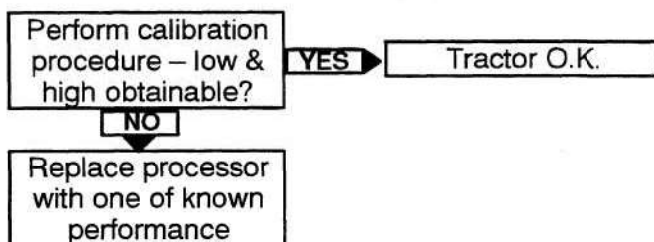


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F02

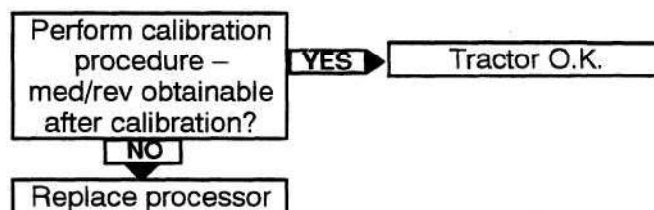
FAST/SLOW SYNCHRO UNCALIBRATED OR BAD CALIBRATION

EFFECT – Cannot obtain low or high range & mid range (if applicable) selected automatically

**ERROR CODE F03**

MED/REV SYNCHRO UNCALIBRATED OR BAD CALIBRATION

EFFECT – Cannot obtain mid or reverse range & low range (if obtainable)

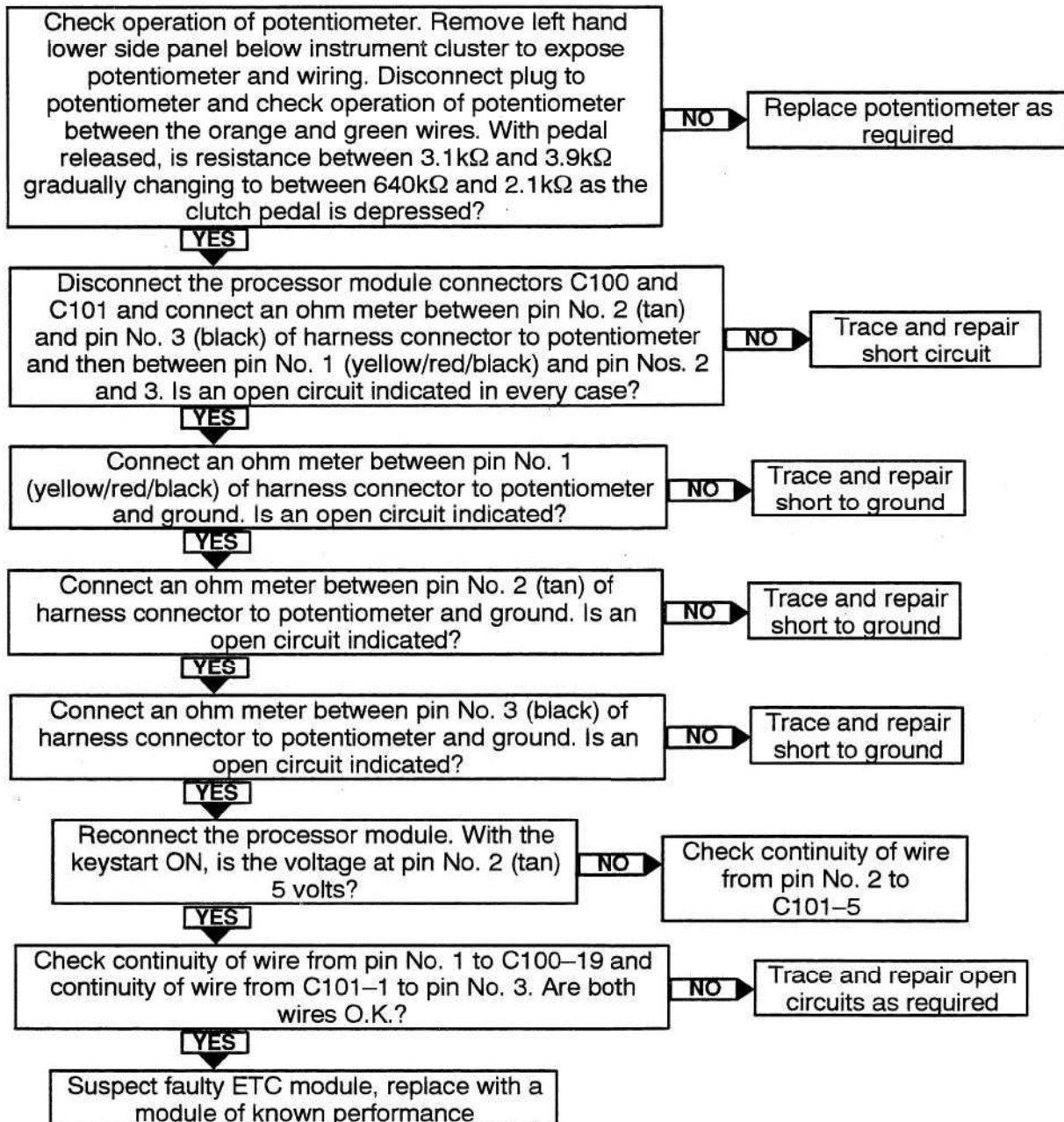


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;**F11 – CLUTCH POT OPEN CIRCUIT****F12 – CLUTCH POT SHORT TO +12V**

EFFECTS – Occurrence while driving will disable transmission. Cycling shuttle lever will re-enable Transmission. Tractor may be used on shuttle lever. If CP Depressed Transmission will disable again until cleared by cycling shuttle lever.

For transmission wiring diagram and connector location refer to the end of this Section.

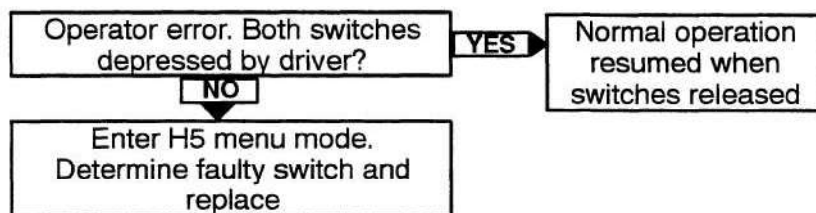


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F13

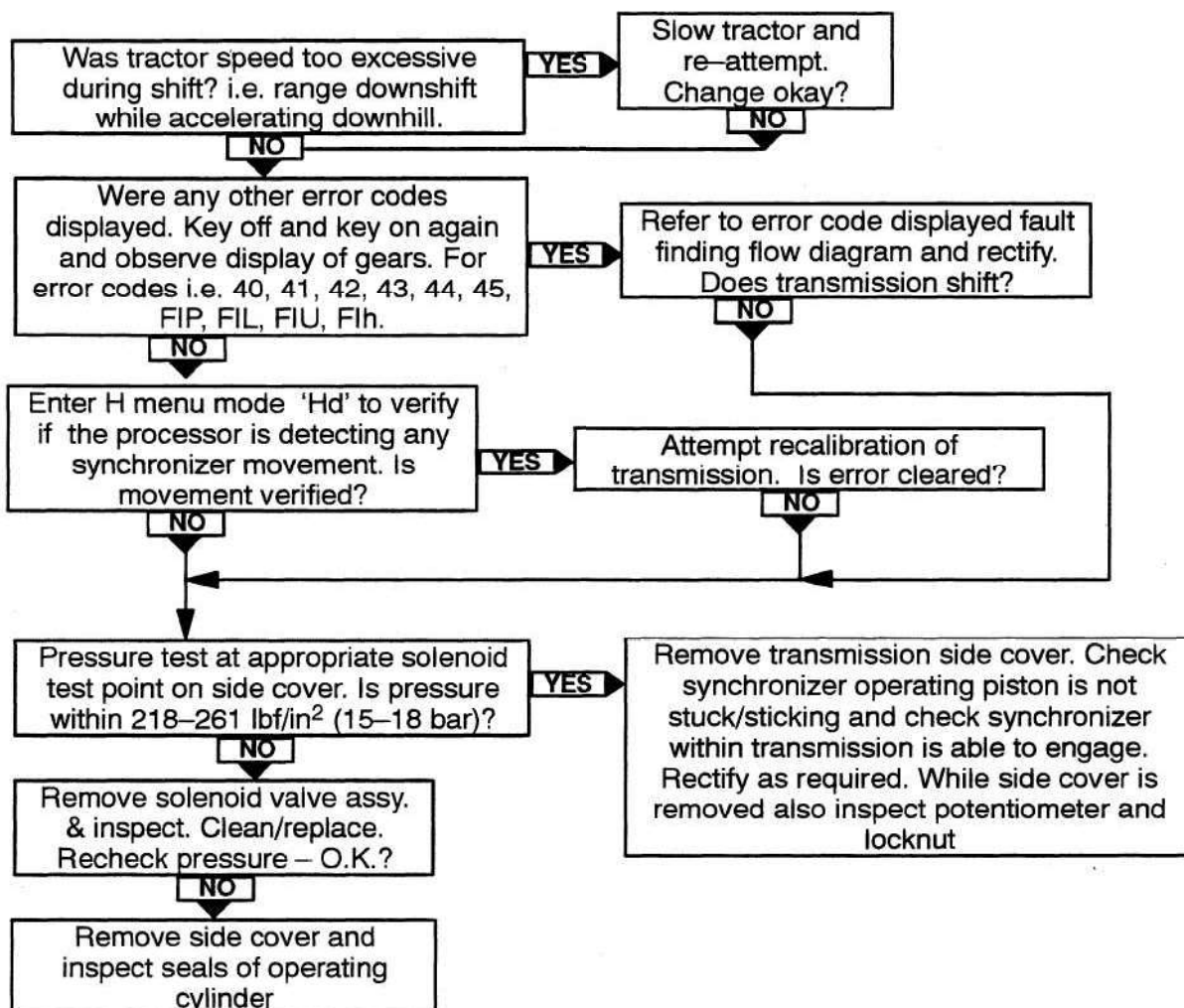
UPSHIFT & DOWNSHIFT SWITCHES BOTH CLOSED

EFFECT – Tractor will continue to drive but attempts to shift will not be recognized.

**ERROR CODE F20**

RANGE SHIFT SYNCHRONIZER DID NOT ENGAGE

EFFECT – Transmission attempts change and returns to previously engaged range

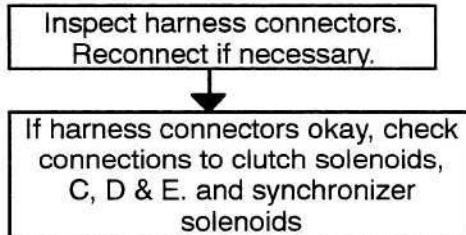


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F21

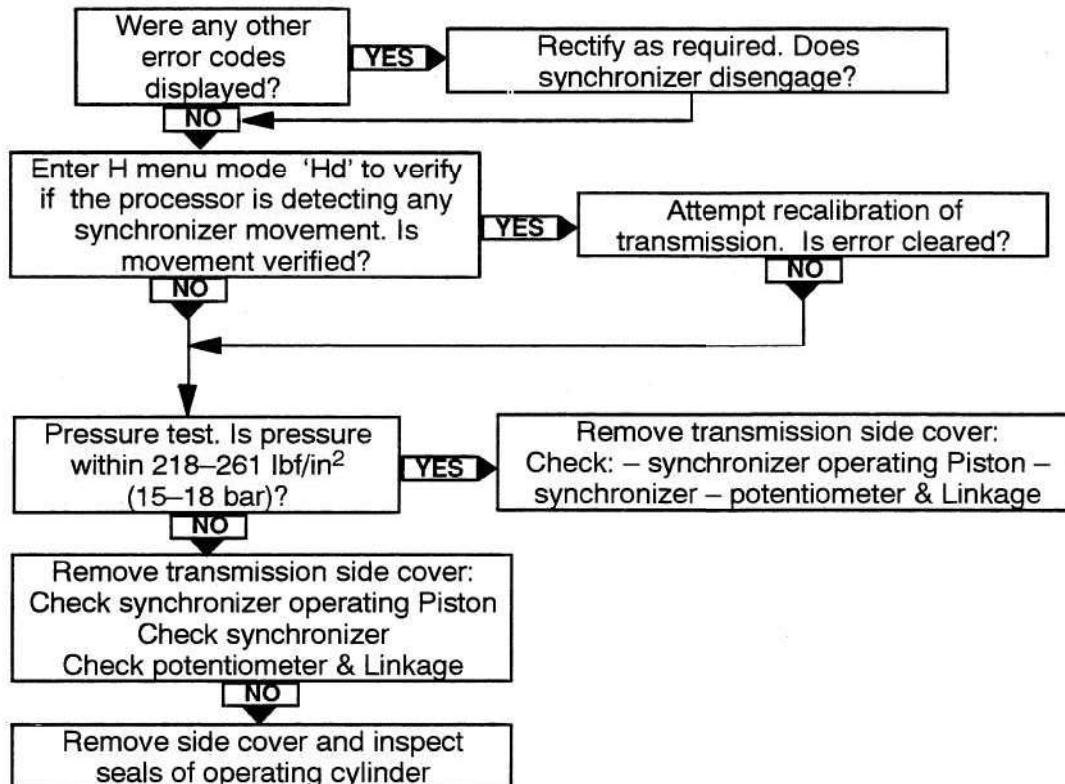
TRANSMISSION EXTENSION HARNESS TO MAIN HARNESS DISCONNECTED.

