

For more information
see manuals
26509 EGS-CAT

PROJECT Nr. 98405 / 113089

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
NEW	EC 1123386	JAN-2009	ESPLIN
A	EC 1123386	FEB-2009	ESPLIN
B	EC 1123386	APR-2009	ESPLIN
C	EC 1123386-2	NOV-2009	ESPLIN
D	EC 1123386-2	OCT-2010	ESPLIN
E	EC 1123386-6	OCT-2012	ESPLIN
F	EC 1136498-10	FEB-2017	JEVAND

CONTROL WIRING DIAGRAM

Caterpillar Gas engine control

EGS-CAT
733- Control Hardware

For single and Tandem engine applications
System Nr. 8280-1131

Table of content



- 01 Overview
- 02 Outline 733 control
- 03 Connector pin layout 733
- 04 Power distribution
- 05 On Engine CAN Bus (CAN 3) Layout – AFR Full Authority
- 06 On Engine CAN Bus (CAN 3) Layout – AFR Trim
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- 11 Package CAN Bus (CAN 1) Layout – EasYgen
- 12 Tandem system – Block diagram
- 13 Field Terminal Module – Jumpers configuration
- 14 Field Terminal Module – Connections
- 15 LSM Connections

MAP input pwm-sensor
CAN 1 port is used for J1939 Data and Easygen

and

System Nr. 8280-1124
(Non preferred, not maintained since 2011)
CAN 1 port is CANopen

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	THIRD ANGLE PROJECTION	CHECKED ESPLIN	DATE MAR-2009			CONTROL WIRING DIAGRAM 733 Gas Engine Control				
		DRAWN ESPLIN	DATE MAR-2009							
							SIZE D	CAGE CODE 31361	DWG NO 9971-1387	REV F
							SCALE NTS	SHEET 1 OF 15		

VISIO

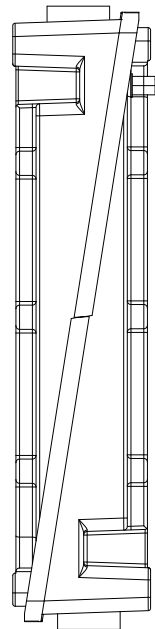
8 7 6 5 4 3 2 1

D

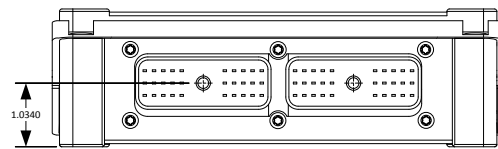
C

B

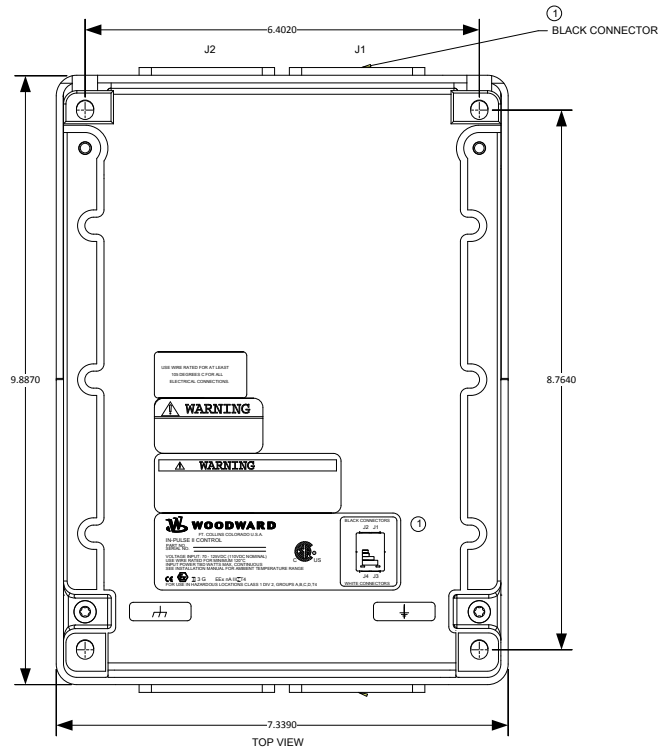
A



SIDE VIEW



BACK VIEW



TOP VIEW

9.887	251.1
8.764	222.6
7.339	186.4
6.402	162.6
2.238	56.8
1.034	26.3
INCH	MM
INCH TO MM CONVERSION	

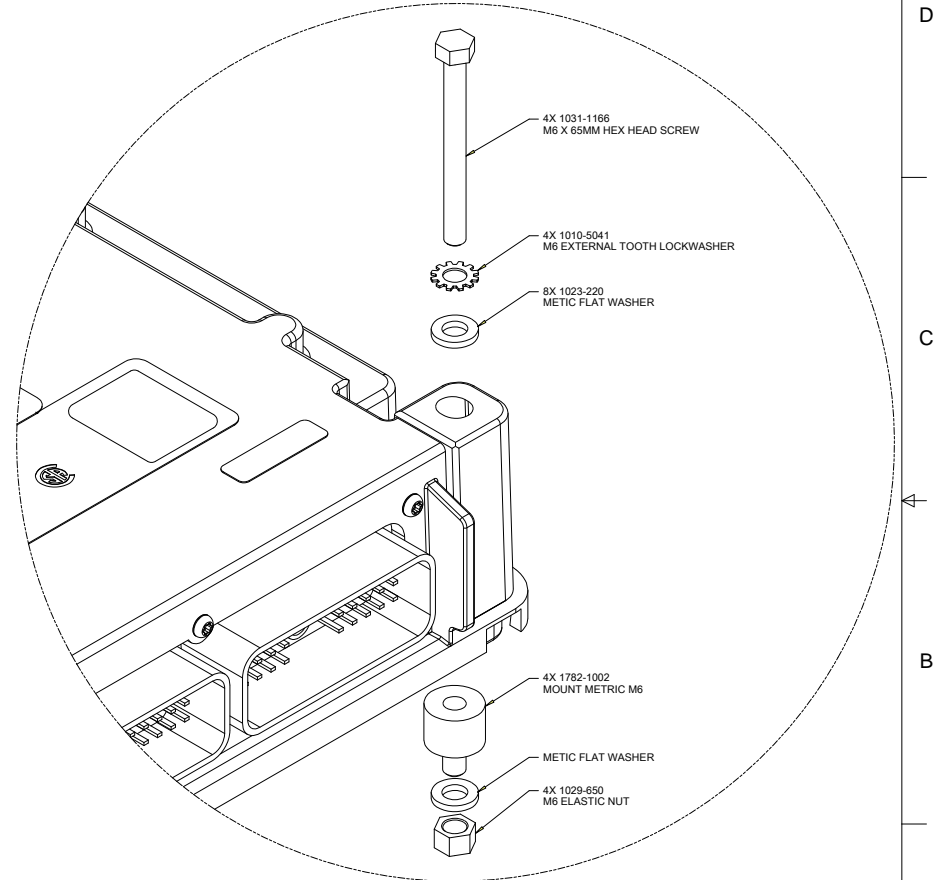
WEIGHT: 1.8KG

Outline 733 control

8 7 6 5 4 3 2 1



NOTES:

1. MATING CONNECTOR HARDWARE REQUIREMENTS:
8928-7039 KIT - MCU CONNECTOR
8928-7040 KIT - DRIVER BOARD CONNECTOR
8996-2015 TOOL - CRIMP
2. MOUNTING HARDWARE:
8928-7064 KIT - ARAPAHOE VIBRATION ISOLATOR & INSTALLATION.

