Menu

Attention Flows in US Gallons

# HYDRAULIC MOTOR DRIVEN PUMP APPLICATION INSTRUCTIONS

For Tyrone *(formerly Gresen)* Hydraulic Motor, Part No. P-58-0686

## HYDRAULIC SYSTEM REQUIREMENTS:

The hydraulic motor driven pump can be operated on either a closed center or open center hydraulic system. The maximum system requirement is 9 gallons per minute of hydraulic fluid flow. A flow of less than 9 gallons per minute can be used. This can result in a lower pump speed, lower pump output, and lower pressure delivered by the pump. Exceeding a 9 gallon per minute flow will damage the motor and/or the pump.

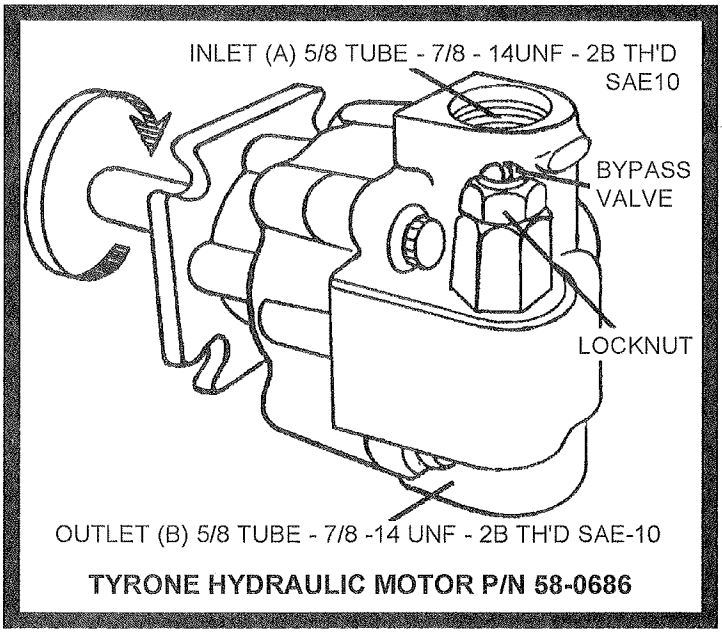
## CLOSED CENTER VERSUS OPEN CENTER HYDRAULIC SYSTEMS:

An OPEN CENTER hydraulic system is based on either a vane or gear type hydraulic pump. These pumps have a constant output proportional to the speed of the engine driving them. When this flow is not being used, a valve diverts the flow back to the hydraulic reservoir where it is recirculated through the pump. The term "open center" is derived from the type of valve used to control an open center system. The open center position of the hydraulic valve permits the flow of hydraulic fluid back to the reservoir in the neutral position.

A CLOSED CENTER system uses a variable displacement piston pump. This type of pump varies its output from zero flow to maximum flow depending on the demands put to it by the system. All this happens without disengaging or changing the speed of the engine driving the pump. The term "closed center" comes from the fact that the type of valve used to control this system completely shuts off the flow in the neutral position.

## INSTALLATION OF PUMP ON AN OPEN CENTER SYSTEM:

The pump hydraulic motor has a BUILT IN BYPASS VALVE to control the amount of oil flowing through the motor, thus controlling the RPM of the motor. After determining that your hydraulic power supply meets the minimum requirement of 6 GPM hydraulic fluid flow, the supply line from the hydraulic pump or control valve should be connected to the inlet port (marked A) of the hydraulic motor. The outlet port (marked B) should be connected to return to the hydraulic system reservoir. Before starting up the system, the bypass valve should be opened far enough to insure that the motor will not overspeed. To do this, loosen the locking nut on the bypass valve. Close the bypass valve by turning the screw clockwise until it seats. Then turn it out about three full turns.