EFFECT – Transmission inoperable


ERROR CODE F22

RANGE SYNCHRONIZER DID NOT DISENGAGE

EFFECT – Transmission attempts change and returns to previously engaged range

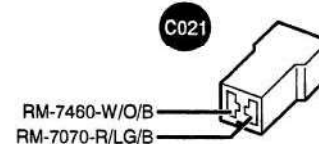
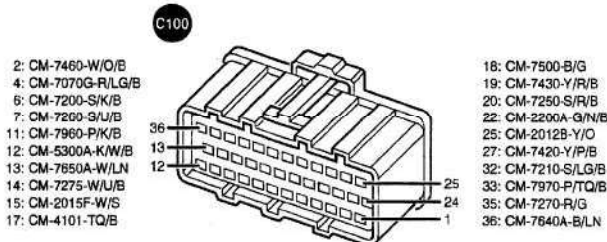
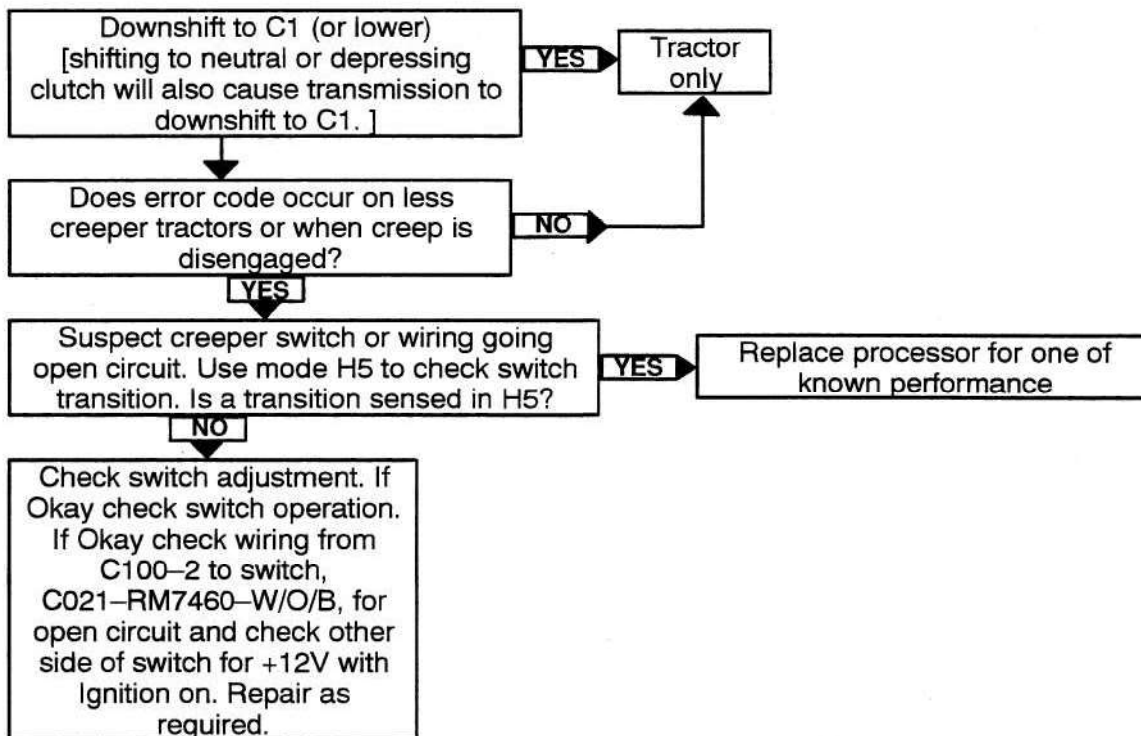


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F23

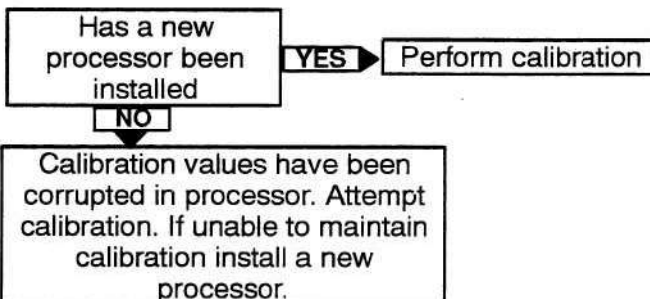
CREEPER ENGAGED (SPEED OR GEAR TOO HIGH)

EFFECT – Upshifts are inhibited.

**ERROR CODE F24**

ALL CLUTCHES & SYNCHRONIZERS REQUIRE CALIBRATION

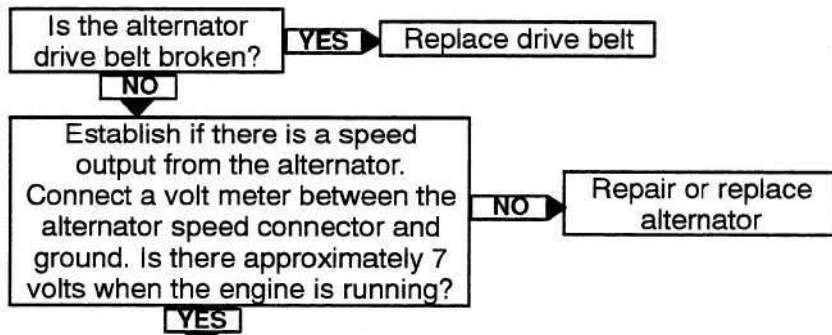
EFFECT – Transmission is disabled.



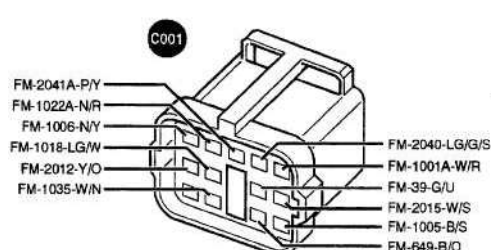
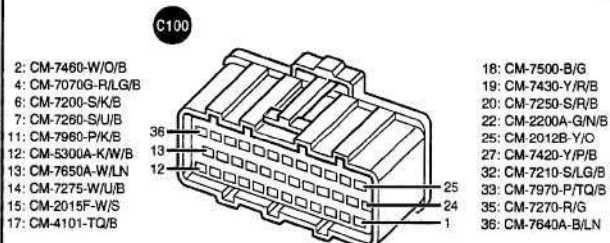
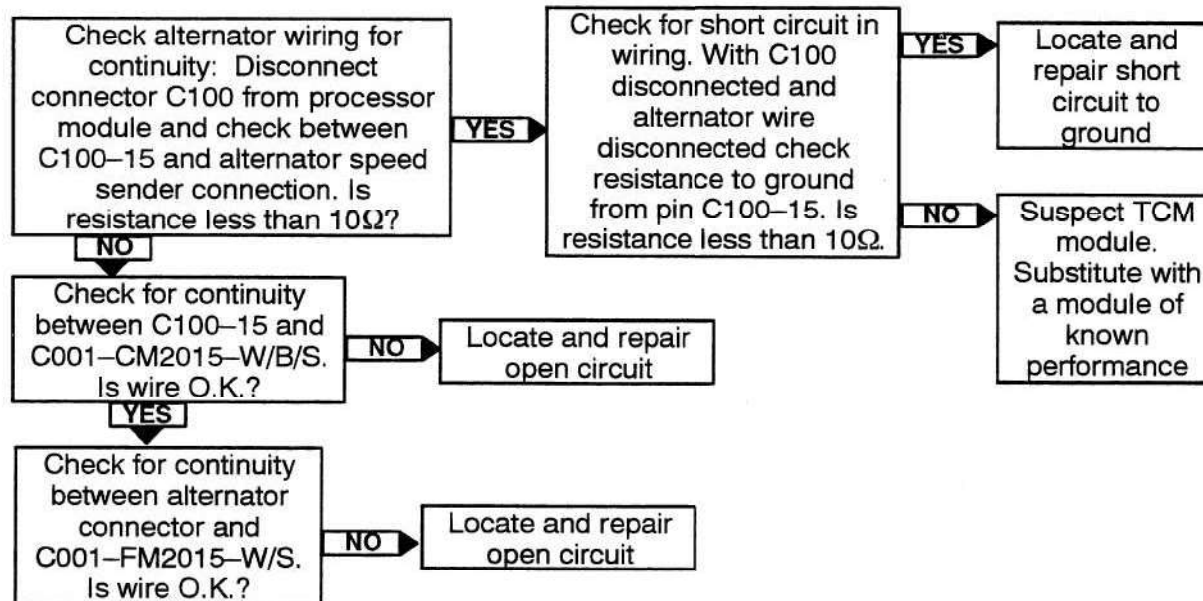
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F27**ERPM SIGNAL NOT PRESENT**

EFFECT – No speed matching. Delay in upshifts after auto take off. Minor reduction in shift performance (2,300 rpm assumed by processor)



The following checks must be carried out with the engine stopped and keystart switched OFF

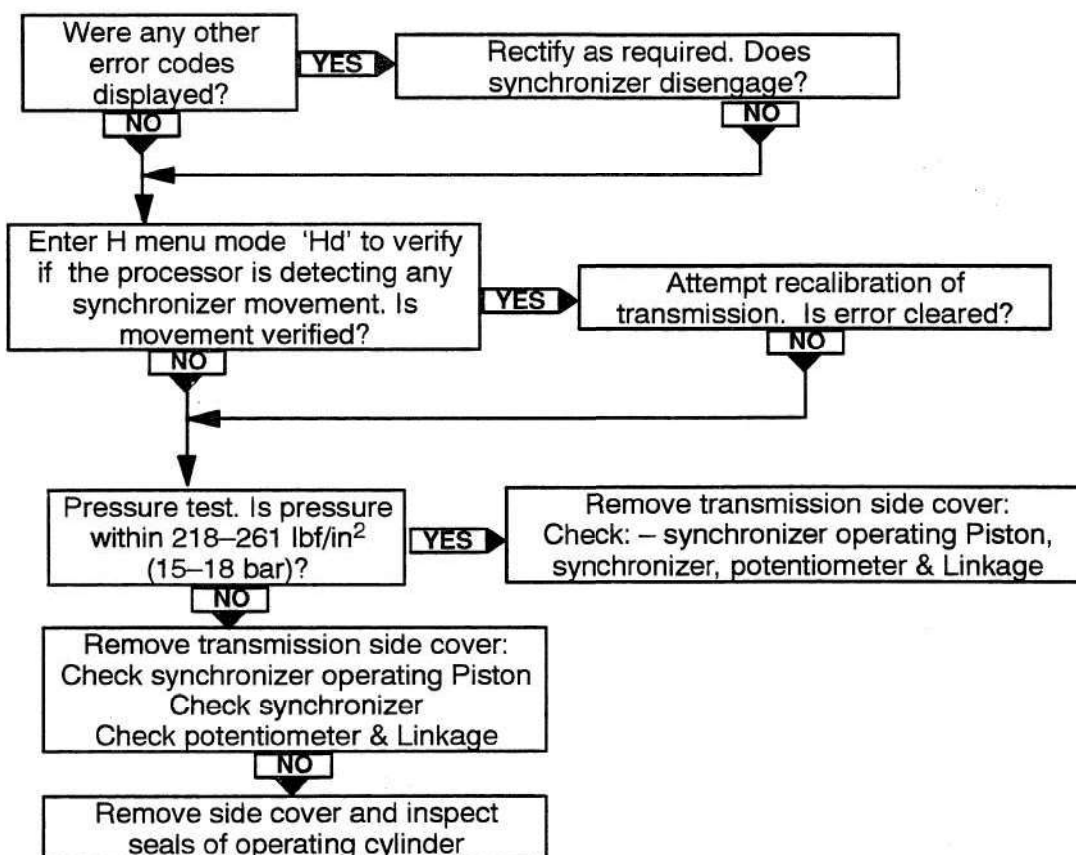


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F31

SYNCHRONIZER DID NOT ENGAGE DURING SHUTTLE SHIFT

EFFECT – Transmission disabled.

