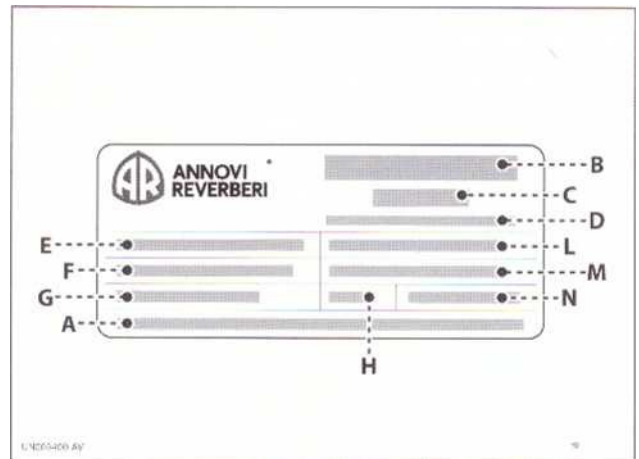


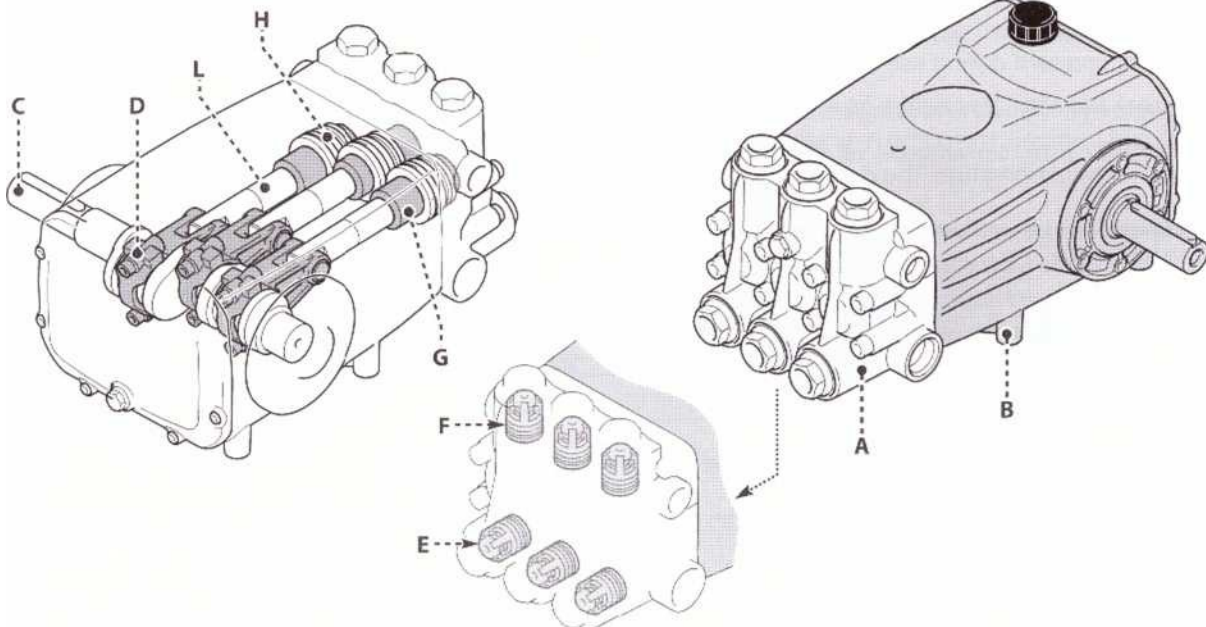
**TIMFOG – THERMOMECHANICAL HIGH PRESSURE PUMP MAINTENANCE INSTRUCTIONS**

**1) PUMP ID CARD AND MEANINGS:**

- A) COMPANY NAME AND ADDRESS
- B) SERIAL NUMBER
- C) BARCODE
- D) MODEL
- E) SERIAL NUMBER
- F) MAXIMUM EXIT FLOW RATE (L/MIN)
- G) MAXIMUM OPERATING PRESSURE (BAR)
- H) MAXIMUM REVOLUTIONS PER MINUTE (RPM)
- H) MAXIMUM POWER (KW)
- I) MAXIMUM EXIT FLOW RATE (U.S.GPM)
- J) MAXIMUM EXIT PRESSURE (PSI)
- K) LUBRICANT PROPERTIES



**2) PUMP PARTS:**



- A) PUMP HEAD
- B) PUMP BODY
- C) CRANK SHAFT
- D) PISTON-CRANK CONNECTION
- E) WATER INLET VALVE
- F) PRESSURE WATER EXIT VALVE
- G) PISTON

- H) PISTON BEARING
- I) GUIDE PISTON

### 3) MAINTENANCE INSTRUCTIONS

#### A) SECURITY WARNINGS

Before starting the maintenance procedures, electrical connections of the pump must be disconnected, water inlet and exit connections must be removed and presence of pressurized water within them must be prevented.

