

MODEL 250V-275V HELM PUMPS AND NO. 50 UNIFLOW VALVE

CAUTION:

- BEFORE PROCEEDING WITH THE INSTALLATION, READ THESE INSTRUCTIONS THOROUGHLY. TELE-FLEX CANNOT ACCEPT RESPONSIBILITY FOR THE INTEGRITY OF INSTALLATIONS IN WHICH SUBSTITUTE PARTS ARE USED.
- DIRT AND FOREIGN MATTER INTRODUCED INTO THE STEERING SYSTEM DURING INSTALLATION OR FILLING OF THE SYSTEM MAY CAUSE MALFUNCTION. CLEANLINESS IS EXTREMELY IMPORTANT.
- NEVER USE TEFLON TAPE AS A THREAD SEALER, LIQUID THREAD SEALERS ARE ACCEPTABLE.
- THESE INSTRUCTIONS COVER THE ABOVE MENTIONED HELM PUMP INSTALLATION AND THE FILLING AND BLEEDING OF THESE SYSTEMS ONLY. REFER TO INSTRUCTIONS SUPPLIED WITH OTHER COMPONENTS FOR THEIR INSTALLATION.
- BE CERTAIN THAT ADEQUATE SPACE IS AVAILABLE AROUND EACH HELM PUMP FOR CONNECTING LINES.
- PROVISION SHOULD BE MADE TO GIVE PROPER ACCESS TO THE TOP OF THE UPPERMOST HELM PUMP TO ALLOW FOR PROPER FILLING AND BLEEDING OF THE SYSTEM.

PROCEED WITH THE INSTALLATION AS FOLLOWS:

- Determine desired mounting location(s) for helm pump(s) making sure that there is ample space around helm pump for connection of fittings and tubing.

NOTE: Helm pumps must always be mounted so that mounting holes are in a horizontal plane.

Helm pumps can be mounted with the helm pump shaft being horizontal and up to a maximum angle of 60°. See Fig. 1.

If the angle of 60° is exceeded, filler extension is required. See Fig. 2.

- Drill mounting holes as indicated on template, Fig. 4, and secure helm pump, bezel and adjusting knob.

CAUTION: DO NOT DRILL INTO HELM PUMP WHEN MOUNTING BEZEL.

NOTE: Before proceeding with the connection of tubing, all other components should be installed, i.e., cylinder(s), auto pilot, etc.