**ERROR CODE F32**

HIGH RANGE SYNCHRONIZER DID NOT ENGAGE DURING START UP SEQUENCE, WITHIN SPECIFIED TIME. (THIS IS PART OF A SYSTEM TEST DURING START UP)

EFFECT – Transmission disabled

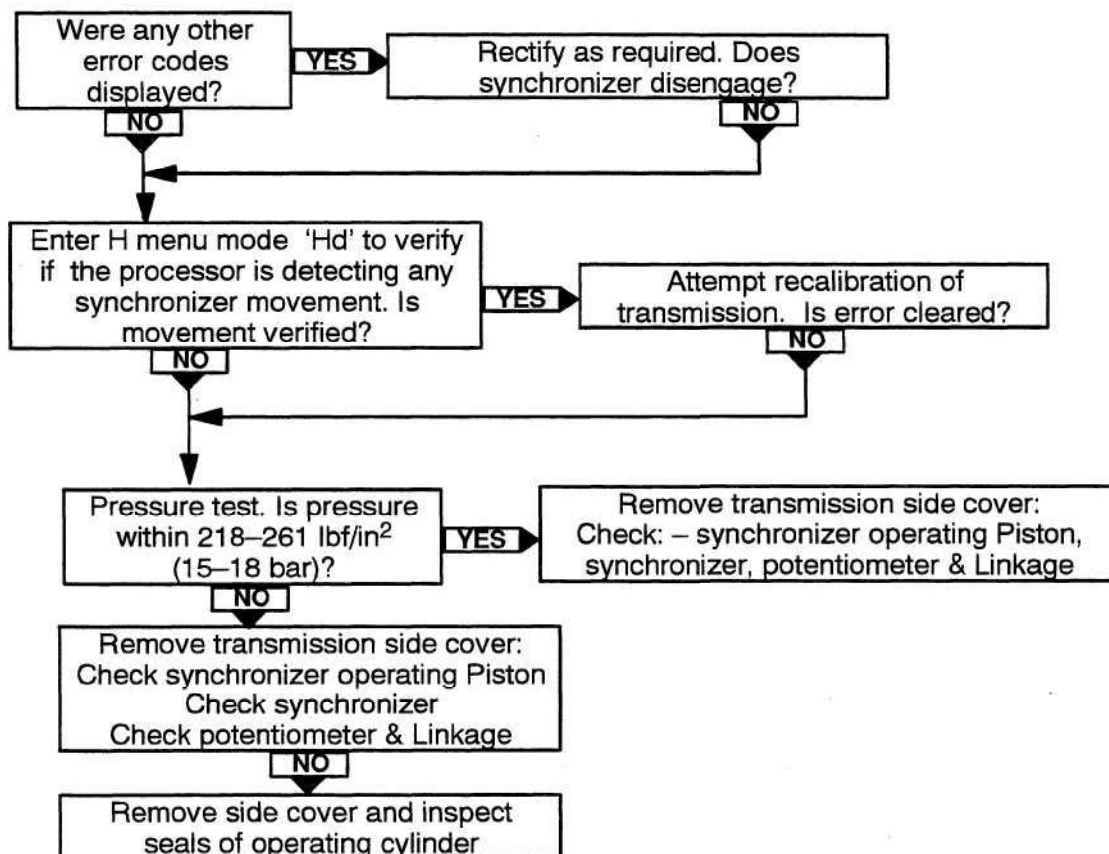
If low oil pressure light is on repair low pressure circuit as described in hydraulic section.

Otherwise, cycle shuttle lever. If problem still persists a different error code will occur, probably F31. Refer to new error code page.

SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F33

SYNCHRONIZER DID NOT DISENGAGE, SHUTTLE OR NEUTRAL
EFFECT – Transmission disabled

**ERROR CODE F34**

SYNCHRONIZER DID NOT DISENGAGE AFTER POWER UP. (PART OF START UP SEQUENCE)

EFFECT – Transmission disabled

If low oil pressure light is on repair low pressure circuit as described in hydraulic section.

Otherwise, cycle shuttle lever. If problem still persists a different error code will occur, probably F33. Refer to new error code page.

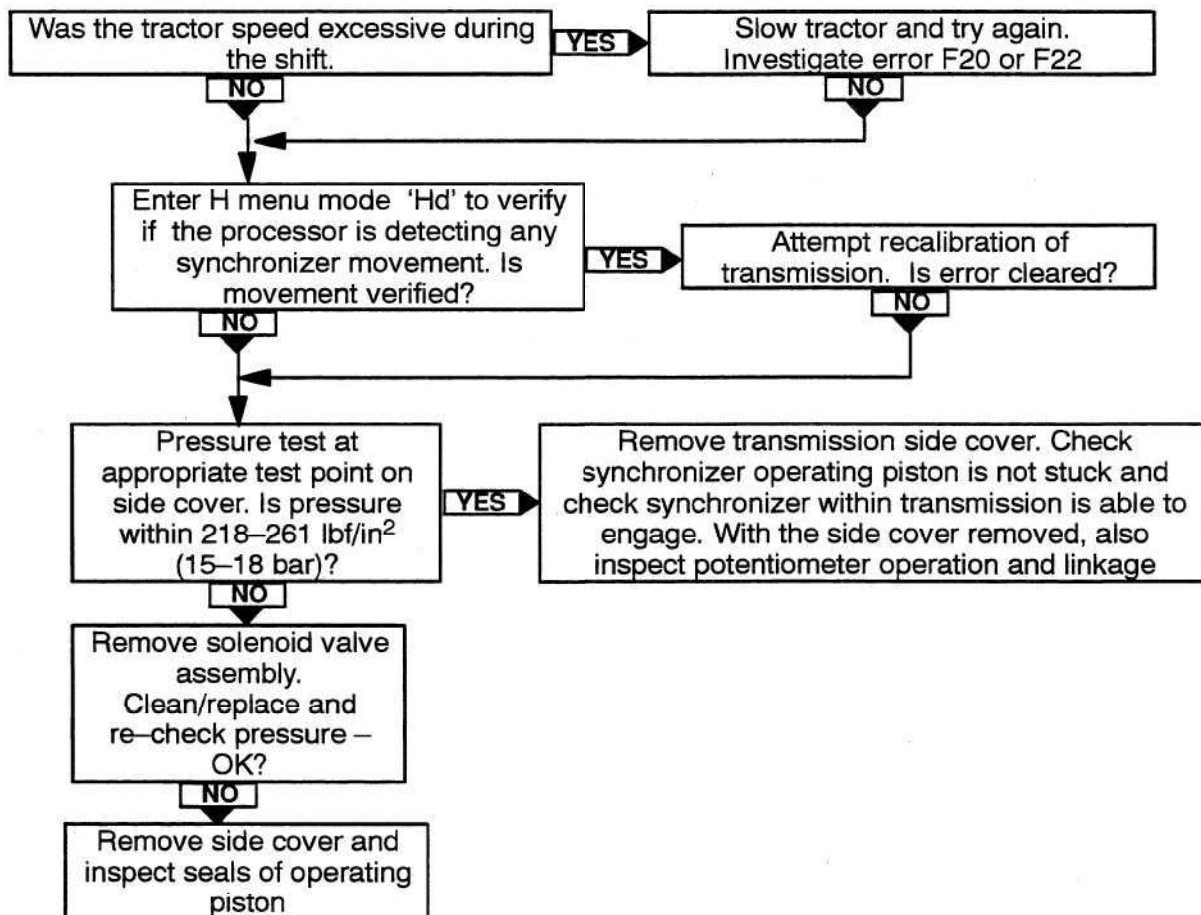
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F35

SYNCHRONIZER FAILED TO ENGAGE PREVIOUS RANGE AFTER ERROR F20 OR F22.

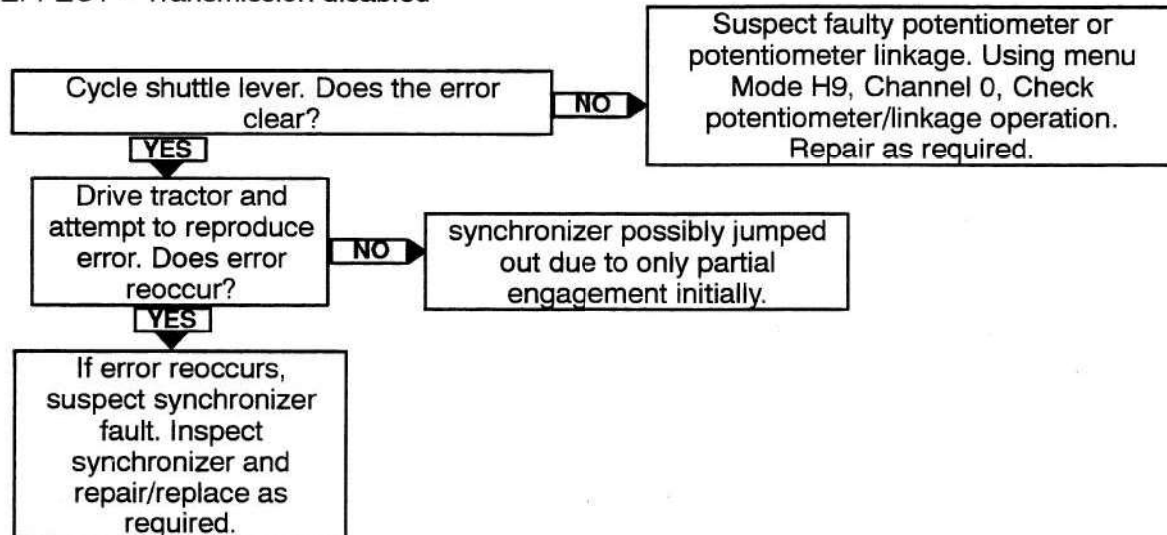
EFFECT – Transmission disabled

RECOVER – Cycle shuttle lever to try again or select another range while in neutral.

**ERROR CODE F36**

SYNCHRONIZER DISENGAGED WITHOUT DRIVER INITIATION

EFFECT – Transmission disabled

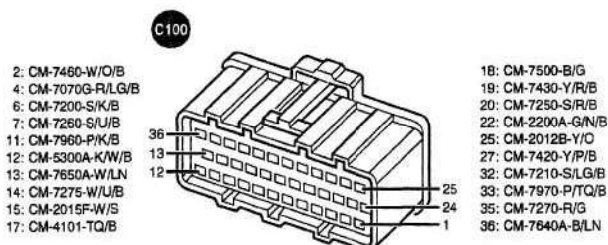
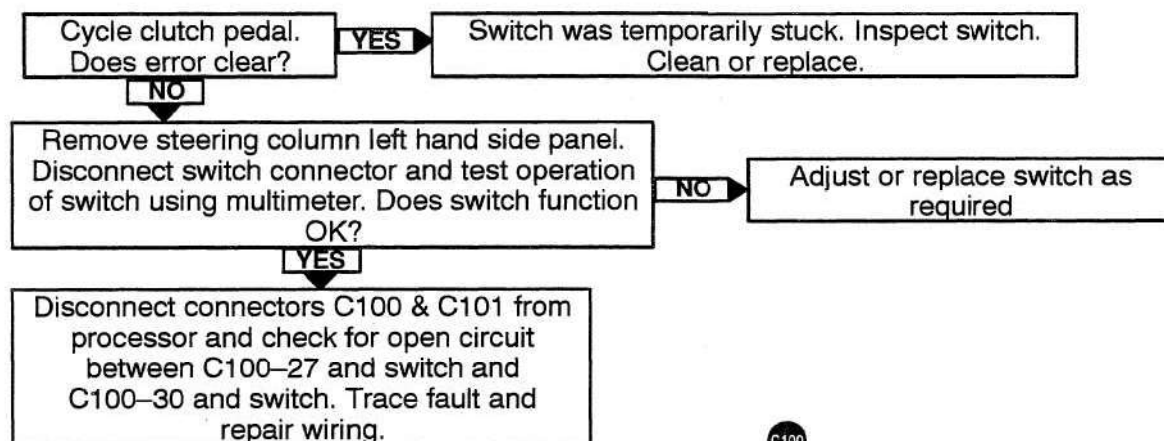


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F37

CLUTCH PEDAL SWITCH OPEN CIRCUIT

EFFECT – Transmission disabled

**ERROR CODE F38**

DISABLED RANGE SELECTED BY OPERATOR

- (i) synchronizer range shift (to Mid) not completed
- (ii) synchronizer for/rev not completed
- (iii) Reverse not selected from a gear higher than C1

