



**CLA-VAL CO.**

NEWPORT BEACH, CALIFORNIA

CATALOG NO.

43-37/643-37

DRAWING NO.

203197

REV

C

TYPE OF VALVE AND MAIN FEATURES

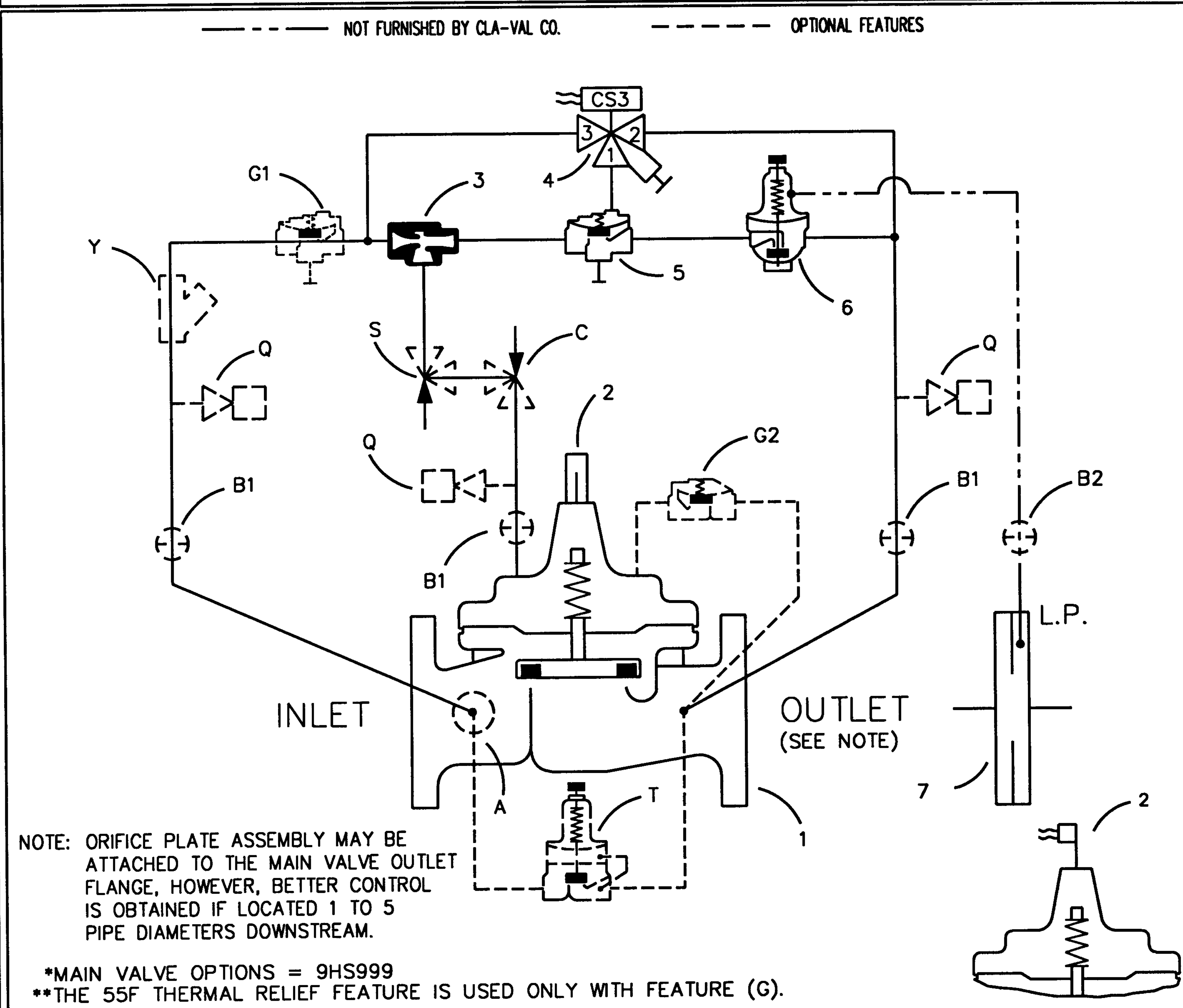
COMBINATION RATE OF FLOW AND SOLENOID SHUTOFF VALVE

