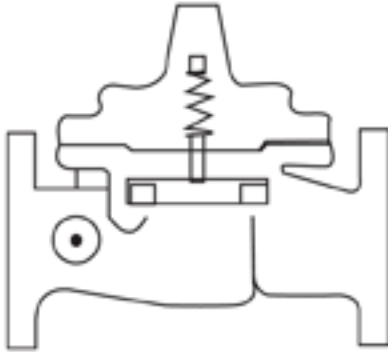


CLA-VAL

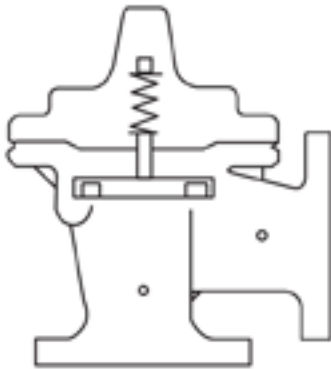
AUTOMATIC CONTROL VALVES

60-08/660-08

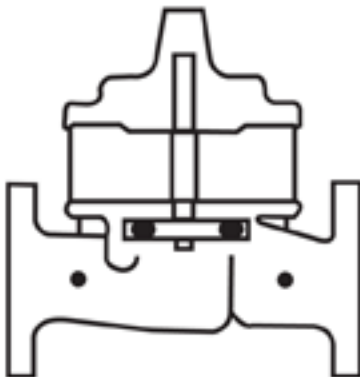
Place this manual with personal responsible
for maintenance of this valve



