WARNING: DEVIATION FROM THESE INSTALLATION INSTRUCTIONS MAY LEAD TO IMPROPER ENGINE OPERATION WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

1.0 DESCRIPTION

1.1 These instructions detail the installation of the Altronic CPU-90 Interface Unit 791 901. This unit permits using the Altronic CPU-90 ignition system in conjunction with the Caterpillar Timing Control Module on Caterpillar G3500 and G3600 series gas engines previously equipped with Altronic III ignition and III-CPU unit 381 501 series. Using the 791 901 Interface Unit, the control features of the Caterpillar Timing Control Module will be operable with the CPU-90 ignition system.

1.2 The system requires connection to the 24 Vdc power source.

1.3 Reference is made herein to the CPU-90 installation instructions, form CPU-90 II.

2.0 INSTALLATION OF CPU-90 IGNITION SYSTEM

2.1 Use the installation instructions form CPU-90 II to install the CPU-90 ignition system except as noted below:

A. Sections 3.0, 4.0, 5.0, 7.0, 8.3 and 11.0 can be ignored. These elements are either already in place or are not used in this installation.

B. Section 6.2 is superseded - time the CPU-90 4-cycle Hall-effect pick-up signal according to these instructions (see section 3.1).

C. Section 12.2 is superseded - the cycle jumper must be in the 2-CYCLE position.

D. Drawing 709 904 in form CPU-90 II is superseded by drawing 709 945 herein. All pick-up signals come from the 791 901 Interface Unit. The magnetic pick-ups are already in place wired to the Caterpillar Timing Control Module. The Hall-effect pick-up must be wired to the 791 901 Interface Unit instead of directly to the CPU-90 unit.

3.0 TIMING HALL-EFFECT PICK-UP

3.1 Line-up the engine on the compression stroke of no.1 cylinder twelve (12) degrees advanced from the ignition timing mark. With this setting of the engine, the Hall-effect pick-up should be triggered on by the magnet. The HALL-EFFECT PICK-UP indicator (LED) in the 791 901 Interface Unit will light when the pick-up is activated.

4.0 MOUNTING AND HOOK-UP OF INTERFACE UNIT

4.1 The 791 901 Interface Unit should be mounted in place of the III-CPU unit 381 501-x. Dimensions are shown on drawing 799 039.

4.2 Connect the "G" lead from the CPU-90 output connector to the left-hand terminal strip in the Interface Unit as shown on drawing 709 945.

4.3 Connect cable 783 014 supplied with the interface unit to the middle terminal strip in both the Interface Unit and the CPU-90 Unit as shown on drawing 709 945.

4.4 Connect the cable from the Hall-effect pick-up to the right hand terminal strip in the Interface Unit as shown on drawing 709 945.

4.5 Plug in the connector from the Caterpillar Timing Control Module into the 10-pin connector on the Interface Unit.

4.6 Connect the 24 Vdc power as shown on drawing 709 945.

5.0 SETTING THE INTERFACE UNIT

NOTE: ALL JUMPERS MUST BE SET PRIOR TO STARTING UP THE ENGINE. DO NOT ATTEMPT TO CHANGE THESE SETTINGS WITH THE ENGINE ROTATING.