**AVIATION FUELING**

DRAWN	AK	9-05-02
CHK'D	VL	9-17-02
APVD	CH	9-19-02

11-1-04	VL	11-1-04
8-18-2005	R	8-18-2005
B	REVISED PILOT LINE CONNECTING FROM ITEM G1 TO ITEM 4 (NED 49199)	
C	ADDED OPTIONAL B-FEATURE (ECO 20266)	

CAD REVISION RECORD - DO NOT REVISE MANUALLY	BY	DATE
	AK	9-05-02
	AK	10-25-04
LTR	-	A
DESCRIPTION		
RELEASED FOR PRODUCTION (NED 47319)		
ADDED 600 SERIES (NED 49163)		



NOTE: ORIFICE PLATE ASSEMBLY MAY BE ATTACHED TO THE MAIN VALVE OUTLET FLANGE, HOWEVER, BETTER CONTROL IS OBTAINED IF LOCATED 1 TO 5 PIPE DIAMETERS DOWNSTREAM.

\*MAIN VALVE OPTIONS = 9HS999  
 \*\*THE 55F THERMAL RELIEF FEATURE IS USED ONLY WITH FEATURE (G).

ITEM NO.	BASIC COMPONENTS	QTY	OPTIONAL FEATURE SUFFIX	ADDED TO CATALOG NUMBER	QTY
1	*100-34 HYTROL (43-37) MAIN VA. (REVERSE FLOW)	1	T	**55F THERMAL RELIEF CONTROL	1
	*100-37 HYTROL (643-37) MAIN VA. (REVERSE FLOW)		Y	X43 "Y" STRAINER	1
2	X101 VALVE POSITION INDICATOR	1			
	X105L SWITCH ASSEMBLY (OPTIONAL)				
3	X47A EJECTOR	1			
4	CS3XM SOLENOID CONTROL	1			
5	100-01 HYTROL (REVERSE FLOW)	1			
6	CDHS18 DIFFERENTIAL CONTROL	1			
7	X52A-1/X52E ORIFICE PLATE ASSEMBLY	1			
A	X46A FLOW CLEAN STRAINER	1			
B	CK2 COCK (ISOLATION VALVE)	4			
C	CV FLOW CONTROL (CLOSING)	1			
G	81-01 CHECK VALVE	2			
Q	QUICK CONNECT ASSEMBLY	3			
S	CV FLOW CONTROL (OPENING)	1			

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SOLENOID SHUTOFF VALVE**AVIATION FUELING**

DRAWN AK 9-05-02

CHK'D VL 9-17-02

APVD CH 9-19-02

OPERATING DATAI. SOLENOID CONTROL FEATURE:

SOLENOID CONTROL (4) IS A DIRECT ACTING, 3-WAY SOLENOID CONTROL THAT CHANGES POSITION WHEN THE COIL IS DE-ENERGIZED OR ENERGIZED. THIS APPLIES OR RELIEVES PRESSURE IN THE COVER CHAMBER OF AUXILIARY HYTROL (5), PROVIDING THE OPERATION SHOWN IN THE FOLLOWING TABLE:

SOLENOID CONTROL (4)		AUXILIARY HYTROL (5) POSITION	MAIN VALVE (1) POSITION
POSITION	PORTS CONNECTED		
ENERGIZED	1 & 2	OPEN	OPEN UNDER COMMAND OF CONTROL (6)
DE-ENERGIZED	1 & 3	CLOSED	CLOSED

NOTE: SOLENOID CONTROL (4) 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. RATE OF FLOW FEATURE:

