Executive Order G-70-70-AC

Exhibit 4

Specifications for Healy System with Central Vacuum Unit
((Model 8500 Multi-Jet or 9000 Mini-Jet)

Drawings of typical installations of Healy vapor recovery systems with a central vacuum unit are shown in Figures 4-A, 4-B, 4-C, 4-D, 4-E, 4-F and 4-G.

Nozzles

1. Systems with a central vacuum unit for which the normal operating range of the vacuum level is -30" to -40" water column may be used only with Model 200 nozzles. Systems with a central vacuum unit for which the normal operating range of the vacuum level is -60" to -80" water column may be used with Model 400 or Model 200(X) nozzles. 200(X) designates Model 200 nozzles which have been modified, by the manufacturer or designated representative only, to operate properly at the higher vacuum level setting. These nozzles have an "X" stamped on the nozzle body following the serial number.

2. Leaded and unleaded nozzle spouts are interchangeable.

3. The nozzle must shut off at a vacuum of -10 inches water column or less and at a pressure of +10 inches water column or greater.

4. Flow rate is limited to 10 gallons or less per minute.

5. The normal operating range in the nozzle boot is -1/4 inch water column to zero (atmospheric pressure). Readings taken during a fueling of at least ten gallons, excluding the first gallon and the last gallon dispensed, should be relatively stable. Fluctuations (except during the first or last gallon) indicate a defective nozzle. A vacuum of -1/2 inch or more, or a pressure of 1/4 inch or more, indicate a defective nozzle or system. (Note: vacuum or pressure levels outside of the specified range may occur when properly functioning equipment is affected by the following conditions. Gasoline dispensed into a vehicle fuel tank which is significantly warmer than the dispensed fuel may cause a vacuum of several inches. Conversely, gasoline dispensed into a vehicle tank which is significantly cooler than the dispensed fuel may temporarily cause pressure as high as 1/2 inch water column. The effects of temperature differential will be most pronounced at the beginning of the fueling operation and tend to gradually disappear toward the end of the fueling operation.)

Central Vacuum Unit

1. Gasoline that flows to the Multi-Jet must be first strained by a filter approved by the manufacturer. The Mini-Jet is direct-coupled to the submerged turbine pump and it has a factory-installed strainer.

2. Any installation with a central vacuum unit which was installed after July 1, 1992, must incorporate a vapor flow control mechanism designed to allow the vapor return line from the dispenser to the central vacuum unit to open only when product dispensing is initiated. The approved vapor flow control mechanisms are listed in Exhibit 1 of this Order. Either the CX6 vapor adaptor or the flow control valve may be used to meet the requirement of this section; the use of both together is neither required nor prohibited. The CX6 vapor adaptor shall be installed as shown in Figure 4-A. The flow control valve shall be installed as shown in Figures 4-F and 4-G.

Coaxial Hose

1. The length of the coaxial hose shall not exceed 13 feet.

2. A swivel is required on the nozzle end of the coaxial hose. A swivel on the dispenser end of the coaxial hose is optional.

Model 143 Control Valve

1. The Healy Model 143 control valve is included with the Model 9000-02 Mini-Jet to prevent siphon loss when the pump is turned off. The Model 8500 Multi-Jet and the Model 9000-001 Mini-Jet do not have built-in siphons. These units may be installed only when the submerged turbine has a siphon available for gasoline condensate removal.

Vapor Line

1. All vapor return lines must be sloped 1/8 inch per foot minimum.

2. The riser must be 16 inches or longer and have an inside diameter of no less than 3/4 inch. One-inch inside diameter riser is required with multi-product dispensers. Locate the 1-inch riser with double swing connection to the 2-inch run for best mounting position inside a multi-product dispenser. Allow for 1/2-inch outside diameter copper gasoline tie-in to the regular or lowest octane riser. When a swing joint is used in a riser containing a shear connection, the riser must be rigidly supported.

3. All vapor return and vent piping shall be provided with swing joints at each tank connection, and at the base of the vent riser where it fastens to a building or other structure.

Tank Vents

1. Vent pipes shall be adequately supported throughout their length and when they are supporting weights in addition to their own, additional supports may be required; anchor to building or other structure.

2. Tank vent pipes shall be manifolded at a height not less than 12 feet above the driveway surface used for Phase I tank truck filling operations. A single vertical outlet pipe above the manifold shall be equipped with a pressure/vacuum (P/V) valve. The P/V valve shall be Board certified at a pressure setting of 2 to 3 inches water column and