Please pay attention to keep the replaced, old parts away from the vicinity of the pump and rotary assemblies when maintenance procedures are completed.

Original parts must be used as spare parts and the lubricants in the lubricant table must be used for replacing the lubricant, allowing the pump to have long service life.

#### B) PERIODIC MAINTENANCE SCHEDULE

MAINTENANCE INTERVAL	SECTION TO BE OBSERVED	TO DO
EVERY DAY, BEFORE OPERATION	FILTER	CONTAMINATION CONTROL FOR FILTERS
	PUMP	LUBRICANT LEVEL CONTROL
PER 50 HOURS OF OPERATION	PUMP WATER AND ENGINE CONNECTIONS	OBSERVATION
	PUMP BODY	CHECKING CHASSIS CONNECTIONS
	PUMP	LUBRICANT MUST BE REPLACED IN THE INITIAL 50TH HOUR.
PER 500 HOURS OF OPERATION	PUMP	LUBRICANT REPLACEMENT
PER 1000 HOURS OF OPERATION	PISTON GASKETS	REPLACEMENT
	VALVES	REPLACEMENT

#### C) LUBRICANT TYPES USED, LUBRICANT REPLACEMENT AND LUBRICANT LEVEL

##### - LUBRICANT TYPES

Pumps are delivered with prefilled lubricant within the system.

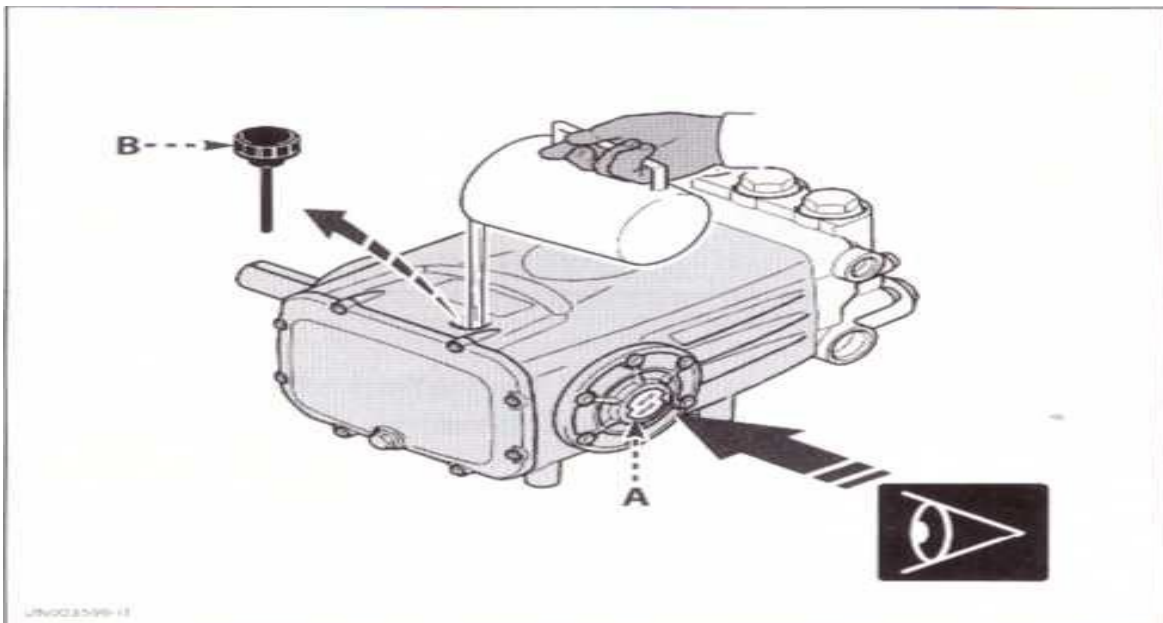
As indicated in the periodic maintenance schedule (See 3-B), lubricant must be replaced after initial 50 hours. Then, lubricant replacement depends on the conditions and use of the unit, yet it must be performed between 500 and 800 hours.

