



# CSA Hazardous Area Approvals Fisher™ FIELDVUE™ DVC6005 Series Remote Mount Digital Valve Controllers

## Hazardous Area Approvals and Special Instructions for “Safe Use” and Installations in Hazardous Locations

Certain nameplates may carry more than one approval, and each approval may have unique installation/wiring requirements and/or conditions of “safe use”. These special instructions for “safe use” are in addition to, and may override, the standard installation procedures. Special instructions are listed by approval type.

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### Note

This information supplements the nameplate markings affixed to the product and the DVC6005 Series Remote Mount quick start guide ([D103784X012](#)), available from your [Emerson sales office](#), Local Business Partner or at [Fisher.com](#).

Approval information is for both aluminum and stainless steel constructions.

Always refer to the nameplate itself to identify the appropriate certification.

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### **⚠ WARNING**

**Failure to follow these conditions of “safe use” could result in personal injury or property damage from fire or explosion and area re-classification.**

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### Ordinary Locations Approval

Complies with general electrical safety CAN/CSA-C22.2 No. 61010-1-2004  
SELV, conduit connected, Enclosure Type 4X, IP66, Installation Category I, Pollution Degree 4

#### **DVC6005 Series (HART HW1, FOUNDATION fieldbus)**

Rated Input 9-30 VDC, 4-20 mA

Outputs 0-9.6 VDC, 0-3.5 mA

-52°C ≤ Ambient ≤ +80°C

#### **DVC6015, DVC6025, DVC6035**

Rated Input 10 VDC max, 3.5 mA max

-60°C ≤ Ambient ≤ 125°C

### Explosion-proof and Dust Ignition-proof

Class I, Division 1, Groups B,C,D ; Class I, Division 2, Groups A,B,C,D  
 Class II, Division 1, Groups E,F,G ; Class II, Division 2, Groups F,G  
 Class III, Division 1  
 Ex d IIC  
 Ex nC IIC (DVC6005 Series)  
 Ex nA IIC (DVC6015, DVC6025, DVC6035)  
 Type 4X, IP66  
 Single Seal Device (HART HW2 with I/O Package pending)

**DVC6005 Series (HART HW1 & HW2, FOUNDATION FIELDBUS)**

Rated input 30 Vmax, 20 mA  
 - 52°C ≤ Ambient ≤ + 80°C  
 Max inlet pressure 10 bar (145 psig) (air or natural gas)  
 Temperature Code: T6 (Tamb ≤ 75°C), T5 (Tamb ≤ 80°C)

**DVC6015, DVC6025, DVC6035**

Rated input 10 Vmax, 5 mA  
 - 60°C ≤ Ambient ≤ + 125°C  
 Temperature Code: T6 (Tamb ≤ 80°C), T5 (Tamb ≤ 95°C), T4 (Tamb ≤ 125°C)

### Intrinsically Safe

Class I, Division 1, Groups A,B,C,D  
 Class II, Division 1, Groups E,F,G  
 Class III, Division 1  
 Ex ia IIC  
 Type 4X, IP66  
 Single Seal Device (HART HW2 with I/O Package pending)

**DVC6005 Series (HART HW1 & HW2, FOUNDATION FIELDBUS)**

Rated input 30 V DC max, 20 mA  
 - 52°C ≤ Ambient ≤ + 80°C  
 Max inlet pressure 10 bar (145 psig) (air or natural gas)