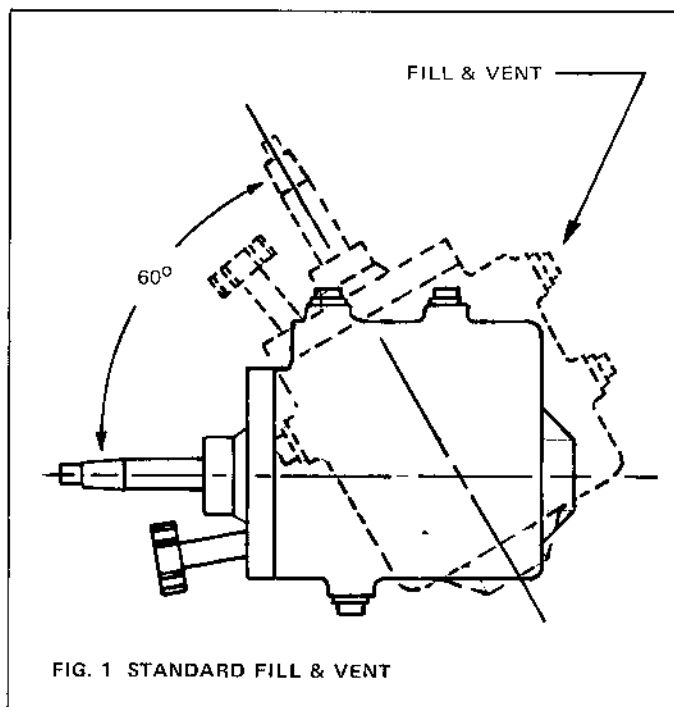


FIG. 1 STANDARD FILL & VENT

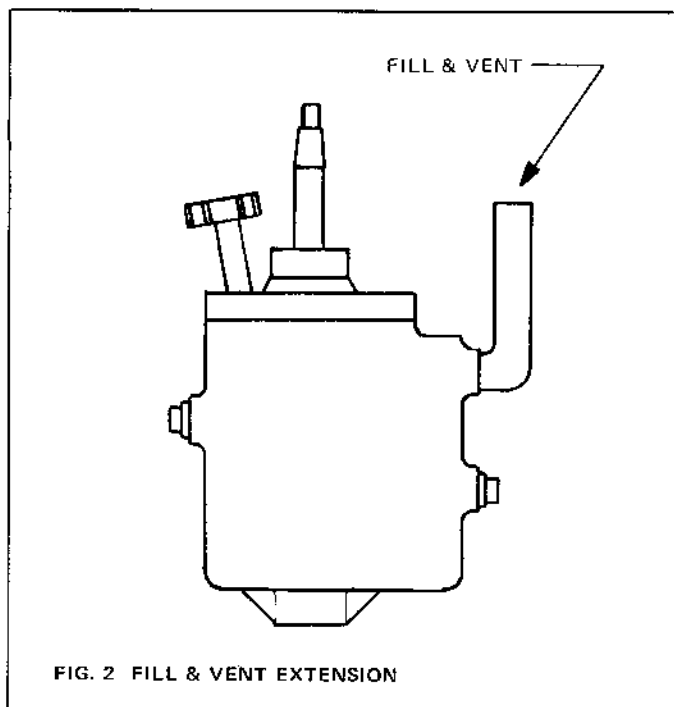


FIG. 2 FILL & VENT EXTENSION

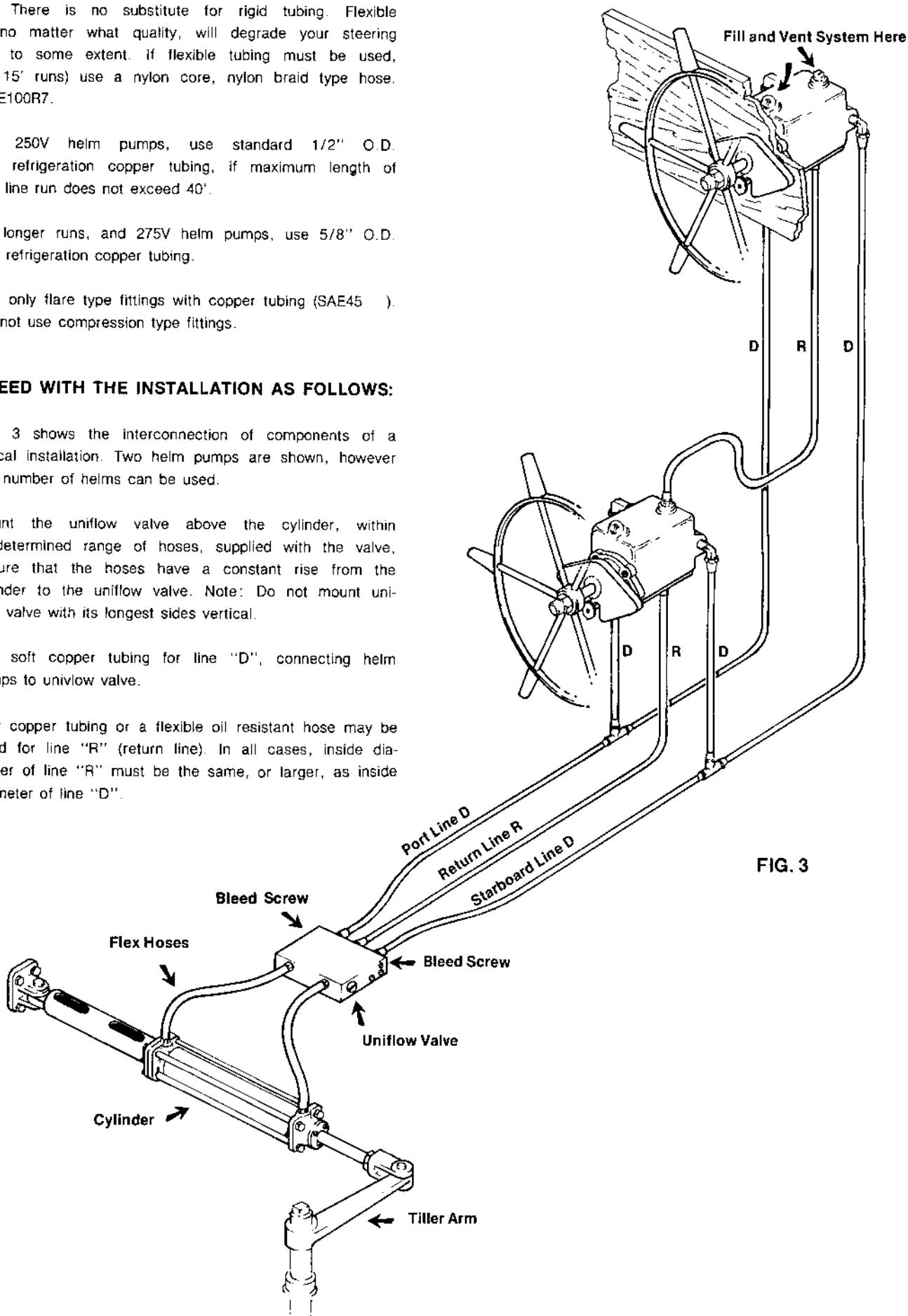
TUBING AND FITTINGS

NOTE: There is no substitute for rigid tubing. Flexible hose, no matter what quality, will degrade your steering system to some extent. If flexible tubing must be used, (under 15' runs) use a nylon core, nylon braid type hose, i.e. SAE100R7.