PRESSURE DIFFERENTIAL CONTROL (6) IS NORMALLY OPEN AND RESPONDS TO DIFFERENTIAL PRESSURE CHANGES SENSED ACROSS ORIFICE PLATE ASSEMBLY (7). AN INCREASE IN DIFFERENTIAL PRESSURE TENDS TO CLOSE CONTROL (6) AND A DECREASE IN DIFFERENTIAL PRESSURE TENDS TO OPEN CONTROL (6). THIS CAUSES MAIN VALVE COVER PRESSURE TO VARY AND THE MAIN VALVE MODULATES (OPENS AND CLOSES) MAINTAINING A RELATIVELY CONSTANT RATE OF FLOW. PRESSURE DIFFERENTIAL CONTROL (6) ADJUSTMENT: TURN THE ADJUSTING SCREW CLOCKWISE TO INCREASE THE RATE OF FLOW.

III. BASIC COMPONENTS OPTIONAL FEATURE OPERATING DATA:SWITCH ASSEMBLY FEATURE:

SWITCH ASSEMBLY (2) 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 OPEN/CLOSED. WHEN THE MAIN VALVE STARTS TO CLOSE/OPEN, THE SPRING LOADED SWITCH ACTUATING LEVER IS RELEASED AND RETURNS THE SWITCH TO ITS NORMAL POSITION.

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DESCRIPTION

SEE SHEET 1

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OPERATING DATA - CONTINUED

 IV. 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 C (CLOSING SPEED CONTROL)

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

SUFFIX G (CHECK FEATURE)

WHEN OUTLET PRESSURE IS GREATER THAN INLET PRESSURE, CHECK VALVE (G2) OPENS AND PERMITS THE HIGHER OUTLET PRESSURE TO CLOSE THE MAIN VALVE, CHECK VALVE (G1) CLOSSES AND PREVENTS FLOW OUT OF THE MAIN VALVE COVER TO THE INLET.

SUFFIX Q (QUICK CONNECT ASSEMBLY)

QUICK CONNECT ASSEMBLIES (Q) ALLOW PRESSURE GAGES TO BE EASILY CONNECTED OR DISCONNECTED TO THE VALVE PILOT SYSTEM.

SUFFIX S (OPENING SPEED CONTROL)

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

SUFFIX T (THERMAL RELIEF CONTROL)

THE THERMAL RELIEF FEATURE IS USED ONLY WITH A CHECK FEATURE (SUFFIX G). WHEN MAIN VALVE OUTLET PRESSURE EXCEEDS MAIN VALVE INLET PRESSURE AND THE OUTLET PRESSURE REACHES THE SET POINT OF CONTROL (T), IT OPENS. THIS RELIEVES THE HIGHER MAIN VALVE OUTLET PRESSURE TO THE MAIN VALVE INLET.

SUFFIX Y (Y-STRAINER)

A Y-PATTERN STRAINER IS INSTALLED IN THE PILOT SUPPLY LINE TO PROTECT THE PILOT SYSTEM FROM FOREIGN PARTICLES. THE STRAINER SCREEN MUST BE CLEANED PERIODICALLY.

 V. 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.
- ( ) PERIODIC CLEANING OF STRAINER (Y) IS RECOMMENDED (OPTIONAL FEATURE).
- ( ) CK2 COCKS (B) OPEN DURING NORMAL OPERATION (OPTIONAL FEATURE).
- ( ) CV FLOW CONTROLS (C) & (S) OPEN AT LEAST 4 TURNS (OPTIONAL FEATURE).
- ( ) CORRECT VOLTAGE TO SOLENOID CONTROL (4).
- ( ) MANUAL OPERATOR OF SOLENOID CONTROL (4) DISENGAGED.
- ( ) ORIFICE PLATE ASSEMBLY (7) ASSEMBLED DOWNSTREAM OF THE MAIN VALVE, BETWEEN 1 AND 5 PIPE DIAMETERS IN DISTANCE. (SEE NOTE)

NOTE: ORIFICE PLATE ASSEMBLY MAY BE ATTACHED TO THE MAIN VALVE OUTLET FLANGE, HOWEVER, BETTER CONTROL IS OBTAINED IF LOCATED 1 TO 5 PIPE DIAMETERS DOWNSTREAM.

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