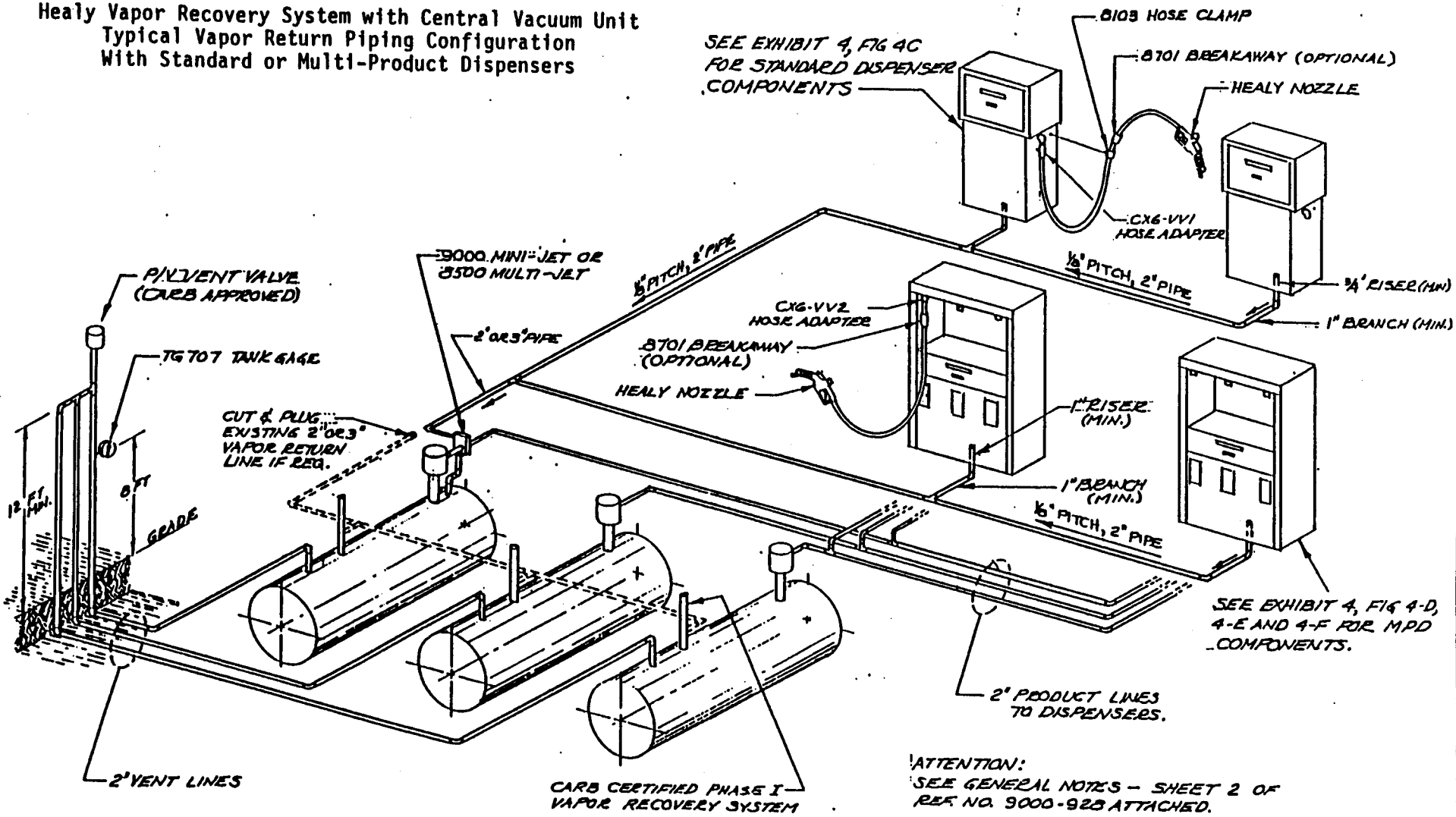
a vacuum setting of -1/2 ounce (-0.8") to -8 inches water column. For systems installed before July 1, 1992, and for which the normal operating range of the vacuum level is -15" to -40" water column, a Board certified P/V valve with a pressure setting of 1 inch may be used. The outlet shall vent upward and be located to eliminate the possibility of vapors accumulating or traveling to a source of ignition or entering adjacent buildings.

3. A Board-approved or district-approved leak test is recommended for all new or modified installations. In addition to any tests which may be required by the local district, the following requirements are made a condition of certification for any installation with a central vacuum unit which was installed or modified to increase the vacuum level setting after July 1, 1992, or for any installation with a central vacuum unit for which the normal operating level is -40" water column or greater. The owner or operator of the installation shall conduct the leak test in Exhibit 5 of this Order at least once in each twelve month period. Test results which demonstrate that the installation is leak free as specified in Exhibit 5 shall be submitted to the local district. The local district may impose more stringent test frequency requirements or test procedures.

Executive Order G-70-70-AC

Figure 4-A

Healy Vapor Recovery System with Central Vacuum Unit
Typical Vapor Return Piping Configuration
With Standard or Multi-Product Dispensers



ATTENTION:
SEE GENERAL NOTES – SHEET 2 OF REF. NO. 9000-928 ATTACHED.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ORIG. ISSUE	4-13-92	JWH

BREAK ALL SHARP CORNERS — DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE SPECIFIED TOLERANCES ON FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1°

MATERIALS

HEAT TREATMENT

FINAL PROTECTIVE FINISH

ORIGINAL ISSUE DATE
DWN JWH DATE 4/13/92
CHKD DATE
APPD DATE
SUBMITTED
CLIENT C.E. INC.

HEALY SYSTEM PIPING

SCALE ~ NO REQ'D

HEALY SYSTEMS, INC.
17 Hampshire Drive
Hudson, New Hampshire 03051

DWG NO C 9000-928
CODE SHEET 1 OF 2

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ORIG. ISSUE	4/13/92	JNH

GENERAL NOTES

1. TEST ALL VAPOR PIPING FROM DISPENSER TO TANK PER HEALY VAPOR RETURN TIGHTNESS TEST PROCEDURE AND DWG. 9001-111 ATTACHED.

2. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. THIS PLAN SHOWS A GENERAL ARRANGEMENT AND IS INTENDED AS A GUIDELINE FOR TYPICAL SINGLE, DUAL, OR MULTIPRODUCT DISPENSERS USING CENTRAL VACUUM VAPOR RECOVERY EQUIPMENT. THE GENERAL ARRANGEMENT SHALL BE MODIFIED TO SUIT INDIVIDUAL INSTALLATION AND CONDITIONS AND IS NOT TO BE USED FOR ACTUAL DESIGN AND INSTALLATION.

3. INSTALLATION SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS SPECIFIED HEREIN, CALIFORNIA AIR RESOURCES BOARD REGULATIONS, CALIFORNIA STATE FIRE MARSHAL REGULATIONS, SUB-CHAPTER 11.5 AND LOCAL APCD RULES.

4. ALL PIPING AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. METAL PIPE SHALL BE MINIMUM SCHEDULE 40 WELDED OR SEAMLESS STEEL PIPE PER ASTM A-53, GALVANIZED, AND FITTINGS SHALL BE 1500 SCREWED MALLEABLE IRON, GALVANIZED. ALL NON-METALLIC PIPE AND FITTINGS SHALL BE UL APPROVED.

5. VAPOR RETURN LINES AND VENT LINES TO BE 2" DIAMETER PIPE UNLESS OTHERWISE NOTED. SLOPE MUST BE MINIMUM 1/8" PER FOOT, WITHOUT SAGS OR TRAPS, DRAINING UNIFORMLY TOWARD PRODUCT STORAGE TANK.

6. VENT LINES MUST BE SEPARATED BY PRODUCT.

7. ALL VAPOR PIPING TRENCHING MUST BE COMPACTED TO 90% UNDISTURBED SOIL BEFORE THE PIPES ARE INSTALLED AND BACKFILLED WITH SAND AT LEAST SIX INCHES BELOW AND ABOVE THE PIPING.

8. THE VAPOR RETURN PIPE SHOULD ENTER A SEPARATE UNDERGROUND TANK OPENING FROM THAT CONNECTED TO THE VENT PIPE OR STAGE I PIPING.

9. PRESSURE/VACUUM VALVE #802-2T OR EQUAL SHALL BE INSTALLED ON VENT PIPE.

10. VENT PIPES SHALL BE MANIFOLDED AT MINIMUM HEIGHT OF 12 FEET ABOVE DRIVEWAY LEVEL.

11. TANK GAGE SHALL BE INSTALLED 8 FEET ABOVE DRIVEWAY LEVEL.

Executive Order G-70-70-AC

Figure 4-B

Healy Vapor Recovery System with Central Vacuum Unit
Notes to Accompany Figure 4-A

BREAK ALL SHARP CORNERS

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TOLERANCES ON
FRACTIONS DECIMALS ANGLES
MATERIAL
FINAL PROTECTIVE FINISH

ORIGINAL ISSUE DATE
DWN JNH DATE 4-13-92
CHKD DATE
APPD DATE
SUBMITTED
C.E. INC.
CLIENT

HEALY SYSTEM PIPING GENERAL NOTES

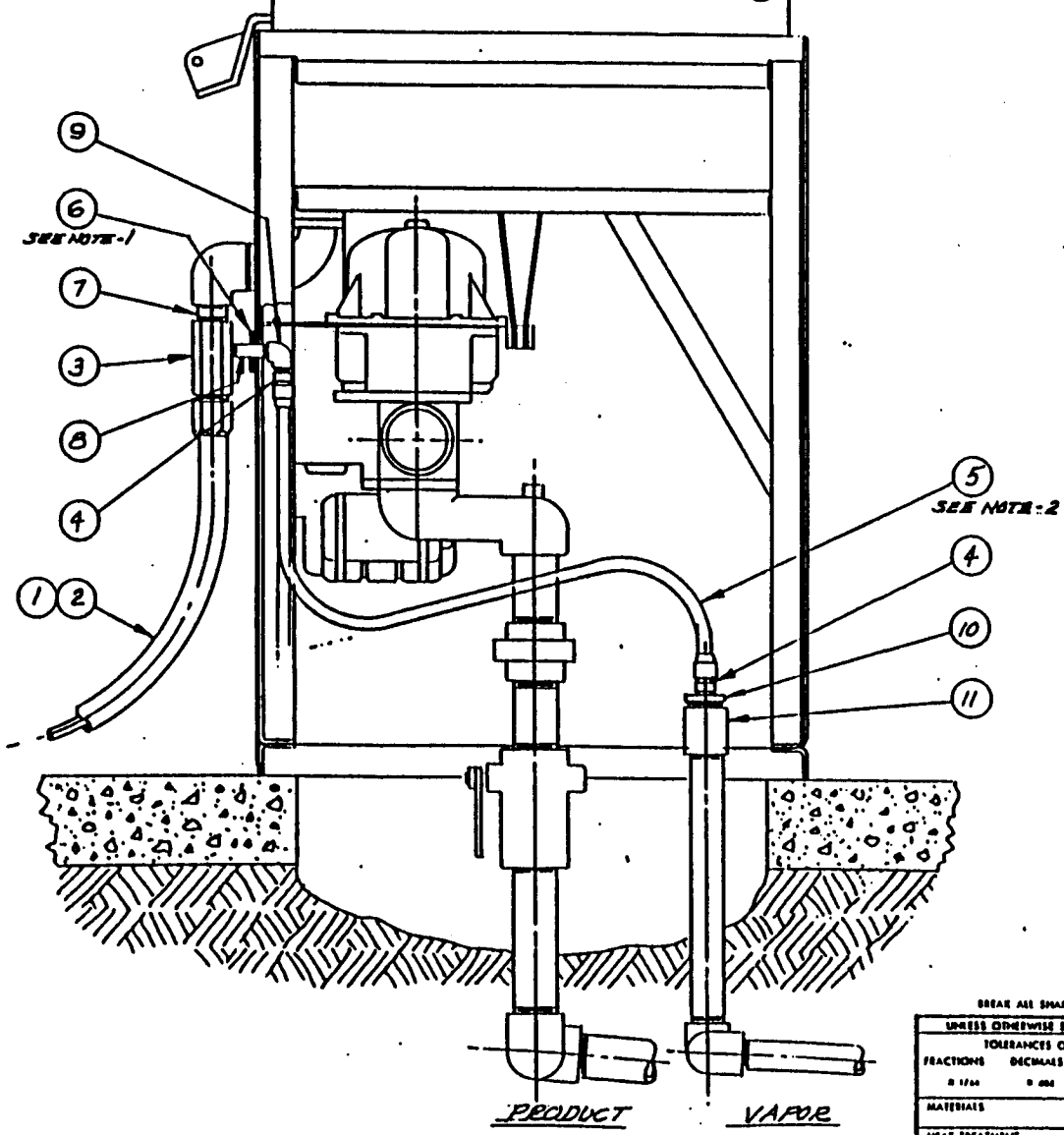
HEALY SYSTEMS INC.
17 Hampshire
Hudson, New
NH 03051

