

GMC

SYCLONE

TYphoon

**MASTER TECHNICIAN
OVERVIEW**



GMC TECHNICAL ASSISTANCE

LEADER GUIDE

To complete your familiarization with the GMC Syclone and Typhoon Trucks, we called on PAS Inc., the small volume manufacturer of these unique sport trucks to assist us in preparing this release.

To further assist you, both the video and the manual present the service subject matter in a different format than usual.

We hope this release will round out your understanding of the service requirements of these two "special" GMC Trucks.

RECOMMENDED PROCEDURE FOR CONDUCTING YOUR MEETING

- We suggest the following format for your meeting:
 - Introduce the subject of the special engine and unusual service procedures that must be followed when servicing the GMC Syclone and Typhoon.
 - Show the accompanying video.
 - Review this manual.
 - We suggest you "walk" your service personnel page by page through the manual to familiarize them with the easy-to-follow format.
 - Complete and return the response card.

Good luck. We hope this release is helpful to you and your service department.

GMC Service Training

The material in this manual and accompanying video tape are for the exclusive use of GMC Dealership professional technicians. It is not intended for use by any other persons.

ALL MATERIAL PRESENTED IN THIS
VIDEOTAPE IS THE LATEST INFORMATION
AVAILABLE AT THE TIME OF PRODUCTION.

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TABLE OF CONTENTS

A	ROUGH IDLE - CONDITION	2
	ROUGH IDLE	3
	MEMCAL I.D.	3
	AFTERMARKET ENGINE ITEMS	4
	FUEL INJECTOR NOISE	5
	SPARK PLUGS	6
	PISTONS	7
B	OVERBOOST - CONDITION	9
	ECM WIRING	10
	ECM TAMPER-PROOF LABEL	11
	MEMCAL I.D.	12
	AFTERMARKET ENGINE ITEMS	13
	CODE 31	14,15
	BOOST CONTROL HARNESS	16
C	LOW W.O.T. PERFORMANCE - CONDITION18	
	ECM WIRING	19
	MEMCAL I.D.	20
	ECM TAMPER-PROOF LABEL	20
	AFTERMARKET ENGINE ITEMS	21
	CODE 31	22,23
	SPARK PLUGS	24
	ENGINE TIMING	24
	RIDE HEIGHT	25,26
	INTER-COOLER COOLANT LEVEL	27
	FUEL QUALITY	27
D	W.O.T. ENGINE CUT-OFF - CONDITION	29
	ECM WIRING	30
	MEMCAL I.D.	31
	AFTERMARKET ENGINE ITEMS	32
	CODE 31	33,34
	3RD TO 4TH GEAR W.O.T. UPSHIFT	35
	FUEL LINE NOISE	36
	RIDE HEIGHT	37,38
	FUEL LEVEL	39
E	VIBRATION - CONDITION	41
	FRONT PROPSHAFT JOINT FAILURE	42
	FRONT PROPSHAFT INDEXING	43
	FRONT PROPSHAFT FLANGE RUN-OUT	43
	WHEELS	44
	RIDE HEIGHT	45,46
	TCC SHUDDER	47
	REFERENCE	49

NOTE: During the video, you will see an alpha symbol in a box on the upper right corner of the screen. That symbol corresponds with the section and subject in this manual.

This video is intended for use by the professional technician. The information is presented with the understanding that a technician has a working knowledge of the components and systems that are used on the types of vehicle shown in this production.

A ROUGH IDLE

■ **CONDITION:**

Rough idle.

■ **SYMPTOM:**

Engine doesn't idle as smoothly as an LB4 V-6 engine, but is rough sounding.

■ **CHECK:**

ROUGH IDLE

MEMCAL I.D.

AFTERMARKET ENGINE ITEMS

FUEL INJECTOR NOISE

SPARK PLUGS

PISTONS

IMPORTANT: On all repairs to Sycloons and Typhoons (other than normal maintenance) make sure you check ServiceNet history on your DCS. This will alert you to tampering situations which may affect warranty.

ROUGH IDLE

■ ROUGH IDLE

Syclones and Typhoons do not achieve a "smooth" idle. This is to comply with all current federal emissions specifications, therefore these engines tend to run lean at idle causing a slight misfiring. This condition is very similar to the condition of the Buick 3.8 Turbo engines. Early Syclones do have a campaign for rough idle and stalling and the service technician should refer to campaign #91-C-12 for the corrections. A compression test should be done any time rough idle is diagnosed.

Note: If fuel used is above 93 octane, vehicles may actually exhibit a "cold stumble" or be harder to start.

MEMCAL I.D.

■ MEMCAL (PROM) I.D.

There are currently three Memcal I.D. numbers that should be seen on the 1991 and 1992 Syclones/Typhoons. Memcals with I.D.'s other than these, garbled I.D.'s or no I.D. numbers at all are to be considered unauthorized and will void the engine warranty.

The GMC TAC and the Assistant Zone Manager - Service should be notified for service instructions. Replace only with authorized GM Memcals.

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(Campaign #91C-12).
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- 3971* Production memcal for the 1992 Typhoon. This memcal has definite boost control calibration. Will set code 31 and shut off pulse width even if the wastegate is disconnected. Also has improved cold idle quality and does not require boost learn on start up.

***Note:** This memcal is Certified for 1991 Syclone but may require wastegate adjustment to prevent Code 31. Some Syclones may not be able to run this calibration due to variations in exhaust backpressure and should have memcal 3961 installed.

AFTERMARKET ENGINE ITEMS

■ AFTERMARKET ENGINE ITEMS

The following is a brief description of a few of the aftermarket components that are currently available for the Sycloons and Typhoons.

AT NO TIME SHOULD THESE ITEMS BE RECOMMENDED FOR USE BY ANY GMC PERSONNEL. USE OF ANY OF THESE ITEMS IS CONSIDERED TAMPERING AND VOIDS THE POWERTRAIN WARRANTY.

- [A] **ADJUSTABLE FUEL PRESSURE REGULATORS** - These are designed to increase fuel pressure to the injectors, increasing the amount of fuel delivered to the engine. If misadjusted or not used in conjunction with a larger fuel pump, the adjustable fuel regulator will cause the engine to operate lean at W.O.T. and possibly cause piston failure. If adjusted too rich at idle, the engine will have a tendency to foul plugs and cause excessive carbon deposits on valves.
- [B] **AFTERMARKET MEMCALS** - Most of the aftermarket memcals deliver as much fuel and boost as the vehicle's respective systems will deliver. However, these memcals do not consider durability issues and generally have excessive spark calibrations for low octane fuel. These conditions have frequently resulted in engine failure.

Use of unauthorized memcals often results in unwarranted engine failure.
- [C] **REDUCTION PULLEYS** - These are designed to reduce strain and horsepower requirements to accessory drive components on engines operating at very high RPMs. The turbocharged engines in these vehicles have a maximum operating range of 4800 rpm before injector pulse width is shut off. Therefore, these pulleys have no real benefit to the customer since the accessory drive components are in their designed operating range, thus horsepower reduction is minimal.
- [D] **AIR CLEANERS** - Most aftermarket air cleaner systems are designed to reduce air inlet restrictions caused by the production system. This is most commonly done by removing the production system and installing a less restrictive filter under the hood. This reduces restriction but does not take into account under-hood temperatures. In that these vehicles are turbocharged, the under-hood temperature is considerably higher than on non-turbocharged applications. This may overload the intercooler and create a loss in power by increasing inlet temperature and detonation.

NOTE: ANY REDUCTION IN INLET RESTRICTION OR EXHAUST BACKPRESSURE WILL CAUSE THE ENGINE TO OPERATE LEAN AND LEAD TO POSSIBLE PISTON FAILURE.

