DDEC III Wiring Instructions

Engine Preparation

Clean the engine thoroughly and remove the rocker cover and gasket. Note the location of the valve and injector operating components (Fig. 1).

NOTE:

IF THE ENGINE IS EQUIPPED WITH AN ALUMINUM TWO-PIECE VALVE COVER, REMOVE ONLY THE UPPER VALVE COVER TO INSTALL THE ENGINE BRAKE.

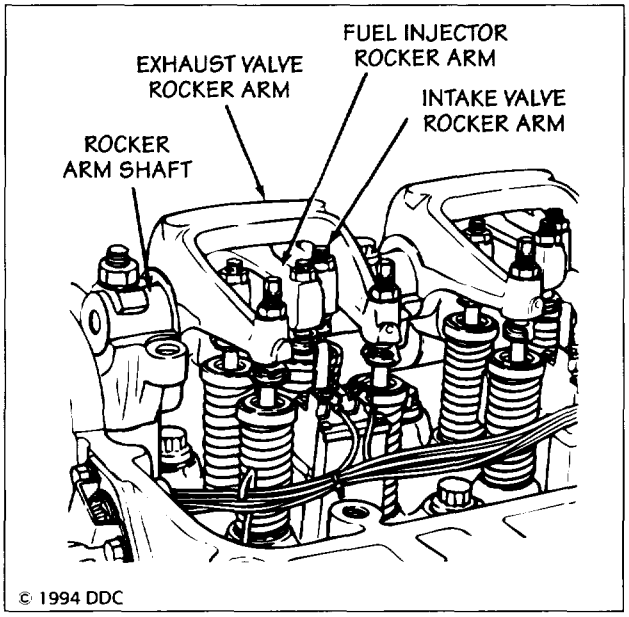

FIG. 1

Undercover Wire Harness Installation (DDEC III Retrofit)

Before installing the engine brake housings, install the undercover wire harness (Fig. 2). Letters in the illustrations refer to specific components explained in detail below.