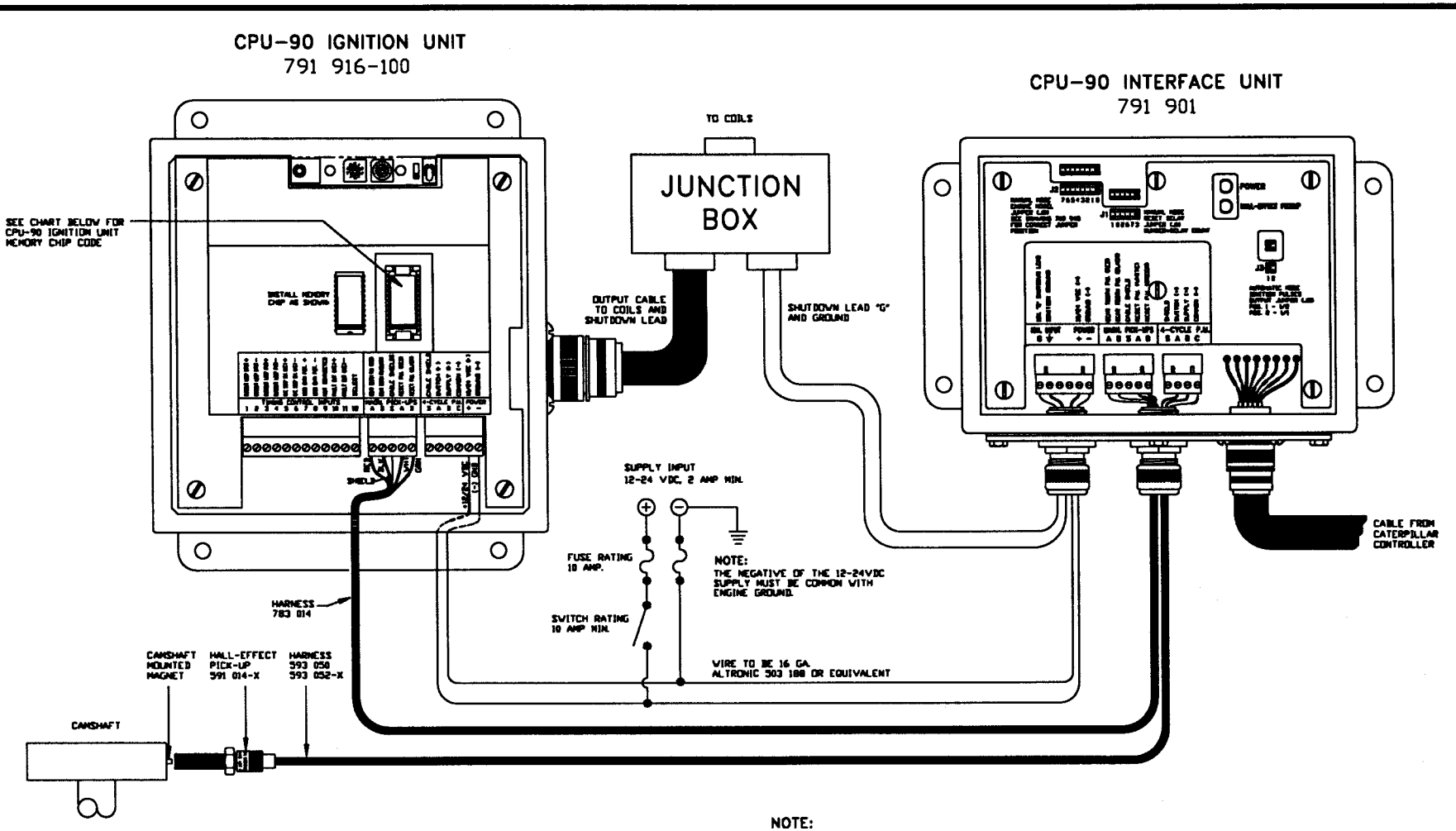
5.1 JUMPER J1 - Set by the factory in position 7. This jumper can be used to change the ignition timing setting under starting conditions. A higher number gives more retarded timing; a lower number gives more advanced timing.

5.2 JUMPER J2 - Sets the Interface unit to match the memory code used in the CPU-90 ignition unit. Refer to the chart below for the proper setting.

5.3 JUMPER J3 - Sets the Interface Unit for the proper number of firings for feedback to the Caterpillar Timing Control Module. Refer to the chart below for the proper setting.

MEMORY CODE CHART:

CATERPILLAR ENGINE MODEL	CPU-90 MEMORY CHIP CODE	POSITION FOR JUMPER J2	POSITION FOR JUMPER J3
G3508	H4A183.EE	0	1
G3512	L4A183.EE	1	1
G3516	P4T183.EE	2	1
G3606	F4A255.EE	3	2
G3608	H4A255.EE	4	1
G3612	L4V255.EE	5	1
G3616	P4V255.EE	6	1



NOTE:

1. TO TIME THE CPU-90 4-CYCLE HALL-EFFECT PICK-UP SIGNAL, LINE UP THE ENGINE ON THE COMPRESSION STROKE OF NO. 1 CYLINDER TWELVE (12) DEGREES ADVANCED FROM THE TIMING MARK WITH THIS SETTING OF THE ENGINE, THE HALL-EFFECT PICK-UP SHOULD BE TRIGGERED ON BY THE MAGNET. USE THE RED LED HALL-EFFECT PICK-UP INDICATOR IN THE CPU-90 INTERFACE UNIT TO HELP ALIGN THE PICK-UP.
2. JUMPER J1 – IN THE MANUAL MODE, JUMPER J1 DELAYS THE TIMING FROM THE HALL-EFFECT PICK-UP POSITION. USE JUMPER J1 TO SET THE DELAY COUNT. THE NUMBER OF DEGREES CAN BE CALCULATED USING THE FORMULA: DEGREES = 360 / # OF GEAR TEETH X DELAY COUNT (J1)
3. JUMPER J2 – IN THE MANUAL MODE, JUMPER J2 SELECTS THE MEMORY CODE FOR THE IGNITION PULSE SIGNAL OUTPUT FOR EACH CAT. ENGINE MODEL. USE THE MEMORY CODE CHART ON THIS DRAWING TO SELECT THE PROPER JUMPER POSITION.
4. JUMPER J3 – IN THE AUTOMATIC MODE, JUMPER J3 ADJUSTS THE IGNITION PULSE OUTPUT SIGNAL FOR 1/1 OR 1/2 OUTPUT SIGNALS FOR THE CAT. CONTROLLER. USE THE MEMORY CODE CHART ON THIS DRAWING TO SELECT THE PROPER JUMPER POSITION.