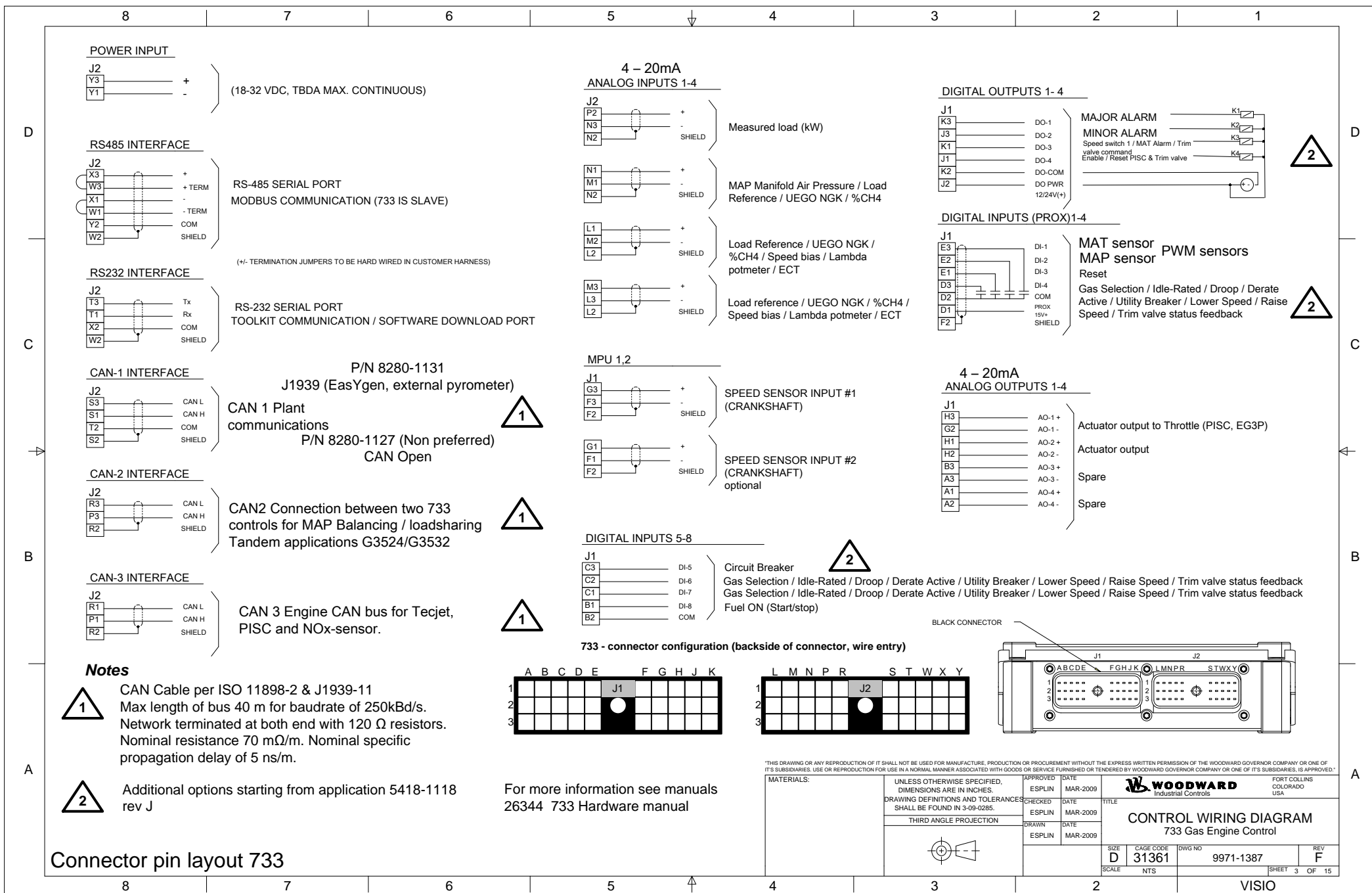


VIBRATION KIT ASSEMBLY VIEW
(TYPICAL 4 PLACES)

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		THIRD ANGLE PROJECTION			733 Gas Engine Control		
							
			SIZE D		CAGE CODE 31361	DWG NO 9971-1387	REV F
			SCALE 2		NTS	SHEET 2 OF 15	

VISIO



Notes



CAN Cable per ISO 11898-2 & J1939-11
Max length of bus 40 m for baudrate of 250kBd/s.
Network terminated at both end with 120 Ω resistors.
Nominal resistance 70 mΩ/m. Nominal specific propagation delay of 5 ns/m.

