



**HYDROTECH ENGINEERING, INC.**

**7 SARATOGA COURT**

**BEACHWOOD, OHIO 44122**

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## **UPDATE AND MODERNIZE**

**YOUR OUTDATED**

**“HPM” VARIABLE VOLUME PUMP CONTROLS**

**WITH**

***HYDROTECH ENGINEERING’S***

**“FIELD & APPLICATION PROVEN”**

**5-POSITION OR INFINITE POSITION**

**ELECTRO-HYDRAULIC PUMP CONTROLS**

**SERVICING:**

**NORDBERG & ELMES HYDRAULIC PRESSES  
“HPM”, BLISS, VERNON HYDRAULIC PRESSES  
OTHER, FOREIGN & DOMESTIC PRESSES  
SPECIAL HYDRAULIC EQUIPMENT  
NORDBERG & ELWOOD HYDRAULIC VALVES**

**FIELD SERVICES:**

**HYDRAULIC PRESSES  
HYDRAULIC SYSTEMS & CONTROLS  
HYDRAULIC SYSTEM ENGINEERING  
CUSTOM APPLICATION & DESIGN  
REPLACEMENT PARTS & COMPONENTS**



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**APPLICATION BENEFITS, FEATURES AND ACHIEVEMENTS**  
**RESULTING FROM THE INSTALLATION**  
**OF**  
**HYDROTECH 5-POSITION “HPM” PUMP CONTROL ACTUATOR**  
**ON**  
**“HPM” 7R100, 7R20 & 7R400**  
**RADIAL PISTON HYDRAULIC PUMPS**

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**APPLICATION BENEFITS, FEATURES AND ACHIEVEMENTS  
RESULTING FROM THE INSTALLATION OF .....  
HYDRAULIC ENGINEERING, 5-POSITION, ELECTRO-HYDRAULIC PUMP CONTROL  
REFERENCE HYDROTECH ENGINEERING DRAWING NO. CC-9901-090-001**

**GENERAL APPLICATION INFORMATION.....**

THE EXISTING, ORIGINAL "HPM" HYDRO-MECHANICAL PRESS AND PUMP CONTROL SYSTEM WAS DESIGNED IN THE EARLY 1940's. THIS HYDRO-MECHANICAL PRESS AND PUMP CONTROL SYSTEM INCORPORATES THE UTILIZATION OF A SERIES OF MECHANICAL RODS, PIVOTS, CLEVIS' AND INTERCONNECTING LINKAGE. THIS OBSOLETE PUMP CONTROL IS CURRENTLY DIRECTLY TIED TO THE PRESS MOTIONS OR THE PLATEN POSITION. THE MAIN HYDRAULIC PUMP IS NOW MECHANICAL ACTUATING OR STROKED TO INITIATE AND CONTROL ALL PRESS MOTIONS. AS A DIRECT RESULT OF THIS EXISTING HYDRO-MECHANICAL PUMP CONTROL SYSTEM, THE FOLLOWING PRESS ACTIONS AND MOTIONS ARE GENERALLY PRESENT ON MOST "HPM" HYDRAULIC PRESSES AS BUILT IN THE 1940's and 1950's.....

1. IMMEDIATELY FOLLOWING THE STARTING OF THE MAIN ELECTRIC MOTOR, YOUR PRESS WILL MOVE RAPIDLY UP, TO THE FULLY RETURNED POSITION. IN AS MUCH AS THE OPERATOR HAS NOT COMMANDED PRESS MOTION, BUT HAS IN FACT, ONLY COMMANDED "MOTOR START", THIS IS A VERY **UNSAFE** CONDITION, AND IS IN VIOLATION OF CURRENT O.S.H.A. AND ANSI STANDARDS FOR THE SAFE OPERATION OF MACHINE TOOLS AND HYDRAULIC PRESSES.
2. IF THE PRESS OPERATOR INITIATES "EMERGENCY STOP" WHILE OPERATING THIS PRESS, THE PRESS **WILL NOT STOP**, BUT WILL IMMEDIATELY REVERSE AND RETURN RAPIDLY TO THE FULLY RETURNED POSITION. THIS AGAIN, IS A VERY **UNSAFE** CONDITION, AND IS IN VIOLATION OF CURRENT O.S.H.A. AND ANSI STANDARDS FOR THE SAFE OPERATION OF MACHINE TOOLS AND HYDRAULIC PRESSES.