- For 250V helm pumps, use standard 1/2" O.D. soft refrigeration copper tubing, if maximum length of one line run does not exceed 40'.
- On longer runs, and 275V helm pumps, use 5/8" O.D. soft refrigeration copper tubing.
- Use only flare type fittings with copper tubing (SAE45). Do not use compression type fittings.

PROCEED WITH THE INSTALLATION AS FOLLOWS:

- Fig. 3 shows the interconnection of components of a typical installation. Two helm pumps are shown, however any number of helms can be used.
- Mount the unflow valve above the cylinder, within predetermined range of hoses, supplied with the valve, ensure that the hoses have a constant rise from the cylinder to the unflow valve. Note: Do not mount unflow valve with its longest sides vertical.
- Use soft copper tubing for line "D", connecting helm pumps to unflow valve.
- Soft copper tubing or a flexible oil resistant hose may be used for line "R" (return line). In all cases, inside diameter of line "R" must be the same, or larger, as inside diameter of line "D".



- Ensure that lines are capped or sealed before routing to prevent introduction of contamination into tubing.
- Ensure that lines are not crossed when making your connections, i.e. port to port, and starboard to starboard. Mark lines with masking tape to prevent accidental crossing.
- Make certain that tube nuts are on copper tubing before flaring.
- Ensure that return line "R" runs from the uniflow valve to the bottom of the lowest helm pump, then continues from the top of that helm pump to the bottom of the next highest helm pump, etc. Never use a tee fitting in the return line, unless you are installing an autopilot.
- Ensure that copper tubing is not allowed to kink or collapse during bending. If tubing does collapse, the damaged section should be removed, or stiff steering will result.
- Upon completion of tubing installation, recheck all connections.
- With the exception of the fill and vent port in the upper most helm pump, all plastic shipping plugs must be replaced with metal pipe plugs. (3/8" N.P.T.) Failure to do so can result in leakage.
- Mount steering wheel(s). Minimum of 20" dia. wheel should be used for 250V systems and minimum 24" dia. for 275V systems.

NOTE:

- Use automatic transmission fluid, type A or Dexron II, or SAE 10 Turbine oil.
- Always fill the system from the uppermost or highest station.
- It is recommended that a large funnel or filling container connected to one of the two filler holes on top of the highest station via a short section of hose or pipe be used to fill the system.

THE ABOVE RECOMMENDATION IS MADE FOR THE FOLLOWING REASONS:

If, during the bleeding of the system, insufficient oil is inside the reservoir of the helm pump, a fresh supply of air will be re-introduced into the system and needlessly increase your filling time.

On occasion, air being purged out of the system may cause a sudden rise or spurting of oil. A large funnel or container will prevent spillage of oil.

TO FILL THE SYSTEM, PROCEED AS FOLLOWS:

1. Open bleed screws on uniflow valve. Note: maximum 2 full turns. Opening bleed screws will allow for continuous turning of steering wheel in one direction. If bleed screws are not opened, steering rotation must be reversed each time resistance is felt. The bleed screws can easily be identified as they are metallic, aluminum, or brass, and contain a full screw driver slot.
2. Fill the funnel or filling container half full of oil (NEVER FILL FUNNEL OR FILLING CONTAINER COMPLETELY TO TOP). Do not turn steering wheel at this time. As air bubbles appear and the oil level drops, add oil as needed until air bubbles cease to rise from the helm pump, indicating that the helm pump is completely filled.
3. Now turn steering wheel at upper station continuously in one direction, while adding oil as needed, make certain oil is always visible in filling container throughout filling procedure. Continue to turn steering wheel until air bubbles cease to appear. (15 minutes or longer).
4. Repeat step 3, turning steering wheel in opposite direction.
5. Repeat step 3 and 4 at each additional station, while ensuring of ample oil supply at filling container. Note: If an auto pilot is installed, it also must be activated during the bleeding process.
6. At the completion of step 5, repeat step 3 and 4 at the upper station.

