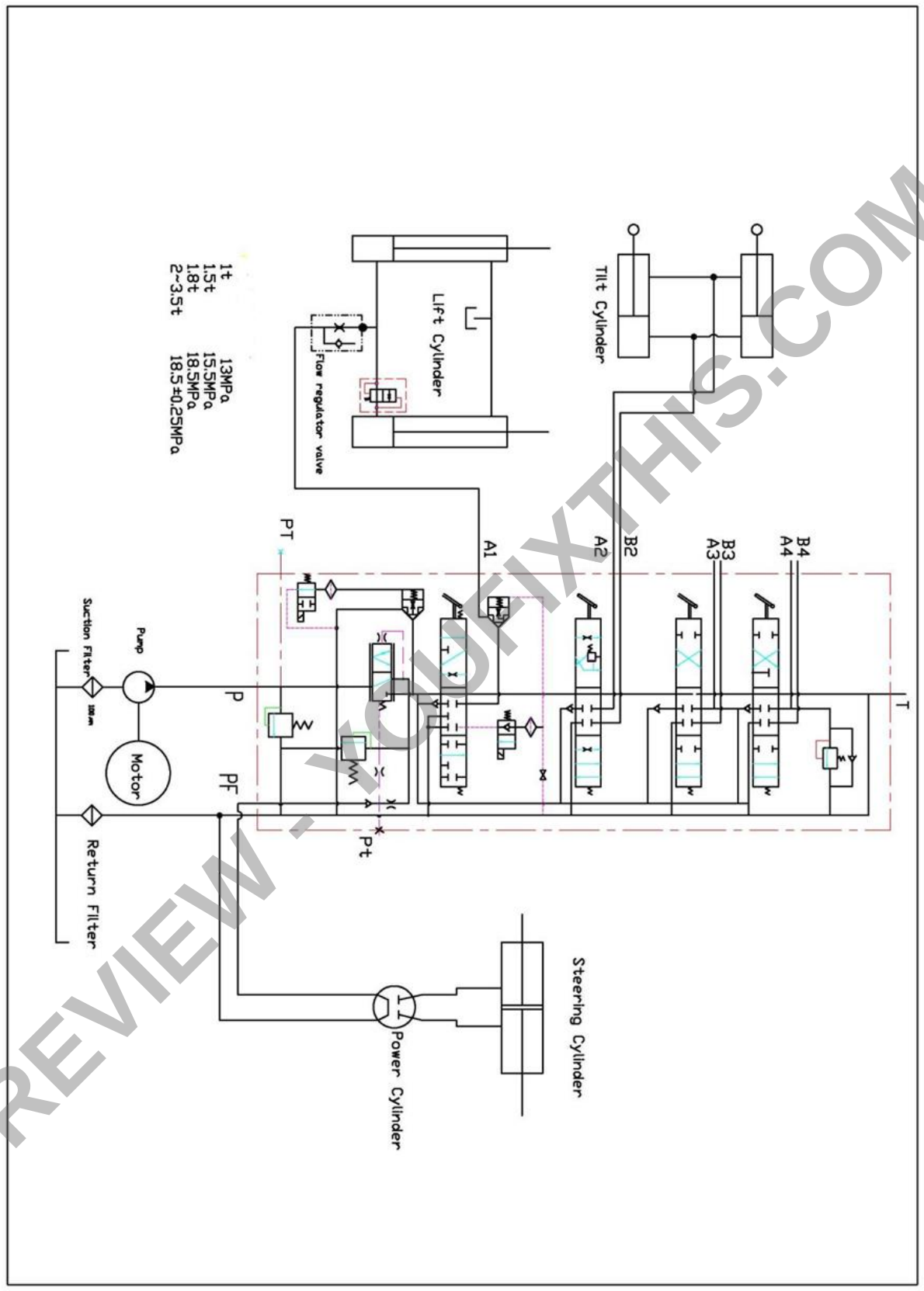


Fig. 7-6 (b) Hydraulic Schematic without Labels

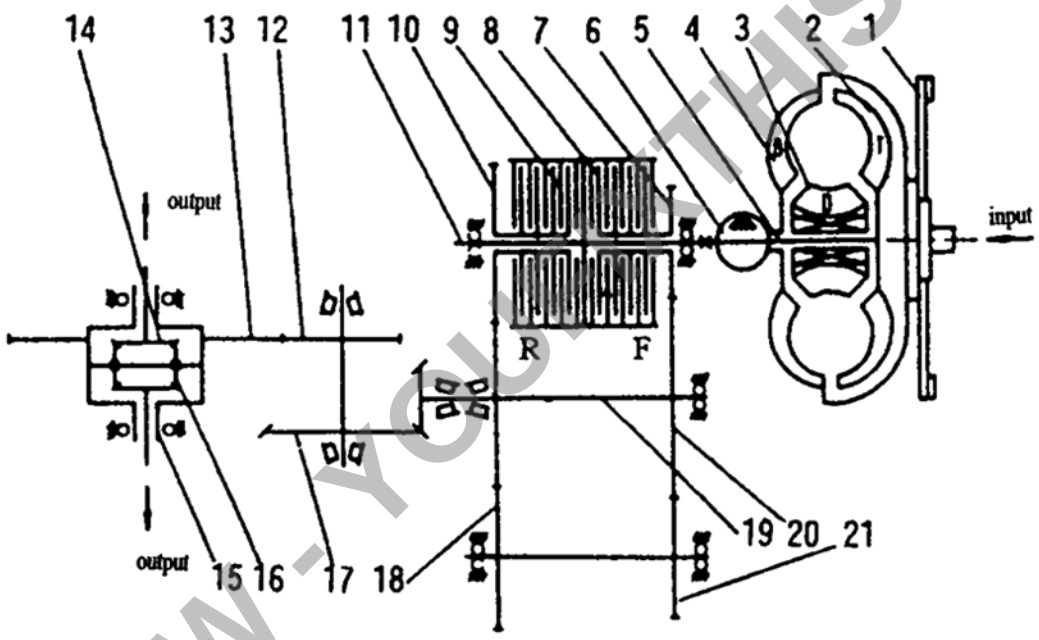
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2.3. Principles of Operation

2.3.1 Hydrodynamic transmission gear-box power transmit

The torque converter is driven by the engine through an elastic plate (See #1 in Gear-box Transmission Sketch, fig. 2-2). It rotates the impeller wheel (#4), in this way, the fluid flows at high speed into the turbine wheel (#2) and rotates the turbine wheel. Stator wheel make the torque converter effective, through turbine shaft (#5), it transmits the torque to input shaft assembly (#11). When in forward gear ratio, reverse clutch at idle motion, transmit order is 11→7→20→19→17→12→13, drives the differential (#15) to output the torque. When in reverse gear ratio, onward clutch at idle motion, transmit order is 11→ 10→ 18→ 21→ 20→19→ 17→12→ 13, drives the differential (#15) to output the torque. Onward and reverse clutch are controlled by a shift control valve. Oil pump (#6) is inner-mesh gear pump, it is driven by the engine through impeller wheel, the oil pump supplies the oil for the system, after hydrodynamic torque converter operates, the oil flows into the radiator, then into the gear-box-lubrication clutch disc, bearings and gears.