**TABLE OF LUBRICANT TYPES USED**

INITIAL LUBRICANT FILLED AT FACTORY	AGIP	MOBILE
SAE 30	DIESEL GAMMA 30 SUPER DIESEL 15W40	DELVAC SUPER 1400 15W40

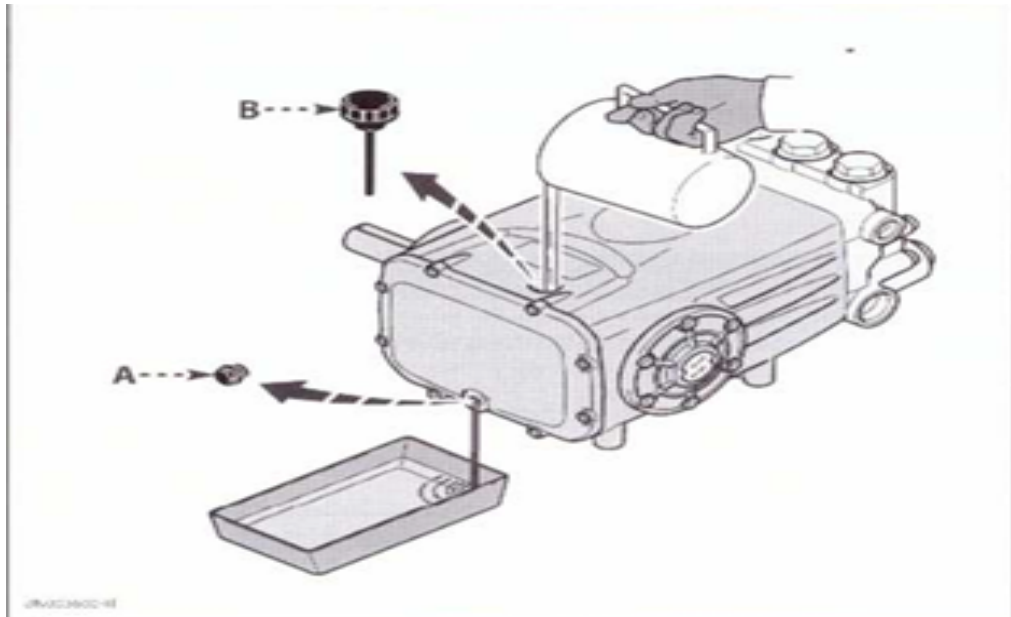
**- LUBRICANT REPLACEMENT AND LUBRICANT LEVEL**

Check the lubricant level by looking at the lubricant level indicator (A) on the front



side of the pump. Standard lubricant level is at the half of the indicator also marked on the indicator. If the lubricant drops below this level, fill until half by adding appropriate lubricant.

**Lubricant replacement**



- Stop the pump before lubricant replacement and wait for the pump and lubricant to cool down.
- After the lubricant and pump cool down, discharge the lubricant inside by opening the drain plug **(A)**.
- Close the drain plug.
- Open the filling plug **(B)** and fill the appropriate type of lubricant into the pump until the lubricant indicator reaches the halfway point.
- Close the filling plug.

#### **D) EXTENDED STOPPAGE AND THEN COMMISSIONING PROCEDURES.**

Before extended stoppage of the pumps;

- 1) Run the pump with water for a few minutes.
- 2) Run the pump for about 10 seconds without water and ensure that water inside is drained.
- 3) Please make sure that water is completely drained by opening the valve covers on the front side of the pump.
- 4) Protect the pump against cold - hot weather conditions during stoppage.

The biggest reason for breakdown of the pumps is that the remaining water in the pump is frozen and damages seals and pistons during stoppage.