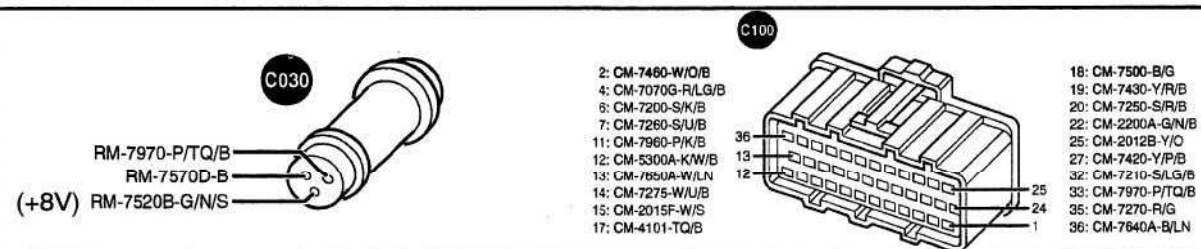
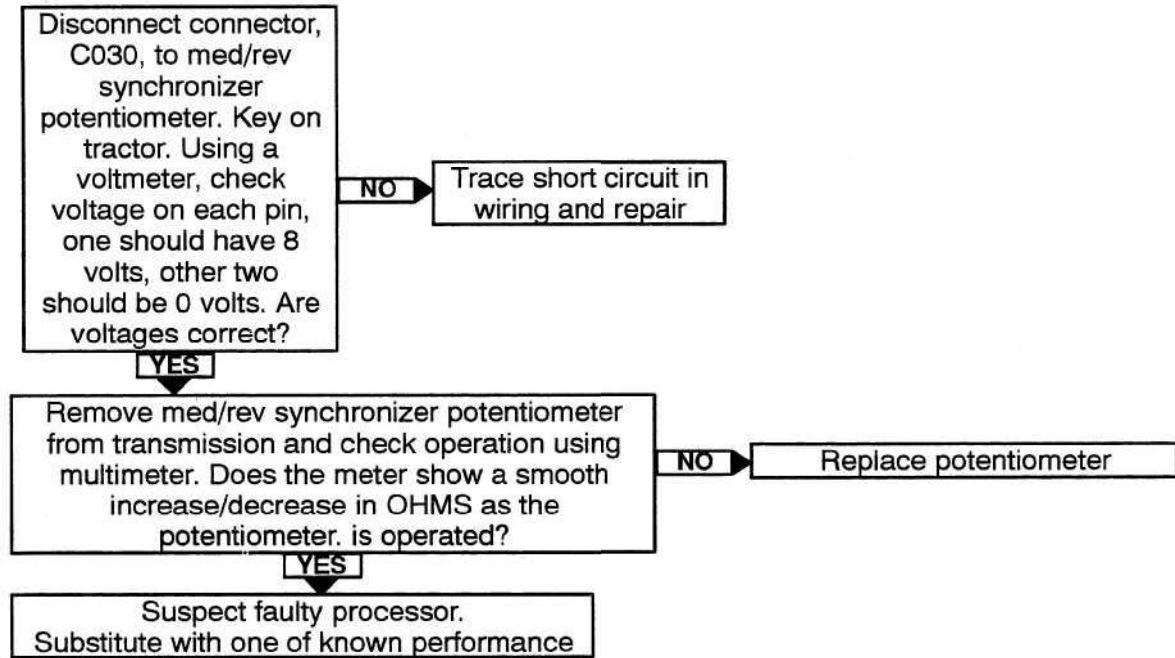
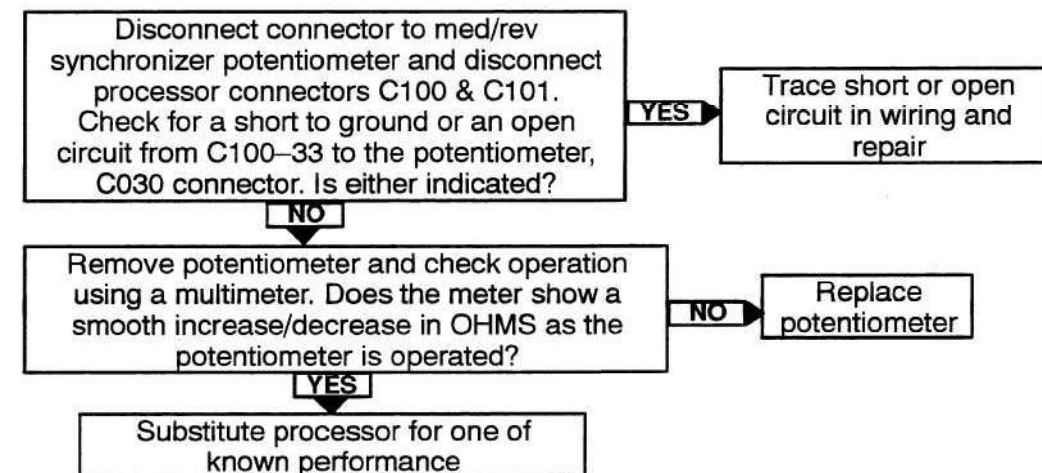
NOTE: This error code will be displayed in conjunction with another error code, usually informing of a solenoid or potentiometer failure.

For items (i) and (ii)

Key off and key on.
Observe error codes.
Rectify error codes
and attempt selection
of ranges. Error F38
will be eliminated if
other faults are
rectified.

- (iii) If reverse has been attempted in a gear higher than C1 when there was a wheel speed sender error (F49, F50 or F77) reverse will not be selected. The transmission will be disabled but can be recovered, to forward drive, by cycling the shuttle lever or clutch pedal. Reverse cannot be obtained for 10 seconds. The processor then assumes that the tractor has slowed sufficient to make the shift. Rectifying the wheel speed sender error will eliminate the reoccurrence of F38.

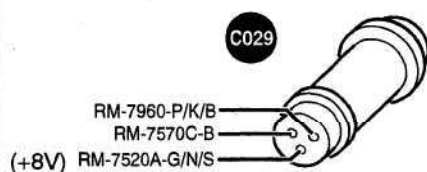
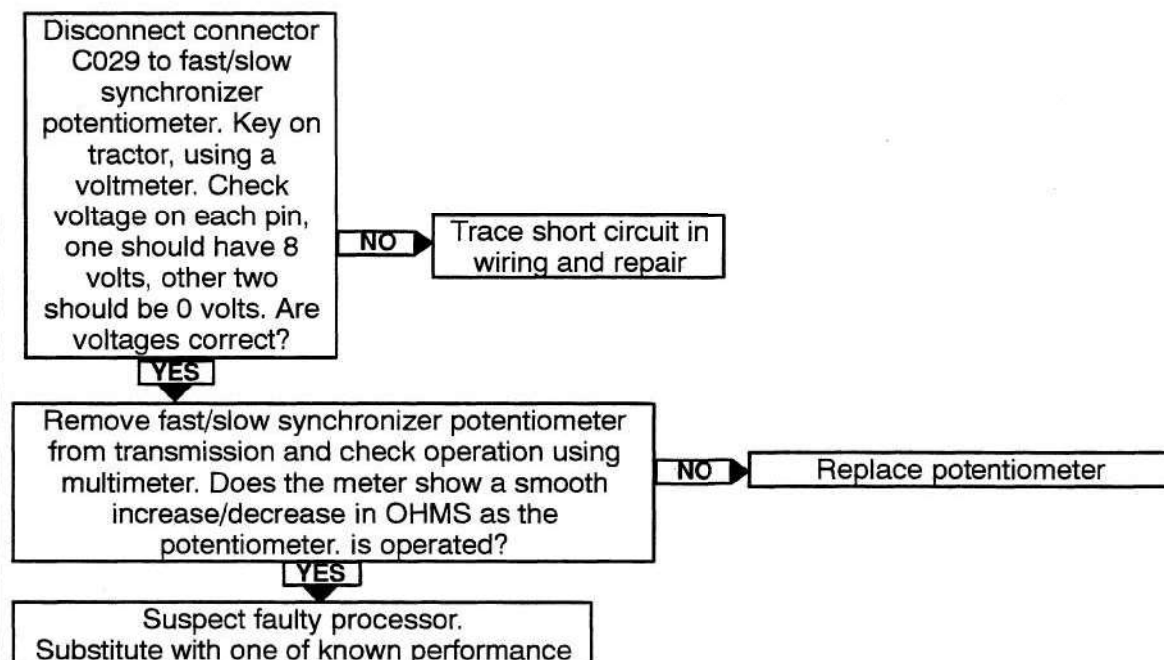
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F40**MEDIUM/REVERSE SYNCHRONIZER POTENTIOMETER OVERVOLTAGE****EFFECT** – Med/Reverse ranges cannot be obtained.**ERROR CODE F41****MEDIUM/REVERSE SYNCHRONIZER POTENTIOMETER UNDERVOLTAGE****EFFECT** – Med and rev ranges cannot be obtained

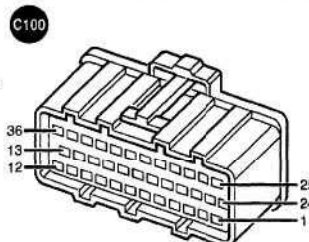
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F42**FAST/SLOW SYNCHRONIZER POTENTIOMETER OVERVOLTAGE**

EFFECT – Low and high ranges cannot be obtained.



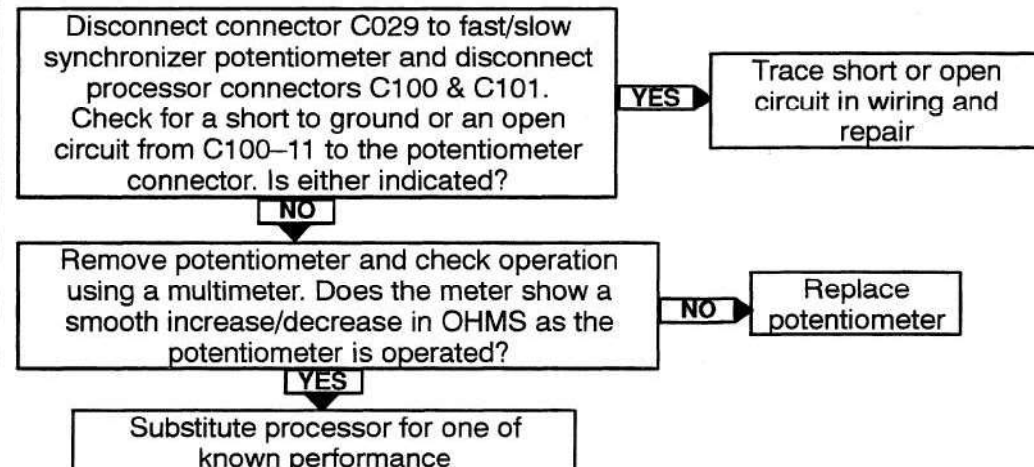
2: CM-7460-W/O/B
 4: CM-70703-R/LG/B
 6: CM-7200-S/K/B
 7: CM-7280-S/U/B
 11: CM-7960-P/K/B
 12: CM-5300A-K/W/B
 13: CM-7650A-W/LN
 14: CM-7275-W/U/B
 15: CM-2015F-W/S
 17: CM-4101-TQ/B



18: CM-7500-B/G
 19: CM-7430-Y/R/B
 20: CM-7250-S/R/B
 22: CM-2200A-G/N/B
 25: CM-2012B-Y/O
 27: CM-7420-Y/P/B
 32: CM-7210-S/LG/B
 33: CM-7970-P/TQ/B
 35: CM-7270-R/G
 36: CM-7640A-B/LN

ERROR CODE F43**FAST/SLOW SYNCHRONIZER POTENTIOMETER UNDERVOLTAGE**

EFFECT – Low and high ranges cannot be obtained



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F44**MEDIUM/REVERSE SYNCHRONIZER POTENTIOMETER OUT OF CALIBRATED RANGE**

EFFECTS – Transmission functions normally but may lead to premature detection of synchronizer engagement and subsequent synchronizer damage.

Perform clutch and synchronizer calibration routine to clear error.
NOTE: This error may be indicating wear on transmission components or a failing potentiometer.

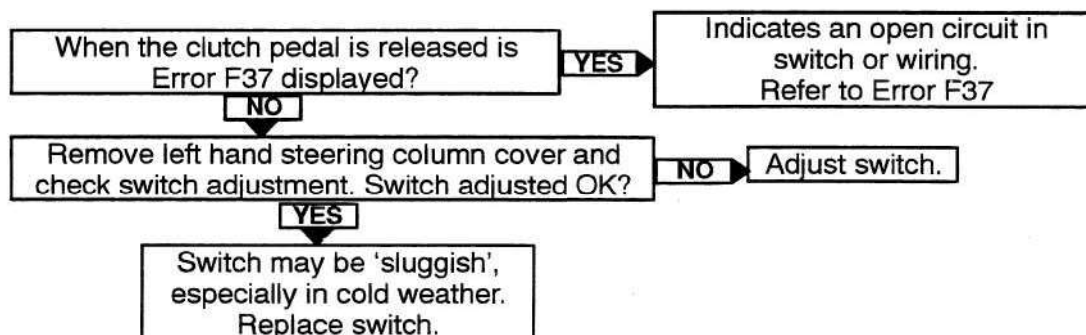
ERROR CODE F45**FAST/SLOW SYNCHRONIZER POTENTIOMETER OUT OF CALIBRATED RANGE**

EFFECTS – Transmission functions normally but may lead to premature detection of synchronizer engagement and subsequent synchronizer damage.

Perform clutch and synchronizer calibration routine to clear error.
NOTE: This error may be indicating wear on transmission components or a failing potentiometer.

ERROR CODE F47**CLUTCH PEDAL SWITCH MISADJUSTED**

EFFECT – Inching may be jerky and at a higher than normal pedal position.



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F48**CLUTCH PEDAL SWITCH SHORT CIRCUIT**

EFFECT – No effect on normal operation but will not cut off power to any clutch solenoids.

Remove steering column left hand side cover and check switch adjustment and operation – OK?

NO

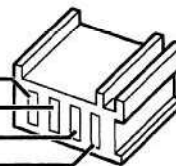
Adjust or replace switch

YES

Disconnect clutch switch connector, C076. With key start 'ON' check for voltage on C076–CM7050–R/G/B. Voltage should be zero. If voltage is evident trace and repair short circuit in wiring.