THE SYSTEM CAN BE CONSIDERED PURGED WHEN:

- a) No more air bubbles rise in filling container.
- b) The oil level in the filling container remains relatively constant, when the steering wheel is turned to the hard over positions and pressure is applied. If oil level falls noticeably, air is still present in the system or excessive amount of flexible tubing has been used.

Drain off excess oil in filling container, final oil level must always be within 1/2" of filler hole.

A vented plug must be used in the filler hole. One of the plastic shipping plugs may be used (for this purpose only). A small pin hole through the plug will provide adequate venting.

ANY AIR LEFT IN THE SYSTEM AT COMPLETION OF FILLING PROCEDURE WILL PURGE ITSELF IN TIME. SHOULD THIS OCCUR, OIL LEVEL IN (TOP) HELM WILL DROP AND MUST BE REPLENISHED. OIL LEVEL SHOULD BE CHECKED PERIODICALLY, AND TOPPED OFF IF NEEDED. BEST TIME TO CHECK OIL LEVEL IS BEFORE LEAVING DOCK.

MOUNTING TEMPLATE DIMENSIONS

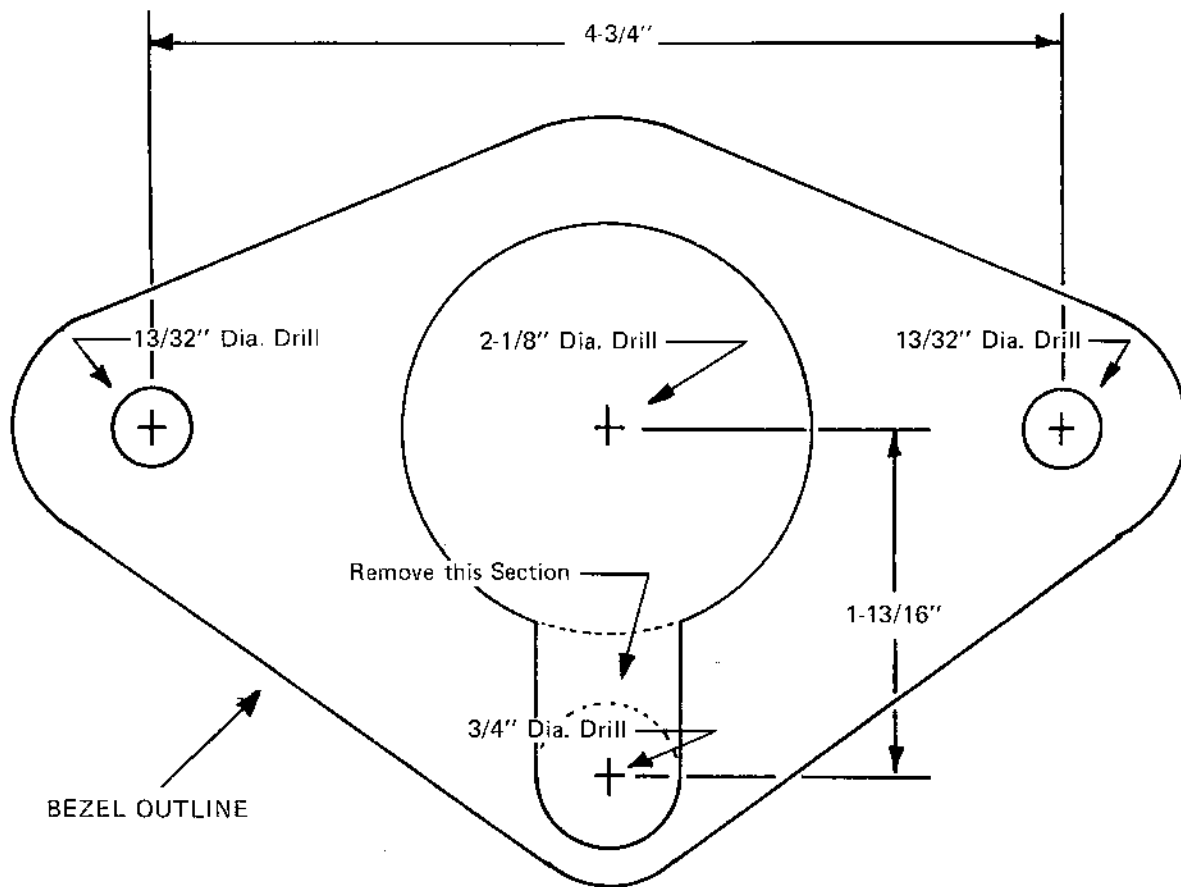


FIG. 4

CAUTION: IMPORTANT INSTRUCTIONS ON REVERSE SIDE .