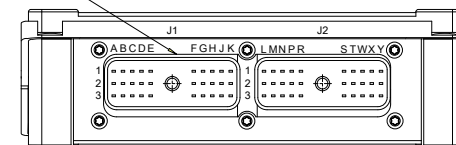


Additional options starting from application 5418-1118 rev J



For more information see manuals 26344 733 Hardware manual

Connector pin layout 733

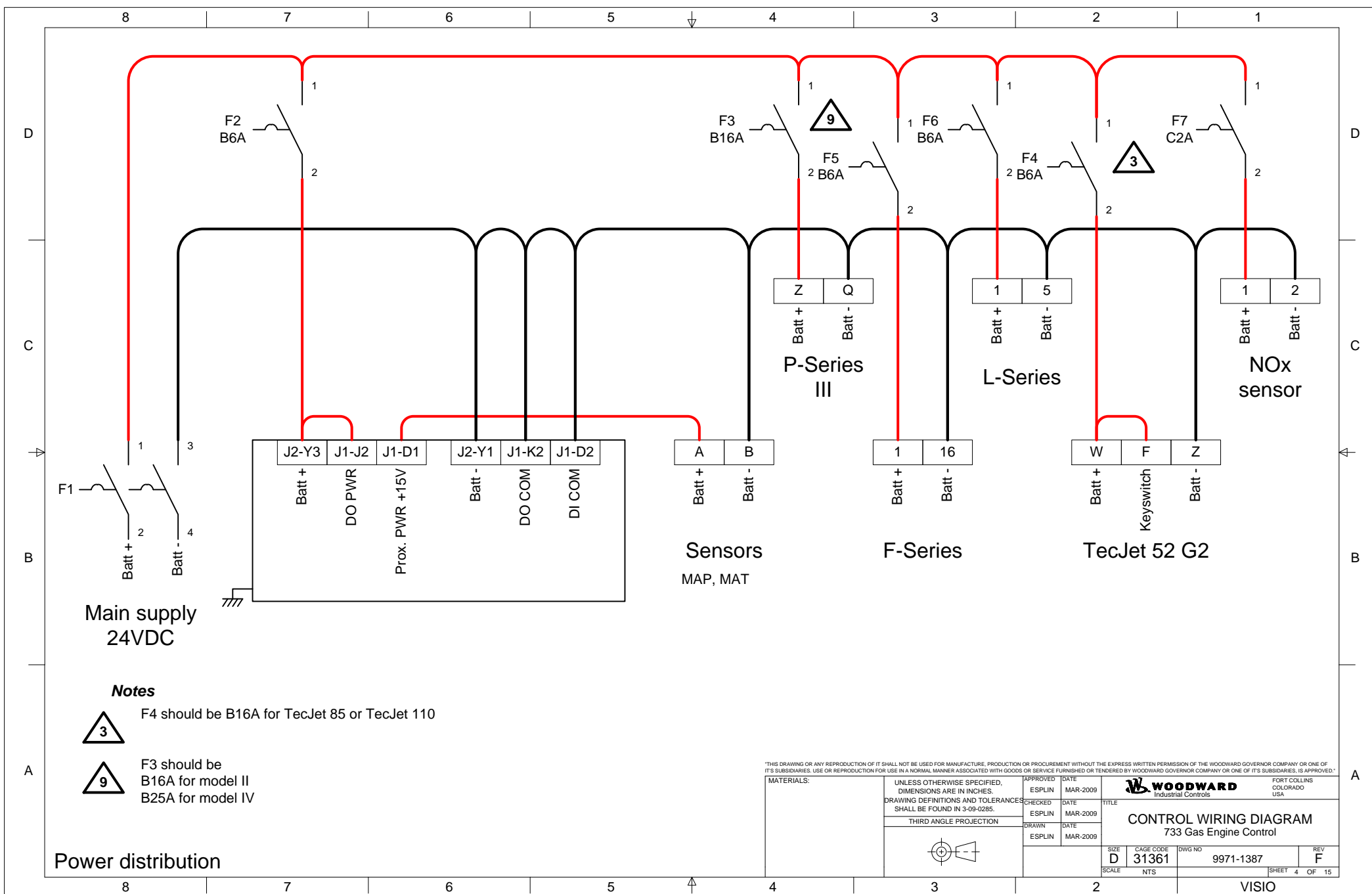
BLACK CONNECTOR

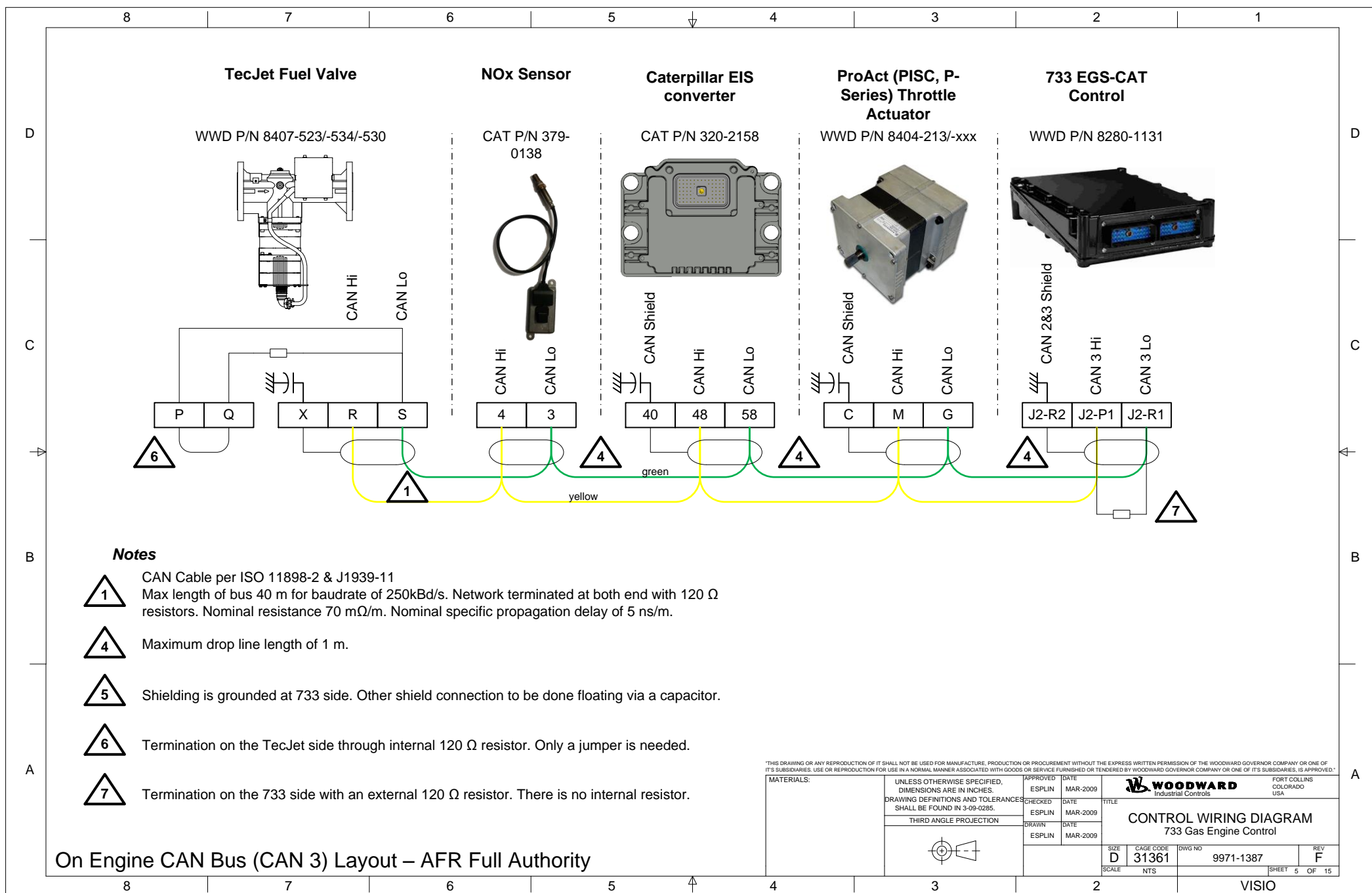


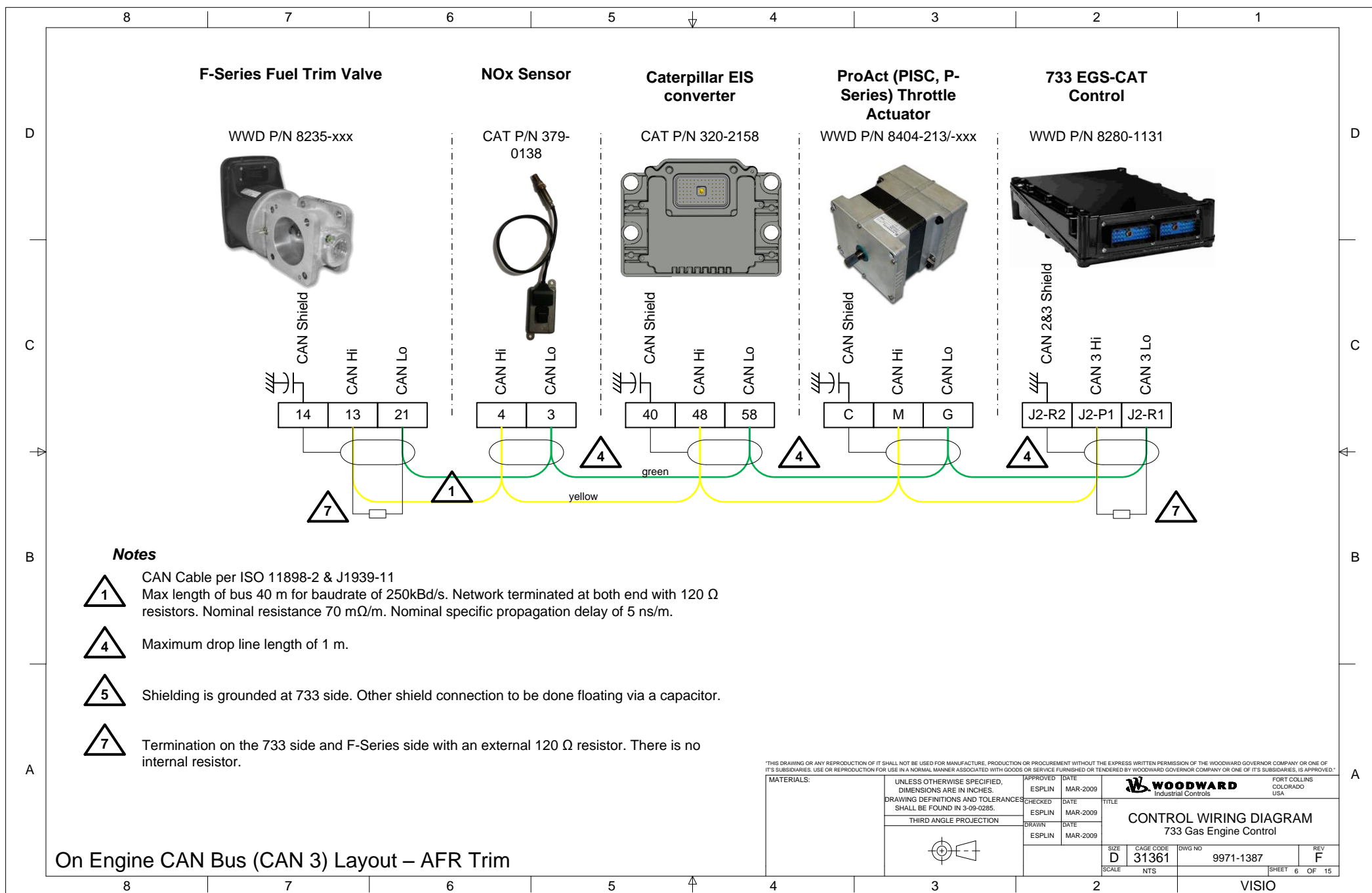
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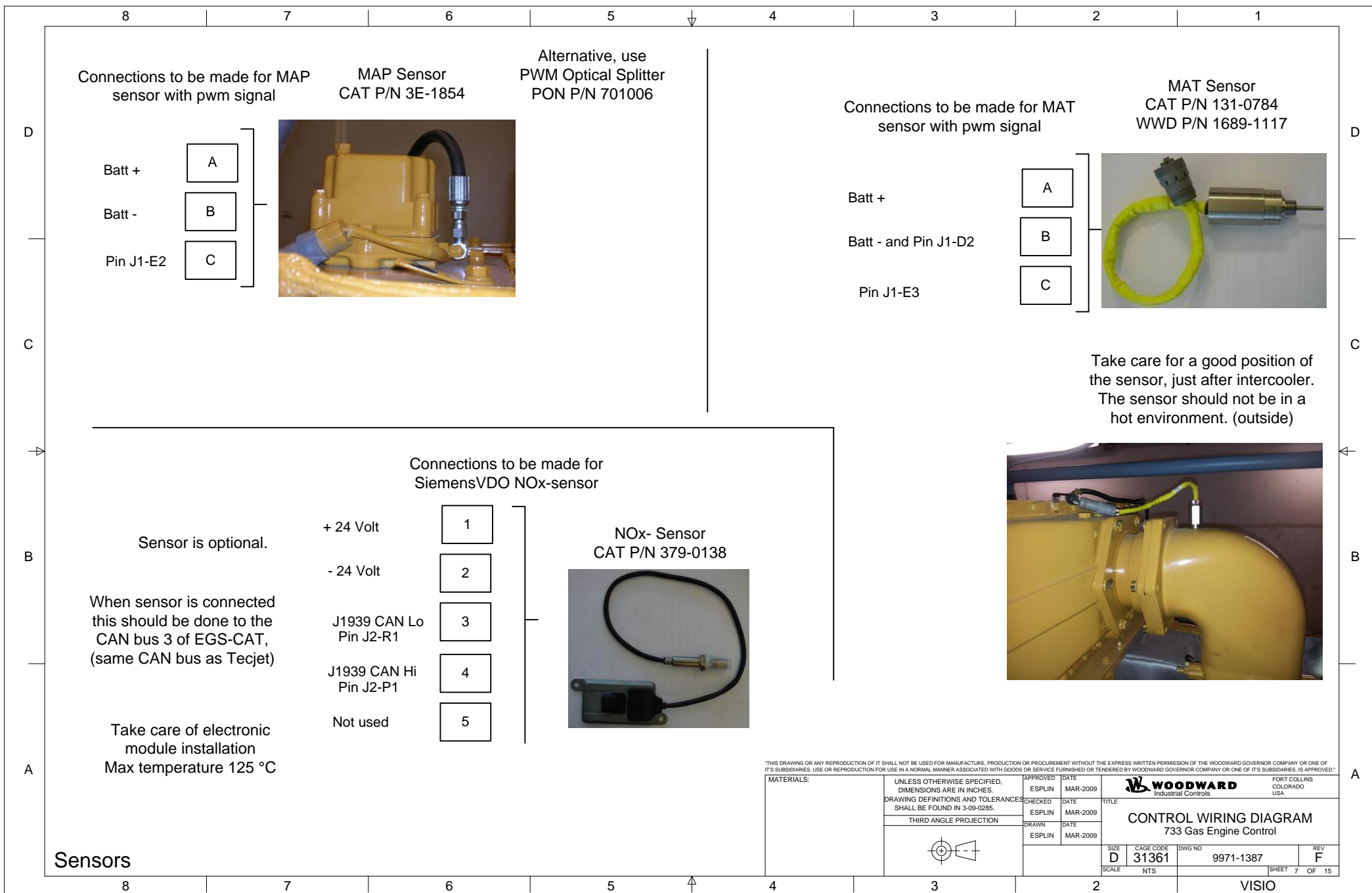
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		DRAWN ESPLIN	DATE MAR-2009	
	THIRD ANGLE PROJECTION			
				
CONTROL WIRING DIAGRAM 733 Gas Engine Control				
SIZE D	CAGE CODE 31361	DWG NO 9971-1387		REV F
SCALE NTS		SHEET 3 OF 15		

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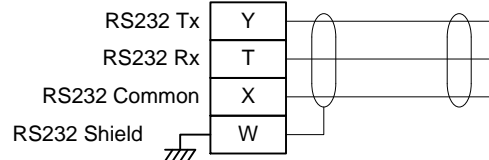
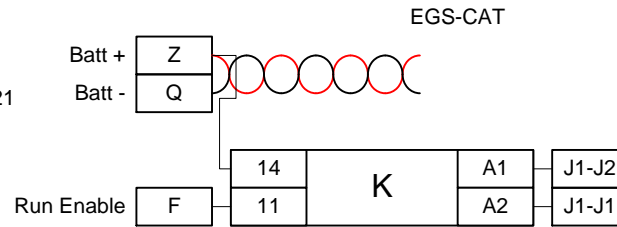