C076

CM-1000C-W/Y
CM-7420B-Y/P/B
CM-7050-R/G/B
CM-7420C-Y/P/B

**ERROR CODES:****F49 – TRANSMISSION OUTPUT SPEED SENSOR OPEN CIRCUIT****F50 – TRANSMISSION OUTPUT SPEED SENSOR SHORT TO GROUND**

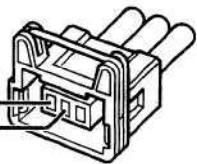
EFFECT – (i) Upshifts in high range are inhibited
(ii) 1–2 second delay in allowing upshifts after clutchless take off

Disconnect processor connectors C100 & C101 and disconnect transmission output speed sensor connector, C038. Test wiring for open/short circuit to C101–6 and repair as required. If wiring checks out OK test sensor.

With the sender installed in the transmission, check for a short to ground on each sender terminal. Check resistance of the sender which should be approximately 0.8–1.2K Ω at 20°C (68°F). Replace if outside specification.

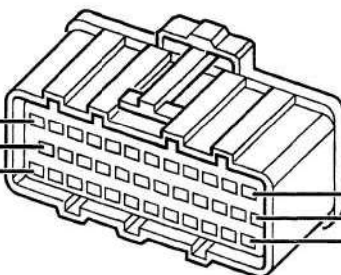
C038

RM-7400-Y/N/B
RM-7570B-B

**C101**

1: CM-7570-B
2: CM-7401-P/B/G
5: CM-7525-G/B/S
6: CM-7400-Y/N/B
9: CM-57AE-B
10: CM-7985-G/O/S
11: CM-7920-TQ/O/B
12: CM-7915-P/O/S
13: CM-7935-P/N/S
14: CM-7930-TQ/R/B
15: CM-7980-K/LG/B
16: CM-7220-S/N/B
17: CM-7910-TQ/N/B

36
13
12



18: CM-7431-TQ/W/B
19: CM-7230-S/O/B
20: CM-7940-TQ/S/B
25: CM-7520-G/N/S
26: CM-7900-TQ/K/B
28: CM-7945-P/TQ/S
29: CM-7000C-U/R/B
30: CM-7050-R/G/B
31: CM-5000C-P
32: CM-57AK-B
33: CM-57AL-B
34: CM-7000D-U/R/B
35: CM-7000B-U/R/B
36: CM-7925-P/R/S

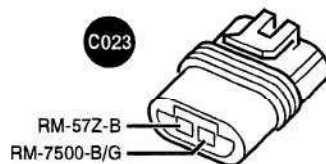
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;**F51 – TEMPERATURE SENDER OPEN CIRCUIT****F52 – TEMPERATURE SENDER SHORT TO GROUND**

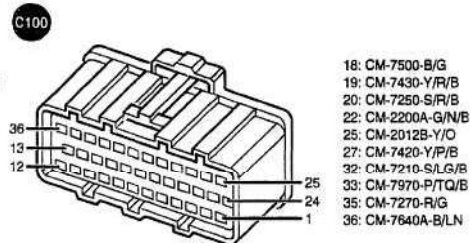
EFFECT – Hot oil is assumed, if oil is cold sluggish shifting and a higher than normal clutch pedal position will be apparent.

Disconnect processor connectors C100 & C101 and disconnect temperature sender, C023. Test the wiring for open/short circuit to C100-18 and repair as required. If wiring checks out OK test temperature sender.

With the sender installed check for a short to ground, and an open circuit from the terminal of the sender to the chassis.



2: CM-7460-W/O/B
4: CM-7070G-R/LG/B
6: CM-7200-S/K/B
7: CM-7260-S/U/B
11: CM-7960-P/K/B
12: CM-5300A-K/W/B
13: CM-7650A-W/LN
14: CM-7275-W/U/B
15: CM-2015F-W/S
17: CM-4101-TQ/B



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;

F53 – 5 VOLT REFERENCE VOLTAGE TOO HIGH

F54 – 5 VOLT REFERENCE VOLTAGE TOO LOW

EFFECT – Transmission disabled

Disconnect the following components, one at a time, to isolate area of fault.

Disconnect Clutch Pedal potentiometer, C077, are F53/54 cleared?

NOTE: Should cause error F11 if potentiometer is faulty

YES

Replace potentiometer

NO

Disconnect forward/reverse connector, C075, (under steering column shroud). Are F53/54 cleared?

NOTE: Should cause errors F66 and F68 if switches are faulty.

YES

Replace forward/reverse switch

NO

Disconnect the upshift/downshift and range switches connector, C103. Are F53/54 cleared?

NOTE: Should cause errors F60 and F62 if switches are faulty.

YES

Replace upshift/downshift & range switch assembly

NO

Check wiring from each of the above components back to processor connector C101–5. Is either a short or open circuit indicated?

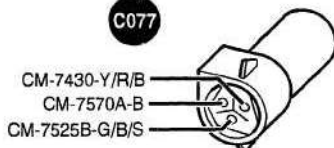
YES

Trace and repair faulty wiring

NO

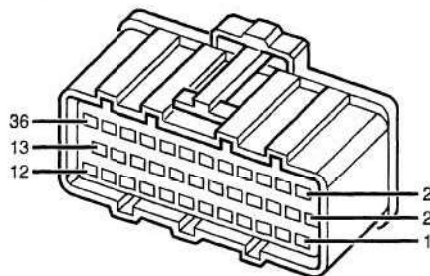
Suspect faulty processor. Replace with one of known performance

C077



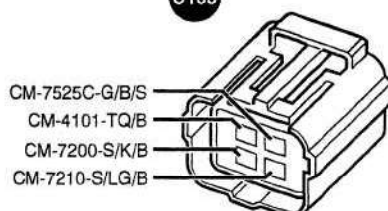
- 1: CM-7570-B
- 2: CM-7401-P/B/G
- 5: CM-7525-G/B/S
- 6: CM-7400-Y/N/B
- 9: CM-57AE-B
- 10: CM-7985-G/O/S
- 11: CM-7920-TQ/O/B
- 12: CM-7915-P/O/S
- 13: CM-7935-P/N/S
- 14: CM-7930-TQ/R/B
- 15: CM-7980-K/LG/B
- 16: CM-7220-S/N/B
- 17: CM-7910-TQ/N/B

C101

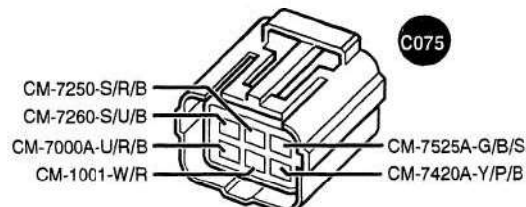


- 18: CM-7431-TQ/W/B
- 19: CM-7230-S/O/B
- 20: CM-7940-TQ/S/B
- 25: CM-7520-G/N/S
- 26: CM-7900-TQ/K/B
- 28: CM-7945-P/TQ/S
- 29: CM-7000C-U/R/B
- 30: CM-7050-R/G/B
- 31: CM-5000C-P
- 32: CM-57AK-B
- 33: CM-57AL-B
- 34: CM-7000D-U/R/B
- 35: CM-7000B-U/R/B
- 36: CM-7925-P/R/S

C103



C075



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES:**F55** – REGULATED 8 VOLTS SUPPLY TOO HIGH**F56** – REGULATED 8 VOLTS SUPPLY TOO LOW**EFFECT** – Transmission disabled

Remove the following components one at a time to attempt to isolate area of fault.

Disconnect transmission Mid/Rev Synchronizer Potentiometer, C030. Are F55/56 cleared?

NOTE: Should cause errors F41 or F44 if potentiometer faulty.

YES

Replace mid/Rev Synchronizer Potentiometer

NO

Disconnect transmission Low/High Synchronizer potentiometer, C029. Are F55/56 cleared?

NOTE: Should cause errors F43 or F45 if potentiometer faulty.

YES

Replace low/high synchronizer potentiometer

NO

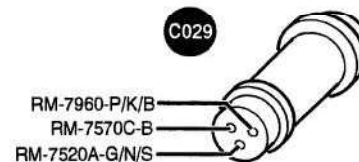
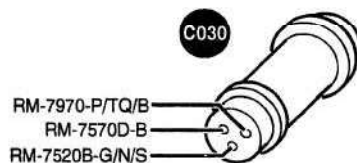
Check wiring back from each of the above components to C101-25. Is either a short or open circuit indicated?

YES

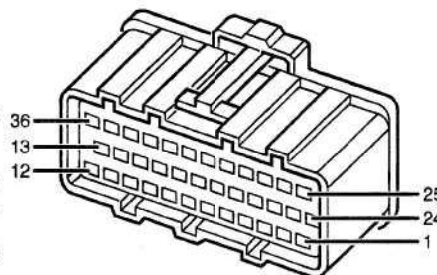
Trace faulty wiring and repair

NO

Suspect faulty processor.
Replace with one of known performance.



- 1: CM-7570-B
2: CM-7401-P/B/G
5: CM-7525-G/B/S
6: CM-7400-Y/N/B
9: CM-57AE-B
10: CM-7985-G/O/S
11: CM-7920-TQ/O/B
12: CM-7915-P/O/S
13: CM-7935-P/N/S
14: CM-7930-TQ/R/B
15: CM-7980-K/LG/B
16: CM-7220-S/N/B
17: CM-7910-TQ/N/B

C101

- 18: CM-7431-TQ/W/B
19: CM-7230-S/O/B
20: CM-7940-TQ/S/B
25: CM-7520-G/N/S
26: CM-7900-TQ/K/B
28: CM-7945-P/TQ/S
29: CM-7000C-U/R/B
30: CM-7050-R/G/B
31: CM-5000C-P
32: CM-57AK-B
33: CM-57AL-B
34: CM-7000D-U/R/B
35: CM-7000B-U/R/B
36: CM-7925-P/R/S

SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F59

**FORWARD/REVERSE/NEUTRAL SWITCH DISAGREEMENT
(MORE THAN ONE SWITCH ENGAGED)**

EFFECT – Transmission is Disabled

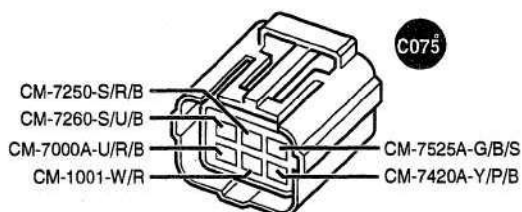
Disconnect processor connectors C100 & C101.
Disconnect connector, C075, to FNR switch. Is an open
circuit indicated between C100–27 and neutral switch?

YES

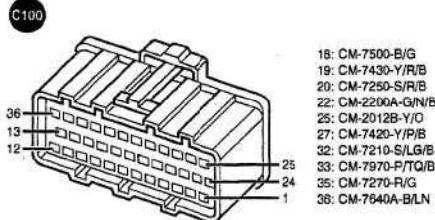
Trace and repair
wiring

NO

Replace forward/neutral
reverse switch.



2: CM-7460-W/O/B
4: CM-7070G-R/LG/B
6: CM-7200-S/K/B
7: CM-7260-S/U/B
11: CM-7960-P/K/B
12: CM-5300A-K/W/B
13: CM-7650A-W/LN
14: CM-7275-W/U/B
15: CM-2015F-W/S
17: CM-4101-TQ/B

**ERROR CODES:**

F60 – UPSHIFT SWITCH INPUT VOLTAGE LOW

F61 – UPSHIFT SWITCH INPUT VOLTAGE HIGH

EFFECT – Upshift switch will not function, higher gears cannot be selected.

NOTE: If required, key off and restart to select B1/R1.

Disconnect processor connectors C100 & C101, and
disconnect connector, C103, to upshift/downshift/range shift
assembly. Using a suitable multimeter, check between
C100–32 & C103–CM7210–S/LG/B. For: (1) Open Circuit
(2) Short to ground. Is either condition indicated?

YES

Trace and repair
faulty wiring

NO

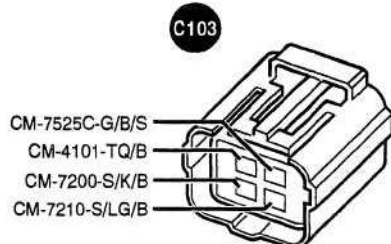
Reconnect processor connectors. Leave up/down range switch
assembly disconnected with key start on. Check for voltage on
C103–CM7210–S/LG/B. Is +5v, +8v or +12V indicated?

YES

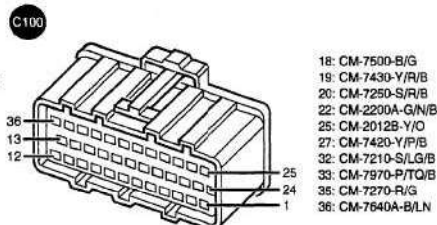
Trace and repair
short circuit, using
voltage previously
indicated to
determine possible
area of faults.