WITH THE INSTALLATION OF THE HYDROTECH ENGINEERING, APPLICATION AND FIELD PROVEN, 5-POSITION, ELECTRO-HYDRAULIC PUMP CONTROL, THE FOLLOWING OPERATING FEATURES AND BENEFITS CAN BE ACHIEVED....

**OPERATOR AND PRESS SAFETY.....**

1. UPON STARTING OF THE ELECTRIC MOTOR, THE MAIN HYDRAULIC PUMP WILL NOW REMAIN IN ITS NEUTRAL OR UN-STROKED POSITION, WITH NO PRESS MOTION, UNTIL SPECIFICALLY COMMANDED BY THE PRESS OPERATOR OR THE PRESS MAIN LOGIC CONTROL SYSTEM.

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**APPLICATION FEATURES**  
**5-POSITION PUMP CONTROL**

2. THE INITIATION OF "EMERGENCY STOP", WILL NOW STOP ALL PRESS MOTION, AND WILL NOT ALLOW THE PRESS TO RETURN UP AS WITH THE EXISTING HYDRO-MECHANICAL SYSTEM.
3. THE LOSS OF ELECTRICAL POWER TO THE MAIN PRESS LOGIC CONTROL SYSTEM WILL RESULT IN AUTOMATICALLY STOPPING ALL PRESS MOTION, WHILE RETURNING THE MAIN HYDRAULIC PUMP TO ITS NEUTRAL AND FULLY DECOMPRESSED POSITION, THUS STOPPING ALL PRESS MOTION.

**EQUIPMENT MODERNIZATION.....**

1. THE EXISTING SYSTEM OF MECHANICAL RODS, PIVOTS, CLEVIS' AND LINKAGE IS FREQUENTLY FOUND TO BE WORN AND OUT OF ADJUSTMENT, REQUIRING SERVICING AND PERIODIC REPLACEMENT.
2. THE HYDROTECH 5-POSITION ELECTRO-HYDRAULIC PUMP CONTROL AND SYSTEM ALLOWS FOR THE TOTAL REMOVAL AND ELIMINATION OF ALL EXISTING MECHANICAL CONTROL LINKAGE.
3. THE MAIN HYDRAULIC PUMP WILL NO LONGER BE STARTED UNDER FULL STROKE AS IT CURRENTLY IS, THUS, GREATLY REDUCING PREMATURE PUMP WEAR, WHILE IMPROVING THE SERVICE LIFE OF YOUR MAIN HYDRAULIC PUMP AND ELECTRIC MOTOR.
4. THE HYDROTECH PUMP CONTROL UNIT, IS A SINGLE SELF CONTAINED PUMP ACTUATOR / CONTROL, DESIGNED TO MOUNT DIRECTLY TO THE EXISTING "HPM" CS-SERVO CONTROL, WITHOUT ANY MODIFICATIONS OR SPECIAL FIELD ADAPTATIONS.

FOR ADDITIONAL INFORMATION, OR TO DISCUSS YOUR SPECIFIC APPLICATION AND OPERATING REQUIREMENTS, PLEASE CONTACT CRAIG, ORUM, HYDROTECH ENGINEERING, INC., AT (216) 831-3833.



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**GENERAL SPECIFICATIONS AND TECHNICAL DESCRIPTION**

***HYDROTECH ENGINEERING***

**5-POSITION "HPM" PUMP CONTROL ACTUATOR**

**FOR**

**"HPM" 7R100, 7R200 & 7R400  
RADIAL PISTON HYDRAULIC PUMPS**

**SERVICING:**

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"HPM", BLISS, VERNON HYDRAULIC PRESSES  
OTHER, FOREIGN & DOMESTIC PRESSES  
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## **GENERAL SPECIFICATIONS AND TECHNICAL DESCRIPTION**

### **HYDROTECH ENGINEERING 5-POSITION, ELECTRO-HYDRAULIC PUMP CONTROL**

HYDROTECH ENGINEERING'S CUSTOM ELECTRO-HYDRAULIC 5-POSITION PUMP CONTROL PACKAGE FOR "HPM" 7R100, 7R200 AND 7R400 RADIAL PISTON HYDRAULIC PUMPS IS ILLUSTRATED ON HYDROTECH DRAWING CC-9901-091-001.....