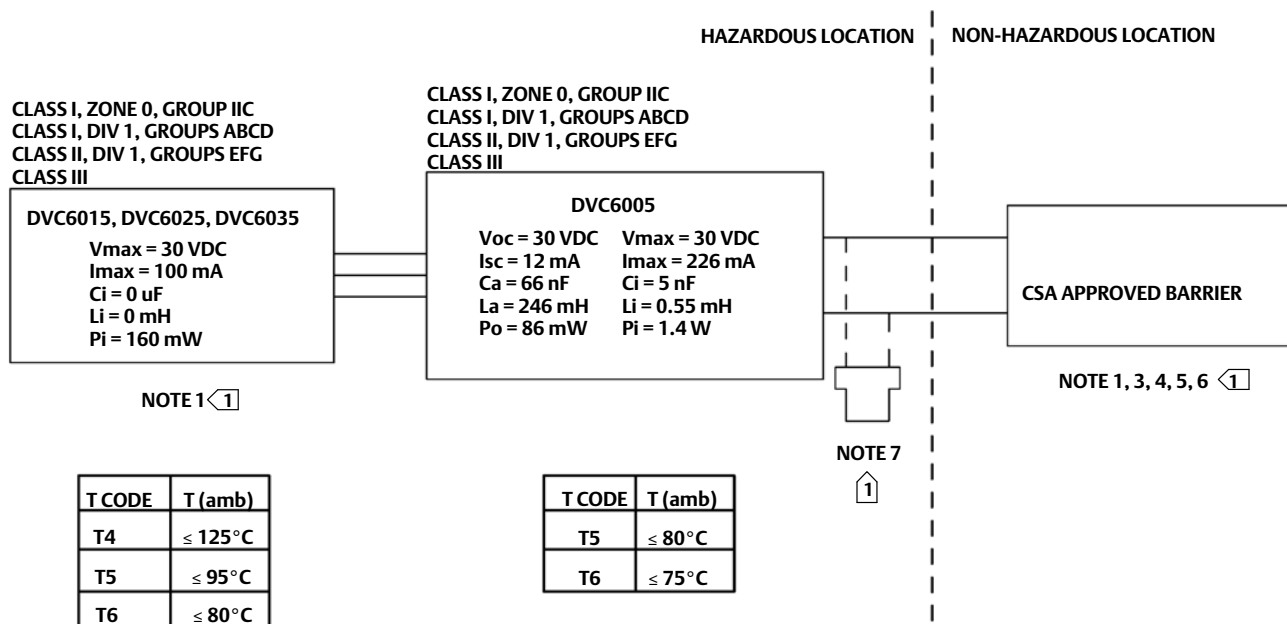
**DVC6015, DVC6025, DVC6035**

Rated input 10 Vmax, 5 mA  
 - 60°C ≤ Ambient ≤ + 125°C

Intrinsically safe when connected per installation drawing GE42818, as shown in the following figures

- DVC6005 HW1 and DVC6015, DVC6025, DVC6035** ..... figure 1 and 4
- DVC6005 HW2 and DVC6015, DVC6025, DVC6035** ..... figure 2 and 4
- DVC6005f and DVC6015, DVC6025, DVC6035** ..... figure 3 and 4