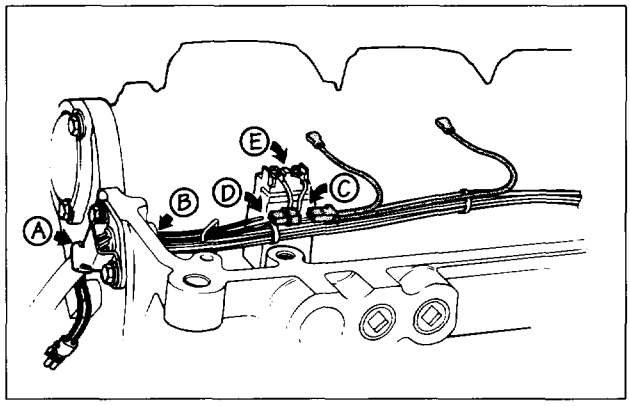

FIG. 2

1. Remove the mounting flange cover (A) from the Electronic Unit Injector (EUI) harness (Fig. 3).

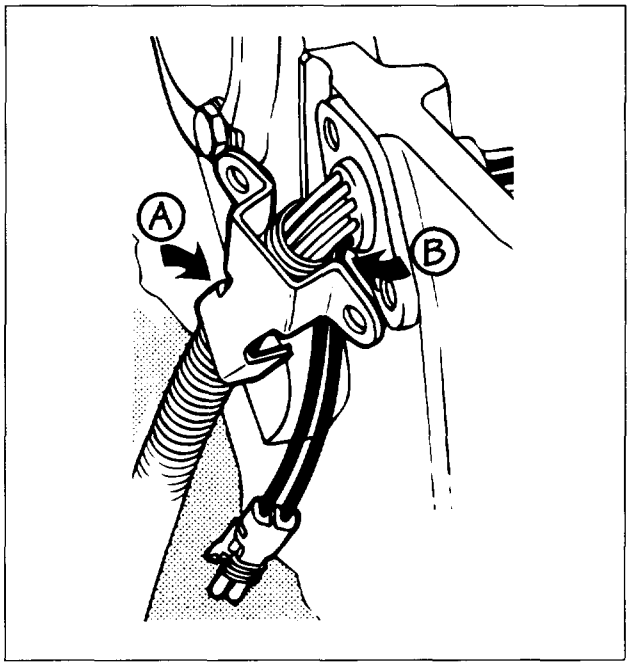

FIG. 3

2. Insert the blue and yellow wires from the wire harness, Jacobs P/N 020217, through two of the access holes in the grommet (B) located at the rear of the cylinder head. Insert the wires from the outside in.

NOTE:

ONCE THE WIRES ARE INSERTED THROUGH THE GROMMET, THEY CANNOT BE REMOVED DUE TO THE TERMINAL LOCKING TANGS.

To prevent oil leakage, apply a small quantity of RTV (or equivalent) on the outboard side of the grommet where the plugs were removed from the access holes.

3. Install the solenoid wire harness, Jacobs P/N 017392 (blue and yellow wires). Lay the harness along side of the injector wire harness. Locate the end connector on the outboard side of the standoff at the rear of the cylinder head.

4. Install the pin housing onto the connector at the end of the solenoid harness (C). Push the pin housing until it "clicks" (see Fig. 4).

NOTE:

THE PIN HOUSING WILL FIT ONTO THE CONNECTOR IN ONLY ONE DIRECTION.

NOTE:

HARNESSES INSTALLED AT DETROIT DIESEL CORPORATION WILL NOT HAVE THE PIN HOUSING AND CONNECTOR.

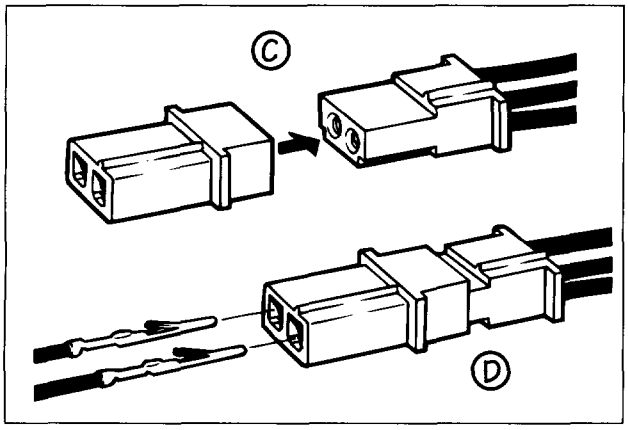

FIG. 4

5. Insert the yellow wire from the harness, Jacobs P/N 020217, into the pin housing on the same side as the yellow wire on the solenoid harness. Insert the blue wire into the other hole so that the blue wires are connected together (D) (see Fig. 4).

⚠ CAUTION

THE WIRES MUST BE CONNECTED AS INSTRUCTED. IF THE WIRES ARE REVERSED, IMPROPER ENGINE BRAKE SEQUENCING WILL OCCUR.

6. Connect the Metri-Pack 150 connector end of the Jacobs P/N 020217 into its mating DDC-provided connector. The DDC connector may be identified by its wires:

Label	Wire No.	Color	Engine Conn.
Engine Brake Low Ctl.	562	Orange	A
Engine Brake Med. Ctl.	561	Red	B

NOTE:

IT MAY BE NECESSARY TO REPROGRAM THE DDEC III MODULE FOR JAKE BRAKE OPERATION.