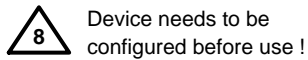
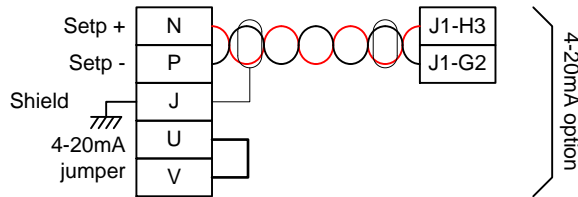
ProAct / PISC throttle connection

P/N 8404-213 PISC III
P/N 8404-xxx PISC IV

Mating connector kit P/N 6995-1021

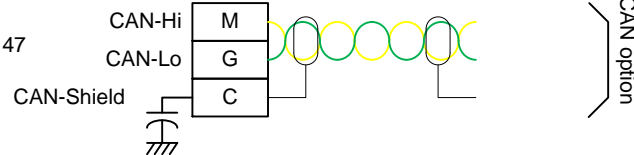


For more information see manuals
26246 PISC



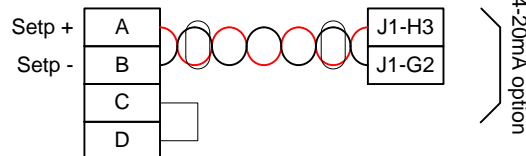
Device needs to be
configured before use !

Configuration cable P/N 1249-1147



EG-3P Actuator connection

For more information see manuals
82560 EG-3P Actuator

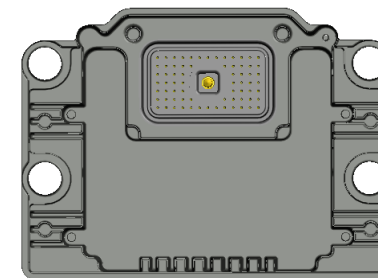


Throttle Actuator & EIS

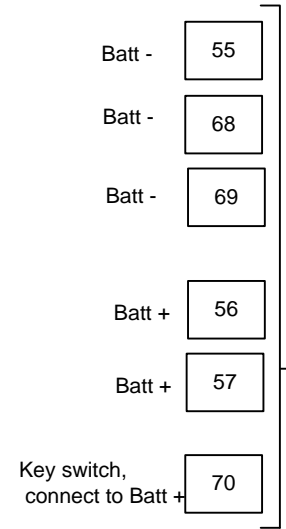
Caterpillar
CAN J1939 Converter
to adjust engine timing in EIS



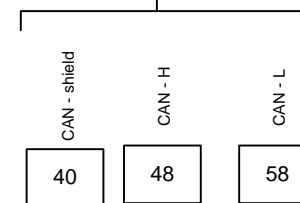
Also, note that there is an external ground strap (5/16
M8 ring terminal) on the





CAT p/n 320-2158



(CAN Link)

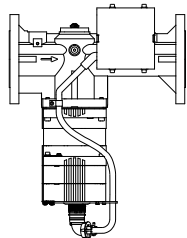


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				DRAWN ESPLIN MAR-2009		CONTROL WIRING DIAGRAM			
		THIRD ANGLE PROJECTION				733 Gas Engine Control			
						SIZE D		CAGE CODE	DWG NO
						31361		9971-1387	REV F
						SCALE NTS		SHEET 8 OF 15	
4		3		2		VISIO			

TecJet connection

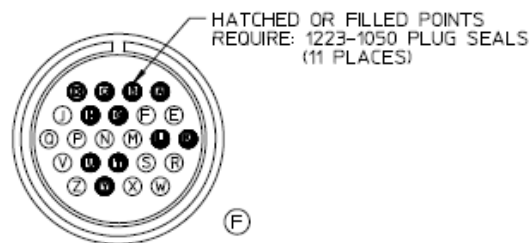
P/N 8407-534 TecJet 52 G2
P/N 8407-530 TecJet 85
P/N 8407-523 TecJet 110

Mating connector kit P/N 6995-1021



TecJet Receptacle

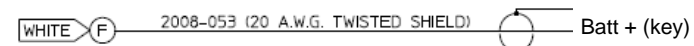
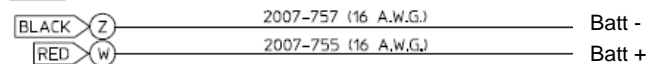
For more information see manuals
26833 TecJet 52 G2
26701 TecJet 85
26185 TecJet 110



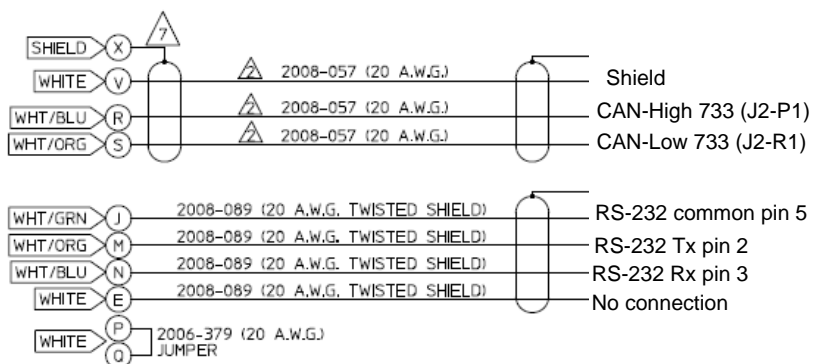
INSTALLATION OF PLUG SEALS

SCALE: 1.5X

WIRE
COLOR





MATING CONNECTOR FOR TECJET



Cable p/n 1249-1083

TecJet

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	THIRD ANGLE PROJECTION	ESPLIN	MAR-2009			
		DRAWN	DATE			
		ESPLIN	MAR-2009	CONTROL WIRING DIAGRAM 733 Gas Engine Control		
		SIZE	CAGE CODE	DWG NO	REV	
		D	31361	9971-1387	F	
		SCALE	NTS		SHEET 9	OF 15

VISIO

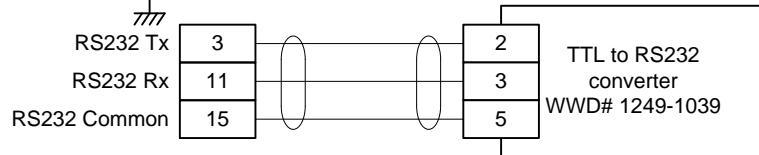
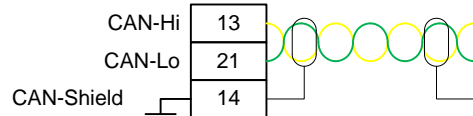
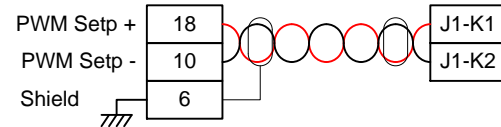
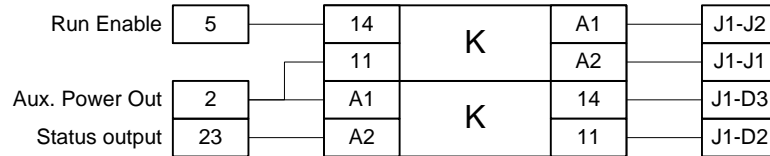
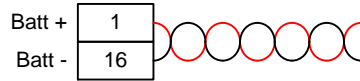
SHEET 9 OF 15

F-Series Trim valve connection

P/N 8235-xxx F-Series 23-PIN, xxMM
P/N 8235-xxx F-Series 23-PIN, xxMM

Mating connector kit P/N 8923-1312

EGS-CAT



Device needs to be configured before use !