DWG SIZE C 9001-928

Executive Order G[illegible]-70-AC

Figure 4-C

Healy Vapor Recovery System with Central Vacuum Unit
Typical Installation of Dispenser Components
With Standard Dispenser



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ITEM 3 WAS CX-6; ITEM 5 WAS 3/8" HOSE	11-15-91	JWN

PARTS LIST			
ITEM	QTY	DESCRIPTION	P/N
1	1	NOZZLE (NOT SHOWN) #200/OE	#900
2	1	CO-AXIAL HOSE (13 FT LG. MIN)	75B
3	1	HOSE ADAPTER.	CX6-VVI
4	2	1/4" MPT x 1/8" OD TUBE FLARE FIT.	
5	4 FT	1/2" O.D. COPPER TUBE	
6	1	WASHER, HOLE MASK	189
7	1	1" CLOSE NIPPLE (GALV.)	
8	1	1/4 x 2 1/2 NIPPLE (GALV.)	
9	1	1/4 ELBOW (GALV.)	
10	1	1/4 x 1 BUSHING (GALV.)	
11	1	1" COUPLING, (GALV.)	

NOTES: 1- MAKE 3/4" DIA. HOLE TO PASS THROUGH 1/4" NIPPLE. ATTACH WASHER (ITEM 6) BEFORE MAKING UP NIPPLE TO HOSE ADAPTER.
2- CUT & INSTALL TUBING (ITEM 5) TO AVOID ANY POSSIBILITY OF KINKING.

BREAK ALL SHARP CORNERS

DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE SPECIFIED			
TOLERANCES ON			
FRACTIONS	DECIMALS	ANGLES	
± 1/64	± .001	± 1°	
MATERIALS			
HEAT TREATMENT			
FINAL PROTECTIVE FINISH			