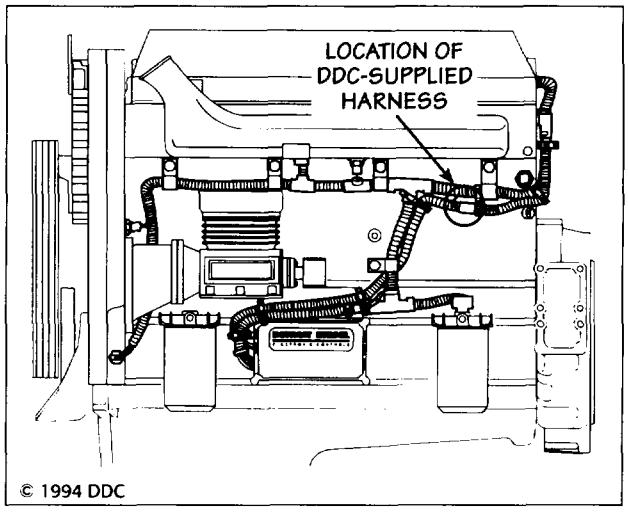

FIG. 5

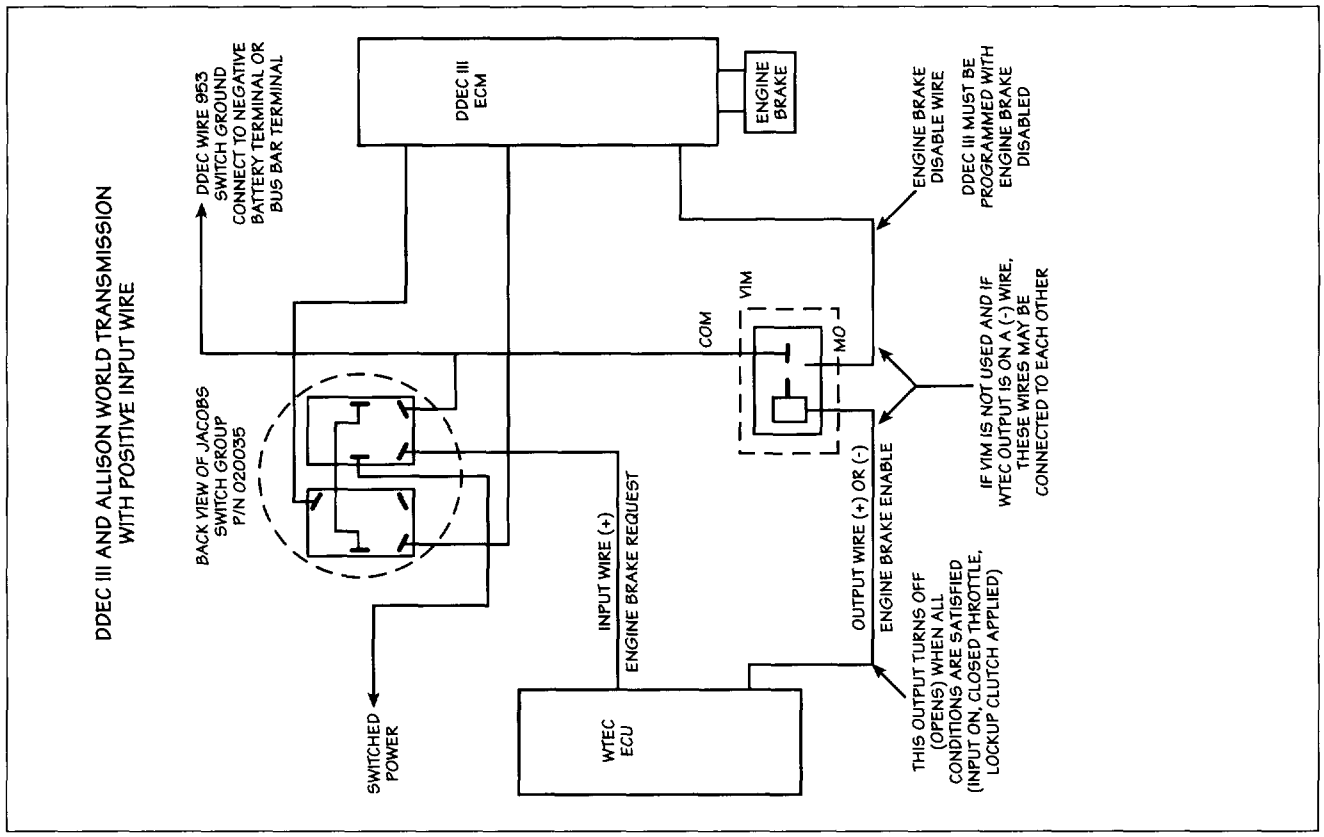
DDEC III AND ALLISON WORLD TRANSMISSION
WITH POSITIVE INPUT WIRE
DDEC WIRE 953
SWITCH GROUND
CONNECT TO NEGATIVE
BATTERY TERMINAL OR
BUS BAR TERMINAL
DDEC III
ECM
ENGINE
BRAKE
ENGINE BRAKE
DISABLE WIRE
DDEC III MUST BE
PROGRAMMED WITH
ENGINE BRAKE
DISABLED
BACK VIEW OF JACOBS
SWITCH GROUP
P/N 020035
COM
VIM
MO
IF VIM IS NOT USED AND IF
WTEC OUTPUT IS ON A (-) WIRE,
THESE WIRES MAY BE
CONNECTED TO EACH OTHER
INPUT WIRE (+)
ENGINE BRAKE REQUEST
OUTPUT WIRE (+) OR (-)
ENGINE BRAKE ENABLE
SWITCHED
POWER
WTEC
ECU
THIS OUTPUT TURNS OFF
(OPENS) WHEN ALL
CONDITIONS ARE SATISFIED
(INPUT ON, CLOSED THROTTLE,
LOCKUP CLUTCH APPLIED)