Configuration cable P/N 8923-1255

For more information see manuals
26600 F-Series 23 pins

Trim valves (F-Series & L-Series)

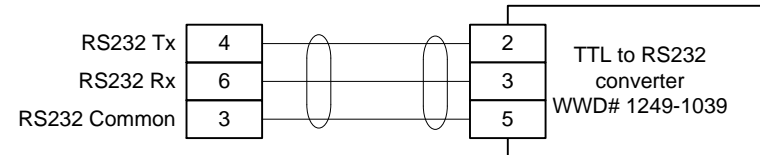
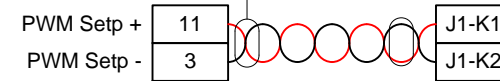
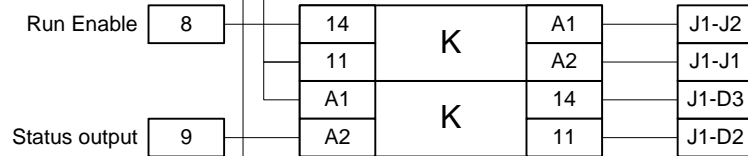
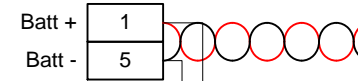
L-Series Trim valve connection

P/N 8404-20xx L-Series ITB xxMM
P/N 8404-3003 L-Series Trim 16MM
P/N 8404-3004 L-Series Trim 22MM



Mating connector kit P/N 8923-396

EGS-CAT





Device needs to be configured before use !