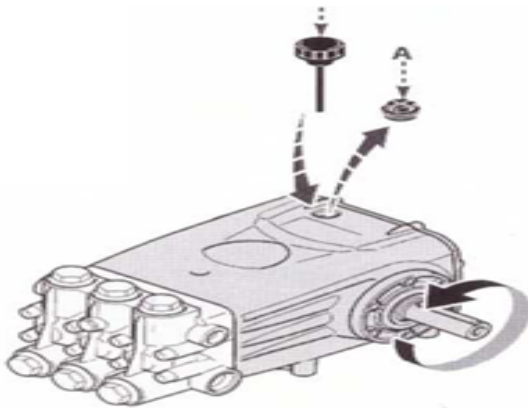
Check the lubricant level and the screw connections on it before re-commissioning the pumps. Where considered necessary, top up the lubricant and tighten the loosened screws.

#### **4) REASONS AND SOLUTIONS FOR COMMON PROBLEMS**

ISSUE	REASON	SOLUTION
PUMP DOESN'T ACHIEVE DESIRED PRESSURE	PUMP TAKES AIR	CHECK FOR LEAKS IN THE INLET LINE
	INLET PRESSURE IS LOW	ENLARGE THE INLET LINE PIPES.
		REMOVE THE CORROSION IN THE INLET LINE
		REPLACE THE FILTERS.
		INCREASE ENGINE SPEED.
	INLET OR EXIT VALVES ARE BROKEN	REPLACE VALVES
	BY-PASS VALVES ARE BROKEN	REPLACE VALVES
	GASKETS ARE DAMAGED	REPLACE GASKETS
	NOZZLES ARE CLOGGED OR LEAKING	REPLACE NOZZLES
EXIT PRESSURE HAS UNDESIRED FLUCTUATIONS	INLET OR EXIT VALVES ARE BROKEN	REPLACE VALVES
	INLET OR EXIT VALVES ARE CLOGGED	CLEAN THE VALVES
	PUMP TAKES AIR	CHECK FOR LEAKS IN THE INLET LINE
	GASKETS ARE DAMAGED	REPLACE GASKETS
PIPES HAVE VIBRATION	INLET OR EXIT VALVES ARE BROKEN	REPLACE VALVES
	BY-PASS VALVES ARE BROKEN	REPLACE BY-PASS VALVES
	BY-PASS VALVES ARE SMALL	ENLARGE BY-PASS VALVES
	PUMP TAKES AIR	CHECK FOR LEAKS IN THE INLET LINE
PRESSURE DECREASES	NOZZLES ARE CLOGGED OR LEAKING	REPLACE NOZZLES
	INLET OR EXIT VALVES ARE BROKEN	REPLACE VALVES
	INLET OR EXIT VALVES ARE CLOGGED	CLEAN VALVES
	BY-PASS VALVES ARE BROKEN	REPLACE BY-PASS VALVES
PUMP OPERATES LOUDLY	PUMP TAKES AIR	CHECK FOR LEAKS IN THE INLET LINE
	SPRINGS IN THE PUMP INLET OR EXIT VALVES ARE BROKEN	CLEAN VALVES
	VALVES ARE CONTAMINATED	CLEAN THE VALVES
	SHAFT BEARING IS BROKEN	REPLACE SHAFT BEARING
	INLET WATER TEMPERATURE IS TOO HIGH	DECREASE INLET WATER TEMPERATURE

<b>PUMP OVERHEATS</b>	OPERATING PRESSURE IS TOO HIGH	DECREASE EXIT PRESSURE TO NORMAL LEVEL
	COUPLING SETTING HAS CHANGED	ALIGN THE COUPLING BETWEEN ENGINE AND PUMP
<b>LUBRICANT CONTAINS WATER</b>	GASKET IS DAMAGED	REPLACE LUBRICANT AND WATER GASKETS
	AIR HAS TOO MUCH HUMIDITY	PERFORM PUMP REPLACEMENT TWO TIMES MORE FREQUENTLY/
<b>PUMP LEAKS LUBRICANT</b>	GASKET IS DAMAGED	REPLACE LUBRICANT AND WATER GASKETS
<b>PUMP LEAKS WATER</b>	GASKET IS DAMAGED	REPLACE LUBRICANT AND WATER GASKETS

## **Important Warnings:**



\* Before initial operation of the pump, make sure that temporary lubricant plug (A) is removed and the lubricant plug with air permeability (B) is installed. If lubricant plug with air permeability is not available, do not run the pump and inform the company.

\* If water used at pumps is hard, lubricant and water gaskets will be damaged.

Our company doesn't guarantee gasket problems resulting from the hard water. Keep in mind that all the water used in Turkey is hard. Therefore, reverse osmosis system must be used so that system remains within the scope of warranty.