NO

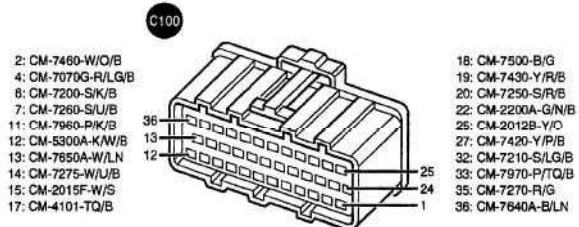
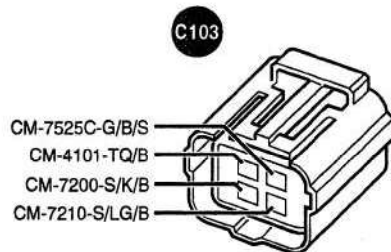
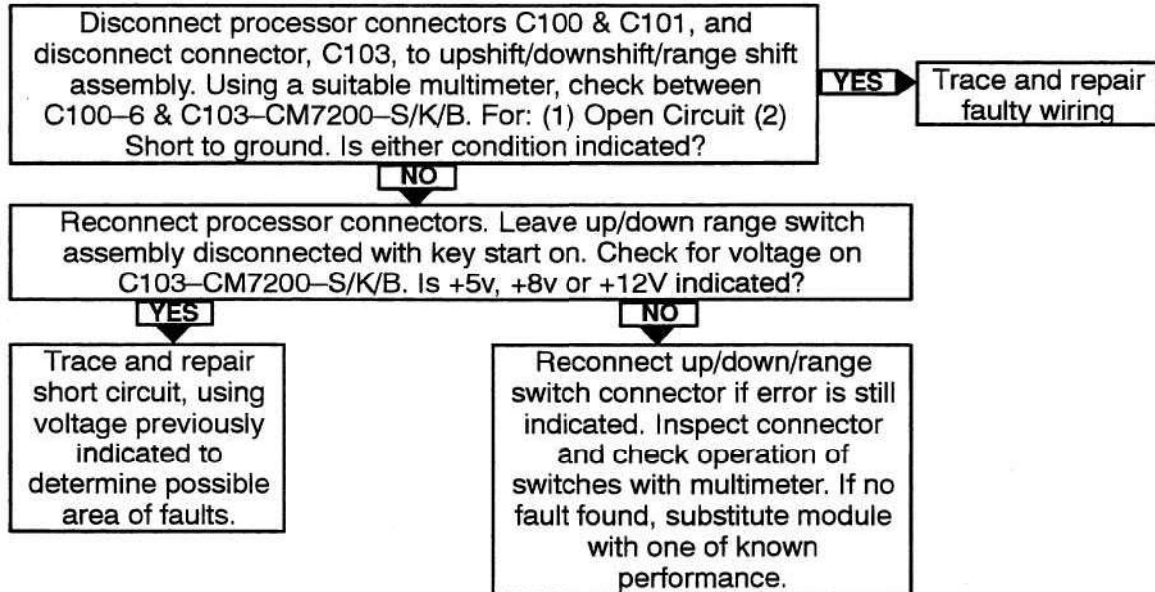
Reconnect up/down/range
switch connector if error is still
indicated. Inspect connector
and check operation of
switches with multimeter. If no
fault found, substitute module
with one of known
performance.



2: CM-7460-W/O/B
4: CM-7070G-R/LG/B
6: CM-7200-S/K/B
7: CM-7260-S/U/B
11: CM-7960-P/K/B
12: CM-5300A-K/W/B
13: CM-7650A-W/LN
14: CM-7275-W/U/B
15: CM-2015F-W/S
17: CM-4101-TQ/B



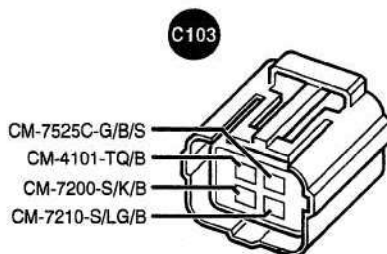
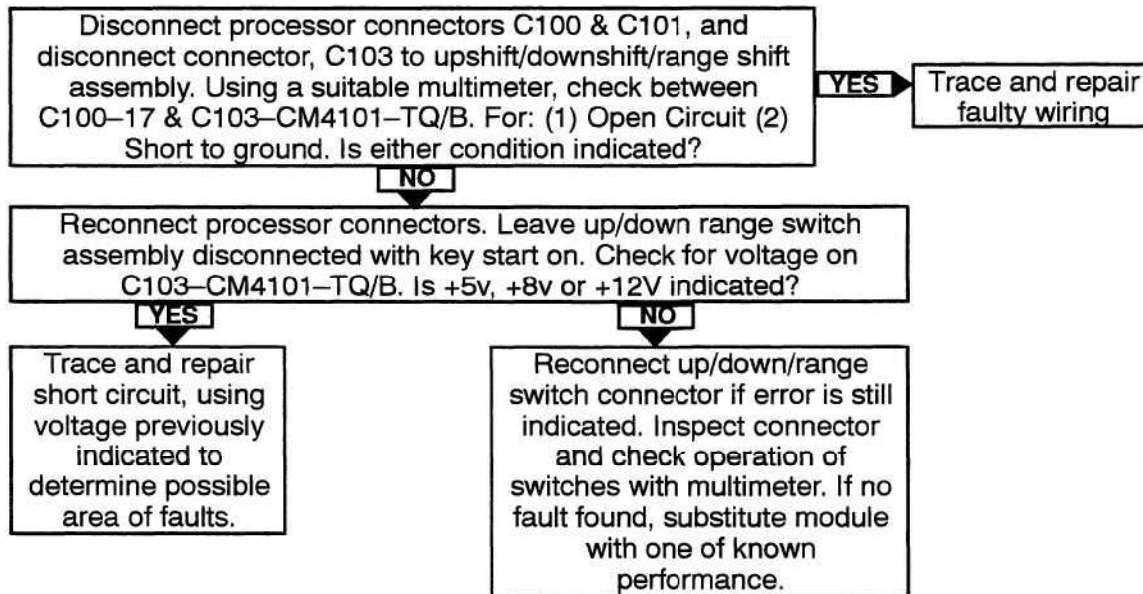
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES:**F62** – DOWNSHIFT SWITCH INPUT VOLTAGE LOW**F63** – DOWNSHIFT SWITCH INPUT VOLTAGE HIGH**EFFECT** – Downshift switch will not function, lower gears cannot be selected.**NOTE:** If required, key on and restart to select B1/R1.

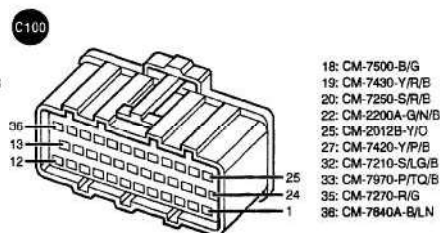
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;**F64** – RANGE SWITCH INPUT VOLTAGE LOW**F65** – RANGE SWITCH INPUT VOLTAGE HIGH

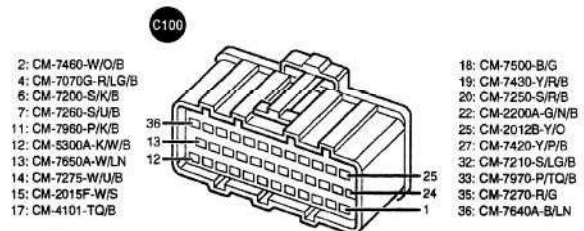
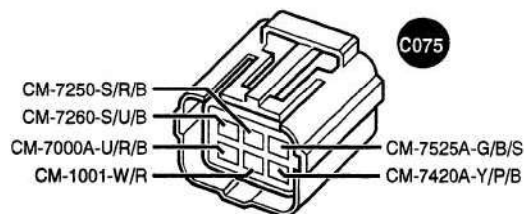
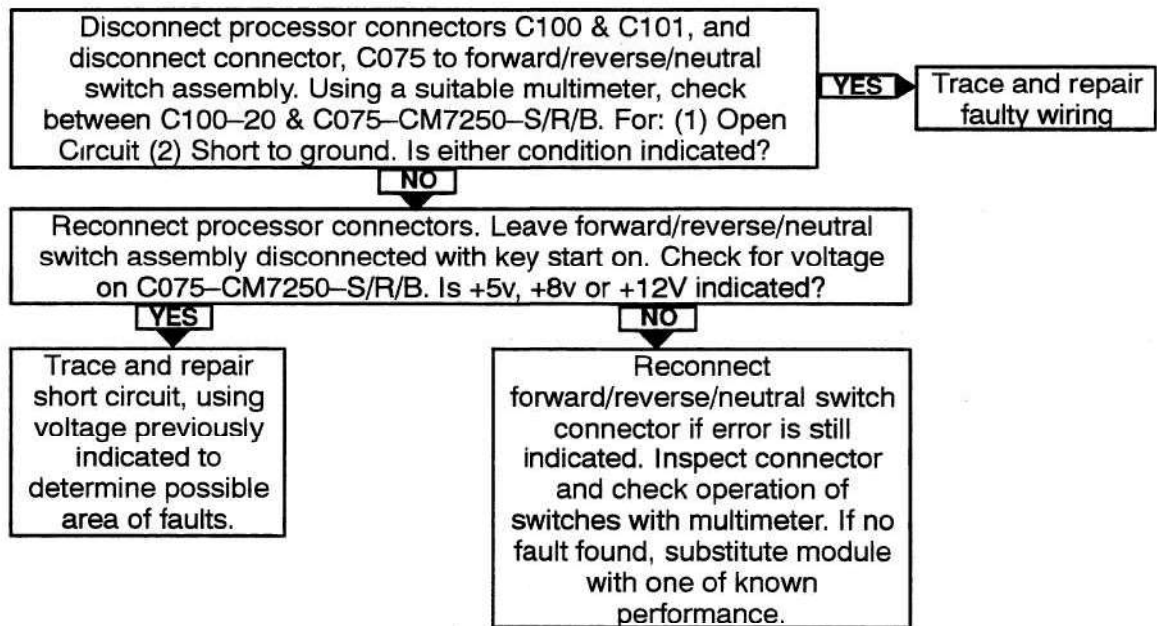
EFFECT – Range switch will not function. Another range may be selected by depressing the clutch pedal or shifting into neutral.



2: CM-7460-W/O/B
4: CM-7070G-R/LG/B
6: CM-7200-S/K/B
7: CM-7260-S/U/B
11: CM-7960-R/K/B
12: CM-5300A-K/W/B
13: CM-7650A-W/LN
14: CM-7275-W/U/B
15: CM-2015F-W/S
17: CM-4101-TQ/B



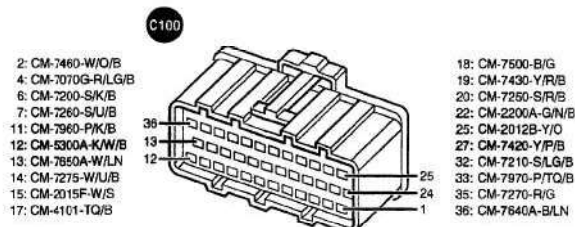
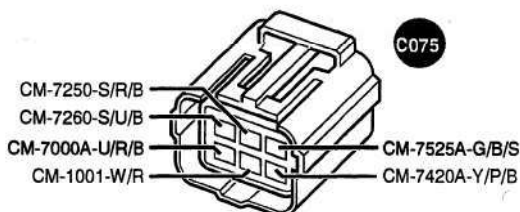
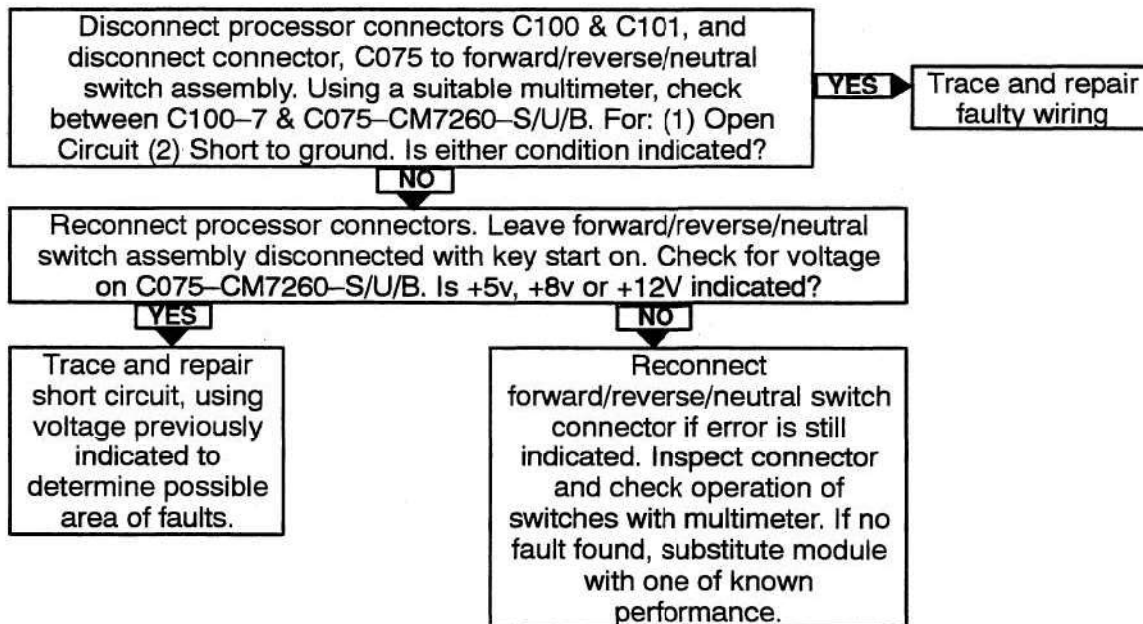
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;**F66** – FORWARD SWITCH INPUT VOLTAGE TOO LOW**F67** – FORWARD SWITCH INPUT VOLTAGE TOO HIGH**EFFECT** – Tractor will operate normally, except there will be a short delay recognizing that forward has been selected.

SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;**F68** – REVERSE SWITCH INPUT VOLTAGE TOO LOW**F69** – REVERSE SWITCH INPUT VOLTAGE TOO HIGH

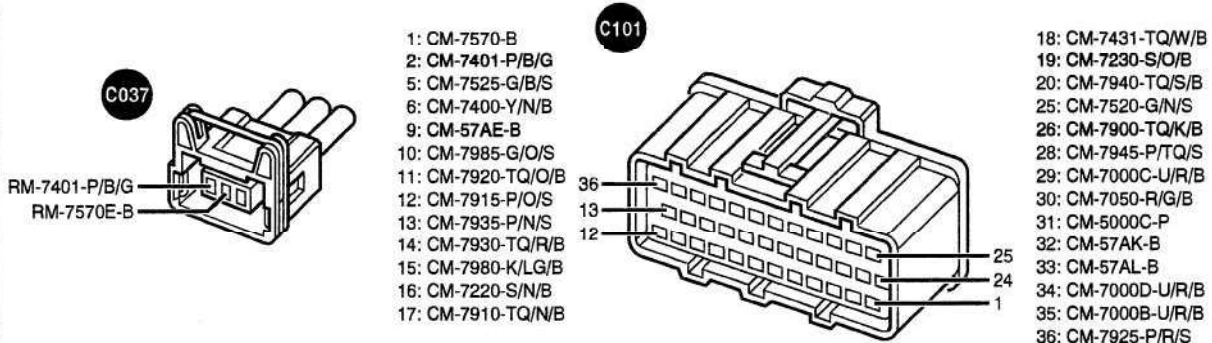
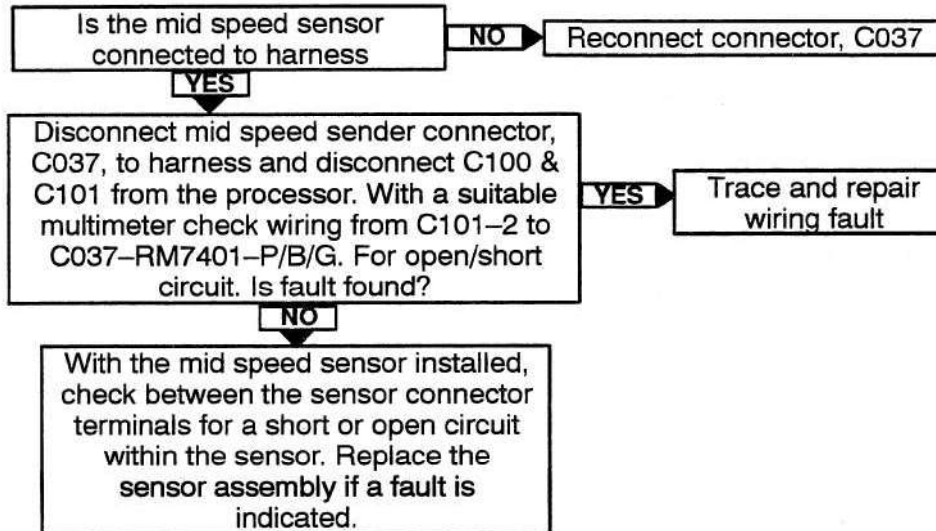
EFFECT – Tractor will operate normally, except there will be a slight delay recognizing that reverse has been selected.



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES:**F73 – MID SPEED SENSOR OPEN CIRCUIT****F74 – MID SPEED SENSOR SHORT CIRCUIT**

EFFECT – Centrifugal compensation assumes 2300 rpm for clutch B, minor shift performance loss at other speeds. Gears affected 2, 4 and 6.

**ERROR CODE F75****SWAPPED MID AND REAR SPEED SENSORS**

EFFECT – After error is detected the tractor will operate normally.

Swap speed sensor
connectors, C037 and C038.

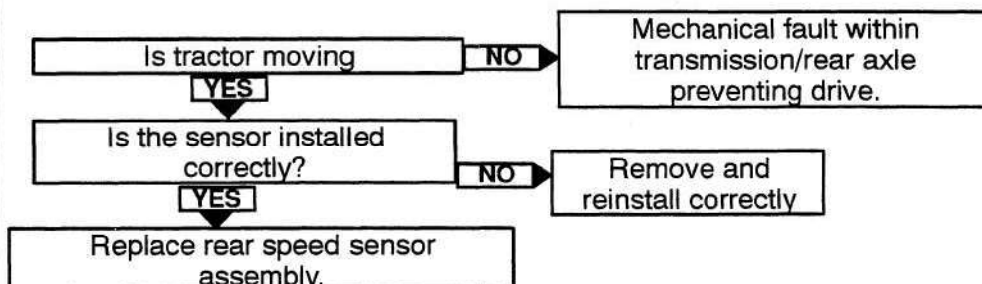


SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F77

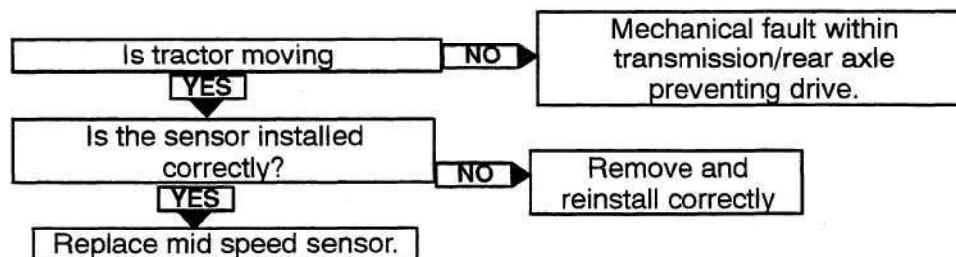
NO SIGNAL FROM REAR WHEEL SPEED SENSOR.

EFFECT – Upshifts in high range inhibited. Jerky or sluggish shuttle shifting and automatic take off generally poor shifting.

**ERROR CODE F78**

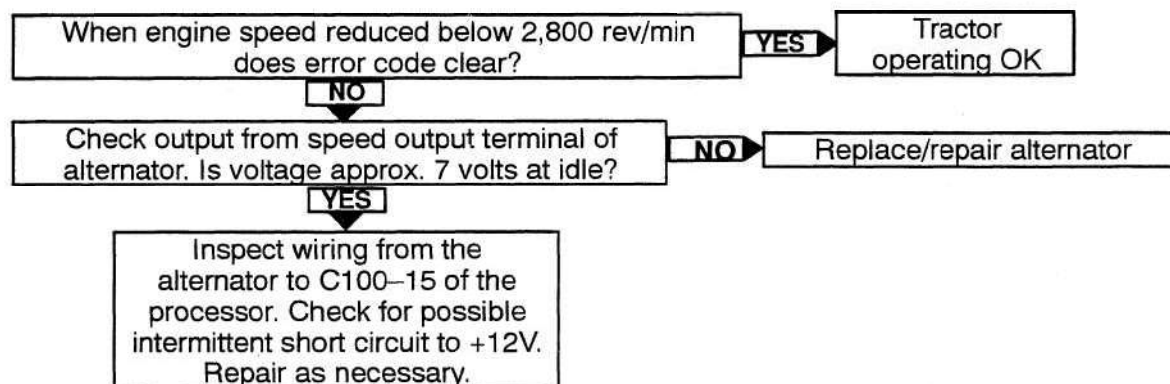
NO SIGNAL FROM MID SPEED SENSOR.

EFFECT – Centrifugal compensation assumes 2,300 rpm for Clutch B. Minor shift quality loss at other speeds, only affect gears 2, 4 and 6.

**ERROR CODE F79**

ENGINE RPM EXCEEDS 3000 REV/MIN.

EFFECT – General shift quality poor and/or delayed.



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE F80

TRANSMISSION OUTPUT REV/MIN TOO HIGH FOR SELECTED GEAR.

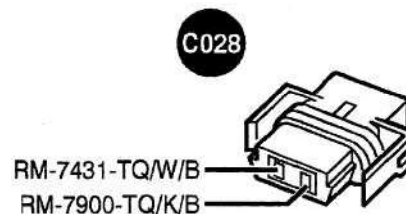
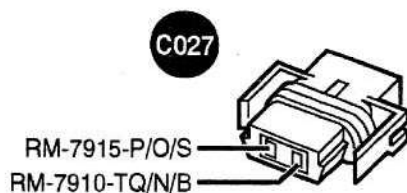
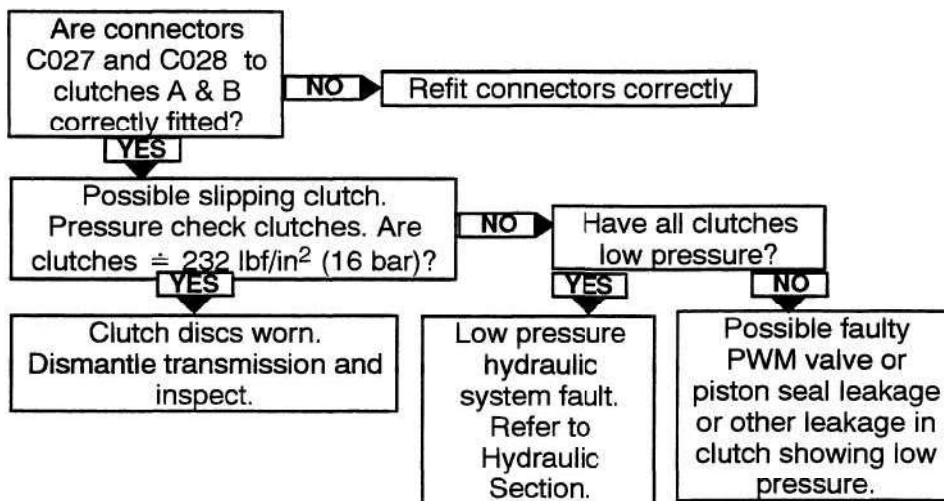
EFFECT – None

Self clearing when speed OK
for gear selected.

ERROR CODE F81

CORRECT RATIO NOT DETECTED (OUTPUT SPEED TOO LOW FOR GEAR SELECTED)

EFFECT – Transmission disabled.



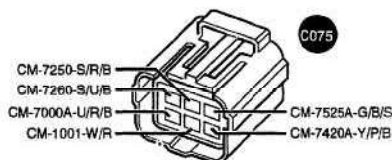
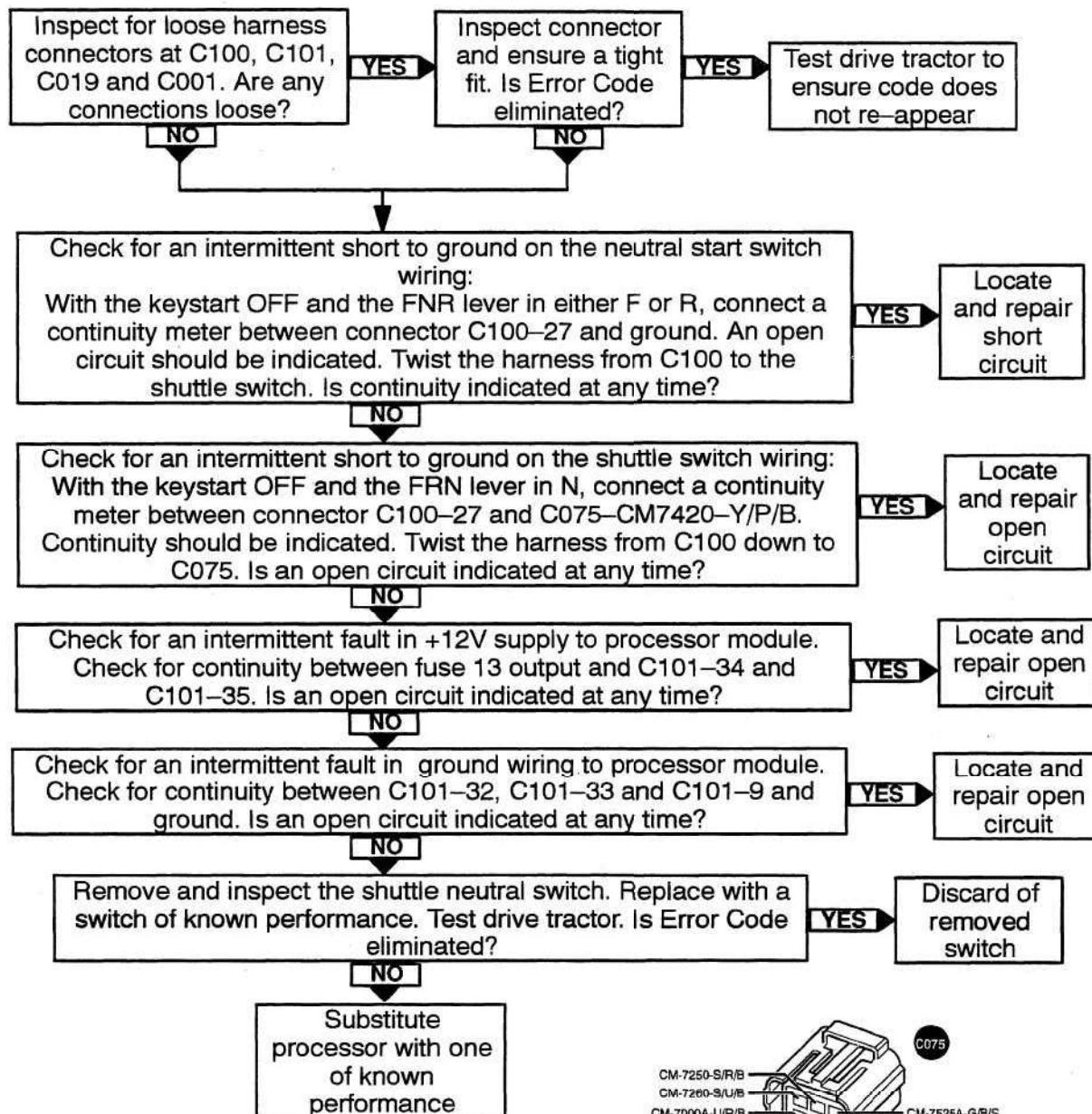
SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODE CP

DEPRESS CLUTCH PEDAL TO RE-ENABLE TRANSMISSION

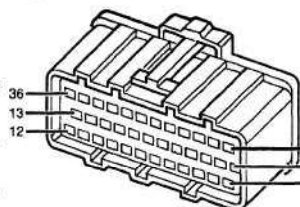
EFFECT – Transmission disabled.

