



**Morehouse**  
THE FORCE IN CALIBRATION SINCE 1925

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ISO/IEC 17025 / ANSI/NCSLI Z540.3 Accredited

## Operation and Instruction Manual

# Universal Hydraulic Pump



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## General Specification

### 1 Scope

This specification describes the Morehouse Universal Hydraulic Pump (UHP). This control is specifically designed to have the correct rate of flow to control the hydraulic jack of a Universal Calibrating Machine or Universal Scale Calibrator. However, it additionally would have application wherever the loading of hydraulic cylinders must be precisely controlled, such as in non-destructive testing of structures.

### 2 Physical Characteristics

#### 2.1 Design

The Universal Hydraulic Pump powered by a radial piston pump driven by an electric motor and two sizes of manually operated screw pumps. The steel cabinet which houses the Universal Hydraulic Pump is fitted with spring loaded chest handles to aid in moving the unit.

#### 2.2 Maximum Working Pressure

5,000 psi maximum rated. Pressure safety relief valve is set between 4000-5000 psi, adjusted according to the machine it is used with.

#### 2.3 Rate of Flow

Flow rates for the motor driven pump are configured according to the machine it will be used with.

- With motor driven pump (HI) - Possible range: 1.4cm<sup>3</sup>/s to 14cm<sup>3</sup>/s (0.085 in<sup>3</sup>/s to 0.85 in<sup>3</sup>/s)
- With motor driven pump (LO) - Possible range: 1.4cm<sup>3</sup>/s to 14cm<sup>3</sup>/s (0.085 in<sup>3</sup>/s to 0.85 in<sup>3</sup>/s)
- With auxiliary screw pump – 0.70 cm<sup>3</sup> (0.043 in<sup>3</sup>) per revolution
- With small screw pump – 0.090 cm<sup>3</sup> (0.0055 in<sup>3</sup>) per revolution

#### 2.4 Reservoir Volume

8560 cubic cm (8.56 liters) (522 cubic inches (2.26 gallons))

#### 2.5 Hydraulic Connector

Quick-connect fitting (Snap Tite H series, 1/4")

#### 2.6 Motor

3/4 Horsepower motor controlled by a variable frequency drive

## 2.7 Power Requirements

- 100-120 VAC, 50/60 Hz
- 200-240 VAC, 50/60 Hz

## 2.8 Length of Power Cord

3 meters (10 feet)

## 2.9 Cabinet Size

Base cabinet: 310mm x 476mm x 437 mm (17.2" x 18.8"x 12.0") See figure 6 for more details