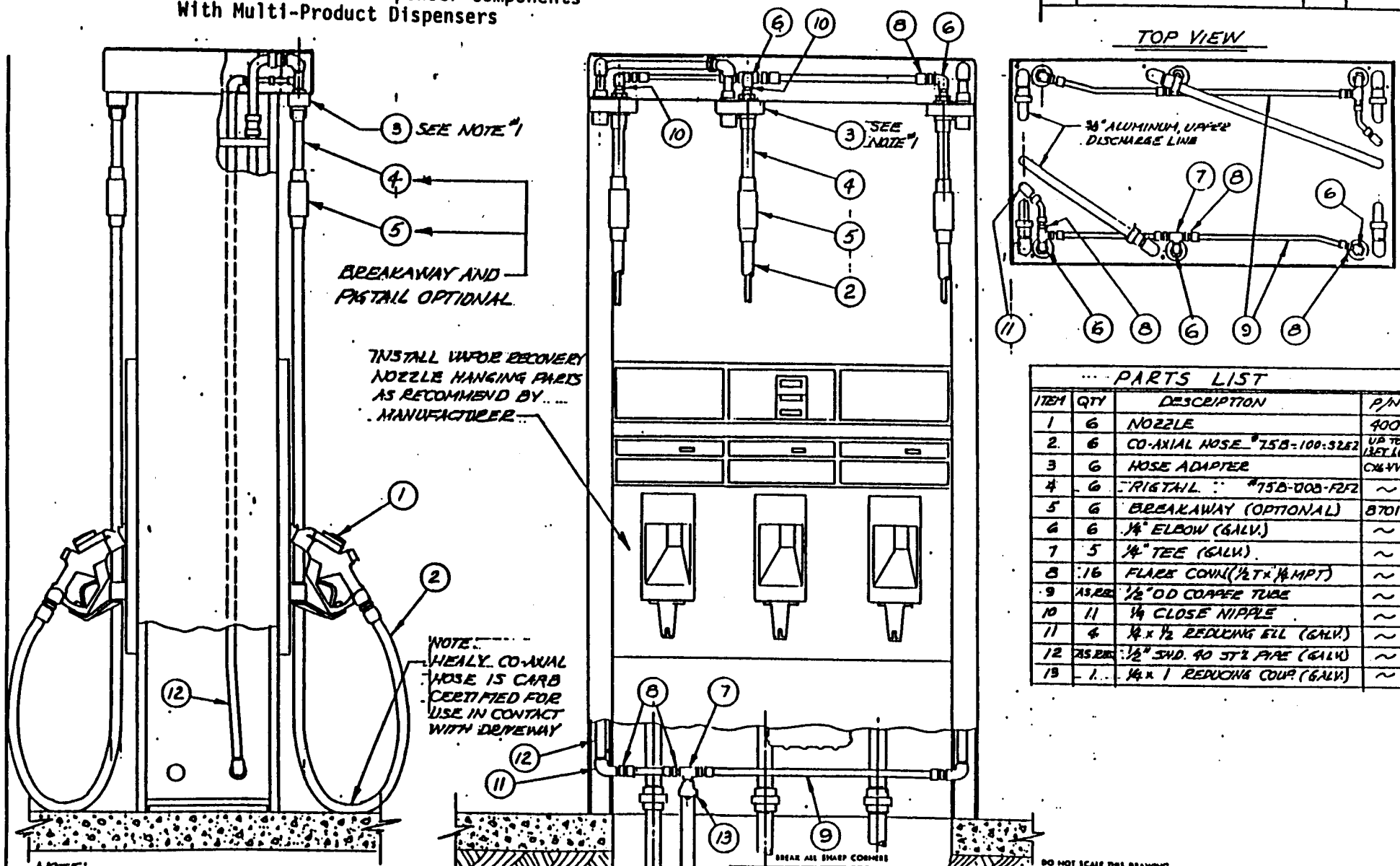
ORIGINAL ISSUE DATE	
DWN JWN	DATE 10-7-91
CHKD	DATE
APPD	DATE
SUBMITTED	C.E. INC.
CLIENT	

HEALY SYSTEM INSTALLATION
TYPICAL DISPENSER WITH CENT. VAC. UNIT

CAMBRIDGE ENGINEERING, INC.

DWG NO	C 8502-124
SCALE	NO REQ'D.
CODE	SHEET OF

Executive Order G-70-70-AC
Figure 4-D
Healy Vapor Recovery System with Central Vacuum Unit
Typical Installation of Dispenser Components
With Multi-Product Dispensers



PARTS LIST

ITEM	QTY	DESCRIPTION	P/N
1	6	NOZZLE	400
2	6	CO-AXIAL HOSE #75B-100-S2E2	UP TO 13FT LG
3	6	HOSE ADAPTER	CX6-VV3
4	6	PIGTAIL #75B-008-F2F2	~
5	6	BREAKAWAY (OPTIONAL)	8701
6	6	1/4" ELBOW (GALV.)	~
7	5	1/4" TEE (GALV.)	~
8	16	FLARE CONN (1/2 T x 1/4 MPT)	~
9	AS REQ	1/2" OD COPPER TUBE	~
10	11	1/4 CLOSE NIPPLE	~
11	4	1/4 x 1/2 REDUCING ELL (GALV.)	~
12	AS REQ	1/2" SHD. 40 ST'L PIPE (GALV.)	~
13	1	1/4 x 1 REDUCING COUP. (GALV.)	~

