



**Use 3/8" 2 Double Extra Strong Seamless Steel Nipple To Support Valve (17) at All Four Tilt Cylinder Ports
See Main Prod Sub-Assembly No. C-60181.

MICROFILMED
AUG 1987
FILE LOCATION C 60181
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- Idle Phase: Tilt Cylinder Rods extended, shift Cylinder Rod retracted, & Clamp Cylinder Rods retracted. Pump is not running. Valves (1) & (2) in Position #2 (Centered). Valve (3) in Position #2 (Spring Off Set), & Valves (4) in Position #2 (P to A & B to T) Coil Filter is loaded with Palletted Coil. Coil #1 is in Position closing #1 Track Switch.
- Motors (1) Drive Pump Shafts supplying oil to system. Pressure is limited by Relief Valve (11). Maximum Pressure must never exceed 1500 PSI.
- In the Forward Shifting Sequence, Solenoid "A" of Valve (12) is energized connecting P to A directing flow to Port "A" of Shift Cylinder (23) through Flow Control Valve (10) & Solenoid Valve (13) to Forward Position into Coil Saddle of Tilter. When Coil stops in Saddle, Pressure builds up in Cylinder tripping Pressure Switch (15) de-energizing Solenoid "A" of Valve (12) which then Spring Centers.
- In the Forward Tilting Sequence, Solenoid "B" of Valve (12) is energized shifting valve to Position #1 connecting P to A & B to T directing Flow to Port "A" of Tilt Cylinders with Pressure Flowing through counterbalance Valves (17) & outgoing counterbalance Valves (17) Piloted open By Pressure requirement of load being lifted by Solenoid of Valve (12) is also energized, shifting valve to Position #1 connecting A to T directing Return Flow from Tilt Cylinders to Tank by-passing Flow Control Valve (10). Halfway thru Tilt (1/2 Position) Limit Switch LS-2 trips, de-energizing Solenoid A of Valve (12) shifting valve to Position #1 connecting P to B & A to T directing Flow to Clamp Cylinders extending them, Clamping Pallet. Limit Switch also de-energizes Solenoid "A" of Valve (12) shifting valve to Position #2 directing return flow from Tilt Cylinders through Flow Control Valve (10).
- At this point, as load passes top position of Balance, the counterbalance Valves (17) at the Piston ends of the Tilt Cylinders must continue to be piloted open by pressurized oil being directed to the Rod End Ports, thus making the Valves serve as a Hydraulic "Choke" if the speed of the descending load tends to over-ride the rate of oil delivery from the Pump. This condition would create a loss of sufficient Pilot Pressure necessary to hold open outgoing Valves (17) thereby permitting them to restrict Flow & hold back the descending load. The net result of this counterbalance system requires that the load be pushed down as well as lifted up, and provides the added safety of holding the load in any position in case of hose or pump failure.
- At end of rotation Limit Switch LS-3 trips, de-energizing Solenoid "B" of Valve (12) & Solenoid A of Valve (12). Limit Switch LS-3 also shuts off motor. Pressure is retained in Clamp Cylinders by Pilot Check Valve (16).
- In the Reverse Tilt Sequence, Solenoid "A" of Valve (12) is energized shifting valve to Position #3 connecting P to A & A to T directing Flow to Port B of Tilt Cylinders. Functions of ingoing & outgoing counterbalance Valves are now reversed, & will provide the same safety of operation in the opposite direction. Solenoid of Valve (12) is also energized shifting valve to Position #1 connecting A to T directing Tilt Cylinder Return Flow to Tank by-passing Flow Control Valve (10). Halfway through Tilt (1/2 Position) Limit Switch LS-2 trips de-energizing Solenoid of Valve (12). Spring shifts valve to Position #2 directing Tilt Cylinder Return Flow thru Flow Control Valve (10). At end of rotation, Limit Switch LS-1 trips, de-energizing Solenoid "A" of Valve (12) (Valve Centers) & energizing Solenoid "B" of Valve (12) Shifting valve to Position #2 directing Flow to Ports "A" of Clamp Cylinders' Unclamping Pallet.
- In the Reverse Shift Sequence, Solenoid "B" of Valve (12) is energized, shifting valve to Position #3 connecting P to B & A to T directing Flow to Port "B" of Shift Cylinder Retracting Rod. At extension of Reverse Position Limit Switch LS-1 trips de-energizing Solenoid "B" of Valve (12) shifting valve to Position #2. Limit Switch also shuts off Pump Motors.