- [E] **"HOT INJECTORS"** - These are injectors that have a higher flow rate at a specific fuel pressure than stock injectors. The aftermarket uses these to enrich the fuel mixture which cuts down on detonation. However, these cannot be used effectively without modifying the memcal, fuel pump, and fuel regulators. The production injectors are manufactured by Bosch and have red plastic tops. If the top is not red, or appears to have been painted, follow the tamper procedure.
- [F] **EXHAUST** - The exhaust system on these vehicles must remain intact for the production memcal to operate properly. To lessen the restriction in the exhaust will make the vehicle run leaner and possibly cause piston failure.

NOTE: Removal of restriction will also cause a Code 31 Overboost.

FUEL INJECTOR NOISE

■ FUEL INJECTOR NOISE

Injector noise is caused by the fuel rails seated too tightly into the intake manifold, causing the fuel injectors to make contact. The repair procedure involves increasing the height of the fuel rail, thus relieving the metal to metal contact of the fuel injectors to the manifold. This depressed fuel rail condition can also cause the fuel to boil in the fuel rail because heat is transferred directly from the intake manifold through the injectors to the rail. This can cause poor engine performance. (See Service Bulletin #92-6C-51.)

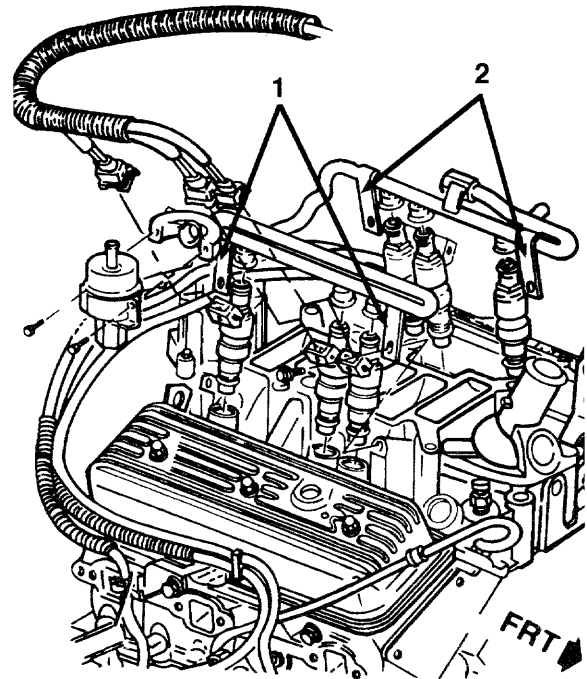
■ TO SET THE RAIL TO THE CORRECT HEIGHT

■ If fuel rail brackets are slotted: ('91, '92 and limited '93 models)

- 1 On a cool engine, loosen the passenger side fuel rail brackets (1).
- 2 Then loosen the driver side fuel rail brackets (2).
- 3 Raise the passenger side fuel rail as far as the bracket slots (1) permit, tighten the bolts.
- 4 Raise the driver side fuel rail as far as the fuelrail bracket (2) permits, tighten the bolts. This should correct the injector noise and heated fuel rail condition.

■ If fuel rail brackets have holes: (most '93 models)

- 1 Depression of the fuel rail can only be caused by bent brackets, forcing the rail down. Straighten the bent brackets to raise the fuel rail height. This should correct the injector noise and heated fuel rail condition.



(1) Passenger Side Fuel Rail Bracket
(2) Driver Side Fuel Rail Bracket

SPARK PLUGS

■ SPARK PLUGS

■ PLUG CHANGE-OUT PROCEDURE

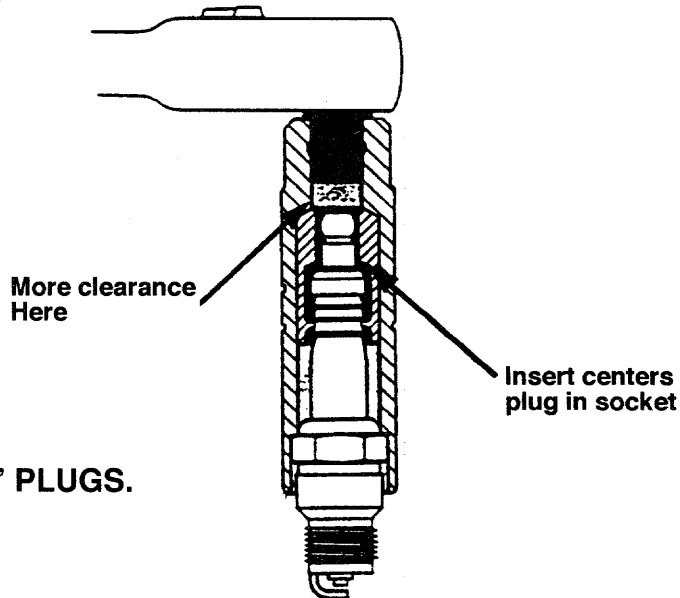
- 1 Raise and support the truck in the usual manner.
- 2 Remove the front wheels.
- 3 Remove the spark plug wires.
- 4 Remove spark plugs using tool S9706KA.

HINT: Perform a compression check at this time. This may save you a lot of aggravation and time later.

- 5 Replace plugs with new plugs . . . reverse these steps to complete the plug change-out.

NOTE: Always replace spark plugs with: CR42TS

- The Cyclone and Typhoon use the Quantum Plugs, which, among other differences, are longer than the plugs that you routinely work with. Because of this longer length, you'll have to use Snap-On tool #S9706KA spark plug socket or equivalent to service the plugs.



NEVER REPLACE WITH "HOTTER" PLUGS.

PISTONS

■ PISTONS

The piston in the Syclone and Typhoon engines was specially designed to handle the added stress of turbocharging. These are Hypereutectic Aluminum alloy with a T6 heat treat and have a redesigned skirt contour to handle the high thrust forces from turbocharged firing pressures. Validation was done on these pistons using the GM 300 hour Durability test and the GM 300 hour W.O.T. tests, passing both at production level calibrations. **THESE PISTONS ARE NOT INTERCHANGEABLE WITH ANY OTHER GM SERVICE PISTONS.**

These pistons are currently not available through SPO because all engine failures are replaced on an exchange basis through TAC. All Syclone and Typhoon engines are to be returned to the Romulus Engine Plant to have a Failure Analysis completed.

NOTE: Syclone and Typhoon connecting rods are identified by a pink mark on the end of the rod bolt.

NOTES

B OVERBOOST

■ **CONDITION:**

■ OVERBOOST

■ **SYMPTOM:**

- Overboost is a condition in which the turbocharger creates more boost than the 14.8 pounds for which it was designed.

This is generally the cause of piston failure and is frequently the result of tampering.

■ **CHECK:**

ECM WIRING

ECM TAMPER-PROOF LABEL

MEMCAL I.D.

AFTERMARKET ENGINE ITEMS

CODE 31

WASTEGATE BOOST HARNESS

NOTE: The overboost checklist must be completed and GMC Truck TAC notified before any repairs are started.

IMPORTANT: On all repairs to Sycloons and Typhoons (other than normal maintenance) make sure you check ServiceNet history on your DCS. This will alert you to tampering situations which may affect warranty.

■ ECM WIRING

Syclones built before VIN 1521 may experience overboost due to ECM wiring harness chaffing against the upper mounting bracket. It is necessary to repair the wires and install a new mounting bracket assembly to correct this condition. (Campaign 91-C-12.) NOTE: Normally this chaffing occurs with the green/white to black wire.

