



**4277**  
**50 GPM Hydraulic Flow Meter**  
**User Manual**



## Introduction

The OTC 4277 50 gpm Hydraulic Flow Meter provides the ideal solution for servicing and commissioning hydraulic circuits on agricultural and other mobile machinery.

The kit comprises of a direct-acting flow indicator with built-in thermometer, a loading valve and a pressure gauge all built into a strong steel case with a removable lid. The unit is self-contained and requires no electrical power. The dials are clear and easy to read.

Installation is extremely simple and the test kit can be connected into either the pressure or return lines. The loading valve and pressure gauge allow smooth, progressive build-up of system pressure.

The test kit provides the service engineer with quick, accurate and simple performance testing of pumps, motors, valves, cylinders, hydraulic tools and complete hydraulic circuits.

## Safety Precautions



**CAUTION:** To prevent injury and / or property damage,



- Study, understand, and follow all safety precautions and operating instructions before using this equipment. If the operator cannot read instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.

- No alteration shall be made to this product.
- Inspect the condition of the equipment before each use; do not use if damaged, altered, or in poor condition.

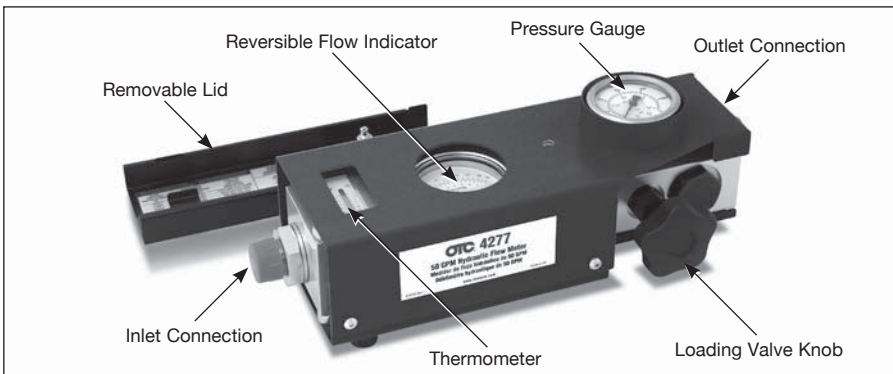


- Ensure load valve is fully open prior to testing.
- Wear eye protection that meets the standards of ANSI Z87.1 and OSHA.

## Overview

The assembly comprises of the following items built into a steel frame.

- Reversible Flow Indicator with 54 gpm (200 lpm) flow scale and thermometer scale 20 - 110 °C (65 - 230 °F)
- Loading valve built-in burst discs and glycerine-filled pressure gauge. The valve is easy to turn and gives progressive control of system pressure loading.
- Burst discs - Four spare discs are supplied with the kit. Specify OTC 573736 (Pk of 10), 440 bar, 6400 psi for replacements. Note these discs are colour coded Red for easy identification. Other burst discs with lower pressure ratings are available. Consult Sales Office for details.
- Carrying handle, which may also be used for hanging up the unit.



## Specification

Model No.	Flow Range	Max. Working Pressure	Temperature Range
4277	2.0 - 54 US gpm (10 - 200 lpm)	6000 psi (420 bar)	65 - 230 °F (20 - 110 °C)

### Connections

By flexible hose (2 - 3 ft recommended length)

Inlet Connection: 1-5/16" -12UN #16 SAE ORB

Outlet Connection: 1-1/16" -12UN #12 SAE ORB

### Adaptors

Adaptors are fitted as standard to provide inlet & outlet connections.

### Dimensions/Weight:

12.25 x 4.125 x 4.875 inches, 14.5 lbs

(310 x 105 x 120 mm, 6.6 kg)

Adapters are available to suit most applications. Consult sales office for details.

Connect the unit into the hydraulic system as required using two 3 - 6 ft (1 - 2 metre) long hoses. Ensure that the flow you wish to measure is passing through the unit in the direction of the double arrows on the flow indicator dial. Flow is allowed in the direction of the single arrow, but this flow will not be measured.