## 2.10 Weight

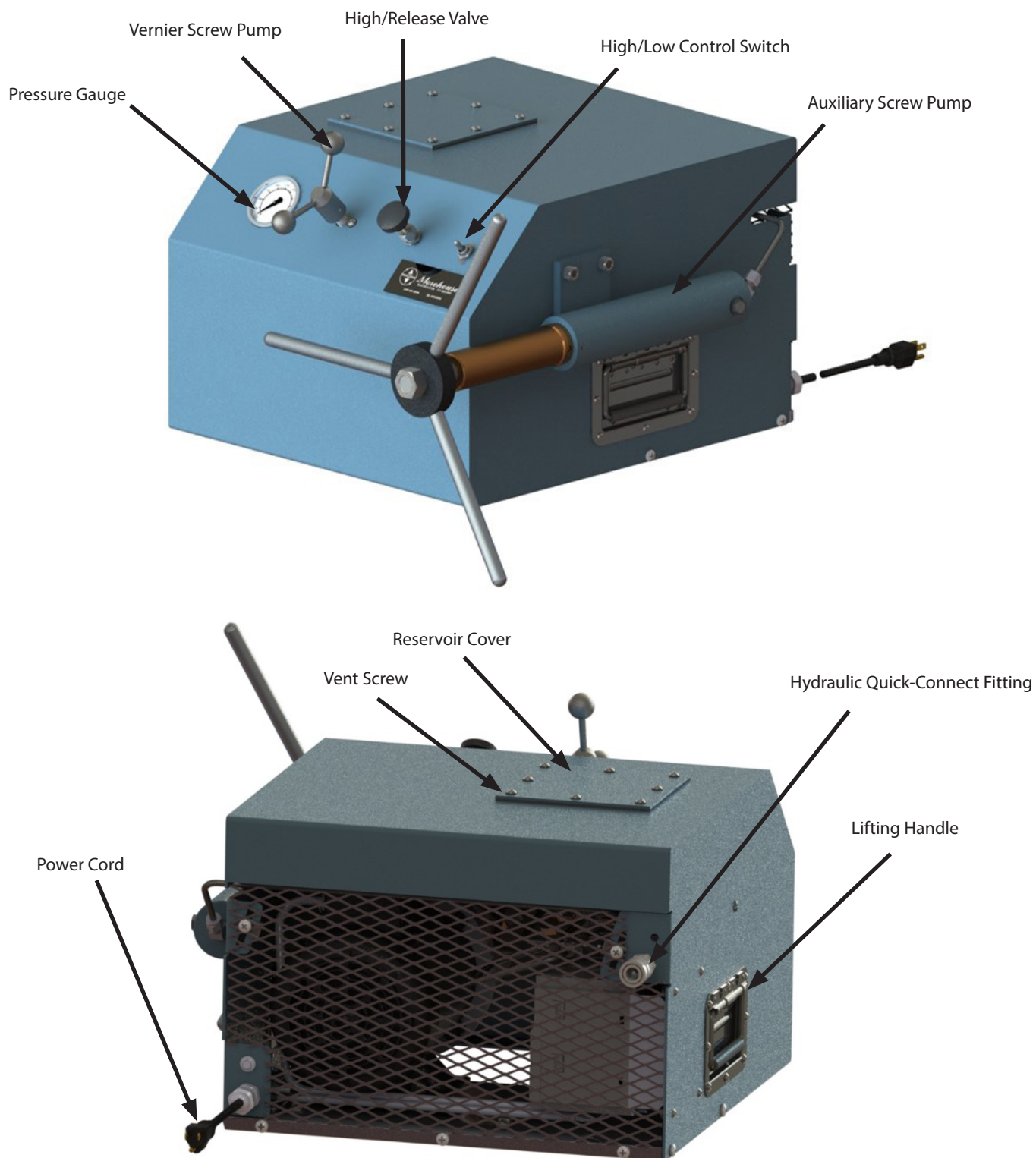
As shipped with 7 liters (2 gallons) of hydraulic fluid: 63kg (140 pounds)

## 3 Operation

The electric motor driven pump is used to approach a specific pressure or force, and then the Auxiliary and Vernier screw pumps are used to accurately approach and monitor the desired pressure or force.

Model	Power	Aux. Screw Pump	Universal Calibrating Machine
UHP-C1-01D	100-120 VAC	No	30k to 1,000k lbf
UHP-C1-01DS	100-120 VAC	Yes	30k to 1,000k lbf
UHP-C1-01E	200-240 VAC	No	30k to 1,000k lbf
UHP-C1-01ES	200-240 VAC	Yes	30k to 1,000k lbf

**Table 1: Universal Hydraulic Pump Models**

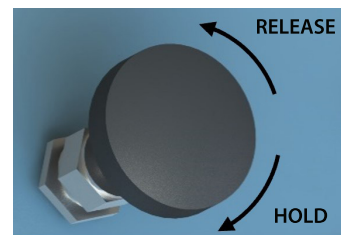


**Figure 1: Universal Hydraulic Pump**

## Operating Instructions

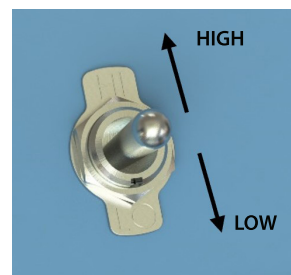
**1** - The Morehouse Universal Hydraulic Pump is ready to use as received. Simply remove the Universal Hydraulic Pump from the shipping box, check the level of the hydraulic fluid connect the quick disconnect of the hydraulic hose to the hydraulic jack with which it is to be used, and plug in the power cord. The unit is usually placed on a bench or cart next to the calibration machine. Make sure at least one of the screws on the top of the cabinet has a vent hole in it.