THIS UNIQUE PUMP CONTROL PACKAGE WOULD BE A DIRECT CONVERSION AND REPLACEMENT FOR THE EXISTING PUMP ACTUATING / OPERATING CYLINDER TOGETHER WITH ALL OF THE ASSOCIATED MECHANICAL CONTROL LINKAGE, AND WOULD PROVIDE FIVE PRE-ESTABLISHED, NON-ADJUSTABLE PUMP STROKE OR PRESS SPEED SETTINGS TO PROVIDE THE FOLLOWING PRESS OPERATION AND CONTROL FUNCTIONS:

1. FAST PRESS DOWN AND/OR MAXIMUM PRESSING SPEED
2. SLOW PRESS DOWN AND/OR REDUCED / SLOW PRESSING SPEED
3. ALL SOLENOIDS DE-ENERGIZED . . . . PRESS IS STOPPED, WITH THE "HPM" PUMP IN THE NEUTRAL POSITION, WHILE DE-COMPRESSING THE HYDRAULIC SYSTEM TO MINIMUM PRESSURE
4. SLOW PRESS RETURN UP, AT SLOW SPEED
5. FAST PRESS RETURN UP AT MAXIMUM PRESS RETURN SPEED

THIS PUMP CONTROL PACKAGE, WHILE NOT ADJUSTABLE, WOULD BE CONVENIENTLY CHANGEABLE THROUGH INTERNAL COMPONENT CHANGES OR FIELD MODIFICATIONS IF DESIRED. SPECIFICALLY, THIS PACKAGE WOULD INCLUDE THE FOLLOWING COMPONENTS:

- (1) SPECIAL 5-POSITION HYDRAULIC ACTUATING CYLINDER ASSEMBLY AS ILLUSTRATED ON HYDROTECH ENGINEERING DRAWING NO. CC-9901-091-010.
- (1) 4-VALVE CONTROL VALVE MANIFOLD, COMPLETE WITH (4) SOLENOID OPERATED, 2-POSITION, 4-WAY DIRECTIONAL CONTROL VALVES.
- (1) STANDARD STRAIGHT OR DIRECT CYLINDER TO PUMP SERVO HOUSING ADAPTER SUPPORT MOUNTING, AS SHOWN ON THE ATTACHED HYDROTECH ENGINEERING DRAWING NO. CC-9901-091-010.

---OR---

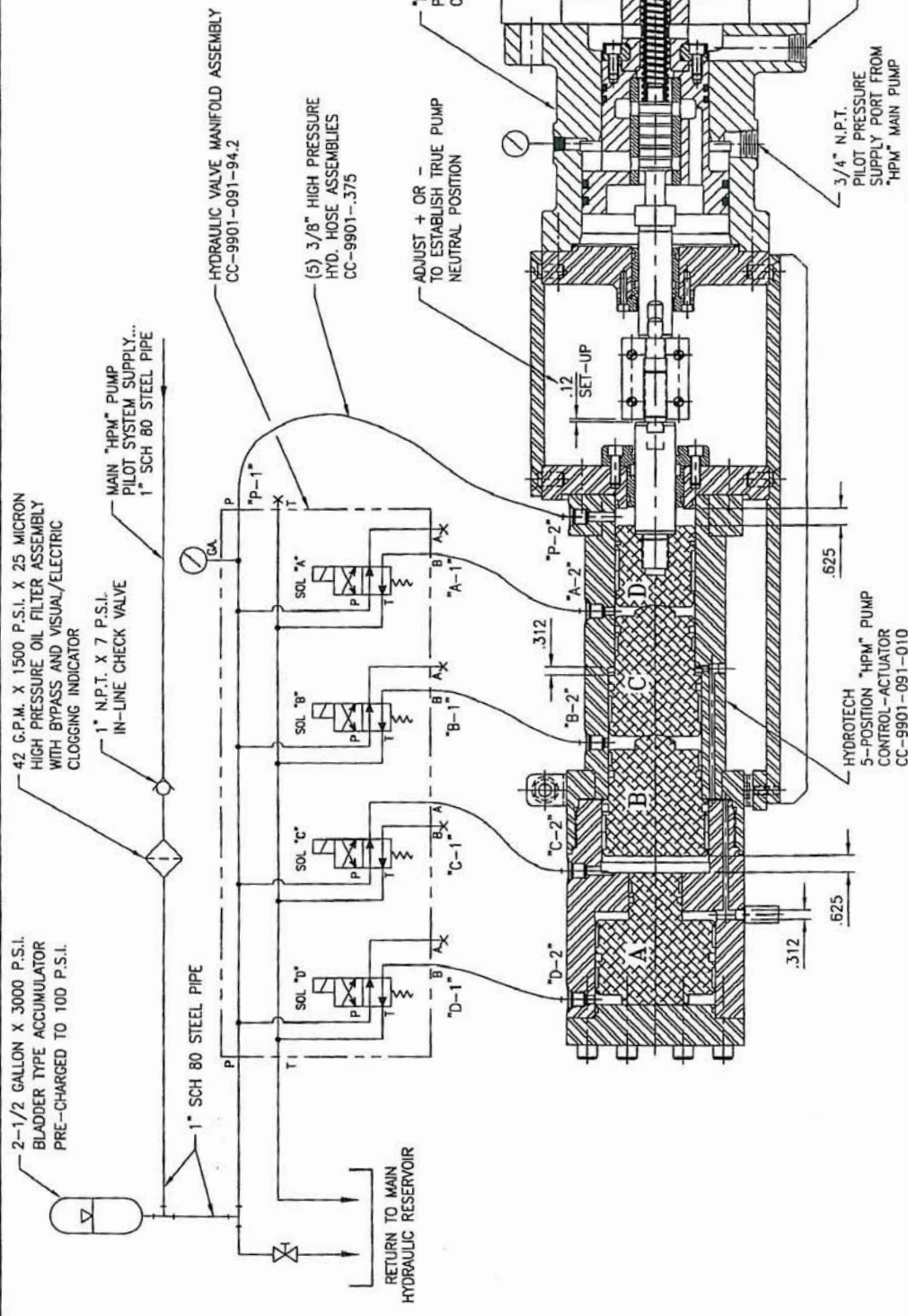
- (1) OPTIONAL, 90° RIGHT ANGLE, CYLINDER TO PUMP SERVO HOUSING ADAPTER SUPPORT AS ILLUSTRATED ON HYDROTECH ENGINEERING DRAWING NO. CC-9901-091-020.
- (1) ACTUATING CYLINDER TO PUMP SERVO ACTUATOR CONTROL ADJUSTABLE COUPLING ASSEMBLY.