FIG. 8

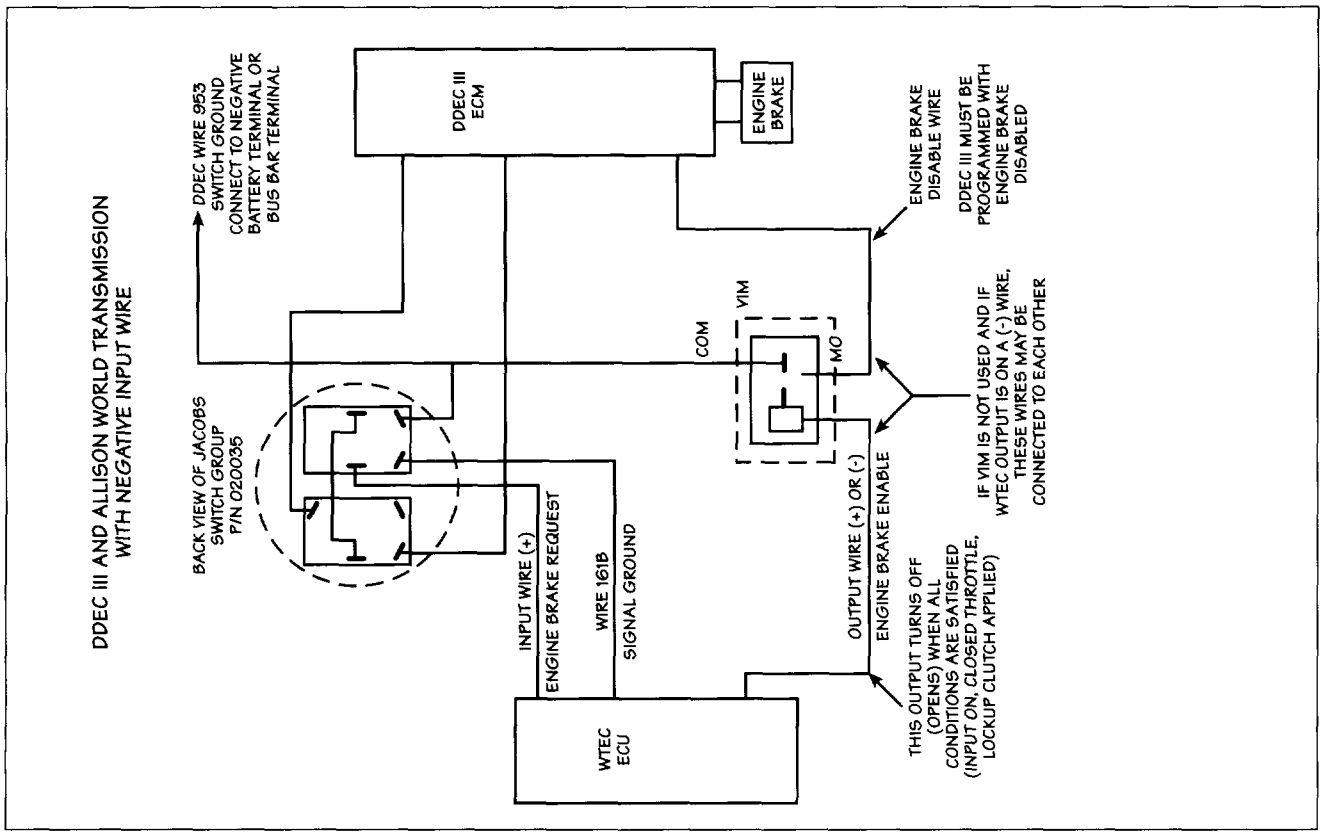
DDEC III AND ALLISON WORLD TRANSMISSION
WITH NEGATIVE INPUT WIRE
DDEC WIRE 953
SWITCH GROUND
CONNECT TO NEGATIVE
BATTERY TERMINAL OR
BUS BAR TERMINAL
DDEC III
ECM
ENGINE
BRAKE
ENGINE BRAKE
DISABLE WIRE
DDEC III MUST BE
PROGRAMMED WITH
ENGINE BRAKE
DISABLED
BACK VIEW OF JACOBS
SWITCH GROUP
P/N 020035
COM
VIM
MO
IF VIM IS NOT USED AND IF
WTEC OUTPUT IS ON A (-) WIRE,
THESE WIRES MAY BE
CONNECTED TO EACH OTHER
INPUT WIRE (+)
ENGINE BRAKE REQUEST
WIRE 1618
SIGNAL GROUND
OUTPUT WIRE (+) OR (-)
ENGINE BRAKE ENABLE
WTEC
ECU
THIS OUTPUT TURNS OFF
(OPENS) WHEN ALL
CONDITIONS ARE SATISFIED
(INPUT ON, CLOSED THROTTLE,
LOCKUP CLUTCH APPLIED)

FIG. 9

Allison World Transmission Wiring

Special Instructions for Allison World Transmissions

NOTE:

BOTH DDEC III AND THE ALLISON WORLD TRANSMISSION MUST BE PROGRAMMED TO INTERFACE WITH THE ENGINE BRAKE. FOR INFORMATION ON PROGRAMMING THE ALLISON WORLD TRANSMISSION AND DETROIT DIESEL DDEC III, PLEASE CONTACT YOU LOCAL AUTHORIZED ALLISON AND DETROIT DIESEL SERVICE FACILITY. THE ALLISON WORLD TRANSMISSION INPUTS AND OUTPUTS ARE FIELD PROGRAMMABLE, THEREFORE, NO STANDARD CONFIGURATION IS AVAILABLE. IDENTIFICATION OF YOUR CONFIGURATION IS ALSO AVAILABLE FROM YOUR AUTHORIZED ALLISON TRANSMISSION SERVICE FACILITY.

⚠ WARNING

IF THE DDEC III AND ALLISON WORLD TRANSMISSION ECMS ARE NOT PROPERLY PROGRAMMED TO INTERFACE WITH THE ENGINE BRAKE, THE ENGINE BRAKE MAY NOT FUNCTION PROPERLY AND ENGINE AND ENGINE BRAKE DAMAGE MAY RESULT!