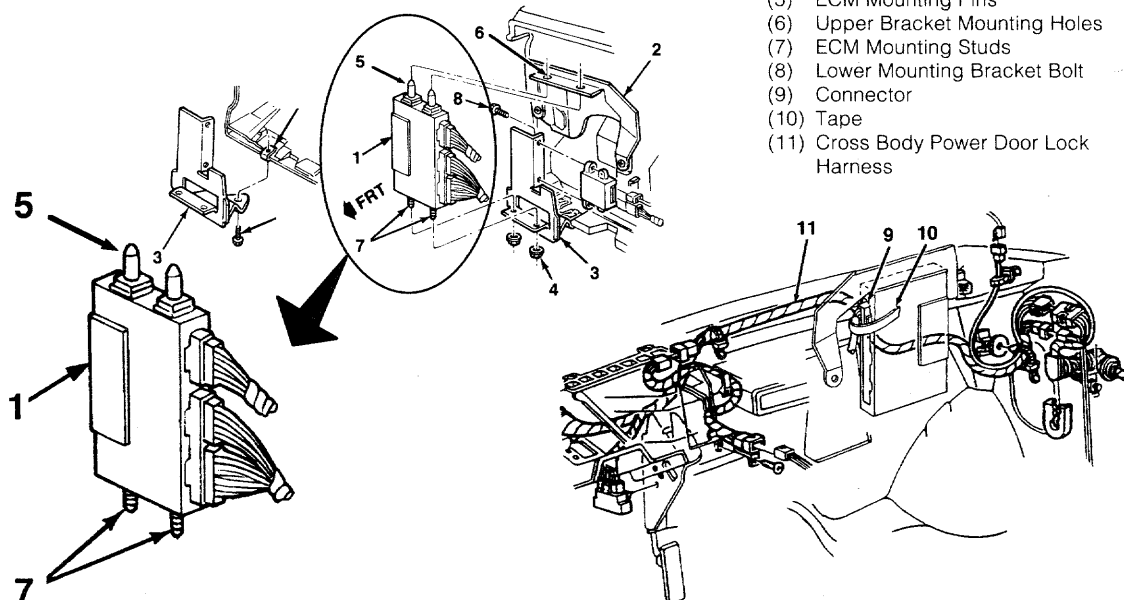
■ ECM WIRING REPAIR/REMOVAL OF MOUNTING BRACKET

- 1 Disconnect the negative (-) battery cable.
- 2 Disconnect ECM wiring harness.
- 3 Remove the ECM from the upper bracket.
- 4 Remove the upper mounting bracket.
- 5 Repair the "chaffed" wiring harness in the approved GM manner.

■ INSTALL NEW MOUNTING BRACKET

- 1 Mount upper mounting bracket (2) to the I.P.
- 2 When installing the ECM into the passenger compartment, position the wire out of the top (green) connector (9) between the connector thumb latch and the tab on grey comb. IMPORTANT: Place tape (10) to retain wire in this position during ECM installation. To avoid interference, it will be necessary to move the cross body power door lock harness (11) prior to ECM installation.
- 3 Mount the ECM (1) into the upper mounting bracket (2) by inserting the ECM mounting pins (5) into the upper bracket mounting holes (6).
- 4 Secure the lower mounting bracket (3) to the I.P. using the lower mounting bracket mounting bolt (8).
- 5 Install right hush panel.
- 6 Reconnect negative (-) battery cable.
- 7 Verify all ECM functions with a Tech Scan tool.

- (1) ECM Assembly
- (2) Upper Mounting Bracket
- (3) Lower Mounting Bracket
- (4) Nut
- (5) ECM Mounting Pins
- (6) Upper Bracket Mounting Holes
- (7) ECM Mounting Studs
- (8) Lower Mounting Bracket Bolt
- (9) Connector
- (10) Tape
- (11) Cross Body Power Door Lock Harness



ECM TAMPER-PROOF LABEL

■ ECM TAMPER-PROOF LABEL

All Syclones and Typhoons come from the factory with a serial numbered Tamper Proof Label on the ECMs to prevent unauthorized memcal change-outs. The serial number on the label should be documented on the repair order any time powertrain components are being worked on. **If memcal replacement is necessary, remove the label, clean the ECM with solvent, and install a new label. Record the new label number on the repair order.**

If the dealership does not have replacement labels, contact GMC TAC and they will make the necessary arrangements. The serial numbers on these labels are recorded and will be checked on warranty service.

NOTE: If the label shows signs of being removed, the Assistant Zone Manager - Service and GMC TAC should be contacted immediately and work discontinued. See Warranty Information Letter D-91-2.

NOTE: After installation, affix the small numbered label with the ECM tamper label to the R.O. for future reference.

NOTE: You can also check to see if the ECM harness has been pulled out. This can be determined because the tab on the label will be torn.

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CODE 31, MISADJUSTED WASTEGATE

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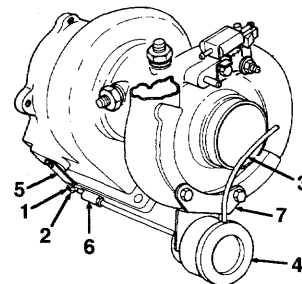
NOTE: Code 31 can occur from normal driving.

■ WASTEGATE ACTUATOR ADJUSTMENT

NOTE: Do not attempt to adjust the wastegate actuator outside the range of the specifications in this procedure. Improper adjustment can severely limit performance or cause overboost, resulting in fuel shut off.

TOOLS REQUIRED:

J 35691 Turbocharger Pressure Gage
J 8001-3 Dial Indicator, Part of J 8001 Dial Indicator set



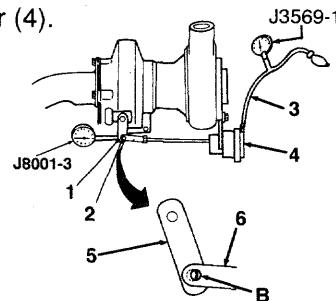
- (1) Wire Retainer
- (2) Lever Pin
- (3) Boost Control Hose
- (4) Wastegate Actuator
- (5) Lever
- (6) Rod End
- (7) Clamp
- (B) 7/8 of diameter of hole on rod end covered by pin

■ TO ACCESS WASTEGATE ACTUATOR

- 1 Remove right front wheel and tire.
- 2 Remove the passenger side wheelhouse panel.
- 3 Disconnect the retaining wire (1) from pin (2).
- 4 Remove special clamp (7) from boost control hose.
- 5 Disconnect boost control hose (3) from wastegate actuator (4).

■ TO ADJUST WASTEGATE ACTUATOR

- 1 Connect pressure gage, tool J 35691, to hose connection on wastegate actuator (4) making sure dial reads zero.
- 2 Connect the dial indicator, tool J 8001-3, on end of the lever (5), making sure dial reads zero.
- 3 Apply 31 to 34.5 Kpa (4.5 to 5 psi) air pressure with the tool J 35691 and check tool J 8001-3 for pressure reading.
- 4 If the dial indicator, tool J 8001-3, reads greater than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by shortening it a half-turn at rod end (6). If J 8001-3 reads less than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by lengthening it a half-turn at rod end (6).
- 5 Recheck travel at 31 to 34.5 Kpa (4.5 to 5 psi) air pressure.
- 6 Repeat the adjustment until above specifications are met. If specifications can not be met, replace the wastegate actuator.
- 7 If adjustment causes wastegate to open at all, replace the wastegate actuator.
- 8 Remove tools J 8001-3 and J 35691.



■ TO INSTALL WASTEGATE ACTUATOR

- 1 Install new clamp (7) on boost control hose (3). (These can be obtained through TAC.)
- 2 Connect the boost control hose (3) to wastegate actuator (4).
- 3 Correctly position on hose end and crimp clamp onto hose. Clamp must prevent hose from being capable of pulling off actuator.
- 4 Connect the retaining wire (1) to pin (2).
- 5 Install the passenger side wheelhouse panel.