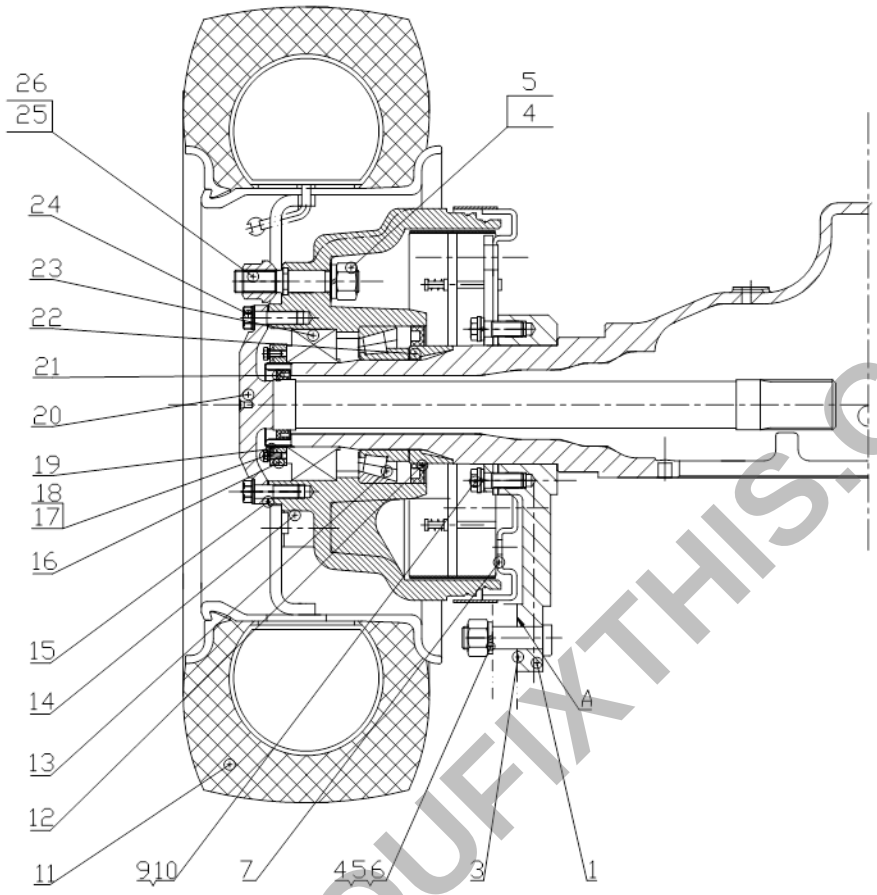


1.ELASTIC PLATE	2.TURBINE WHEEL	3.STATOR WHEEL	4.IMPELLER WHEEL	5.TURBINE SHAFT
6.OIL PUMP	7.GEAR (FORWARD GEAR RATIO)	8.CLUTCH DISC	9.SEPTA	10.GEAR (REVERSE GEAR RATIO)
11.INPUT SHAFT ASSEMBLY	12.GEAR SHAFT	13.GEAR RING	14.HALF-AXLE GEAR	15.DIFFERENTIAL ASSEMBLY
16.PLANET GEAR	17.HELICAL BEVEL GEAR	18.IDLER SHAFT	19.OUTPUT SHAFT	20. OUTPUT GEAR
21. IDLER WHEEL				

Fig. 2-2 hydrodynamic transmission gear box sketch

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



1. PLATE	3. PLATE	4. WASHER	5. NUT
6. BOLTS	7. BRAKE ASSY	9. BOLTS (BRAKE)	10. WASHER
11. TIRE ASSY	12. SEAL	13. BEARING	14. WHEEL
15. PAPER GASKET	16. LOCKNUT	17. WASHER	18. BOLT
19. LOCK	20. AXLE	21. SEAL	22. SEAL SEAT
23. BEARING 7815	24. AXLE BOLTS	25. WHEEL BOLTS	26. WHEEL NUTS

2.0-3.5t Drive Axle > 02-01-2014 (1 pc Hub & Drum)

Tighten torque: N.m

	2t-3.5t	Remark
Hub Fixing Nut Support Plate Fixed Nut（Part 5）	324-373	Conical Surface On Wheel Hub Nut Needn't Lubricate Grease
Bolt, Brake Plate Assy（Part 9）	190-210	
Wheel Hub Nut（Part 26）	363-490	
Half Shaft Bolt（Part 24）	90-120	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 109 pages

The full manual includes:

- All 109 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Utilev UT15P, UT18P, UT20P, UT25P, UT30P, UT35P, UT15/18P, UT20/25P, UT30/35P Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual