

S.T. SYSTEM TRUCK S.p.A.

Trasformazioni e Soluzioni per Veicoli Industriali

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INSTRUCTIONS TO REPLACE THE HYDRAULIC PUMP

1. SAFETY GENERAL WARNINGS

- Before operating, the authorized workshop personnel are required to read and assimilate these safety warnings together with the possible installation manual attached.
- The vehicle manufacturer's warnings and the safety provisions in force by law must be observed and followed.
- To lift the vehicle, use the lifting points of the vehicle.
- The vehicle can overturn on the lifting platform.
- The pumps are assembled in different models, they are only identifiable by means of the plate.
- A pump fallen to the ground cannot be reused because it could have been damaged.
- Never start the engine with the servo-pump removed.
- The replaced pump, detergents and any disposable equipment used, must be disposed of in an environmentally friendly manner and according with current legislation.
- The personal protective equipment (PPE) possibly prescribed must also be used.
- Follow the manufacturer's instructions strictly.

2. GENERAL INFORMATION

- All original pumps are submitted by the manufacturer for inspection and bench testing.
- Engine and hydraulic pump must not be started until the filling of the hydraulic circuit with new oil.
- The hydraulic system and the pump **MUST** be free of impurities, so the new pump **MUST NOT** come in contact with used oil. For this reason, the hydraulic system must be emptied and washed accurately to prevent pump early failure.

3. PUMP REMOVAL AND INSTALLATION

- Before starting working, let hot engines cool down (danger: burns).
- Remove engine compartment carters if present.
- Before removing the defective pump, clean the nearby area.
- Make sure that no impurities can enter the hydraulic system.
- Remove packaging and transport anchors just before assembly.
- The sealing surfaces must be clean and free of sealant or sealant residues.
- As a general rule, use new gaskets or seals.
- Make sure that the new gasket or the new sealing ring is fitted correctly.
- Before installing the pump make sure that the structure be identical to the removed one.
- The installation of the pumps must be possible without force application (gear transmission) and it must be checked that the pump's seat is correct.
- When tightening the screw fittings of the hoses, avoid any twisting of them. The hoses must not be tightened firmly or damaged.
- Replace the damaged hoses.
- If a drive belt is used for the pump, tighten it according to the manufacturer's instructions.

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- Suck the hydraulic oil from the tank (the sucked oil cannot be reused).
- Proceed to an accurate circuit cleaning.
- Fill up the hydraulic oil with ATF DEXRON III H oil.
- After fitting the new pump, idle the engine and turn the steering wheel 10 to 15 times left and right till the end-stop.
- After about 10 minutes, idle again the engine and turn the steering wheel 10 to 15 times left and right till the end-stop.
- Check hydraulic oil level and refill till "MAX" mark.
- Run a test ride, check the steering operation and last check the road holding.

4. FILLING UP THE HYDRAULIC STEERING CIRCUIT

4.1. OPERATIONAL SEQUENCE

- Drain and wash the system thoroughly.
- Fill the tank with oil.
- With the engine off, loosen the outlet fitting on the pump until the oil comes out, then tighten it and start the engine at idling by adding the oil immediately into the tank to keep the level at the value indicated on the tank.
- Disconnect the command cable from the distributor lever and manual move the distributor lever to its extreme left and its extreme right; at the same time check for the oil tank not empty. If the level drops, add oil accordingly to maintain the correct level; repeat left and right lever movements 3 to 4 times, the wheels will move left and right.
- Add oil to the level indicated on the tank and close with the oil tank cover.
- Turn off the engine; reconnect the command cable to the distributor lever.
- Turn on the engine and complete steer the steering wheel in both directions; adjust the mechanical limit-switch on the wheel spindles, with a steering residual span of $0.5 \div 1$ mm.

4.2. CHECK THE LOW-LEVEL OIL LIGHT

With ignition on, unscrew the cap from oil tank, keeping the oil dipstick in vertical position; check that the warning light is activated on the dashboard.

5. CHECK THE OIL HOSES CONNECTIONS AND VERIFY THEIR FUNCTIONALITY

After having fitted the pump and the related hoses as mentioned above, check the steering system and in particular the sealing of the hydraulic joints according to the following methods:

- a) During the installation, components should not have suffered any deformation that may alter their function; if there are any deformations, the components must be replaced;
- b) Visually inspect all the hose joints carefully for any signs of oil loss. If oil is present at a junction, tighten the joint and if necessary replace it.

6. PRINCIPAL TYPES OF OIL

We recommend the use of **mineral oil for hydraulic systems ATF type A** with the following characteristics:

- Viscosity at $50^{\circ} \text{C} = 3^{\circ} \div 3.8^{\circ}$ Engler.
- Indices of viscosity ≥ 130 .
- Corresponds to SAE normative.

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AGIP	F 1.1 ROTRA ATF	MOBIL OIL	MOBIL ATF 200 MOBIL 1 TF 200 Y
ARAL	SGF AQ. ATF 1841 A	RENAULT	SPORTMATIC FLUID
BP	AUTOMATIC TRANSMISSION FLUID	SHELL	DONAX T 6
CASTROL	TQ	TOTAL	FLUID A
CHEVRON	AUTOMATIC TRANSMISSION DEXRON	VALVOLINE	VALVOMATIC TRANSMISSION FLUID DEXRON B
ESSO	ATF TYPE A	VANGUARD	ATF FLUID
FIAT	G I 55/C	VEEDOL FRANCE	VEEDOL ATF DEXRON
FINA	PURFIMATIC FLUID		

7. MAINTENANCE CHECKS FOR STEERING DEVICE

Working hours	Maintenance and checks
every 250 hr or 10.000 km	a) check oil level in tank. b) check the oil hoses: verify that hoses present no cracks and that there is no contact between hoses and metallic parts. c) check the joints are correctly tightened or not damaged in any way in order to not losing oil or not allowing air to pass through.
every 1.250 hr or 50.000 km	a) check the integrity of any protection covers and check the play in all the pins and ball-joints. b) grease the parts required on the distributor and on the cylinder. c) clean and grease the command cable ends.
every 5.000 hr or 200.000 km	a) drain and clean all the hydraulic system; totally replace the oil.
every 15.000 hr or 600.000 km	a) it is recommended to carry out a complete overhaul of the whole system, contact our technical assistance service or an authorized workshop of our network. b) replace the command cable and its ball-joints.

S.T. System Truck S.p.A. accept no responsibility for the failure of the product caused by improper installation without complying with the above instructions.

NOTE: These instructions can be subject to modifications.