CODE 31, MISADJUSTED TV CABLE

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■ THROTTLE VALVE (TV) CABLE ADJUSTMENT

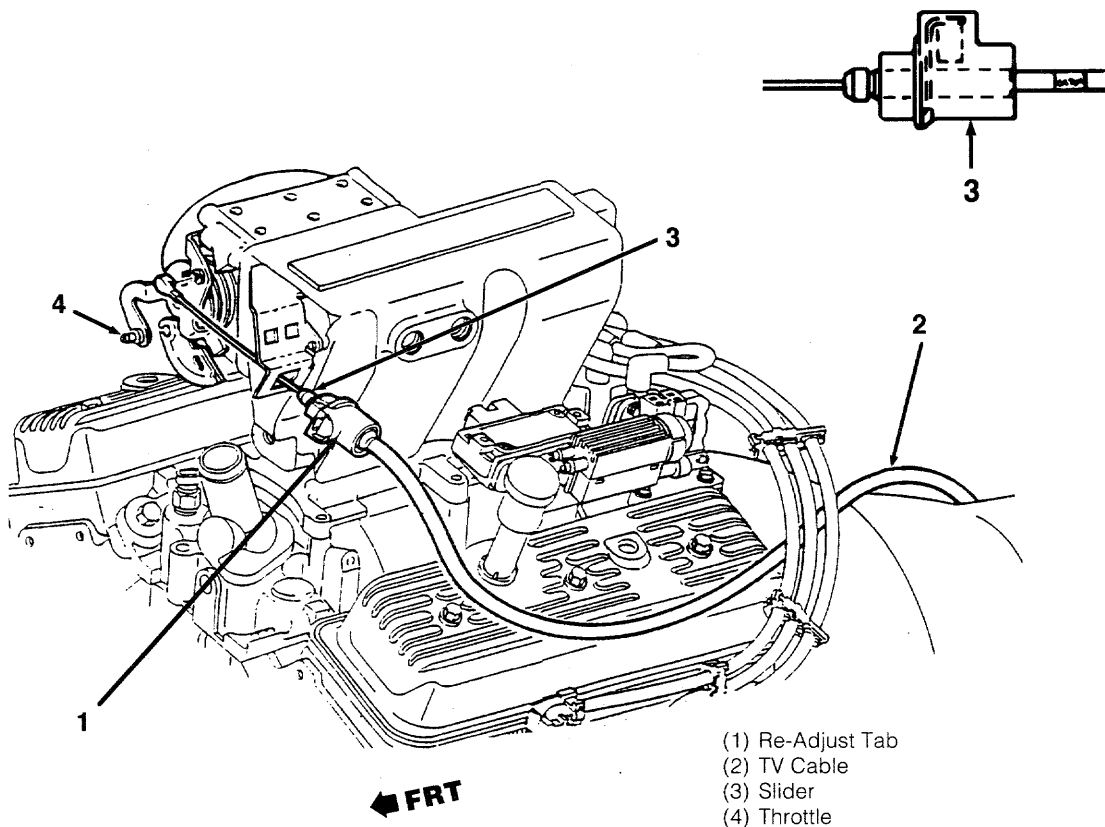
NOTE: Adjustment of the TV cable must be made by rotating the throttle lever at the throttle body. Do not use the accelerator pedal to rotate the throttle lever.

■ TO ADJUST TV CABLE

- 1 Remove the driver side floor mat to prevent a false throttle setting.
- 2 Depress and hold down the metal re-adjust tab (1) at the engine end of the TV cable (2).
- 3 Move the slider (3) toward the passenger side until it stops against the fitting.
- 4 Release the readjustment tab (1).
- 5 Rotate the throttle lever (4) to its "full travel position."
- 6 The slider (3) must move or ratchet toward the lever when the lever is rotated to its full travel position.

NOTE: Check that the cable moves freely. The cable may appear to function properly with the engine stopped and cold. Recheck after the engine is hot.

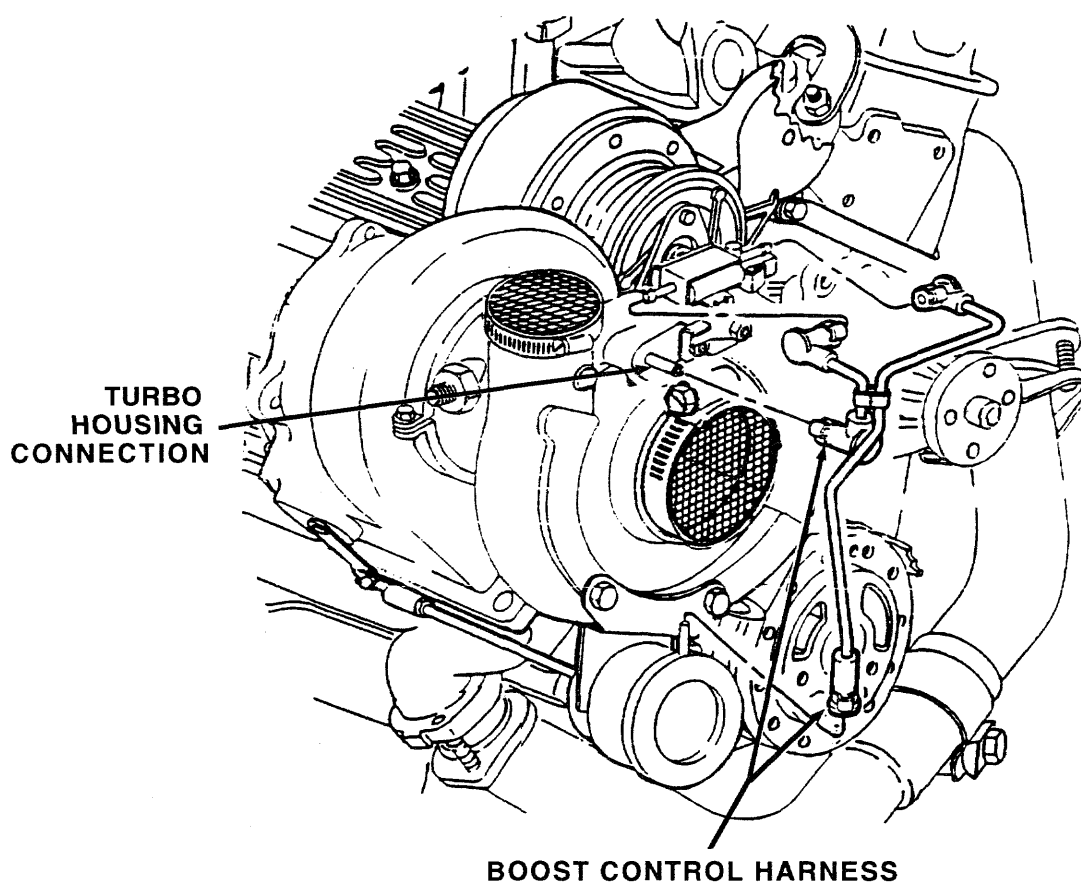
- 7 Road test the vehicle to verify the repair.



BOOST CONTROL HARNESS

- The Boost Control Harness (located on the turbocharger) installs to the compressor housing with a rubber elbow. If this elbow is forced on to the compressor so that the rubber actually touches the aluminum compressor housing, the boost control cannot operate correctly since the hose nipple is bottoming inside the elbow and blocking off boost pressure. With a screwdriver, pry between the compressor housing and the rubber elbow to obtain approximately 1/8 of an inch clearance.

NOTE: Removal of muffler or catalytic converter will cause Code 31 due to a boost "spike".