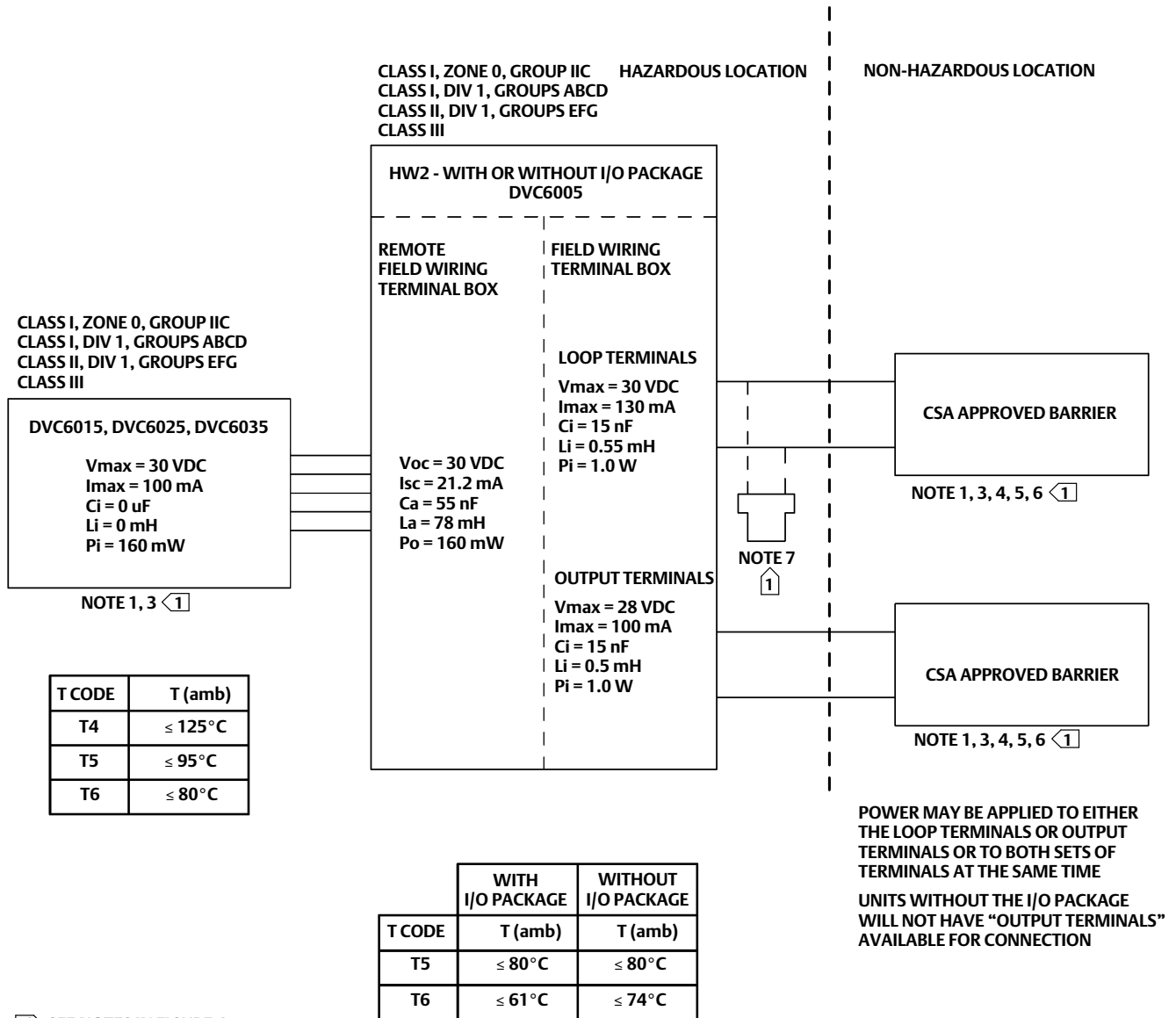
Figure 1. CSA Loop Schematics FIELDVUE DVC6005 HW1 and DVC6015, DVC6025, DVC6035