1. Once you have identified the specific Allison World Transmission configuration, identify the engine brake request and engine brake enable signal.
2. If the engine brake request requires a positive signal, connect the engine brake request wires to the gold contacts on the on/off portion of the switch group, P/N 020035, to a positive switched voltage source (+VDC) as shown in Fig. 7.
3. If the engine brake request requires a ground signal, connect the engine brake request wires through the gold contacts of the on/off switch to wire 161B signal ground of the Allison World Transmission as shown in Fig. 8.

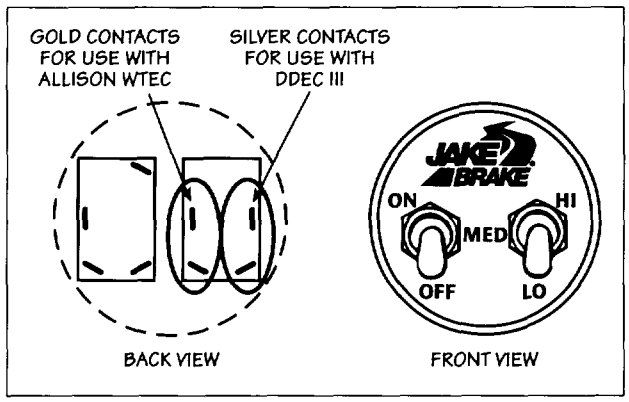

FIG. 7

4. Wire the engine brake enable signal wire to the VIM relay or DDEC III engine brake disable as shown on Fig. 8 or 9.

DDEC III Wiring

NOTE:

THE WIRING FOR THE DDEC III WAS DONE PREVIOUSLY WITH THE EXCEPTION OF THE DIGITAL INPUT FOR THE CLUTCH SWITCH.

1. The digital input for the clutch switch is a standard default for all application codes (except fire trucks) whenever the cruise control option is selected. Since the Allison World Transmission is an automatic transmission, the digital input for the clutch switch must be grounded or the digital input must be reprogrammed to eliminate the clutch switch input for the proper engine brake and cruise control operation.
2. For installation in fire trucks, contact your local Allison World Transmission service facility or refer to the Allison World Transmission manual (Allison Technical Document 110).