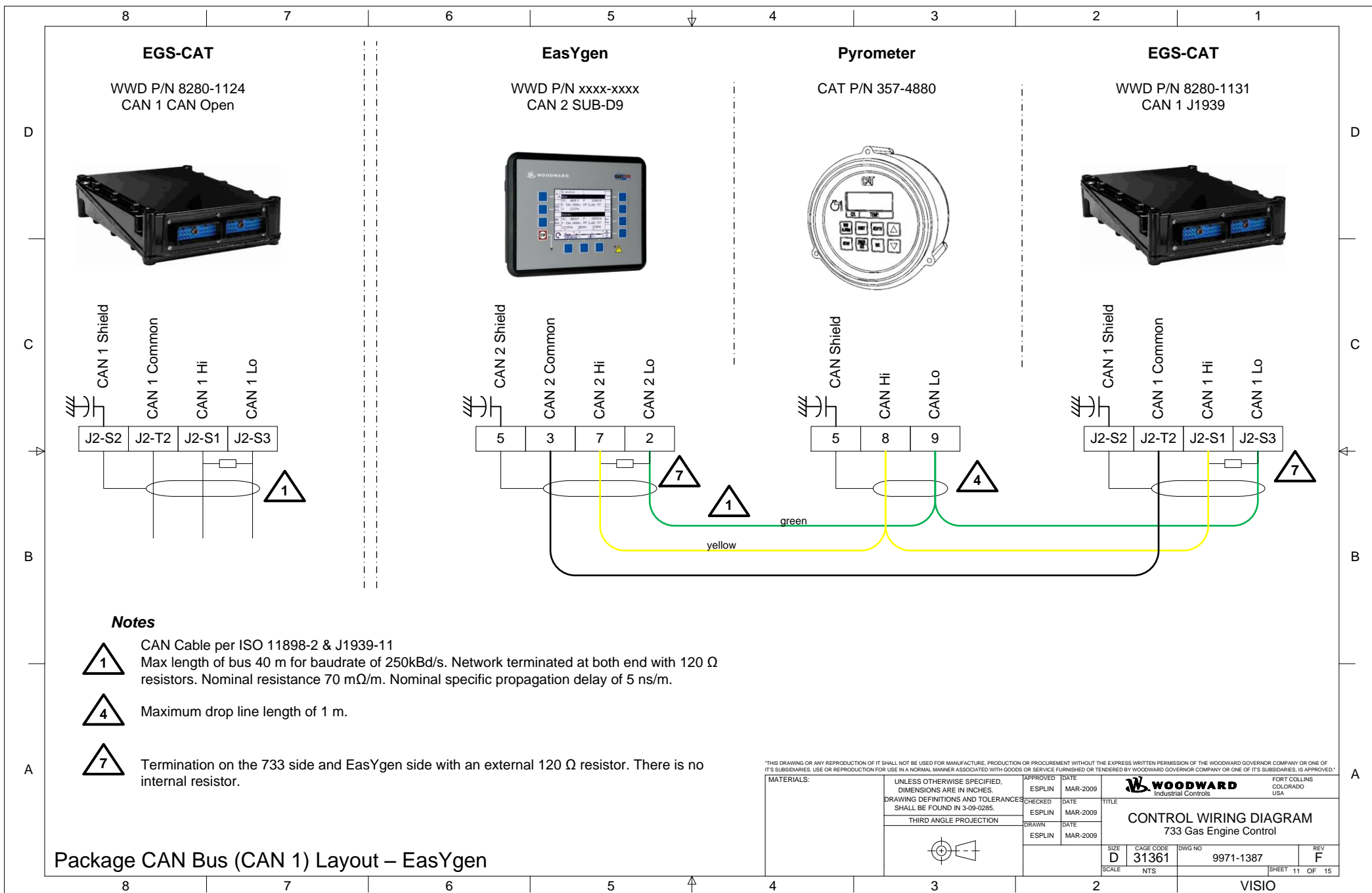
Configuration cable P/N 8923-1061

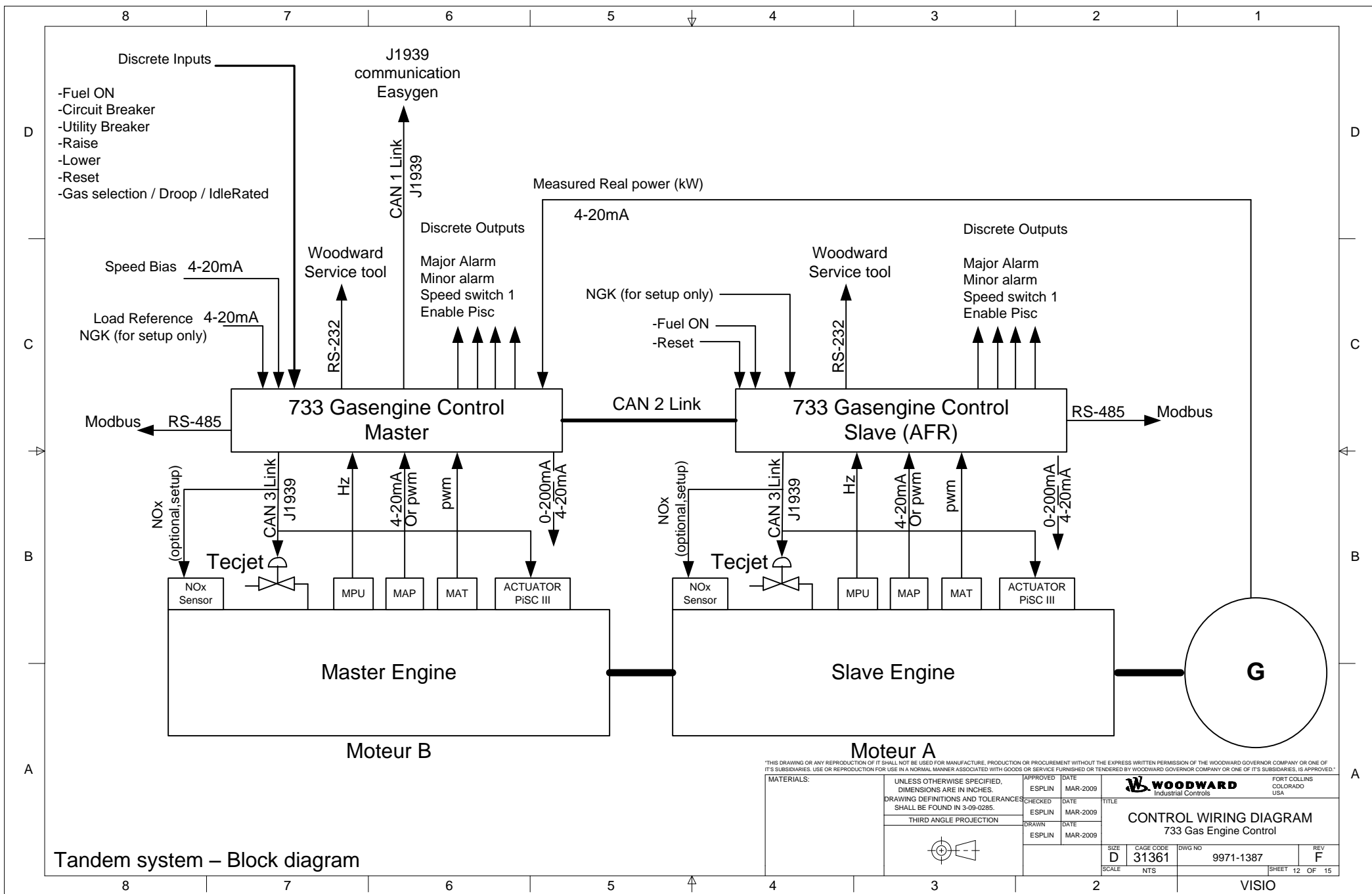
For more information see manuals
26237 L-Series Position Control

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		CHECKED	DATE						
		ESPLIN	MAR-2009						
		DRAWN	DATE						
THIRD ANGLE PROJECTION	ESPLIN	MAR-2009							
									
		SIZE	D	CAGE CODE	31361	DWG NO	9971-1387	REV	F
		SCALE	NTS					SHEET	10 OF 15

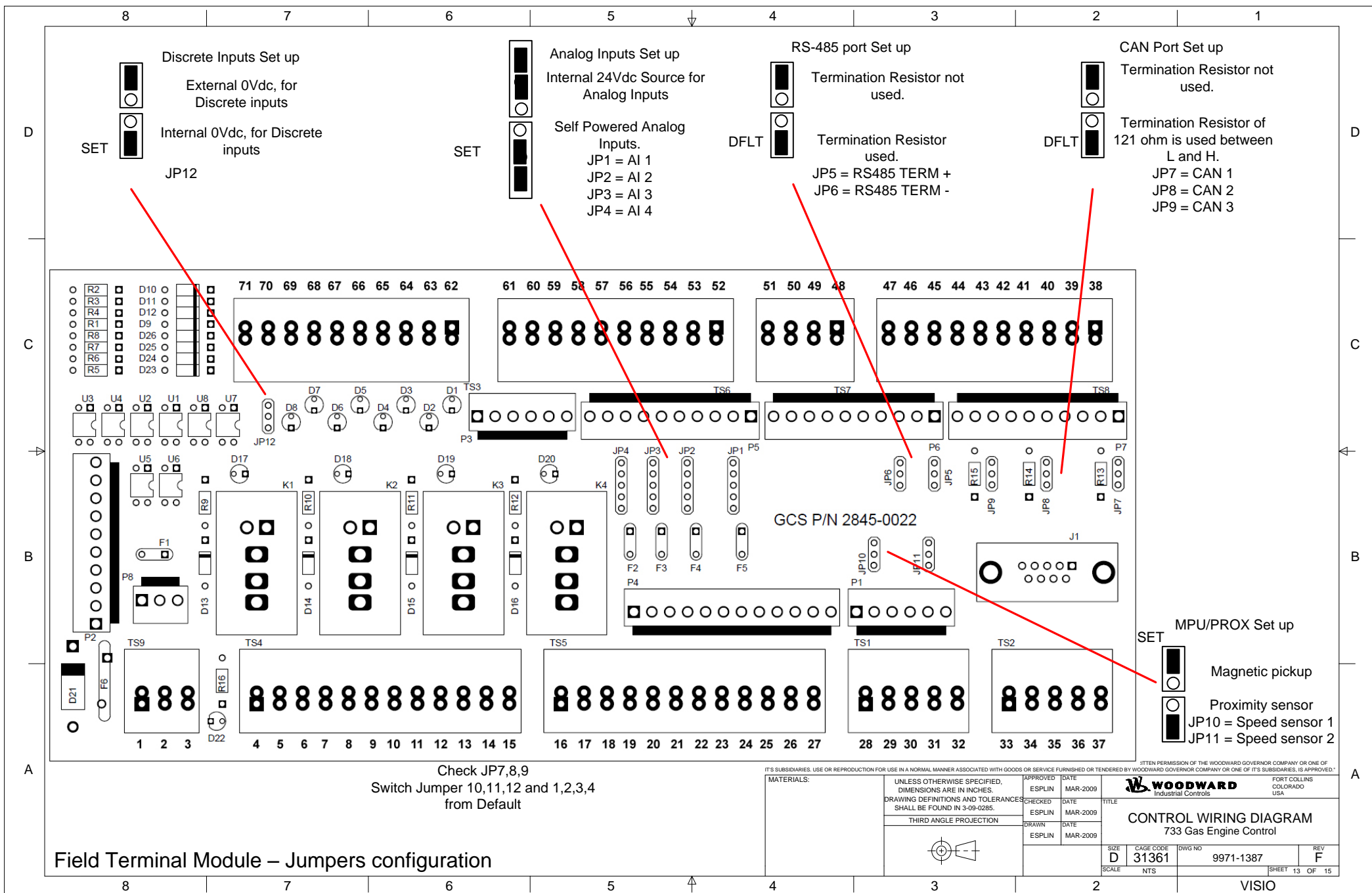
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		DRAWN ESPLIN	DATE MAR-2009			
	THIRD ANGLE PROJECTION					
						