NOTES

C LOW W.O.T. PERFORMANCE

■ **CONDITION:**

LOW W.O.T. PERFORMANCE

■ **SYMPTOM:**

The customer perceives that the engine delivers "less than normal W.O.T. performance".

■ **CHECK:**

ECM WIRING

MEMCAL I.D.

ECM TAMPER-PROOF LABEL

AFTERMARKET ENGINE ITEMS

CODE 31

SPARK PLUGS

ENGINE TIMING

RIDE HEIGHT

INTER-COOLER COOLANT LEVEL

FUEL QUALITY

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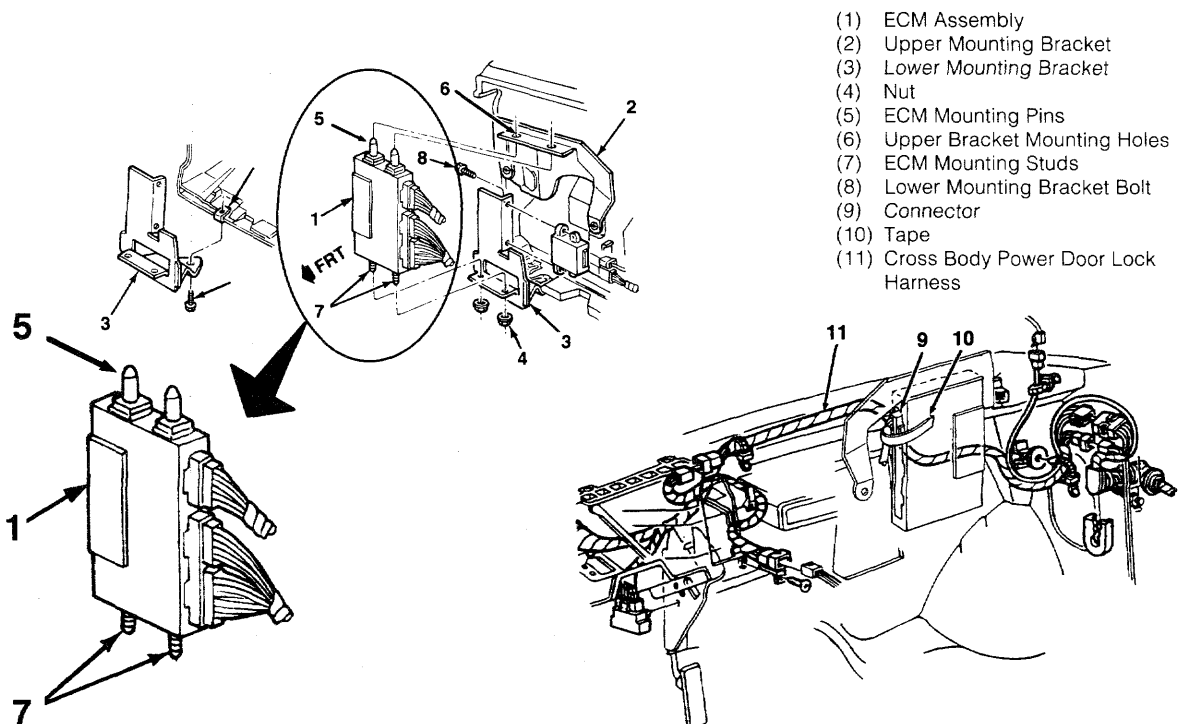
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AT NO TIME SHOULD THESE ITEMS BE RECOMMENDED FOR USE BY ANY GMC PERSONNEL. USE OF ANY OF THESE ITEMS IS CONSIDERED TAMPERING AND VOIDS THE POWERTRAIN WARRANTY.

- [A] **ADJUSTABLE FUEL PRESSURE REGULATORS** - These are designed to increase fuel pressure to the injectors, increasing the amount of fuel delivered to the engine. If misadjusted or not used in conjunction with a larger fuel pump, the adjustable fuel regulator will cause the engine to operate lean at W.O.T. and possibly cause piston failure. If adjusted too rich at idle, the engine will have a tendency to foul plugs and cause excessive carbon deposits on valves.
- [B] **AFTERMARKET MEMCALS** - Most of the aftermarket memcals deliver as much fuel and boost as the vehicle's respective systems will deliver. However, these memcals do not consider durability issues and generally have excessive spark calibrations for low octane fuel. These conditions have frequently resulted in engine failure.

Use of unauthorized memcals often results in unwarranted engine failure.

- [C] **REDUCTION PULLEYS** - These are designed to reduce strain and horsepower requirements to accessory drive components on engines operating at very high RPMs. The turbocharged engines in these vehicles have a maximum operating range of 4800 rpm before injector pulse width is shut off. Therefore, these pulleys have no real benefit to the customer since the accessory drive components are in their designed operating range, thus horsepower reduction is minimal.
- [D] **AIR CLEANERS** - Most aftermarket air cleaner systems are designed to reduce air inlet restrictions caused by the production system. This is most commonly done by removing the production system and installing a less restrictive filter under the hood. This reduces restriction but does not take into account under-hood temperatures. In that these vehicles are turbocharged, the under-hood temperature is considerably higher than on non-turbocharged applications. This may overload the intercooler and create a loss in power by increasing inlet temperature and detonation.

NOTE: ANY REDUCTION IN INLET RESTRICTION OR EXHAUST BACKPRESSURE WILL CAUSE THE ENGINE TO OPERATE LEAN AND LEAD TO POSSIBLE PISTON FAILURE.

- [E] **"HOT INJECTORS"** - These are injectors that have a higher flow rate at a specific fuel pressure than stock injectors. The aftermarket uses these to enrich the fuel mixture which cuts down on detonation. However, these cannot be used effectively without modifying the memcal, fuel pump, and fuel regulators. The production injectors are manufactured by Bosch and have red plastic tops. If the top is not red, or appears to have been painted, follow the tamper procedure.
- [F] **EXHAUST** - The exhaust system on these vehicles must remain intact for the production memcal to operate properly. To lessen the restriction in the exhaust will make the vehicle run leaner and possibly cause piston failure.

NOTE: Removal of restriction will also cause a Code 31 Overboost.

CODE 31, MISADJUSTED WASTEGATE

■ CODE 31, MISADJUSTED WASTEGATE

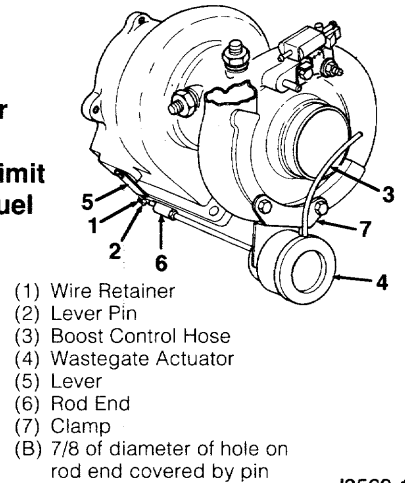
NOTE: Code 31 can occur from normal driving.

■ WASTEGATE ACTUATOR ADJUSTMENT

NOTE: Do not attempt to adjust the wastegate actuator outside the range of the specifications in this procedure. Improper adjustment can severely limit performance or cause overboost, resulting in fuel shut off.

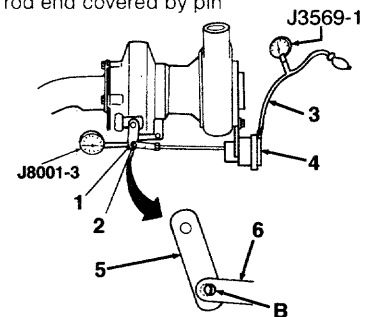
TOOLS REQUIRED:

J 35691 Turbocharger Pressure Gage
J 8001-3 Dial Indicator, Part of J 8001
Dial Indicator set



■ TO ACCESS WASTEGATE ACTUATOR

- 1 Remove right front wheel and tire.
- 2 Remove the passenger side wheelhouse panel.
- 3 Disconnect the retaining wire (1) from pin (2).
- 4 Remove special clamp (7) from boost control hose.
- 5 Disconnect boost control hose (3) from wastegate actuator (4).