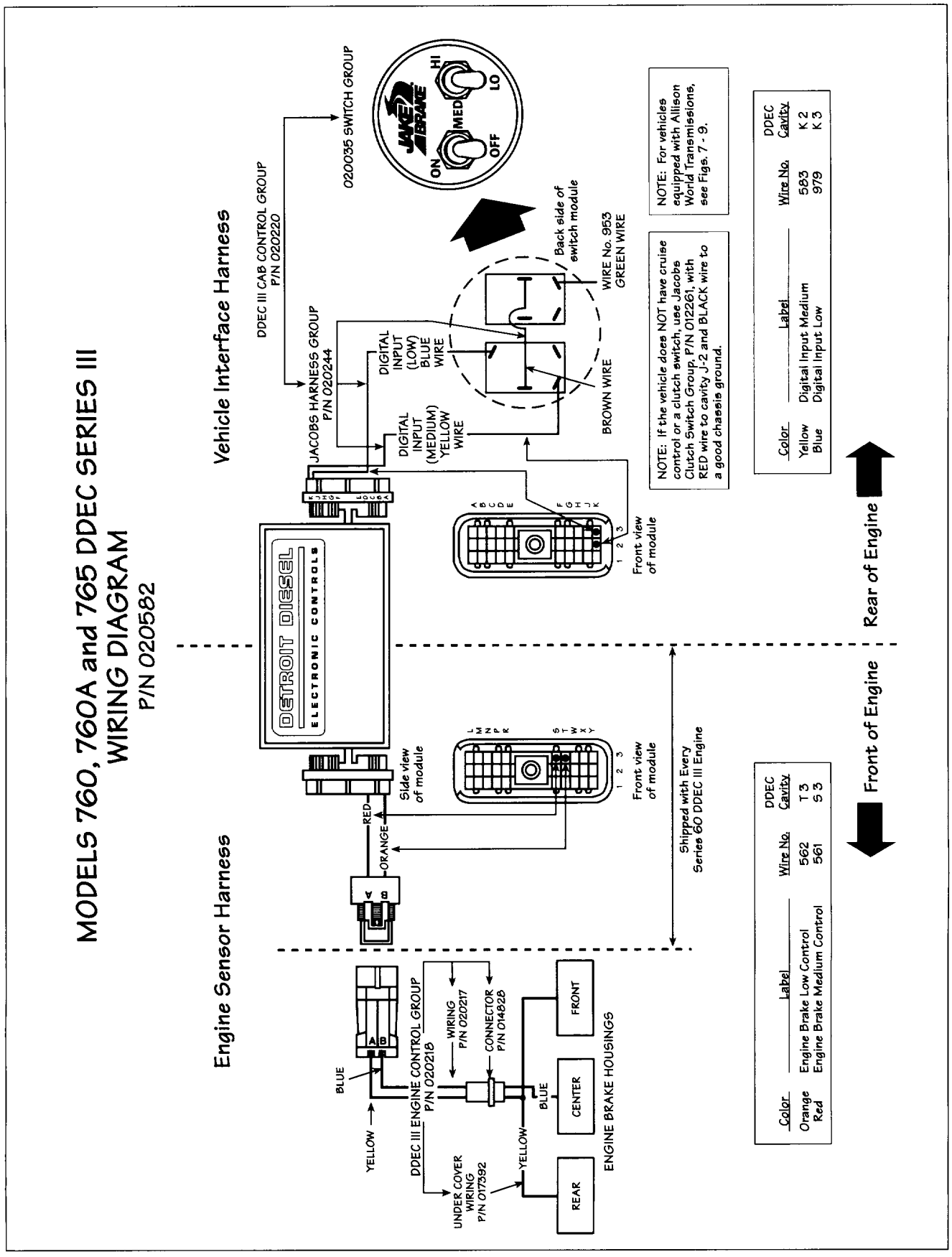
MODELS 760, 760A and 765 DDEC SERIES III
WIRING DIAGRAM
P/N 020582
Engine Sensor Harness
Vehicle Interface Harness
Front of Engine
Rear of Engine
DDEC III CAB CONTROL GROUP
P/N 020220
020035 SWITCH GROUP
JACOBS HARNESS GROUP
P/N 020244
DIGITAL INPUT (LOW) BLUE WIRE
DIGITAL INPUT (MEDIUM) YELLOW WIRE
BROWN WIRE
WIRE No. 953 GREEN WIRE
Back side of switch module
Front view of module
NOTE: If the vehicle does NOT have cruise control or a clutch switch, use Jacobs Clutch Switch Group, P/N 012261, with RED wire to cavity J-2 and BLACK wire to a good chassis ground.
NOTE: For vehicles equipped with Allison World Transmissions, see Figs. 7 - 9.
Color Label Wire No. DDEC Cavity
Yellow Digital Input Medium 583 K 2
Blue Digital Input Low 979 K 3
DETROIT DIESEL
ELECTRONIC CONTROLS
Side view of module
Front view of module
RED
ORANGE
Shipped with Every Series 60 DDEC III Engine
Color Label Wire No. DDEC Cavity
Orange Engine Brake Low Control 562 T 3
Red Engine Brake Medium Control 561 S 3
BLUE
YELLOW
DDEC III ENGINE CONTROL GROUP
P/N 020218
WIRING P/N 020217
CONNECTOR P/N 014828
UNDER COVER WIRING P/N 017392
YELLOW
BLUE
ENGINE BRAKE HOUSINGS
FRONT
CENTER
REAR

FIG. 6

Jacobs®

22 East Dudley Town Road
Bloomfield CT 06002

P/N 020358B Printed in USA 12/94