**2** - To operate the Universal Hydraulic Pump, turn the Hold/Release by hand clockwise until tight to set it in the hold position. In the hold position, hydraulic fluid can flow to, and build pressure in, the connected hydraulic cylinder. To release the load slowly, turn the Hold/Release valve by hand counterclockwise.



**Figure 2: Hold/Release Valve**

**3** - In operation, the Universal Hydraulic Pump is used to approach the desired pressure or force by actuating the momentary switch on the front of the control. Pressing the switch upwards commands a higher flow rate, and pressing down commands a lower flow rate. The Auxiliary and Vernier screw pumps are then used to accurately approach and maintain the desired pressure or force.



**Figure 3: High/Low Control Switch**

**4** - It is suggested that the Auxiliary and Vernier screw pumps be kept at their mid-position of travel to allow small increments of pressure or force to be increased or decreased. Experience will dictate the best position for individual requirements.

**5** - The reservoir of the Universal Hydraulic Pump has been filled with petroleum base hydraulic fluid having an ISO Viscosity Grade of 22 or 32. For recommended hydraulic fluids please refer to the Maintenance Instructions section in this manual. It is not necessary to drain the hydraulic fluid from the hydraulic cylinder with which the control is to be used unless a non-petroleum base fluid was used in the hydraulic cylinder. If a non-petroleum base fluid was being used, drain it from the cylinder and flush it with a petroleum base solvent before connecting the Universal Hydraulic Pump.

## Maintenance Instructions

**1** - The reservoir of the Universal Hydraulic Pump was filled with approximately 7.5 liters (2 gallons) of petroleum based hydraulic fluid (Kendall, Four Seasons AW 32 is recommended) to a level of approximately 3/4 full prior to shipping. The reservoir of the control should be checked at least once every six months and maintained at this level. If hydraulic fluid must be added be sure to use petroleum base anti-wear hydraulic fluid with an ISO Viscosity Grade of 22 or 32 and which meets DIN 51524. The following hydraulic fluids are recommended, but any equal hydraulic fluid may also be used:

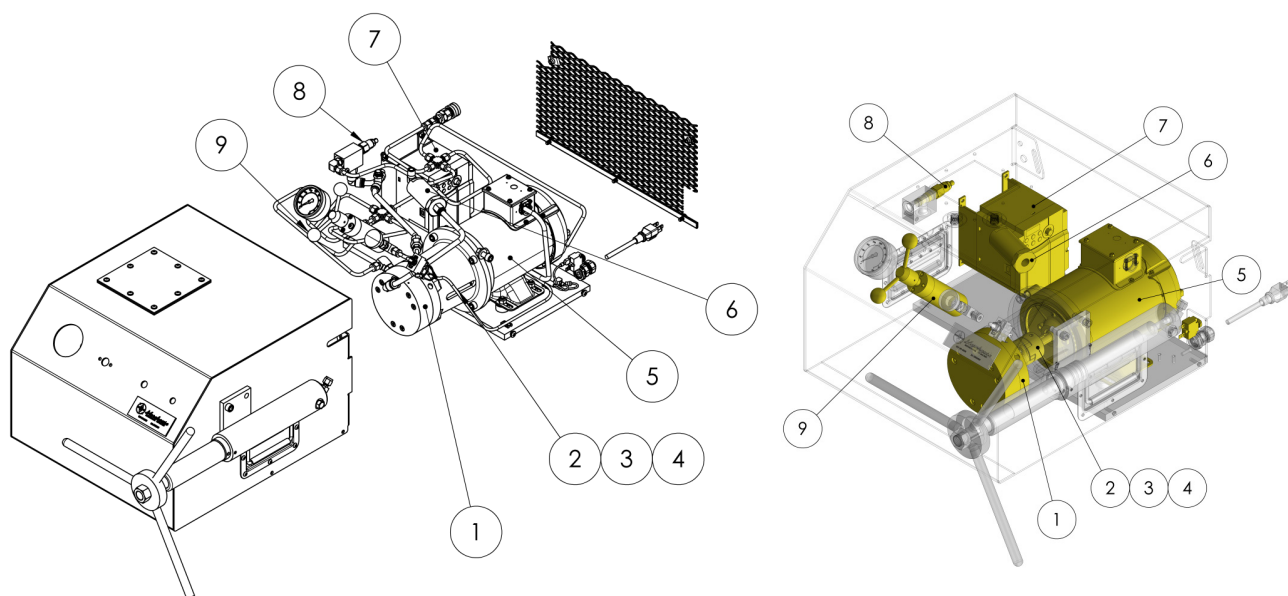
Drydene Oil Co . . . . .	Paradene 22AW
Exxon . . . . .	Nuto H 32
Gulf . . . . .	Harmony 32 AW
Mobil . . . . .	DTE 24
Texaco . . . . .	Rando HD 32