### Measurement and Indication

#### Flow

Measured by a tapered metering piston moving within a fixed, sharp-edged orifice designed to minimise the effects of changes in temperature and viscosity. The piston movement is proportional to the change in flow rate. In reverse the piston moves back to allow the flow to return at low pressure.

**Accuracy:** ± 4% of full flow over range 20 - 40 cSt.

#### Pressure Drop

At full flow with oil viscosity 28 centistokes.

#### Model      Pressure Drop at Max. Flow

4277      218 psi

#### Pressure

Glycerine filled 2-1/2" (63 mm) pressure gauge 0 - 6000 psi (0 - 420 bar) gives a continuous reading of system pressure.

**Accuracy:** ± 1.6% of full scale

#### Temperature

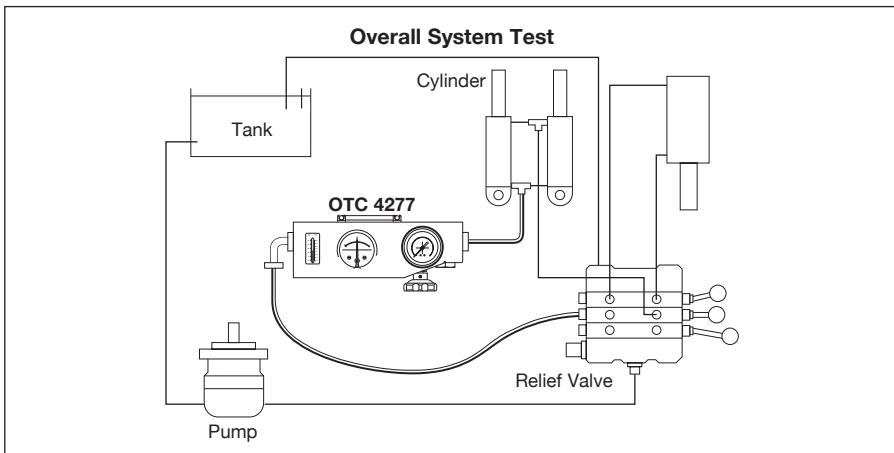
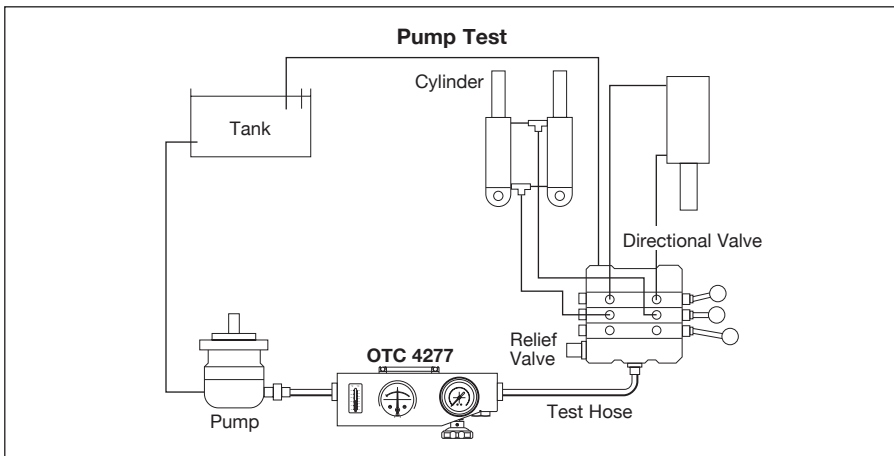
For continuous use at fluid temperatures up to 180°F (80°C), for intermittent use for less than 10 minutes, at up to 230°F (110°C). Indicated in °C and °F by a thermometer built into the flowblock to measure temperature changes in the fluid passage.