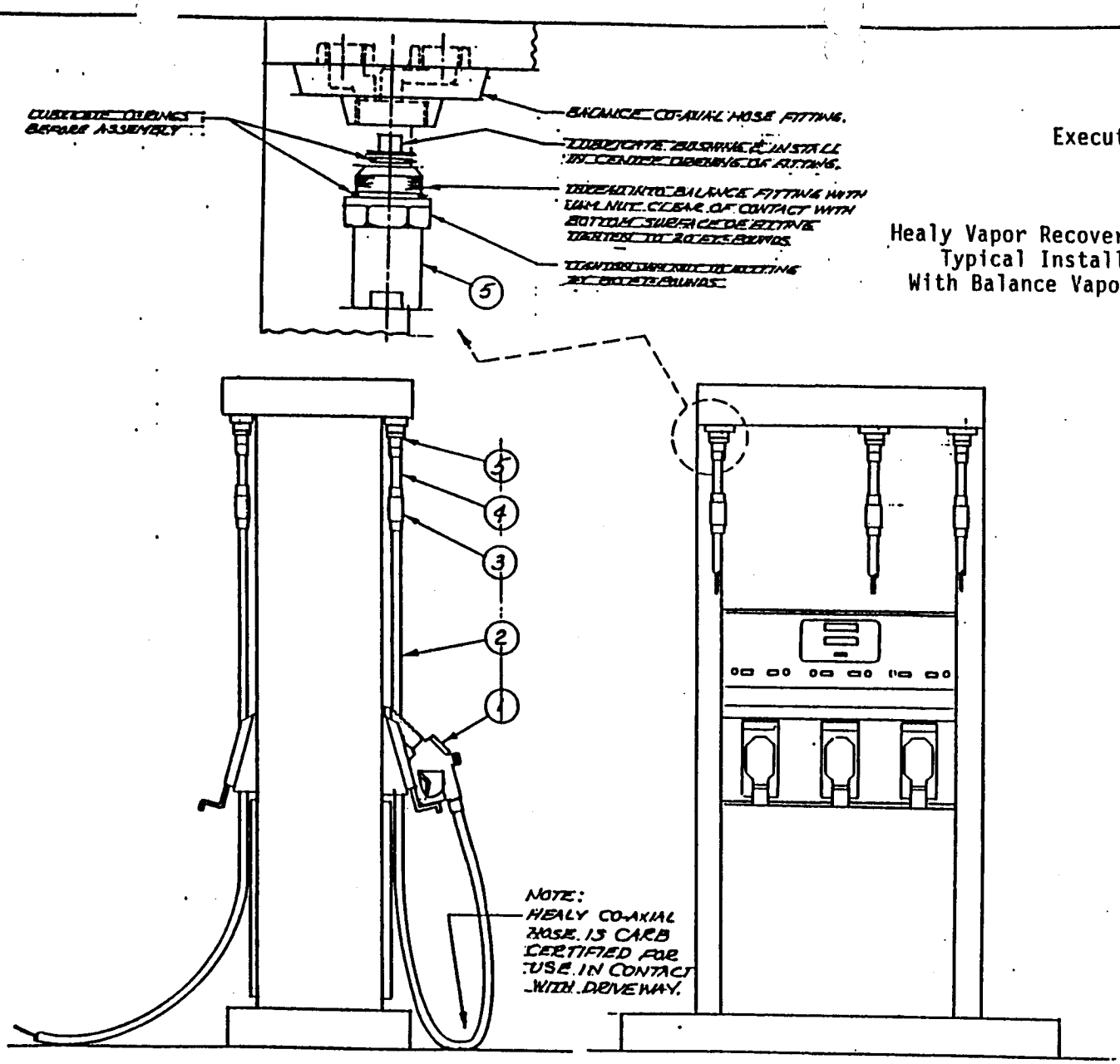
NOTE:
1- SEE DWG. C-9201-402 FOR INSTALLATION INSTRUC[illegible]NS ON ITEM 3, HOSE ADAPTER.
2- CUT & IN[illegible]LL 1/2" OD COPPER TUBE TO AVOID ANY PO[illegible]LE KINKS.
3- USE GAS[illegible]E RATED, NON-HARDENING PIPE COMPOUND ON PIPE THREAD ONLY. LUBRICATE STRAIGHT TH'D & O-RINGS.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ORIG. ISSUE	1-23-92	JWN

Executive Order G-70-70-AC

Figure 4-E

Healy Vapor Recovery System with Central Vacuum Unit
Typical Installation of Dispenser Components
With Balance Vapor-Ready Multi-Product Dispensers



PARTS LIST			
ITEM	QTY	DESCRIPTION	P/N
1	6	NOZZLE	400
2	6	HOSE #75B-100-32FZ	—
3	6	BREAKAWAY	8701
4	6	PIGTAIL	707
5	6	HOSE ADAPTER	CY6-VV2

— REFERENCE CODES —
THIS EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH NFPA-70 AND AUTOMOTIVE & MARINE SERVICE CODE NFPA-30A.