INSTALLATION



OPERATION



MAINTENANCE





NEWPORT BEACH, CALIFORNIA

CATALOG NO.
60-08/660-08

DRAWING NO.
95047

REV.
D

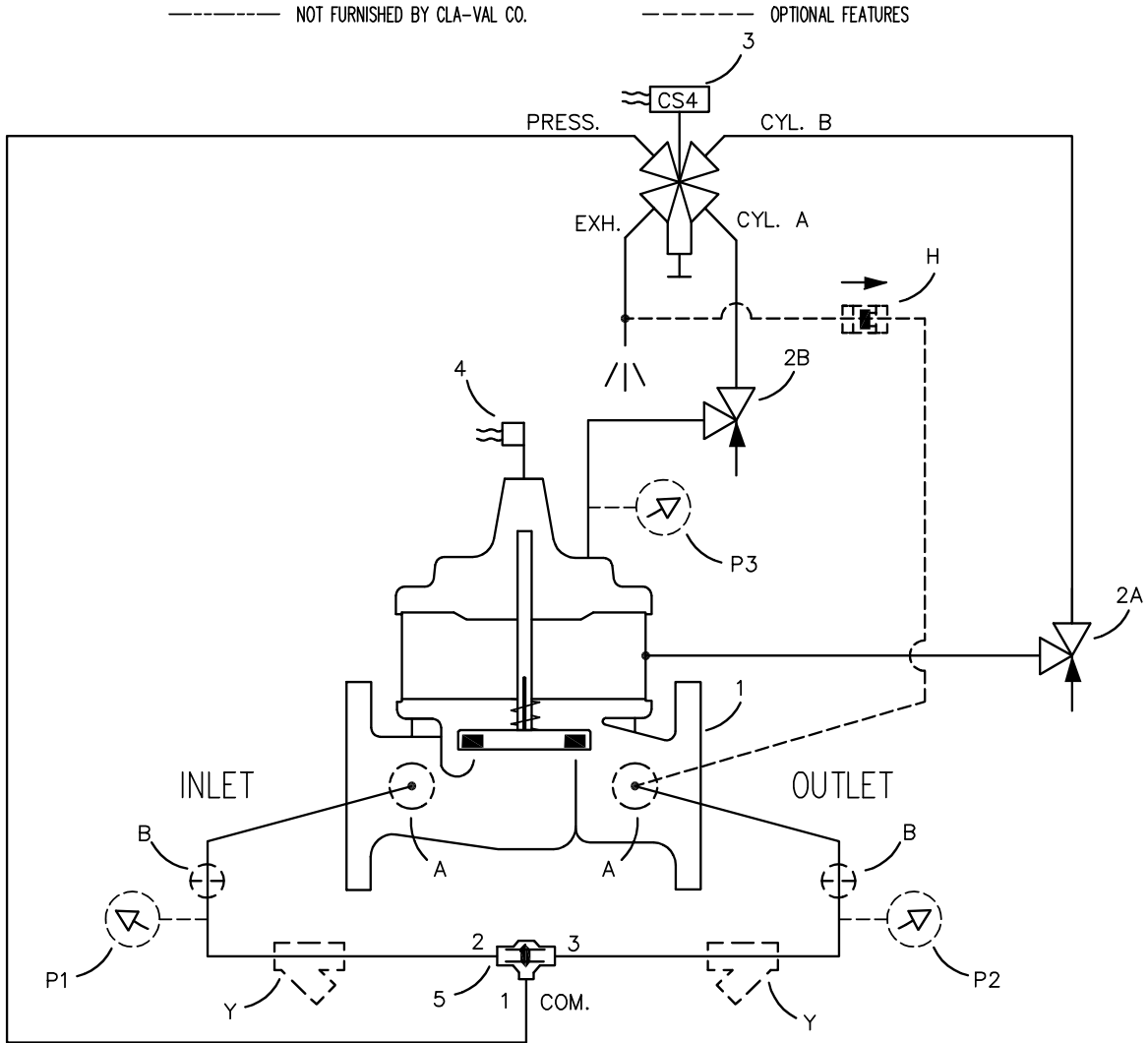
TYPE OF VALVE AND MAIN FEATURES

PUMP CONTROL VALVE
(EQUIPPED WITH HIGH CAPACITY SOLENOID)

DESIGN		
DRAWN	LFH	8-9-82
CHK'D	KD	8-18-82
APVD	C.H.	8-24-82

C ADDED OPTIONAL FEATURE P (ECO 21821)
D ADDED OPTIONAL FEATURE H (NED 64626)

LTR	DESCRIPTION	BY	DATE
		I.C.	TLC
A	SEE REVISION FILE		2-18-91
B	COMBINED & INCLUDED 660-08, DWG 21882 (ECO 14350)		1-7-94



ITEM NO.	BASIC COMPONENTS	QTY
1	100-03 POWERCHECK (60-08) MAIN VALVE 100-22 POWERCHECK (660-08) MAIN VALVE	1
2	CV FLOW CONTROL	2
3	CS4SM SOLENOID CONTROL	1
4	X105LCW SWITCH ASSEMBLY	1
5	CVS-1 SHUTTLE VALVE	1

OPTIONAL FEATURE SUFFIX	ADDED TO CATALOG NUMBER	QTY
A	X46A FLOW CLEAN STRAINER	2
B	CK2 COCK (ISOLATION VALVE)	2
H	CDC CHECK VALVE	1
P	X141 PRESSURE GAUGE	3
Y	X43 "Y" STRAINER	2

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DESIGN

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8-24-82

OPERATING DATA

I. SOLENOID CONTROL FEATURE:

SOLENOID CONTROL (3) IS A DIRECT ACTING, 4-WAY SOLENOID CONTROL THAT CHANGES POSITION WHEN THE COIL IS ENERGIZED OR DE-ENERGIZED. THIS APPLIES OR RELIEVES PRESSURE IN THE COVER CHAMBER OR POWERUNIT CHAMBER OF THE MAIN VALVE PROVIDING THE OPERATION SHOWN IN THE FOLLOWING TABLE:

SOLENOID CONTROL (3)		MAIN VALVE COVER CHAMBER	MAIN VALVE POWERUNIT CHAMBER	MAIN VALVE (1) POSITION
POSITION	PORTS CONNECTED			
ENERGIZED	"PRESS." & "CYL.B" "CYL.A" & "EXH."	PRESSURE RELIEVED	PRESSURE APPLIED	OPEN
DE-ENERGIZED	"PRESS." & "CYL.A" "CYL.B" & "EXH."	PRESSURE APPLIED	PRESSURE RELIEVED	CLOSED

NOTE: SOLENOID CONTROL (3) IS EQUIPPED WITH A MANUAL ACTUATOR WHICH CAN BE USED TO OPERATE THE SOLENOID WITHOUT ELECTRICAL POWER. AFTER MANUAL ACTUATION, ALWAYS RETURN THE ACTUATOR TO ITS ORIGINAL POSITION OR THE SOLENOID WILL NOT RETURN TO THE DE-ENERGIZED POSITION.