■ TO ADJUST WASTEGATE ACTUATOR

- 1 Connect pressure gage, tool J 35691, to hose connection on wastegate actuator (4) making sure dial reads zero.
- 2 Connect the dial indicator, tool J 8001-3, on end of the lever (5), making sure dial reads zero.
- 3 Apply 31 to 34.5 Kpa (4.5 to 5 psi) air pressure with the tool J 35691 and check tool J 8001-3 for pressure reading.
- 4 If the dial indicator, tool J 8001-3, reads greater than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by shortening it a half-turn at rod end (6). If J 8001-3 reads less than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by lengthening it a half-turn at rod end (6).
- 5 Recheck travel at 31 to 34.5 Kpa (4.5 to 5 psi) air pressure.
- 6 Repeat the adjustment until above specifications are met. If specifications can not be met, replace the wastegate actuator.
- 7 If adjustment causes wastegate to open at all, replace the wastegate actuator.
- 8 Remove tools J 8001-3 and J 35691.

■ TO INSTALL WASTEGATE ACTUATOR

- 1 Install new clamp (7) on boost control hose (3). (These can be obtained through TAC.)
- 2 Connect the boost control hose (3) to wastegate actuator (4).
- 3 Correctly position on hose end and crimp clamp onto hose. Clamp must prevent hose from being capable of pulling off actuator.
- 4 Connect the retaining wire (1) to pin (2).
- 5 Install the passenger side wheelhouse panel.

CODE 31, MISADJUSTED TV CABLE

■ CODE 31, MISADJUSTED TV CABLE

■ THROTTLE VALVE (TV) CABLE ADJUSTMENT

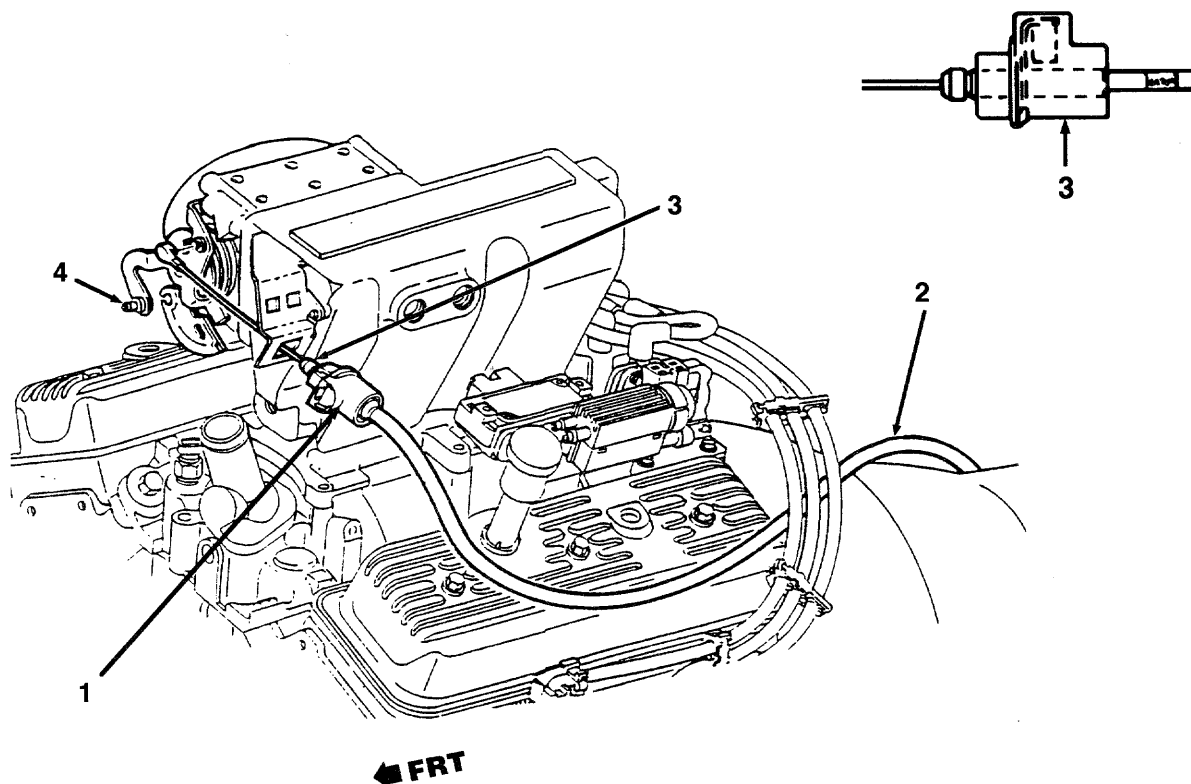
NOTE: Adjustment of the TV cable must be made by rotating the throttle lever at the throttle body. Do not use the accelerator pedal to rotate the throttle lever.

■ TO ADJUST TV CABLE

- 1 Remove the driver side floor mat to prevent a false throttle setting.
- 2 Depress and hold down the metal re-adjust tab (1) at the engine end of the TV cable (2).
- 3 Move the slider (3) toward the passenger side until it stops against the fitting.
- 4 Release the readjustment tab (1).
- 5 Rotate the throttle lever (4) to its "full travel position."
- 6 The slider (3) must move or ratchet toward the lever when the lever is rotated to its full travel position.

NOTE: Check that the cable moves freely. The cable may appear to function properly with the engine stopped and cold. Recheck after the engine is hot.

- 7 Road test the vehicle to verify the repair.



- (1) Re-Adjust
- (2) TV Cable
- (3) Slider
- (4) Throttle Lever

SPARK PLUGS

■ SPARK PLUGS

■ PLUG CHANGE-OUT PROCEDURE

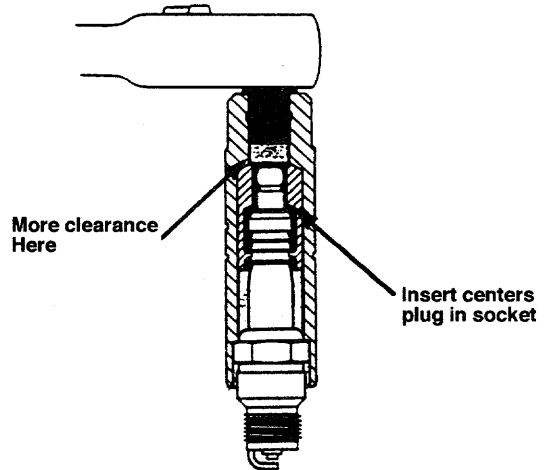
- 1 Raise and support the truck in the usual manner.
- 2 Remove the front wheels.
- 3 Remove the spark plug wires.
- 4 Remove spark plugs using tool S9706KA.

HINT: Perform a compression check at this time. This may save you a lot of aggravation and time later.

- 5 Replace plugs with new plugs . . . reverse these steps to complete the plug change-out.

NOTE: Always replace spark plugs with: CR42TS

The Syclone and Typhoon use the Quantum Plugs, which, among other differences, are longer than the plugs that you routinely work with. Because of this longer length, you'll have to use Snap-On tool #S9706KA spark plug socket to service the plugs.



NEVER REPLACE WITH "HOTTER" PLUGS.