BREAK ALL SHARP CORNERS

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
MATERIALS
HEAT TREATMENT
FINAL PROTECTIVE FINISH

ORIGINAL ISSUE DATE
DWN JWN DATE 1-23-92
CHKD DATE
APPD DATE
SUBMITTED
C.E. INC.
CLIENT

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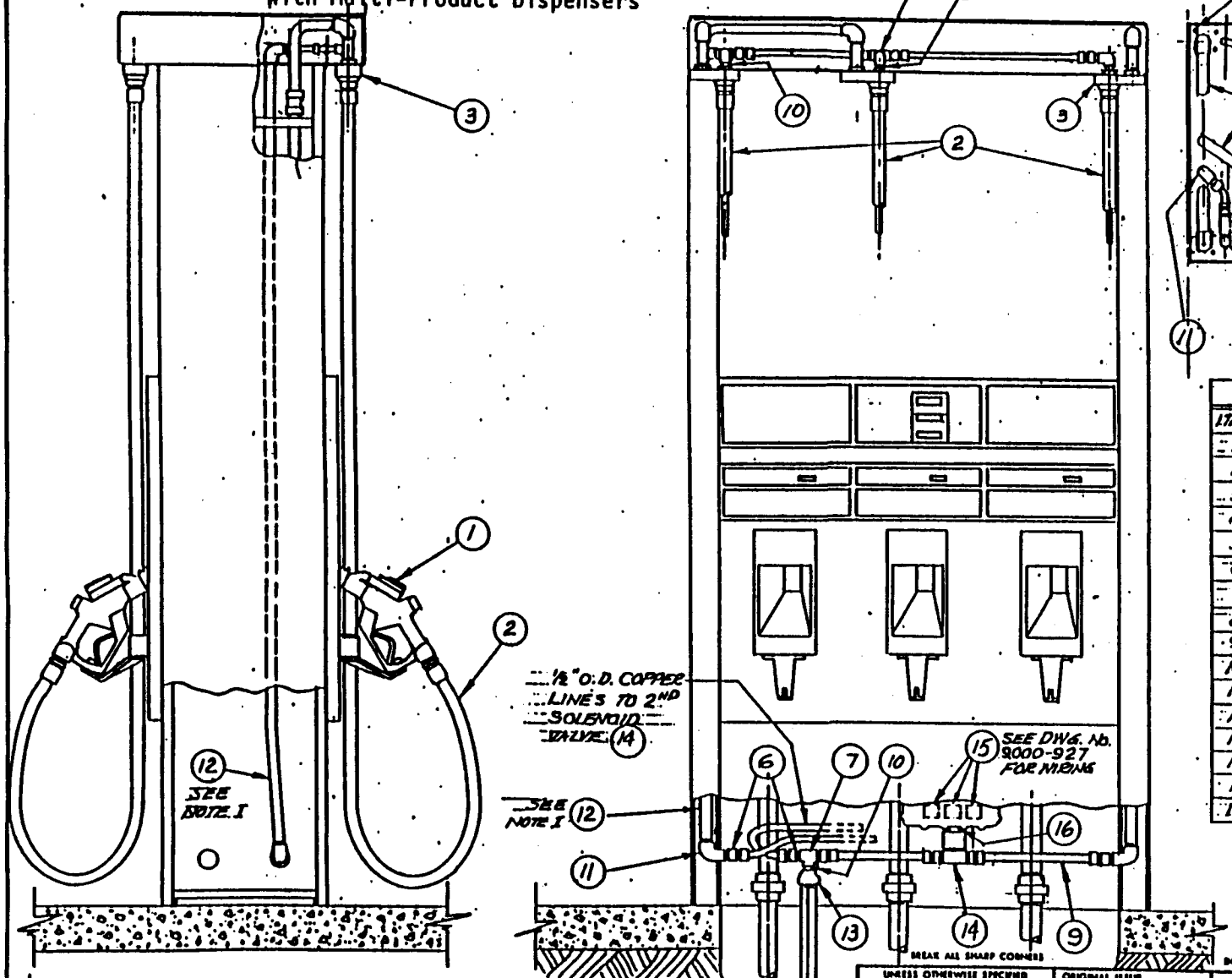
BALANCE CONVERSION TO HEALY SYSTEM
MULTI-PRODUCT DISP

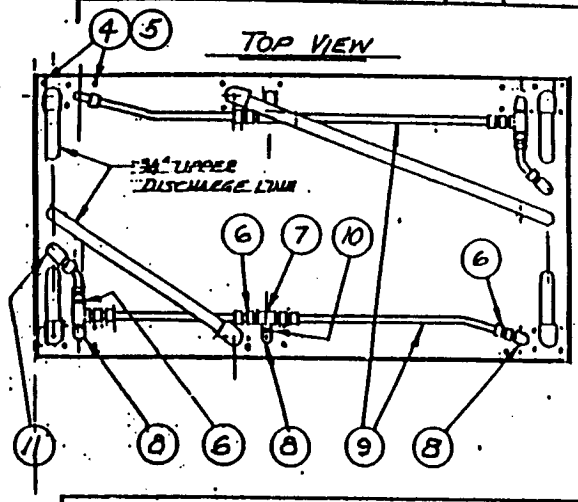
SCALE ~ NO REQ'D

CAMBRIDGE ENGINEERING, INC.
HEALY SYSTEMS, INC.
HUDSON, NEW HAMPSHIRE

DWG SIZE C 9201-401
CODE SHEET OF

Executive Order G-70-70-AC
Figure 4-F
Healy Vapor Recovery System with Central Vacuum Unit
Typical Installation of Dispenser Components With Multi-Product Dispensers





REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
C	ITEM 3 WAS CX6DR	6-21-90	JWA
D	ADD: ITEM 14, 15 & 16	11-18-91	JWA

PARTS LIST

ITEM	QTY.	DESCRIPTION	P/N
1	6	NOZZLE #200X OR	400
2	6	CO-AXIAL HOSE (19 FT. MAX.)	75B
3	6	HOSE ADAPTER	CY6U
4	24	1/4-20 x 5/8 HEX HD BOLT	CX11
5	24	1/4 FLAT WASHER	CX12
6	20	FLARE CONN. (1/2 T x 1/4 MPT)	
7	5	1/4" TEE (GALV.)	
8	6	1/4" ELBOW (GALV.)	
9	16 FT	1/2" OD COPPER TUBE	
10	11	1/4" CLOSE NIPPLE	
11	4	1/4" x 1/2" REDUCING ELBOW (GALV.)	
12	SEE NOTE I	1/2" SCH. 40 ST'L PIPE (GALV.)	
13	1	1/4 x 1 REDUCING COUPLING (GALV.)	
14	2	SOLENOID VALVE	175
15	6	SOLID STATE RELAY	939
16	2	1/2" NIPPLE	

1- 1/2" PIPE BY INSTALLER (2 PCS; APPROX. 7 FT. LG.)
2- REMOVE EXISTING HOSE OUTLETS & VAPOR PORT COVERS.
3- INSTALL C: HOSE ADAPTERS & CONNECT 3/4" MPT GASOLINE.
4- INSTALL 1/4" AS SHOWN, OR PIPE FITTINGS & 1/2" OD COPPER FITTINGS MODIFIED DO NOT RUN DIRECTLY OVER 3/4" PORT IN CY6U.
5- DO NOT KINK 1/2" O.D. TUBE WHEN BENDING.