**PAGE 2**  
**SPECIFICATIONS FOR**  
**5-POSITION PUMP CONTROL**

- (5) 3/8" HIGH PRESSURE HOSE ASSEMBLIES, FOR THE INTERCONNECTION BETWEEN THE 4-VALVE MANIFOLD AND THE 5-POSITION PUMP CONTROL CYLINDER, AS ILLUSTRATED ON HYDROTECH ENGINEERING DRAWING NO. CC-9901-091-001. ACTUAL LENGTHS OF THESE HOSE ASSEMBLIES SHALL BE AS DEFINED AND SPECIFIED BY THE CUSTOMERS INSTALLATION.
- (1) 1" NPT x 7 PSI IN-LINE CHECK VALVE
- (1) LARGE / HIGH CAPACITY 25 MICRON OIL FILTER ASSEMBLY.
- (1) 2-1/2 GALLON BLADDER ACCUMULATOR

IN ADDITION TO THE SPECIFIED COMPONENTS, HYDROTECH, ENGINEERING WILL FURNISH ALL NECESSARY AND REQUIRED INSTALLATION, MAINTENANCE AND COMPLETE SERVICE DOCUMENTATION, TO SUPPORT THE INSTALLATION AND SERVICE OF THE HYDROTECH 5-POSITION PUMP CONTROL PACKAGE. THIS DOCUMENTATION SHALL ALSO INCLUDE THE NECESSARY MODIFICATIONS AND INTERFACE ENGINEERING THAT WILL BE REQUIRED TO INTEGRATE THE PROPOSED PUMP CONTROL INTO THE CUSTOMERS ELECTRICAL PRESS LOGIC CONTROL SYSTEM.

THIS DRAWING INCLUDING ALL TECHNICAL MODEL AND MANUFACTURING INFORMATION IS THE EXCLUSIVE AND PROPRIETARY PROPERTY OF HYDROTECH ENGINEERING, INC. NO PART OF THIS DRAWING IS TO BE REPRODUCED, COPIED OR USED FOR ANY PURPOSE EXCEPT THAT FOR WHICH IT HAS BEEN LOANED. UNLESS PRIOR WRITTEN PERMISSION HAS BEEN RECEIVED FROM HYDROTECH ENGINEERING, INC. AND SHALL BE RETURNED UPON DEMAND BY THE OWNER.



		PUMP CONTROL ASSEMBLY	
		HPM 7R200 PUMP SERVO CONTROL OPERATOR	
DRAWN	JVP	NEXT ASST.	REV.
CHECKED		USED ON	
DESIGN			
HARDNESS			
SURFACE COATING			
FILE I.D.	9901-000	SCALE	1:4 SHEET
DATE	12/17/01		SIZE
			CC-9901-091-001



