

# **THERMAL**

## **ENGINEERING COMPANY**

### **INSTRUCTIONS FOR THERMAL CAP-CHECK**

CAP-CHECK GENERAL DESCRIPTION -Model 1003 is a unique refrigeration capillary lube cleaner that allows a serviceman to remove restrictions from cap tubes without messy and time consuming removal and replacement.

The CAP-CHECK is a portable self-contained hydraulic power unit with auxiliary equipment. It is designed to pump a high rate of oil into the cap tube to build up pressures needed to open any plugged cap tube and will clean partially plugged cap tubes when used with the Thermal Chaser Kit.

The CAP-CHECK unit contains the following items:

1. Pump and reservoir assembly with ¼" male flare outlet.
2. Hydraulic pressure gauge mounted in above assembly with trigger-operated gauge shut-off valve.
3. An adapter to connect a cap tube to the CAP-CHECK without using a flare nut. A flare plug is mounted on the unit to store the adapter when – not in use.
4. A 30" flexible high pressure hydraulic hose.
5. Pump handle with plastic grip.

**TO PLACE UNIT IN OPERATION-** Make sure reservoir contains oil. Open by-pass valve by turning valve screw counter-clockwise. Remove sealing cap from CAP-CHECK outlet and attach flexible hose. Close valve and pump till oil comes out end of hose. Put sealing cap on hose outlet.

**TO FILL CAP-CHECK** -When reservoir empties leave by-pass valve closed. Remove filler fitting and fill reservoir with refrigerant oil. Replace filler fitting. Open by-pass valve and pump 10 or 12 strokes. Close by-pass valve and pump again to see if pressure builds up. If it doesn't, open by-pass valve again and repeat the above procedure. PUMP WILL NOT WORK IF IT HAS AIR IN IT.

**TESTING REFRIGERATION CAPILLARY TUBES** -Remove sealing cap from hose outlet. Loosen cap on filler fitting so air can enter to replace oil pumped out. Close by-pass valve by turning clockwise and pump till oil comes out of hose fitting. Close refrigerant supply to cap tube. Disconnect cap tube from system and connect it to hose outlet either directly or with the adapter. If using adapter be sure to push cap tube thru the neoprene sealer at least 1 inch and tighten adapter nut until cap tube cannot be pulled out. Pump at an even rate of approximately 30 strokes per minute (1 second down, 1 second up). The amount of pressure build-up in clean cap tubes will depend on the size of the cap tube. Large capacity tubes will show practically none while long tubes of small bore and lower capacity will show as high as 2000 PSI or more instantaneous pressure but will rapidly return to zero. If pressure builds up and holds or drops very slowly cap tube is restricted.

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**TO REMOVE RESTRICTIONS** -With CAP-CHECK connected as above pump at a rate which will build up a pressure of not more than 4000 PSI. If this pressure does not remove the restriction drop the pressure by opening the by-pass valve then close the valve and start pumping again. When the pressure reaches about 1500 PSI, close the trigger valve gauge shutoff by holding the trigger down while continuing to pump. As soon as the pressure stops rising on the gauge indicating it is shut off, pumping can be continued as fast and to as high a pressure as needed. When the restriction is removed the pressure will drop and as soon as it gets below the pressure held in the gauge the gauge will start to drop. The trigger valve will open automatically when the pressure drops so if pumping is started again the valve will be open and the gauge will again indicate pressure. As long as pressure is held on the valve piston in the closed position the valve cannot be opened and the trigger will have no effect on it. The Extended Base, which can be purchased as an additional accessory, makes pumping the higher pressures which can be reached with the gauge shutoff much easier.

Use of a CAP-CHECK CHASER KIT will insure that the cap tube is really clean and fully open. It is especially valuable for larger cap tubes which are partially restricted since the rate of flow required for such cap tubes is beyond the capacity of any hand operated hydraulic pump. In using the CHASER KIT a piece of lead alloy wire about 3/8" long and a few thousandths of an inch smaller than the ID of the cap tube is pushed through by hydraulic pressure. If a restriction stops the wire, high velocity oil will flow between the wire and the cap tube wall and be directed against the restriction washing it away. The wire will then move on until it falls harmlessly into the evaporator where it will remain.

**TO USE CAP-CHECK AS A HYDRAULIC POWER UNIT** -To operate hydraulic cylinders connect the power side of the cylinder to the outlet and the return side of the cylinder to the filler opening of the CAP-CHECK. Since the volumetric capacity of the pump is low fill the cylinder with oil before connecting the CAP-CHECK to it. For high pressure testing fill the article to be tested with oil before connecting the CAP-CHECK.

Pump until the desired pressure is reached. BE SURE THE ARTICLE YOU ARE TESTING WILL STAND THE PRESSURE YOU INTEND TO APPLY.

**MAINTENANCE**- Do not bend the hydraulic hose to a radius of less than 3 in. To do so will kink it and cause it to fail.

The pump nut (1034) should only be finger tight. Over-tightening may cause the unit to leak around the piston or may bind the piston and prevent the unit from pumping.

Dip neoprene adapter sealer in oil when replacing to prevent binding.