ENGINE TIMING

■ ENGINE TIMING

The engine timing for these vehicles is 0 degrees BTDC and should not be advanced. If advanced, this will induce detonation which will then cause the ECM to retard spark and boost resulting in poor performance.

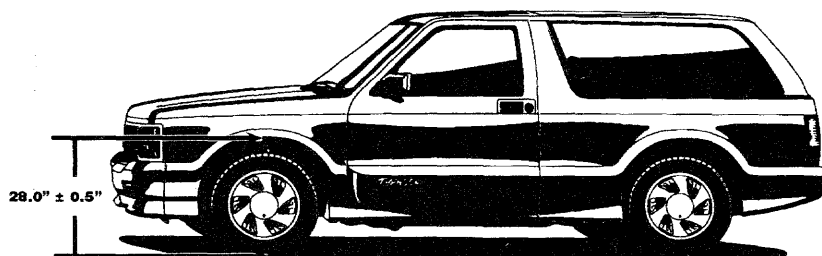
RIDE HEIGHT

■ RIDE HEIGHT

- It is very important that the ride height be checked on Typhoons and Syclones for different reasons. Incorrect ride height on the Typhoon can be due to a malfunctioning ELC system. If the rear height of the vehicle is incorrect, the result is poor handling and premature front tire wear.
- In the case of a Syclone, a common practice is to modify the Syclone by lowering the rear of the vehicle to obtain a "level" look. When the rear of the truck is lowered, it amplifies the fuel level problem of starving the fuel pump on acceleration. Instead of starving the fuel pump at 1/4 tank of fuel or less, it will stall at 1/2 tank or less, depending on how much the vehicle is lowered.
- Ride height can be easily checked by comparing the following illustration and dimensions to the vehicle being worked on.

■ FRONT WHEEL OPENING MEASUREMENT

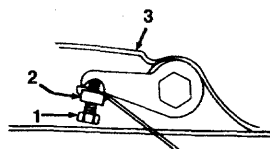
- Measure the distance between the top edge of the front wheel opening and the ground. The correct height should be 28" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.



■ FRONT WHEEL TRIM HEIGHT ADJUSTMENT

- **To raise the trim height:** Rotate the bolt (1) into the nut (2) one complete revolution for each additional 6 mm or .2 inches of height.
- **To lower the trim height:** Rotate the bolt (1) out of the nut (2) one complete revolution for each reduction of 6 mm or .2 inches of height.
- Measure trim height to determine the accuracy of the adjustment. Repeat the adjustment process again, if necessary.

NOTE: 1 mm (0.04 inches) clearance must be provided between the adjuster arm and nut after adjustments are completed.



- (1) Bolt
(2) Nut
(3) Torsion Bar Support

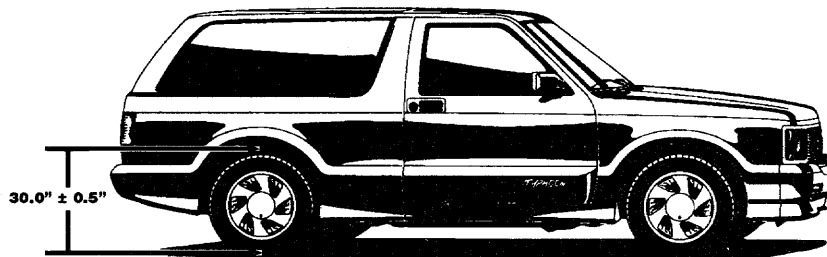
RIDE HEIGHT (CONT.)

■ RIDE HEIGHT

■ REAR WHEEL OPENING MEASUREMENT

The proper ride height can be determined by measuring the distance from the top of the wheel opening to the ground. The correct height should be 30" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.

■ REAR WHEEL OPENING ADJUSTMENT



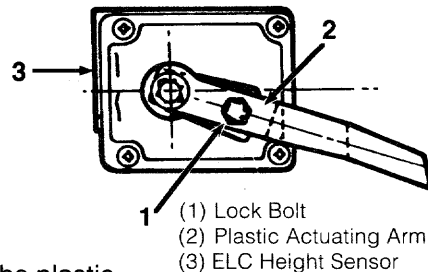
■ Syclone:

The Syclone rear trim height cannot be changed. If the actual measurement shows a significant difference from the 30 inches, look for tampering or owner abuse.

■ Typhoon:

Rear trim height can be changed in the following manner:

- 1 Loosen the lock bolt (1).
- 2 Adjust the plastic actuating arm (2) up or down depending on the correction:
 - TO RAISE the vehicle trim height move the plastic actuating arm (2) upward. Tighten lock bolt (1).
 - TO LOWER the vehicle trim height move the plastic actuating arm (2) downward. Tighten lock bolt (1).
- 3 Measure the new trim height in the above manner and repeat the adjustments, if necessary.



INTERCOOLER SYSTEM

■ INTERCOOLER SYSTEM

- The water to air intercooler systems in the Syclone/Typhoons are very sensitive to low coolant levels in the intercooler. If these systems are run low of coolant or have a restriction in them, the overall W.O.T. performance will be lowered due to spark retard and boost reduction to compensate for the high intake temperatures. All hoses and the intercooler system should be inspected any time there is a low power complaint.

NOTE: A unique characteristic of the Syclone and Typhoon intercooler is that above 160 degrees it is always circulating coolant.

FUEL QUALITY

■ FUEL QUALITY

- The Syclone and Typhoon are designed to run at maximum boost and performance provided that the engine does not see detonation. If the fuel quality is less than optimum, the ECM will reduce boost levels depending on how much detonation it sees from the knock sensor. On all poor performance cases, ask the customer where and when he/she purchased the fuel and what grade was installed. If in question, drain the fuel tank and refill using a known good fuel station and filling with the highest available octane. Monitor the knock signal to verify that signal is not excessive.

D W.O.T. ENGINE CUT-OFF

■ CONDITION: W.O.T. ENGINE CUT-OFF

■ SYMPTOM:

Engine stutters (fuel injection shuts off) for a few seconds at wide open throttle, but re-establishes correct performance when the throttle input is reduced.

■ CHECK:

ECM WIRING

MEMCAL I.D.

AFTER MARKET ENGINE ITEMS

CODE 31

3RD TO 4TH GEAR W.O.T. UPSHIFT

FUEL LINE NOISE

RIDE HEIGHT

FUEL LEVEL

IMPORTANT: On all repairs to Sycloones and Typhoons (other than normal maintenance) make sure you check ServiceNet history on your DCS. This will alert you to tampering situations which may affect warranty.

■ ECM WIRING

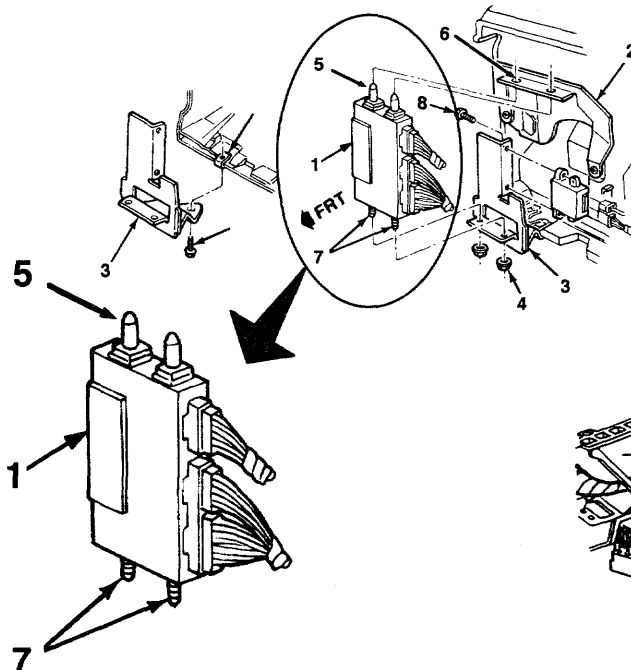
Syclones built before VIN 1521 may experience overboost due to ECM wiring harness chaffing against the upper mounting bracket. It is necessary to repair the wires and install a new mounting bracket assembly to correct this condition. (Campaign 91-C-12.) NOTE: Normally this chaffing occurs with the green/white to black wire.