MEMORY CODE CHART			
CATERPILLAR ENGINE MODEL	CPU-90 MEMORY CHIP CODE	791 901 JUMPER POSITION J2	J3
3508	H4A183.EE	0	1
3512	L4A183.EE	1	1
3516	P4T183.EE	2	1
3606	F4A255.EE	3	2
3608	H4A255.EE	4	1
3612	L4V255.EE	5	1
3616	P4V255.EE	6	1

NOTE:

1. USE INSTALLATION INSTRUCTIONS FORM CPU-90 II TO INSTALL CPU-90 IGNITION SYSTEM EXCEPT AS NOTED BELOW:
   - A. SECTIONS 3.0, 4.0, 5.0, 7.0, 8.3, AND 11.0 CAN BE IGNORED. THESE ELEMENTS ARE EITHER ALREADY IN PLACE OR ARE NOT USED IN THIS INSTALLATION.
   - B. DRAWING 709 904 IS SUPERSEDED BY THIS DRAWING. ALL PICK-UP SIGNALS COME FROM THE 791 901 INTERFACE UNIT. THE MAGNETIC PICK-UPS ARE ALREADY IN PLACE WIRED TO THE CAT CONTROLLER. THE HALL-EFFECT PICK-UP MUST BE WIRED TO THE 791 901 INTERFACE UNIT INSTEAD OF DIRECTLY TO THE CPU-90 UNIT.
   - C. SECTION 6.2 IS SUPERSEDED – TIME THE CPU-90 4-CYCLE HALL-EFFECT PICK-UP SIGNAL ACCORDING TO THIS DRAWING.
   - D. SECTION 12.2 IS SUPERSEDED – CYCLE JUMPER MUST BE IN THE 2-CYCLE POSITION.

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			

TOLERANCES (EXCEPT AS NOTED): DECIMAL .XXX ± .005, .XX ± .010; FRACTIONAL; MATERIAL

ALTRONIC INC.

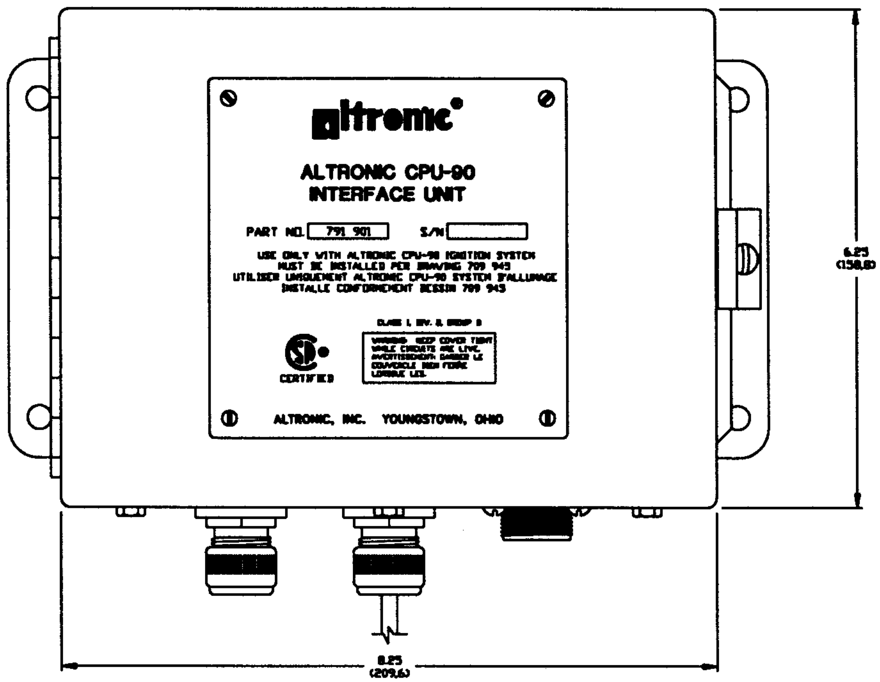
TITLE: INSTALLATION DRAWING CPU-90 INTERFACE UNIT

DRAWN BY: RY | SCALE: NONE | PART NUMBER: 709 945

CHECKED BY | DATE: 9-21-94

APPROVED BY

709 945



SPECIFICATIONS

POWER REQUIRED FOR INTERFACE UNIT ONLY: 12-24 VDC 50mA MAX.