The valve assembly is made up of 3 balls which cover 3 different sized ports. The smallest ball closes the port from the reservoir to the pump, the middle ball closes the port from the pump to the outlet and the large ball closes the by-pass port from the outlet to the reservoir. If pump will not raise any pressure the small ball is not sealing. If pressure can be raised but pump handle raises from the bottom of the stroke by itself, middle ball is not holding and if pressure can be

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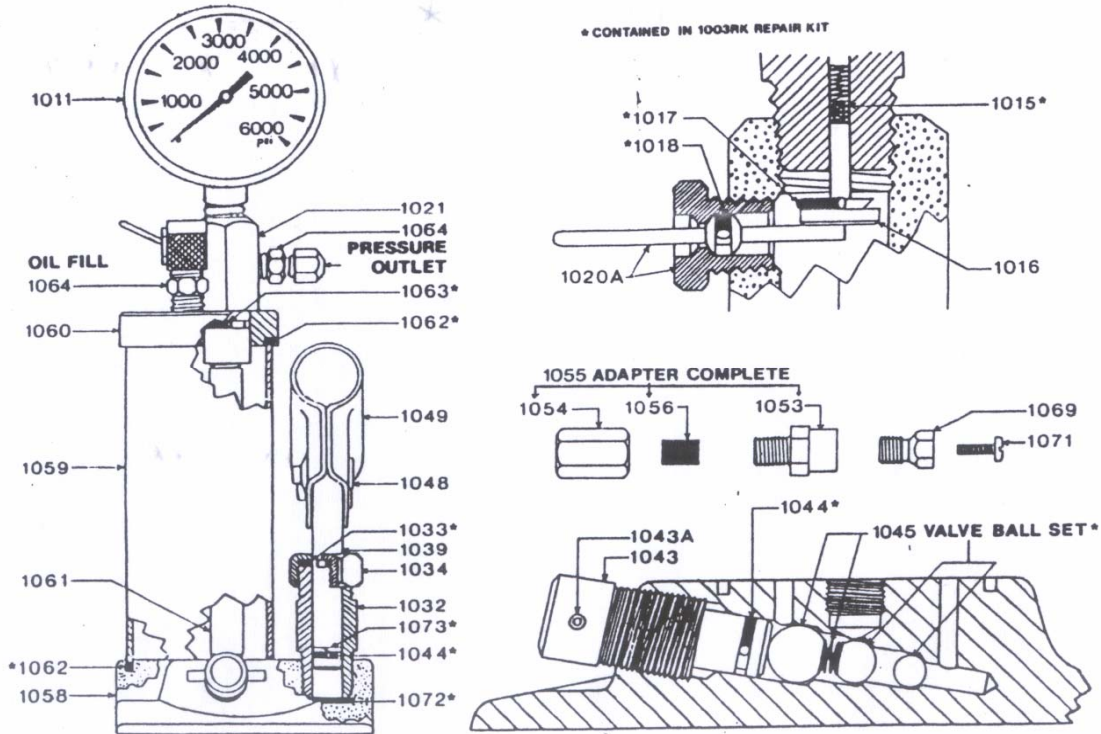
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raised but will not hold against a sealed outlet and pump handle does not move by-pass valve is not holding. Foreign matter in the ports is probably the trouble in all cases. Flush out by removing valve screw, balls and filler plug and letting oil flow out valve screw hole. Replace balls and valve screw and refill with oil.

Gauge and fittings on CAP-CHECK are sealed with Teflon pipe tape.

MODEL 5101 CAP-CHECK OUTFIT provides both the CAP-CHECK and CHASER KIT in one compact case along with an extended base that holds the CAP-CHECK. In this way the CAP-CHECK can be operated with one hand allowing high pressures to be easily pumped. Carrying case has clips to hold CAP-CHECK, CHASER KIT, hose, handle, and extended base.



**IMPORTANT NOTICE** -Before returning a CAP-CHECK for failure to pump **MAKE SURE** it has a full charge of oil and is not air bound. Follow instructions for filling and purging air from the pump. Over 80% of all units returned have nothing wrong with them.

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### **Parts & Accessories**

1003RK	Repair Kit	1049	Handle Socket
1011	0-6000 PSI Gauge	10S3	Male Adopter
1012	30" Hydraulic Hose	10S4	Female Adopter
1014	Handle	105S	Adapter Complete
1015*	Trigger Poppet Spring	1056	Adapter Seals (1 doz.)
1016	Trigger Valve Poppet	105B	Base Casting
1017*	Poppet "O" Ring	1059	Cylinder
1018*	Trigger Valve "O" Ring	1060	Top Cap
1020A	Trigger Complete	1061	Top TP Base Nipple
1021	Gouge Post	1062*	Cylinder "O" Ring
1032	Pump Body	1063*	Gauge Post "O" Ring
1033*	Pump Wiper	1064	Filler Fitting
1034	Pump Nut	1069	Adapter Holder Fitting
1039	Pump Piston	1071	Adapter Holder Screw
1043	Bypass Valve Screw	1072*	Fiber Washer
1043A	Roll Pin, Bypass Screw	1073*	Teflon Back Up Ring
1044*	"O" Ring Bypass Valve, Piston	1101	Chaser Kit
1045*	Valve Ball Set	1201	Metal Case for 5101
1048	Handle Socket Link Pin	1301	Extended Base

\*Contained in 100JRK Repair Kit

#### Limited Warranty

All products sold are warranted against defects in workmanship or materials under normal use for one year. Manufacturer assumes no liability on the actual use of this equipment. Safety responsibility lies with the user. Liability in all events is limited to the purchase price paid and liability under aforesaid warrantee is limited to replacing or repairing any parts which are defective in materials or workmanship and are returned to our warehouse with a detailed description of the problem. Airserco reserves the right to repair or replace unit at our discretion.

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