TYRONE HYDRAULIC MOTOR P/N 58-0686

With each Tyrone hydraulic motor driven pump shipped, we supply a pressure gage. In order to determine that the Pacer pump is operating at the correct speed, a valve should be put on the discharge side of the pump and the pressure gage installed in the pump drain plug hole. Now fill the pump body with priming liquid and start up the system. With the hydraulic motor bypass valve open, the speed of the motor will be slow. Close the bypass valve slowly by turning it **clockwise** until the Pacer pump starts pumping. This should be done with the pump discharge valve open. Once the pump is pumping liquid, the discharge valve can be closed. At this point, the pump should not be developing very much pressure. This is an indication that the pump is not yet up to full speed. Full speed operation, 3450 RPM, will give discharge pressure as shown on the table on page 2. To get maximum pump performance, slowly close the motor bypass valve by turning it **clockwise** until you read the pressure in the table.

| Impeller No. | Performance Curve | Pump Model | Impeller Description | Gage Reading at 3450 RPM |
|---|---|---|---|---|
| 667 | C,E | S & PC | 3 Vane, open, .535" wide, 4.75" dia. | 31 psig |
| 683 | G | I | 5 Vane, open, .700" wide, 4.25" dia. | 33 psig |
| 704 | F | S | 3 Vane, open, .535" wide, 5.5" dia. | 50 psig |
| 706 | I | S | 5 Vane, open, .535" wide, 5.5" dia. | 52 psig |
| 707 | E | PC | 5 Vane, open, .535" wide, 5.0" dia. | 41 psig |
| 709 | D | PC | 3 Vane, open, .535" wide, 5.25" dia. | 39 psig |
| 974 | H | S | 4 Vane, open, .600" wide, 4.75" dia. | 37 psig |
| 975 | J, L & F | S & PC | 4 Vane, open, .975" wide, 4.75" dia. | 37 psig |

Some people will want to adjust the RPM/pressure readings while pumping liquid fertilizer or some other liquid which is heavier than water. If this is necessary, please keep the following in mind:

1. Multiply the above given pressure readings by the specific gravity of the liquid being pumped. (Specific gravity = the weight of a particular substance divided by the weight of an equal volume of water). **IN NO CASE SHOULD THE PRESSURE EXCEED 65 psi.**
2. The pressure gage supplied with these pumps is not designed for use with fertilizers. With this in mind, do not allow the pressure gage to remain in the pump for more than a few minutes. Remove the pressure gage from the pump as soon as possible and replace it with the drain plug supplied with the unit.

Many tractors have hydraulic systems which supply much more than 9 gallons per minute. When this is the case, it is best to idle the engine down so as to obtain a 9 gallon per minute flow. Any flow over 9 gallons per minute is diverted through the bypass valve and does no work. Once you have found the best conditions of engine RPM and bypass valve setting, **lock the bypass valve in position with the locknut.** If a tachometer is available, record engine RPM for future reference.

## INSTALLATION OF PUMP ON CLOSED CENTER SYSTEMS:

In a closed center system, the hydraulic motor bypass valve should be **CLOSED COMPLETELY** by loosening the locknut and turning the valve screw all the way in. Tighten the locknut.

The rate of flow of hydraulic fluid through the hydraulic motor in a closed center system is determined by the use of a metering orifice in the hydraulic fluid supply line. This orifice can be sized by referring to information supplied by the manufacturer of the tractor or power unit. If you do not have this information available, a "variable metering orifice" in the form of a needle valve is used to control the flow. The following procedure will allow you to find the correct valve setting without running the risk of overspeeding the hydraulic motor:

Connect the supply line from the hydraulic pump or supply valve to the needle valve. From the needle valve, the line should run to the inlet port of the hydraulic motor. The return port of the hydraulic motor should be connected back to the reservoir of the hydraulic system.

Install a discharge valve and pressure gauge on the pump as described in the open center system instructions. Close the metering needle valve in the hydraulic supply line completely before starting the system. Prime the pump, then start up the system and slowly open the metering valve. After the pump has primed and is pumping liquid, close the discharge valve. Further opening of the metering valve will result in increasing the speed of the hydraulic motor. This will result in increasing the shutoff pressure developed by the pump. Increase pressure until you read the number in the table for your impeller.