PIPING FOR BASIC HYDRAULIC DEEP HOLE DRILLING CIRCUIT

- Recocking valve
  - 3-way N.O.
  - Air Supply
  - Rear Port Open to Atmosphere

- Quill Clamp Switch
  - Attached to quill clamp and makes contact when drill meets part

- Interlock Switch

- Fast Approach Valve
  - 2-way N.C.

- Flow Control Valves
  - with controlled flow out

- Feed Sol.
  - Retract Sol.

- 4-way 2-position Momentary Contact Hydraulic Valve

- Return Line

- Pressure Line

- Pressure Relief Valve

- Pump Motor
BASIC HYDRAULIC DEEP HOLE DRILLING CIRCUIT

230/460 Volts
3 Phase 60 Cycle
Thru Fused Disconnect

H1 H4
X2   X1

Power On
H2H3
N.O.

2O.L.'S

Line No.  
1  Cycle Start  N.O.  1 CR  2  O.L.'S
2  Emer. Stop  N.O.  4  HPM
3  N.C. Hydraulic Pump Motor  5  HPMF
4  Unit Motor  N.O.  6  UMF
5  Int. Sw.  N.O.  7  UM
6  2CR  8  2CR
7  Feed  N.C.  9  3CR  10  Feed  N.C.
8  11  2CR  12  3CR  13  2CR  14  2CR
9  On Delay  N.O.  15  Quill
10  16  T
11  By Pass Sol.  N.C.  17  Recocking Sol.  N.C.
12  2 Way  N.C.  18  Depth Sw.
13  19  Timer  20  Timer
14  4CR  21  Retract Sol.
15  22  L

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3  Unit Motor  N.O.  6  UMF
4  Int. Sw.  N.O.  7  UM
5  2CR  8  2CR
6  Feed  N.C.  9  3CR  10  Feed  N.C.
7  11  2CR  12  3CR  13  2CR  14  2CR
8  On Delay  N.O.  15  Quill
9  By Pass Sol.  N.C.  16  Recocking Sol.  N.C.
10  2 Way  N.C.  17  Depth Sw.
12  13  14  15  16  17  18  19  20

IMPORTANT
THIS CIRCUIT IS A BASIC METHOD OF CONTROLLING HYPNEUMAT EQUIPMENT.
CHECK LOCAL, STATE, & OSHA REGULATIONS FOR SPECIFIC CIRCUIT REQUIREMENTS.
1. Turn Hydraulic Pump Selector Switch to “ON"

2. Turn Unit Motor Selector Switch to “ON”

3. Push Cycle Start Button
   a. Supplies power to Circuit (1CR)

4. Push Twin Palm Feed Buttons
   a. Valve shifts and unit feeds forward at rapid approach until “Quill Clamp” switch is actuated
   b. Cycle relay (4CR) is energized and held
   c. Recocking Valve is energized and held

5. Quill Clamp Switch is actuated
   a. Deep hole drill Timer (T) is energized and begins timing out

6. Deep hole drill timer (T) times out
   a. Valve shifts and unit rapid retracts
   b. Unit actuates Interlock Relay (2CR)
   c. Valve shifts and unit feeds forward at rapid approach until “Quill Clamp” switch is actuated
   d. Deep hole drill timer (T) is energized and begins timing out

**NOTE:** Operation #6 keeps repeating until Depth Switch is actuated

7. Depth Switch is actuated
   a. Cycle relay (4CR) is dropped out
   b. Valve shifts and unit rapid retracts and stays back
   c. Recocking Valve is dropped out and recocking Cylinder pulls Hydra-Brake to retract position ending cycle

**EMERGENCY STOP**

1. Push Emergency Stop Button
   a. 1CR Master Relay Drops Out
   b. Hydraulic Pump shuts off
   c. Unit motor shuts off and coasts to stop
   d. Valve shifts, but unit cannot retract

2. To return unit to retract position, “Cycle Start” Button must be pressed