		SIZE D	CAGE CODE 31361	DWG NO 9971-1387	REV F	
SCALE		NTS		SHEET 12 OF 15		



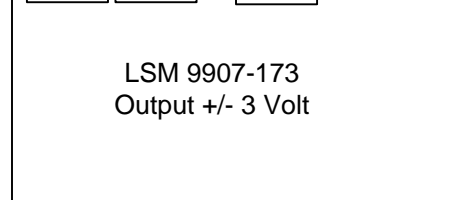
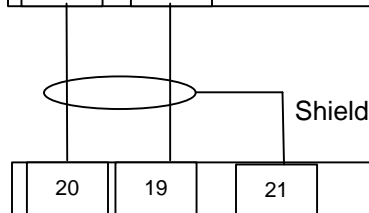
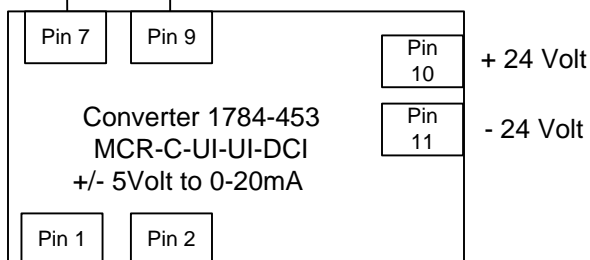
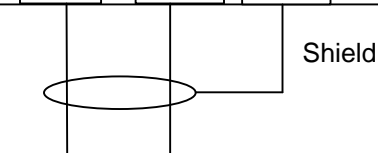
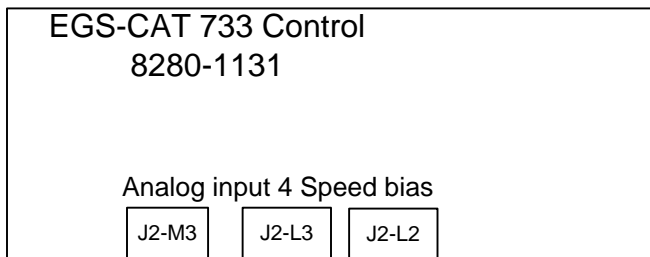
	8	7	6	5	4	3	2	1
		I/O Node	733	Description	Description	733	I/O Node	
		1	J2-Y3	Power Supply (+24 Vdc)				
		2	J2-Y1	Power Supply (0 Vdc)				
		3		GND				
		4		Discrete #1 NO	COM		71	
D		5	J1-K3	Discrete Output # 1	COM	J1-B2	70	
		6		Discrete #1 NC	Discrete Input #8	J1-B1	69	Fuel-on / Run-Stop
		7		Discrete #2 NO	Discrete Input #7	J1-C1	68	Speed raise
		8	J1-J3	Discrete Output # 2	Discrete Input #6	J1-C2	67	Speed Lower
		9		Discrete #2 NC	Discrete Input #5	J1-C3	66	GCB Feedback
		10		Discrete #3 NO	Discrete Input #4	J1-D3	65	MCB Feedback, Gas Selection Idle/Rated or Droop
		11	J1-K1	Discrete Output # 3	Discrete Input#3	J1-K1	64	External Reset
		12		Discrete #3 NC	Discrete Input #2		63	no connection
		13		Discrete #4 NO	Discrete Input #1		62	no connection
		14	J1-J1	Discrete Output # 4	Analog Input #4 -	J2-L3	61	
		15		Discrete #4 NC	Analog Input #4 +	J2-M3	60	Load Setpoint, NGK input, CH4% input or Speed Bias
		16	J1-A1	Analog Output 4 +	Analog Input #3+4 Shield	J1-L2	59	
		17	J1-A2	Analog Output 4 -	Analog Input #3 -	J2-M2	58	Load Setpoint, NGK input, CH4% input or Speed Bias
C		18		Analog Output 4 Shield	Analog Input #3 +	J2-L1	57	
		19	J1-B3	Analog Output 3 +	Analog Input #2 -	J2-M1	56	
		20	J1-A3	Analog Output 3 -	Analog Input #2 +	J2-N1	55	MAP sensor (4-20 mA) - Selectable
		21		Analog Output 3 Shield	Analog Input #1+2 Shield	J2-N2	54	
		22	J1-H1	Analog Output 2 +	Analog Input #1 -	J2-N3	53	Measured kW _e (4-20 mA) if not from easYgen
		23	J1-H2	Analog Output 2 -	Analog Input #1 +	J2-P2	52	
		24		Analog Output 2 Shield	RS-485(Shield)	J2-W2	51	
		25	J1-H3	Analog Output 1 +	RS-485 (COM/GND)	J2-Y2	50	Modbus
		26	J1-G2	Analog Output 1 -	RS-485 (TX-/Rx)	J2-X3	49	
		27	J1-F2	Analog Output 1 Shield	RS-485 (TX+)	J2-X1	48	
		28	J1-G3	MPU/Prox #1 +	CANbus #3 Shield	J2-R2	47	
		29	J1-F3	MPU/Prox #1 -	CANbus #3 High	J2-P1	46	Engine CAN for TecJet, PISC and NO _x sensor
		30	J1-F2	MPU/Prox #1 Shield	CANbus #3 Low	J2-R1	45	
B		31	J1-D1	Prox #1 Power +	CANbus #2 Shield	J2-R2	44	
		32	J1-D2	Prox #1 COM/GND	CANbus #2 High	J2-P3	43	Load-Sharing CANbus (Tandem's only)
		33	J1-G1	MPU/Prox #2 +	CANbus #2 Low	J2-R3	42	
		34	J1-F1	MPU/Prox #2 -	CANbus #1 Shield	J2-S2	41	
		35	J1-F2	MPU/Prox #2 Shield	CANbus #1 COM/GND	J2-T2	40	J1939 & easYgen
		36	J1-D1	Prox #2 Power +	CANbus #1 High	J2-S1	39	
		37	J1-D2	Prox #2 COM/GND	CANbus #1 Low	J2-S3	38	
				MAP sensor (PWM, 500 Hz)				
				MAT sensor (PWM, 500 Hz)				
A				PWM signals need to be connected to wires taken from connector P2 (8 is pwm MAP, 9 is pwm MAT)				
				Check Jumpers				
				Field Terminal Module – Connections				

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APPROVED:		DATE		MAR-2009	
CHECKED:	ESPLIN	DATE	MAR-2009	TITLE	
THIRD ANGLE PROJECTION		DRAWN	DATE		
		ESPLIN	MAR-2009		

WOODWARD Industrial Controls		FORT COLLINS COLORADO USA	
CONTROL WIRING DIAGRAM 733 Gas Engine Control			
SIZE D	CAGE CODE 31361	DWG NO 9971-1387	REV F
SCALE NTS	SHEET 14 OF 15		

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DIP 1:
Jumper 3 ON

DIP 2:
Jumper 2,4,5,7 ON

LSM Connections

10.4 - INPUT 4 - Select (Speed Bias)

Connect Disconnect

CATERPILLAR

Input 4 of 733 (Pin J2-M3 + and Pin J2-L3 -)

Input 3 and 4 should NOT be setup similar.

Select Input Channel 4 to be a Setup Error

Speed Bias

OFFSET %

GAIN

Speed Bias signal mA

Speed Bias signal %

Speed Bias rpm

Speed Bias % min %



Speed Bias % max %

Speed Bias filter sec

Speed Bias filtered rpm

Speed Bias Input (%)	Speed Bias (rpm)
0.0	-40.0
37.0	0.0
75.0	40.0

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MATERIALS:	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.	APPROVED ESPLIN	DATE MAR-2009	 WOODWARD Industrial Controls FORT COLLINS COLORADO USA					
	DRAWING DEFINITIONS AND TOLERANCES SHALL BE FOUND IN 3-09-0285.	CHECKED ESPLIN	DATE MAR-2009		CONTROL WIRING DIAGRAM 733 Gas Engine Control				
	THIRD ANGLE PROJECTION	DRAWN ESPLIN	DATE MAR-2009						
									
					SIZE D	CAGE CODE 31361	DWG NO 9971-1387	REV F	
					SCALE NTS				SHEET 15 OF 15

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