Depress clutch pedal or cycle shuttle switch to re-enable transmission. If CP does not extinguish proceed.



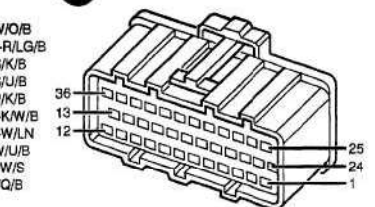
- 1: CM-7570-B
2: CM-7401-P/B/G
5: CM-7525-G/B/S
6: CM-7400-Y/N/B
9: CM-57AE-B
10: CM-7985-G/O/S
11: CM-7920-TQ/O/B
12: CM-7915-P/O/S
13: CM-7935-P/N/S
14: CM-7930-TQ/R/B
15: CM-7980-K/LG/B
16: CM-7220-S/N/B
17: CM-7910-TQ/N/B

C101



- 18: CM-7431-TQ/W/B
19: CM-7230-S/O/B
20: CM-7940-TQ/S/B
25: CM-7520-G/N/S
26: CM-7900-TQ/K/B
28: CM-7945-P/TQ/S
29: CM-7000C-U/R/B
30: CM-7050-R/G/B
31: CM-5000C-P
32: CM-57AK-B
33: CM-57AL-B
34: CM-7000D-U/R/B
35: CM-7000B-U/R/B
36: CM-7925-P/R/S

C100



- 18: CM-7500-B/G
19: CM-7430-Y/R/B
20: CM-7250-S/R/B
22: CM-2200A-G/N/B
25: CM-2012B-Y/O
27: CM-7420-Y/P/B
32: CM-7210-S/LG/B
33: CM-7970-P/TQ/B
36: CM-7270-R/G
36: CM-7640A-B/LN

SECTION 4 – TRANSMISSIONS (Range Command Transmission)

SEMI-POWERSHIFT (18 x 6)**CALIBRATIONS, FAULT FINDING & PRESSURE TESTING**

F1A – CLUTCH A OPEN OR SHORT TO GROUND

F2A – CLUTCH A SHORT TO 12V

F1B – CLUTCH B OPEN OR SHORT TO GROUND

F2B – CLUTCH B SHORT TO 12V

F1C – CLUTCH C OPEN OR SHORT TO GROUND

F2C – CLUTCH C SHORT TO 12V

F1D – CLUTCH D OPEN OR SHORT TO GROUND

F2D – CLUTCH D SHORT TO 12V

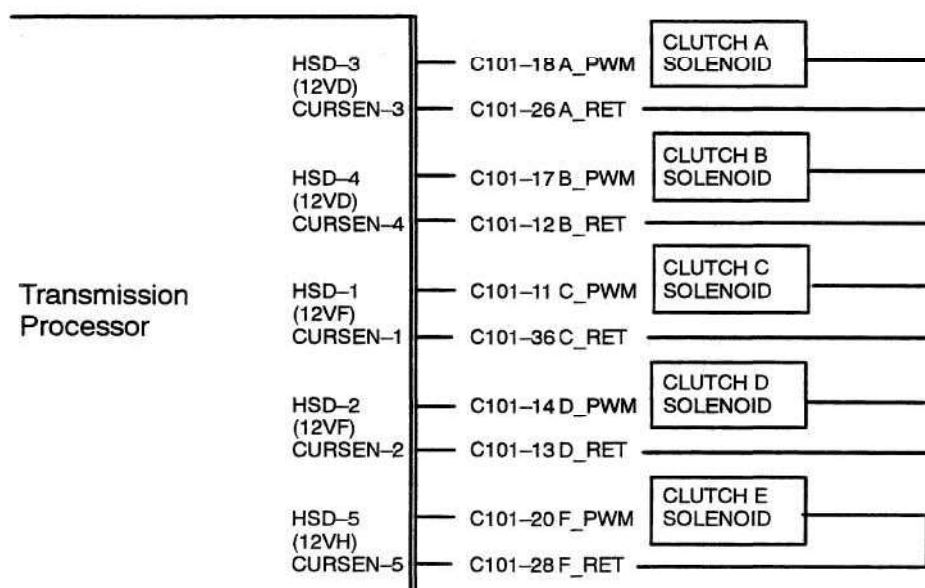
F1E – CLUTCH E OPEN OR SHORT TO GROUND

F2E – CLUTCH E SHORT TO 12V

Error codes F1A through to F2E indicate either a short or open circuit in the wiring of one of the PWM solenoids. Using a suitable multimeter check the wiring from the PWM solenoid back to the processor module. Locate the short/open circuit, repair or replace wiring as necessary.

If wiring is okay disconnect the PWM solenoid from the harness and check that the resistance of the PWM coil is approximately 10Ω at 68°F (20°C). If not, replace the PWM solenoid.

If wiring and PWM solenoids are okay replace the micro processor with one of known performance.



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

SEMI-POWERSHIFT (18 x 6)**CALIBRATIONS, FAULT FINDING & PRESSURE TESTING**

F1P – REVERSE SOLENOID OPEN OR SHORTED TO GROUND

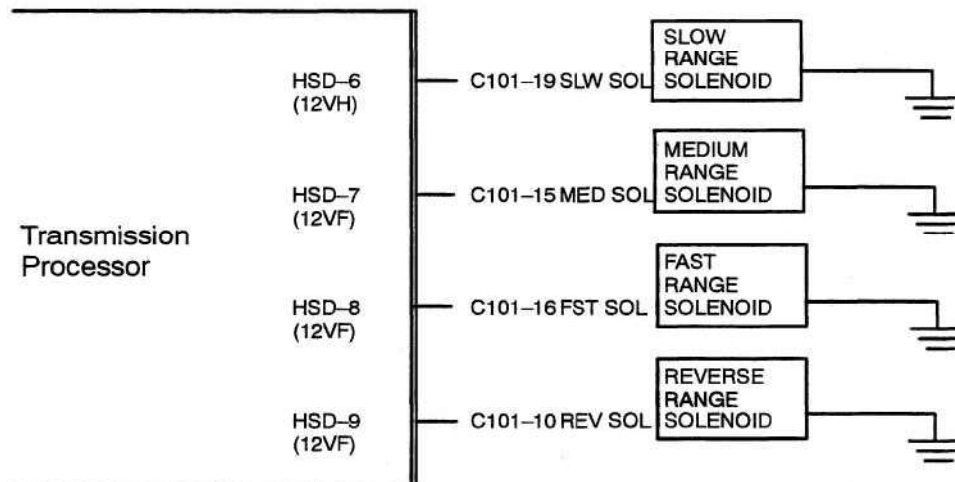
F1L – SLOW RANGE SOLENOID OPEN OR SHORTED TO GROUND

F1U – MID RANGE SOLENOID OPEN OR SHORTED TO GROUND

F1H – FAST RANGE SOLENOID OPEN OR SHORTED TO GROUND

Error codes F1P, F1L, F1U and F1H indicate open or short circuits to ground in the wiring to the solenoid. Using a suitable multimeter check the wiring from the solenoid back to the processor. Locate the wiring fault and repair or replace wiring as necessary.

If wiring is okay, disconnect the solenoid from the harness and check the solenoid resistance is approximately $6-8\Omega$ at 68°F (20°C). If not correct or open/short circuit is indicated replace solenoid.



SECTION 4 – TRANSMISSIONS (Range Command Transmission)

ERROR CODES;

FCA – CLUTCH A NOT CALIBRATED

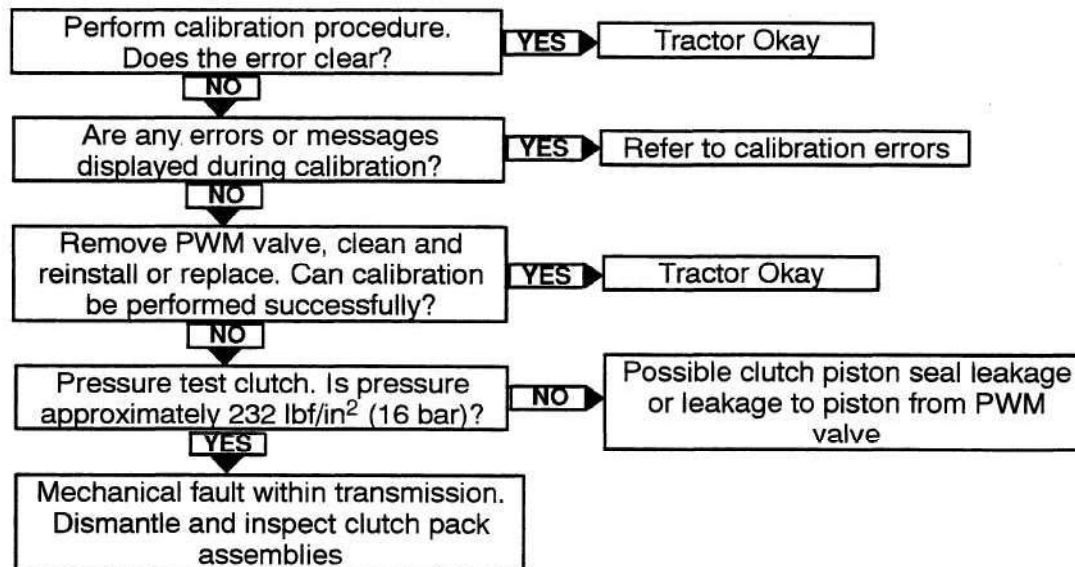
FCB – CLUTCH B NOT CALIBRATED

FCC – CLUTCH C NOT CALIBRATED

FCD – CLUTCH D NOT CALIBRATED

FCE – CLUTCH E NOT CALIBRATED

EFFECTS – Poor clutch performance of uncalibrated clutch.



CALIBRATION ERRORS AND MESSAGES

U19 – Oil temperature below 40°F (10°C)

Warm oil to above 40°F (10°C) before processing with calibration.

U21 – Engine RPM too low

Increase engine RPM to 1200 ± 100

U22 – Engine RPM too high

Reduce engine RPM to 1200 ± 100

U23 – Shuttle lever is in neutral

Place shuttle lever in forward

U26 – Clutch pedal not released

Release clutch pedal

U31 – Output speed sensed – tractor moving

Ensure handbrake is applied and wheels chocked. If error persists check that the Mid and Rear transmission speed sensor connectors are not swapped, if okay then possible mechanical fault within transmission.

U36 – Maximum allowed clutch calibration value exceeded

Current value exceeded without lugging engine down. Possible PWM valve faulty. Low Hydraulic Pressure fault or a faulty synchronizer not transmitting drive.

U37 – Engine RPM dropped too soon

Engine lugged down too soon. Possible PWM fault or mechanical fault within transmission.

CALIBRATION ERRORS AND MESSAGES (Continued)

U81 – No Mid/Reverse synchronizer movement sensed

U82 – No Low/High synchronizer movement sensed

Mechanical fault to synchronizer potentiometer or Low/No Hydraulic Pressure to synchronizer piston. Pressure test – if low pressure, remove and inspect solenoid valve. If pressure good suspect stuck piston – remove side cover and inspect.

U83 – synchronizer potentiometer connectors swapped

Assemble connectors correctly

U84 – Reverse and high synchronizer solenoid connectors swapped

Assemble connectors correctly

U85 – Mid and low synchronizer solenoid connectors swapped

Assemble connectors correctly

U86 – Mid/Reverse synchronizer neutral error

U87 – Low/High synchronizer neutral error

synchronizer NOT in neutral: Enter HD MODE, confirm synchronizer operational if neutral error confirmed suspect mechanical fault with synchronizer. Remove side cover and inspect. With side removed also inspect linkage to potentiometer.