ITEM No.	QUAN REQD	DESCRIPTION
1	2	Electric Motor - 7 1/2 H.P. - Close Coupled Plus 1800 R.P.M. - Frame 218 T - I.E. F.C. Ball Brg. 230/460 Volt - 3 Phase - 60 Cycle
2	1	LITTELL Special 30 Gal. Flat Bottom Tank Sub-Assem. - 4 Way Valve #D60177.
3	2	VICKERS 3/4" In-Line Check Valve #D80P1-06-5
4	2	VICKERS Vane Pump Model #V214-5-1A-12-S211. Delivers 7.12 G.P.M. @ 1250 P.S.I. & 1800 R.P.M.
5	1	VICKERS Pressure Gage #GS-1800.
6	1	MARSH Type 1900-FFA-1/4" - Steel Needle Valve.
7	1	VICKERS 3/4" Double Solenoid Pilot Operated Spring Centered, Closed Center - Sub-Plate Mounted - 4 Way Valve #D05SL-062C-50.
8	1	VICKERS 3/4" Single Solenoid Pilot Operated Spring Ctr. Set Sub-Plate Mounted - 4 Way Valve #D05SL-060AE-50.
9	1	VICKERS 3/4" Sub-Plate Mounted Check Valve #C40-815.
10	2	MANATEL "COLORADO" 1/2" Sub-Plate Mounted Needle Valve 1/2NS-800-5.
11	1	VICKERS 3/8" Double Solenoid Spring Centered Closed Center - Sub-Plate Mounted - 4 Way Valve #D05SL-012C-50.
12	1	VICKERS 3/8" Double Solenoid Sub-Plate Mounted - 4 Way Valve #D05SL-012N-50
13	1	AERQUIP Hose Assem. #A150807-12-35 Each with Adaptor #2021-12-12.
14	4	VICKERS 3/8" Sub-Plate Mounted Pilot Operated Check Valve #UCG-0A-10
15	4	VICKERS 3/4" Pipe Tapped Counterbalance Valve #C1T96-01-10.
16	2	AERQUIP Hose Assem. #A1332-16-33 with Adaptor #2024-16-16.
17	1	VICKERS 3/4" Sub-Plate Mounted Relief Valve #C0-06-C-20.
18	4	AERQUIP Hose Assem. #A150807-6-30 Each with Adaptor #2023-6-6.
19	2	MARVEL Strainer #620-100-1-1/4"NPT.
20	2	PATCON Cylinder Model QH2X-1-5/8MS/1-1/2.
21	2	PATCON Cylinder Model QH2X-3FRH/1-1/2.
22	1	PATCON Cylinder Model QH2-S1-BHR27-NO-COIL-3-1/4 Rod & Std. Thread Extension.
23	1	Vickers Pressure Switch #91-02-20-10-100 to 2000 PSI - Gaskets to be 110V. 1/16" O.Rings.

Note: All electric controls to be 115V, 1ø, 60 HZ

REPLACED BY DWG D-115054 DATED 5/30/74

REV.	1
DATE	5/31/70
BY	W. W.
CHECKED	W. W.
APPROVED	W. W.
TITLE	DIAGRAM - HYDRA
MACHINE	COIL TILT
ORIGINAL ORDER NUMBER	74-715-65
FILE NO.	C 60181