SEE NOTES IN FIGURE 4

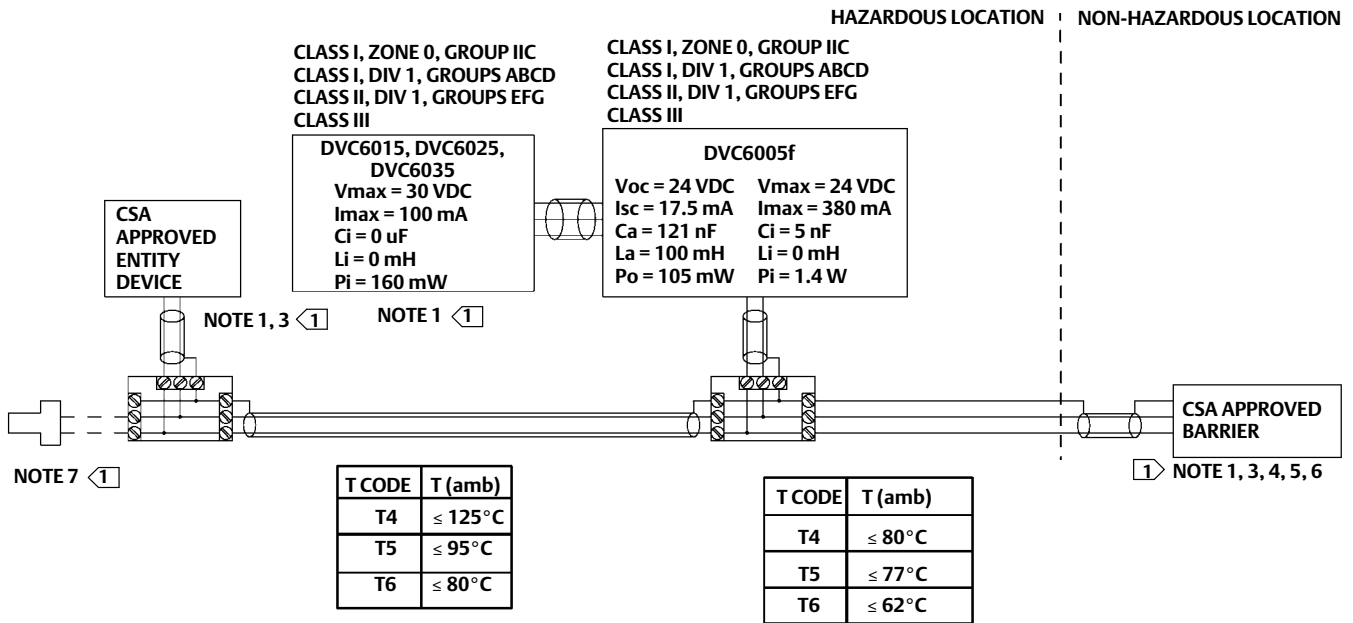
GE42818 Sheet 5, Rev. F

Figure 2. CSA Loop Schematics FIELDVUE DVC6005 HW2 and DVC6015, DVC6025, DVC6035



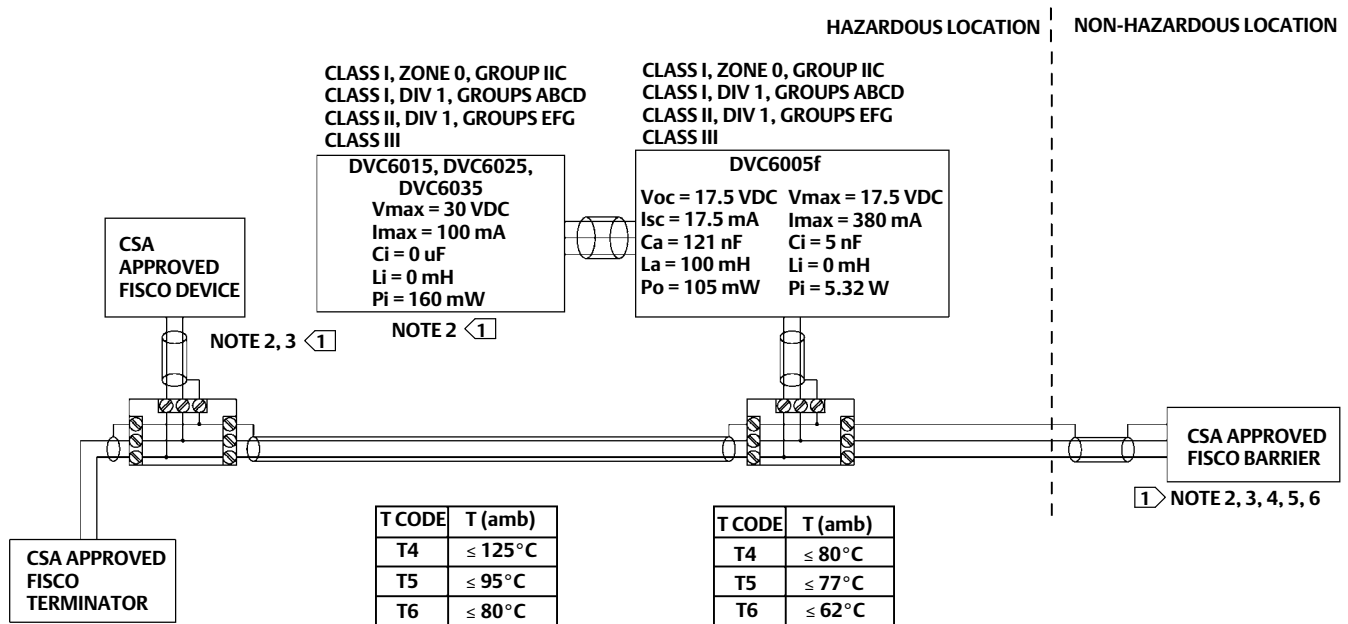
GE42818 Sheet 13, Rev. C

Figure 3. CSA Loop Schematics FIELDVUE DVC6005f and DVC6015, DVC6025, DVC6035



GE42818 Sheet 6, Rev. F

ENTITY FIELDBUS LOOP



GE42818 Sheet 7, Rev. F

FISCO LOOP

SEE NOTES IN FIGURE 4

Figure 4. Notes for CSA Loop Schematics

1 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE ( $V_{max}$  or  $U_i$ ), THE CURRENT ( $I_{max}$  or  $I_i$ ), AND THE POWER ( $P_{max}$  or  $P_i$ ) OF THE INTRINSICALLY SAFE APPARATUS MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE ( $V_{oc}$  or  $U_o$ ), AND THE CURRENT ( $I_{sc}$  or  $I_o$ ), AND THE POWER ( $P_o$ ) DEFINED BY THE ASSOCIATED APPARATUS. IN ADDITION, THE SUM OF THE MAX UNPROTECTED CAPACITANCE ( $C_i$ ) AND MAX UNPROTECTED INDUCTANCE ( $L_i$ ), INCLUDING THE INTERCONNECTING CABLING CAPACITANCE ( $C_{cable}$ ) AND CABLING INDUCTANCE ( $L_{cable}$ ) MUST BE LESS THAN THE ALLOWABLE CAPACITANCE ( $C_a$ ) AND INDUCTANCE ( $L_a$ ) DEFINED BY THE ASSOCIATED APPARATUS. IF THE ABOVE CRITERIA IS MET, THEN THE COMBINATION MAY BE CONNECTED.

$$V_{max} \text{ or } U_i \geq V_{oc} \text{ or } U_o \quad I_{max} \text{ or } I_i \geq I_{sc} \text{ or } I_o \quad P_{max} \text{ or } P_i \geq P_o \quad C_i + C_{cable} \leq C_a \quad L_i + L_{cable} \leq L_a$$

2 THE FISCO CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR THE INTERCONNECTION IS THAT THE VOLTAGE ( $V_{max}$  or  $U_i$ ), CURRENT ( $I_{max}$  or  $I_i$ ), AND POWER ( $P_{max}$  or  $P_i$ ), WHICH AN INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE ( $V_{oc}$  or  $U_o$ ), CURRENT ( $I_{sc}$  or  $I_o$ ), AND POWER ( $P_o$ ) LEVELS WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION THE MAXIMUM UNPROTECTED CAPACITANCE ( $C_i$ ) AND INDUCTANCE ( $L_i$ ) OF EACH APPARATUS (OTHER THAN THE TERMINATION) CONNECTED TO THE FIELDBUS MUST BE LESS THAN OR EQUAL TO 5 nF AND 10  $\mu$ H RESPECTIVELY.