UNLESS OTHERWISE SPECIFIED TOLERANCES ON FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1°
MATERIALS
HEAT TREATMENT
SURFACE PROTECTIVE FINISH

ORIGINAL ISSUE DATE
DWN JWA DATE 12-7-86
CHKD DATE
APPD DATE
SUBMITTED
C.E. INC.
CLIENT

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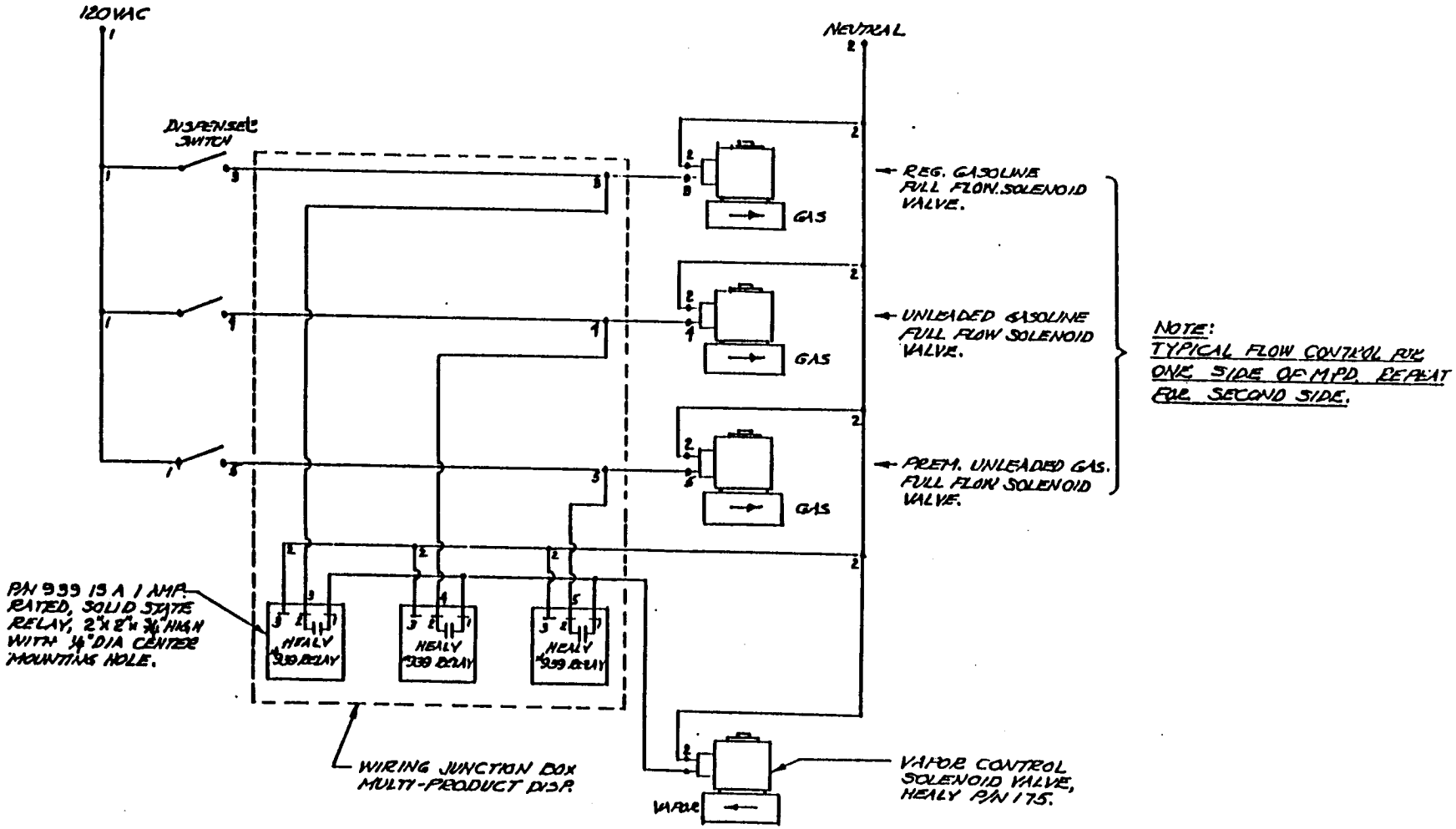
HEALY SYSTEM CONVERSION
MULTI-PROD.-DISP.
CENTRAL VAC. UNIT

CAMBRIDGE ENGINEERING, INC.
HEALY SYSTEMS, INC.
MODEL
JURISDICTION

SCALE NO SCA'B.
DWG SIZE C
CODE 8
1-125G
SHEET 1 OF 2

Executive Order G-70-70-AC
Figure 4-G
Healy Vapor Recovery System with Central Vacuum Unit
Wiring Instructions for Multi-Product Dispensers

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ORIG. ISSUE	11/15/	JWN



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TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
MATERIALS		
HEAT TREATMENT		
FINAL PROTECTIVE FINISH		

ORIGINAL ISSUE DATE		
DWN JWN	DATE 11/15/91	
CHKD	DATE	
APPD	DATE	
SUBMITTED		
	C.E. INC.	
CLIENT		

WIRING DIAGRAM FOR CONTROL OF #175 HEALY VAPOR VALVE IN MULTI-PROD. DISP.

CAMBRIDGE ENGINEERING, INC.
HEALY SYSTEMS, INC.
HUDSON, NEW HAMPSHIRE

DWG NO C 9000-927

SCALE | NO REQ'D. | CODE | SHEET OF