AMBIENT TEMPERATURE RANGE: -40° TO 175°F (-40° TO +85°C)

HAZARDOUS AREA CLASSIFICATION: CSA CERTIFIED FOR
CLASS I, DIV. 2, GROUP D AREAS

INPUT SIGNALS FROM CATERPILLAR CONTROLLER:
GEAR TOOTH, 5 VOLT PULSES AT 4mA
RESET PULSE, 5 VOLT PULSE AT 16mA
MANUAL OVERRIDE SIGNAL

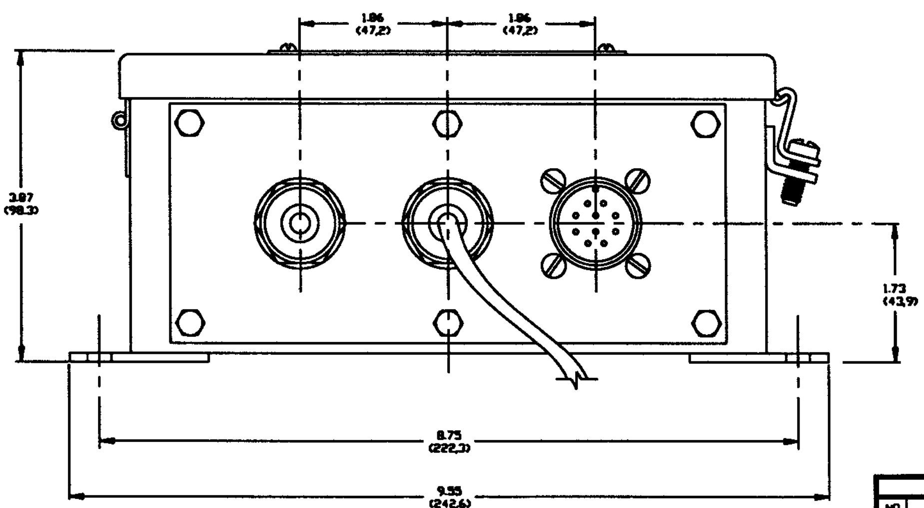
OUTPUT SIGNAL TO CATERPILLAR CONTROLLER:
OPTO ISOLATED LOGIC LEVEL IGNITION PULSE OUTPUT

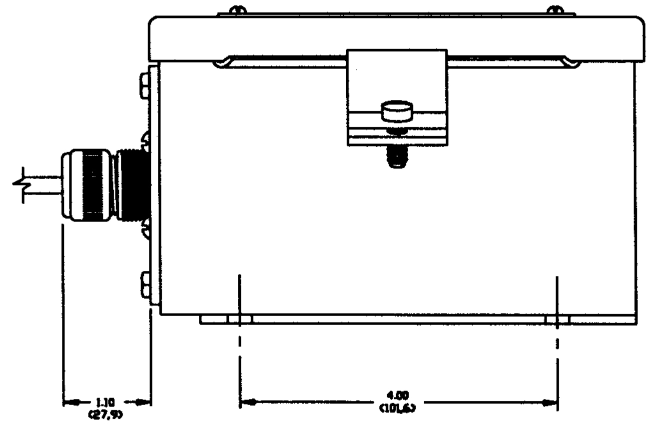
INPUT SIGNAL FROM CPU-90:
IGNITION "G" (SHUTDOWN LEAD)

OUTPUT SIGNAL TO CPU-90:
GEAR TEETH OUTPUT
RESET PULSE OUTPUT

10-PIN CIRCULAR CONNECTOR PINOUTS:

A. IGN. PULSE OUT
B. IGNITION GROUND
C. MANUAL OVERRIDE
D. CONTROLLER GROUND
E. GEAR TOOTH INPUT
F. CONTROLLER GROUND
G. RESET INPUT
H. CONTROLLER GROUND
I. NO CONNECTION
J. NO CONNECTION





799 039

NOTE:
DIMENSIONS IN INCHES AND (MM)

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			

ALTRONIC INC.

TITLE CPU-90 INTERFACE UNIT

DRAWN BY RY/VTF | SCALE FULL | DATE 2-17-95 | PART NUMBER 799 039