IN EACH SEGMENT ONLY ONE ACTIVE DEVICE, NORMALLY THE ASSOCIATED APPARATUS, IS ALLOWED TO PROVIDE THE NECESSARY ENERGY FOR THE FIELDBUS SYSTEM. THE VOLTAGE ( $U_o$  or  $V_{oc}$  or  $V_t$ ) OF THE ASSOCIATED APPARATUS HAS TO BE LIMITED TO THE RANGE OF 9V TO 17.5 VDC. ALL OTHER EQUIPMENT CONNECTED TO THE BUS CABLE HAS TO BE PASSIVE, MEANING THAT THEY ARE NOT ALLOWED TO PROVIDE ENERGY TO THE SYSTEM, EXCEPT FOR A LEAKAGE CURRENT OF 50  $\mu$ A FOR EACH CONNECTED DEVICE. SEPARATELY POWERED EQUIPMENT NEEDS A GALVANIC ISOLATION TO ASSURE THAT THE INTRINSICALLY SAFE FIELDBUS CIRCUIT REMAINS PASSIVE.

THE CABLE USED TO CONNECT THE DEVICES NEEDS TO HAVE THE PARAMETERS IN THE FOLLOWING RANGE:

LOOP RESISTANCE R': 15 TO 150 ohms/km

INDUCTANCE PER UNIT LENGTH L: 0.4 TO 1 mH/km

CAPACITANCE PER UNIT LENGTH C: 80 TO 200 nF/km

$C' = C' \text{ LINE/LINE} + 0.5' \text{ LINE/SCREEN}$ , IF BOTH LINES ARE FLOATING OR

$C' = C' \text{ LINE/LINE} + C' \text{ LINE/SCREEN}$ , IF THE SCREEN IS CONNECTED TO ONE LINE.

LENGTH OF SPLICE: < 1 m (T-BOX MUST ONLY CONTAIN TERMINAL CONNECTIONS WITH NO ENERGY STORAGE CAPABILITY)

LENGTH OF SPUR CABLE: < 30 M

LENGTH OF TRUNK CABLE: < 1 km

AT EACH END OF THE TRUNK CABLE AN APPROVED INFALLIBLE TERMINATION WITH THE FOLLOWING PARAMETERS IS SUITABLE:

$R = 90$  TO  $100$  ohms AND  $C = 0$  TO  $2.2$   $\mu$ F

NOTE, A BUILT-IN TERMINATOR IS INCLUDED IN THE FIELD SIDE AND A SELECTABLE TERMINATOR IS AVAILABLE ON THE HOST SIDE.

THE NUMBER OF PASSIVE DEVICES CONNECTED TO THE BUS SEGMENT IS NOT LIMITED IN THE FISCO CONCEPT FOR INTRINSICALLY SAFE REASONS. IF THE ABOVE RULES ARE RESPECTED, UP TO A TOTAL LENGTH OF 1000 m (SUM OF THE LENGTH OF THE TRUNK CABLE AND ALL SPUR CABLES), THE INDUCTANCE AND CAPACITANCE OF THE CABLE WILL NOT IMPAIR THE INTRINSIC SAFETY OF THE INSTALLATION.

3 INSTALLATION MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE (CEC) AND ANSI/ISA RP12.6.

4 MAXIMUM SAFE AREA VOLTAGE SHOULD NOT EXCEED 250  $V_{rms}$ .

5 RESISTANCE BETWEEN INTRINSICALLY SAFE GROUND AND EARTH GROUND MUST BE LESS THAN ONE OHM

6 LOOPS MUST BE CONNECTED ACCORDING TO THE BARRIER MANUFACTURER'S INSTRUCTIONS.

7 IF HAND-HELD COMMUNICATOR OR MULTIPLEXER IS USED, IT MUST BE CSA APPROVED WITH ENTITY PARAMETERS AND INSTALLED PER THE MANUFACTURER'S CONTROL DRAWINGS.



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