**Accuracy:** ± 5°F (± 2.5°C)

## Instructions for using the Hydraulic Flow Meter

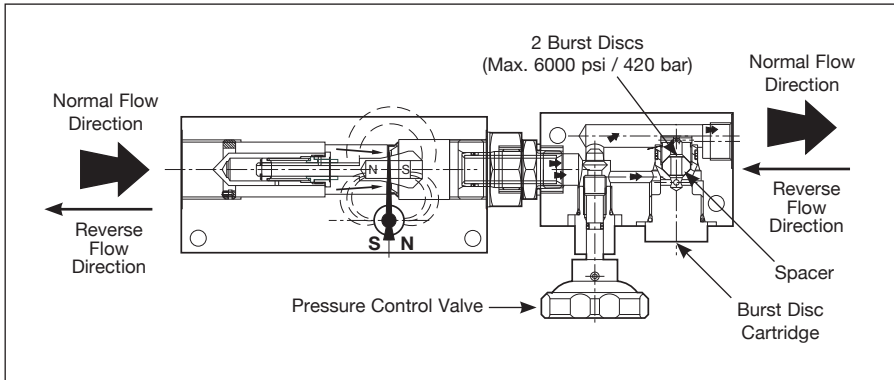
1. Open loading valve by rotating counter-clockwise.
2. Start pump momentarily to ensure oil flows freely through the hydraulic system, then run pump at maximum speed. Do not change pump speed while turning the loading valve.
3. Slowly close the loading valve to develop the desired pressure. Run the machine until normal operating temperature is reached i.e. typically 115 - 140°F (45 - 60°C).
4. Open the loading valve to read the flow at minimum pressure.
5. Close loading valve slowly to increase pressure. Note reduction of flow as the pressure is increased to maximum pump pressure to determine pump condition.

### Typical Tests

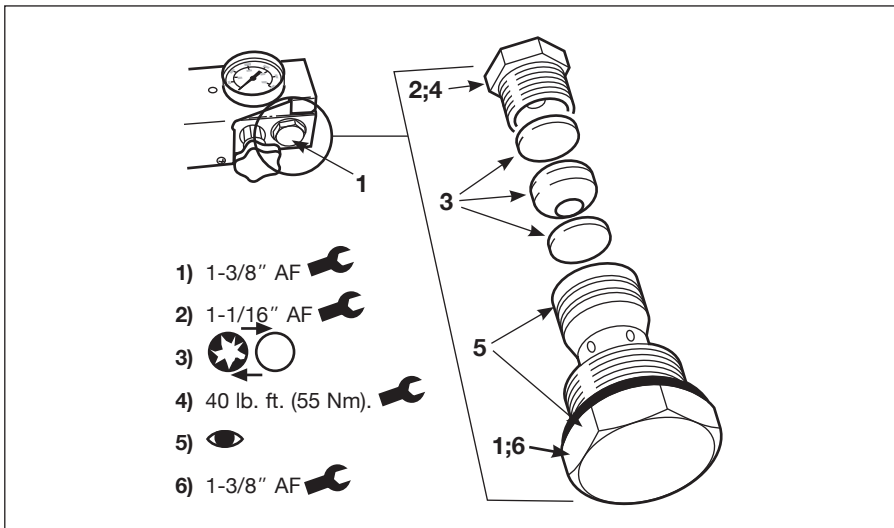


## Maintenance and service

### Replacement of burst discs (No. 573736)



1. Remove burst disc cartridge with a 1-3/8" AF spanner.
2. Remove the internal disc holder in the cartridge with 1-1/16" AF spanner.
3. Remove the two spent discs and fit new discs, one on each side of the spacer.
4. Tighten disc holder to 40 lb. ft. (55 Nm).
5. Check the seals.
6. Replace the entire cartridge assembly in the valve body.



#### Calibration

Flow measurement equipment, such as flow meters and flow blocks, should be calibrated annually or after every 2,000 hours of use. Calibrate the equipment more frequently if it is used or stored in environments where the equipment is exposed to dust or vibrations.