II. DUAL SUPPLY FEATURE:

WHEN MAIN VALVE (1) INLET PRESSURE EXCEEDS OUTLET PRESSURE, SHUTTLE VALVE (5) SHIFTS INTERCONNECTING PORTS 1 AND 2. WHEN MAIN VALVE (1) OUTLET PRESSURE EXCEEDS INLET PRESSURE, SHUTTLE VALVE (5) SHIFTS INTERCONNECTING PORTS 1 AND 3. THIS DIRECTS THE HIGHEST PRESSURE INTO THE PILOT SYSTEM.

III. OPENING SPEED CONTROL:

FLOW CONTROL (2B) CONTROLS THE OPENING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE OPEN SLOWER.

IV. CLOSING SPEED CONTROL:

FLOW CONTROL (2A) CONTROLS THE CLOSING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE CLOSE SLOWER.

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

BY

DESCRIPTION

SEE SHEET 1.

LTR



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DESIGN

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APVD

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8-24-82

OPERATING DATA-CONTINUED

V. SWITCH ASSEMBLY FEATURE:

SWITCH ASSEMBLY (4) IS ACTUATED BY A STEM EXTENSION ATTACHED TO THE MAIN VALVE STEM. THE SWITCH ASSEMBLY IS FACTORY ADJUSTED TO ACTUATE A SINGLE-POLE, DOUBLE-THROW SWITCH WHEN THE MAIN VALVE IS ALMOST CLOSED. WHEN THE MAIN VALVE STARTS TO OPEN, THE SPRING LOADED SWITCH ACTUATING LEVER IS RELEASED AND RETURNS THE SWITCH TO ITS NORMAL POSITION.

VI. CHECK VALVE FEATURE:

THE MAIN VALVE (1) HAS AN INTEGRAL CHECK FEATURE. WHEN OUTLET PRESSURE EXCEEDS INLET PRESSURE, THE MAIN VALVE CLOSSES PREVENTING REVERSE FLOW.

VII. OPTIONAL FEATURE OPERATING DATA:

SUFFIX A (FLOW CLEAN STRAINER)

A SELF-CLEANING STRAINER IS INSTALLED IN THE MAIN VALVE INLET BODY BOSS WHICH PROTECTS THE PILOT SYSTEM FROM FOREIGN PARTICLES.

SUFFIX B (ISOLATION VALVES)

CK2 COCKS (B) ARE USED TO ISOLATE THE PILOT SYSTEM FROM MAIN LINE PRESSURE. THESE VALVES MUST BE OPEN DURING NORMAL OPERATION.

SUFFIX H (PILOT DRAIN TO OUTLET)

CDC CHECK VALVE (H) IS USED WHEN PILOT DRAIN TO ATMOSPHERE IS NOT DESIRED. WHEN OUTLET PRESSURE IS HIGHER THAN INLET PRESSURE, CHECK VALVE (H) CLOSSES.

SUFFIX P (PRESSURE GAUGE):

PRESSURE GAUGES (P) PROVIDE PRESSURE READING IN THE INLET, OUTLET AND COVER CONNECTIONS.

SUFFIX Y (Y-STRAINER)

TWO Y-PATTERN STRAINERS ARE INSTALLED IN THE PILOT SUPPLY LINE TO PROTECT THE PILOT SYSTEM FROM FOREIGN PARTICLES. THE STRAINER SCREENS MUST BE CLEANED PERIODICALLY.

VIII. CHECK LIST FOR PROPER OPERATION:

- () SYSTEM VALVES OPEN UPSTREAM AND DOWNSTREAM.
- () AIR REMOVED FROM THE MAIN VALVE COVER AND PILOT SYSTEM AT ALL HIGH POINTS.
- () CK2 COCKS (B) OPEN DURING NORMAL OPERATION (OPTIONAL FEATURE).
- () PERIODIC CLEANING OF STRAINERS (Y) IS RECOMMENDED (OPTIONAL FEATURE).
- () CORRECT VOLTAGE TO SOLENOID CONTROL (3).
- () MANUAL OPERATOR OF SOLENOID CONTROL (3) DISENGAGED.
- () CV FLOW CONTROLS (2A) & (2B) OPEN AT LEAST 4 TURNS.

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DESCRIPTION

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LTR

SEE SHEET 1.



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