In choosing a hydraulic fluid be certain it is equal to one of the above listed recommendations. Many formulations may lack certain additives or are formulated for special reasons, such as lower cost, high detergency, leakage control, etc. Some of these specialty fluids can be used successfully, however, others may prompt malfunctions and high rates of wear.





## Parts List and Drawings



**Figure 4: Replacement Part Locations**

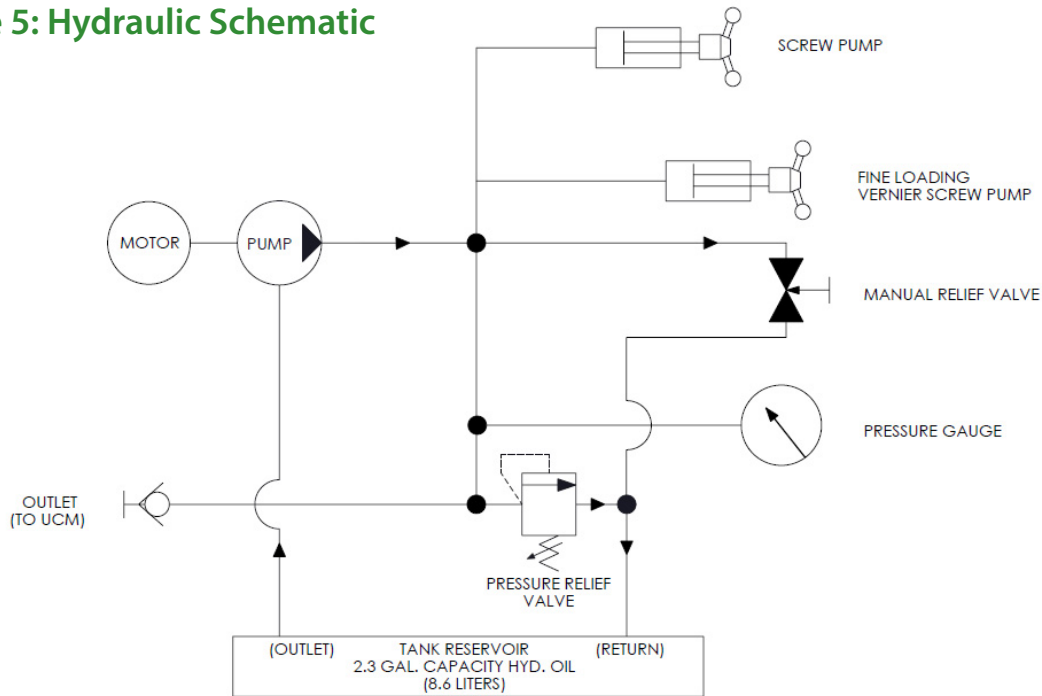
Item	Part Number	Description
1	ZZ-0260	Hydraulic Pump
2	ZZ-0261	Coupling to Motor
3	ZZ-0262	Coupling Rubber Spider
4	ZZ-0263	Coupling to Pump
5	ZZ-0259	Motor
6	ZZ-0326	Oil Filter
7	ZZ-0258	VFD
8	ZH-19-003	Pressure Relief
9	UM-0002	Vernier Screw Pump





## Hydraulic Schematic & Overall Dimensions

**Figure 5: Hydraulic Schematic**



**Figure 6: Overall Dimensions**