■ ECM WIRING REPAIR/REMOVAL OF MOUNTING BRACKET

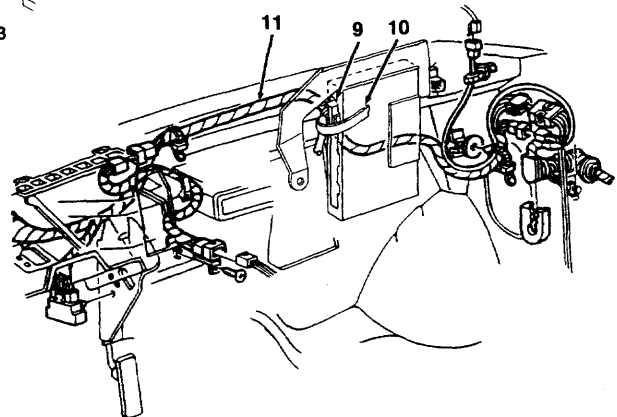
- 1 Disconnect the negative (-) battery cable.
- 2 Disconnect ECM wiring harness.
- 3 Remove the ECM from the upper bracket.
- 4 Remove the upper mounting bracket.
- 5 Repair the "chaffed" wiring harness in the approved GM manner.

■ INSTALL NEW MOUNTING BRACKET

- 1 Mount upper mounting bracket (2) to the I.P.
- 2 When installing the ECM into the passenger compartment, position the wire out of the top (green) connector (9) between the connector thumb latch and the tab on grey comb. **IMPORTANT:** Place tape (10) to retain wire in this position during ECM installation. To avoid interference, it will be necessary to move the cross body power door lock harness (11) prior to ECM installation.
- 3 Mount the ECM (1) into the upper mounting bracket (2) by inserting the ECM mounting pins (5) into the upper bracket mounting holes (6).
- 4 Secure the lower mounting bracket (3) to the I.P. using the lower mounting bracket mounting bolt (8).
- 5 Install right hush panel.
- 6 Reconnect negative (-) battery cable.
- 7 Verify all ECM functions with a Tech Scan tool.



- (1) ECM Assembly
- (2) Upper Mounting Bracket
- (3) Lower Mounting Bracket
- (4) Nut
- (5) ECM Mounting Pins
- (6) Upper Bracket Mounting Holes
- (7) ECM Mounting Studs
- (8) Lower Mounting Bracket Bolt
- (9) Connector
- (10) Tape
- (11) Cross Body Power Door Lock Harness



MEMCAL I.D.

■ MEMCAL (PROM) I.D.

- There are currently three Memcal I.D. numbers that should be seen on the 1991 and 1992 Sycloones/Typhoons. Memcals with I.D.'s other than these, garbled I.D.'s or no I.D. numbers at all are to be considered unauthorized and will void the engine warranty.
- The GMC TAC and the Assistant Zone Manager - Service should be notified for service instructions. Replace only with authorized GM Memcals.

■ MEMCAL I.D. #:

3051 Used in the original 1991 Syclone and campaigned for rough idle and stalling. Replace this memcal if it has not been done.

(Campaign #91C-12).

3961 Used for the replacement memcal in the campaign for the 1991 Sycloones. This memcal has superior idle performance and spark calibration with the same W.O.T. performance level.

3971* Production memcal for the 1992 Typhoon. This memcal has definite boost control calibration. Will set code 31 and shut off pulse width even if the wastegate is disconnected. Also has improved cold idle quality and does not require boost learn on start up.

***Note: This memcal is Certified for 1991 Syclone but may require wastegate adjustment to prevent Code 31. Some Sycloones may not be able to run this calibration due to variations in exhaust backpressure and should have memcal 3961 installed.**

AFTERMARKET ENGINE ITEMS

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CODE 31, MISADJUSTED WASTEGATE

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NOTE: Code 31 can occur from normal driving.

■ WASTEGATE ACTUATOR ADJUSTMENT

NOTE: Do not attempt to adjust the wastegate actuator outside the range of the specifications in this procedure. Improper adjustment can severely limit performance or cause overboost, resulting in fuel shut off.

TOOLS REQUIRED:

J 35691 Turbocharger Pressure Gage
J 8001-3 Dial Indicator, Part of J 8001
Dial Indicator set

■ TO ACCESS WASTEGATE ACTUATOR

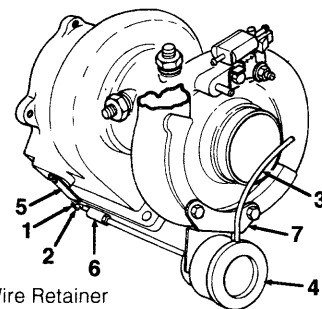
- 1 Remove right front wheel and tire.
- 2 Remove the passenger side wheelhouse panel.
- 3 Disconnect the retaining wire (1) from pin (2).
- 4 Remove special clamp (7) from boost control hose.
- 5 Disconnect boost control hose (3) from wastegate actuator (4).

■ TO ADJUST WASTEGATE ACTUATOR

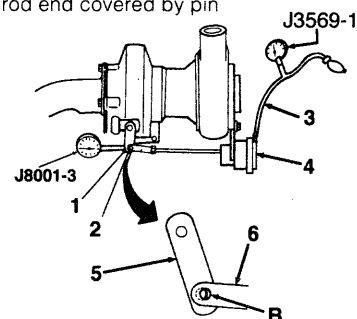
- 1 Connect pressure gage, tool J 35691, to hose connection on wastegate actuator (4) making sure dial reads zero.
- 2 Connect the dial indicator, tool J 8001-3, on end of the lever (5), making sure dial reads zero.
- 3 Apply 31 to 34.5 Kpa (4.5 to 5 psi) air pressure with the tool J 35691 and check tool J 8001-3 for pressure reading.
- 4 If the dial indicator, tool J 8001-3, reads greater than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by shortening it a half-turn at rod end (6). If J 8001-3 reads less than 0.5 mm to 1.5 mm (0.02 to 0.06 inch), readjust rod by lengthening it a half-turn at rod end (6).
- 5 Recheck travel at 31 to 34.5 Kpa (4.5 to 5 psi) air pressure.
- 6 Repeat the adjustment until above specifications are met. If specifications can not be met, replace the wastegate actuator.
- 7 If adjustment causes wastegate to open at all, replace the wastegate actuator.
- 8 Remove tools J 8001-3 and J 35691.

■ TO INSTALL WASTEGATE ACTUATOR

- 1 Install new clamp (7) on boost control hose (3). (These can be obtained through TAC.)
- 2 Connect the boost control hose (3) to wastegate actuator (4).
- 3 Correctly position on hose end and crimp clamp onto hose. Clamp must prevent hose from being capable of pulling off actuator.
- 4 Connect the retaining wire (1) to pin (2).
- 5 Install the passenger side wheelhouse panel.



- (1) Wire Retainer
(2) Lever Pin
(3) Boost Control Hose
(4) Wastegate Actuator
(5) Lever
(6) Rod End
(7) Clamp
(B) 7/8 of diameter of hole on rod end covered by pin



CODE 31, MISADJUSTED TV CABLE

■ CODE 31, MISADJUSTED TV CABLE

■ THROTTLE VALVE (TV) CABLE ADJUSTMENT

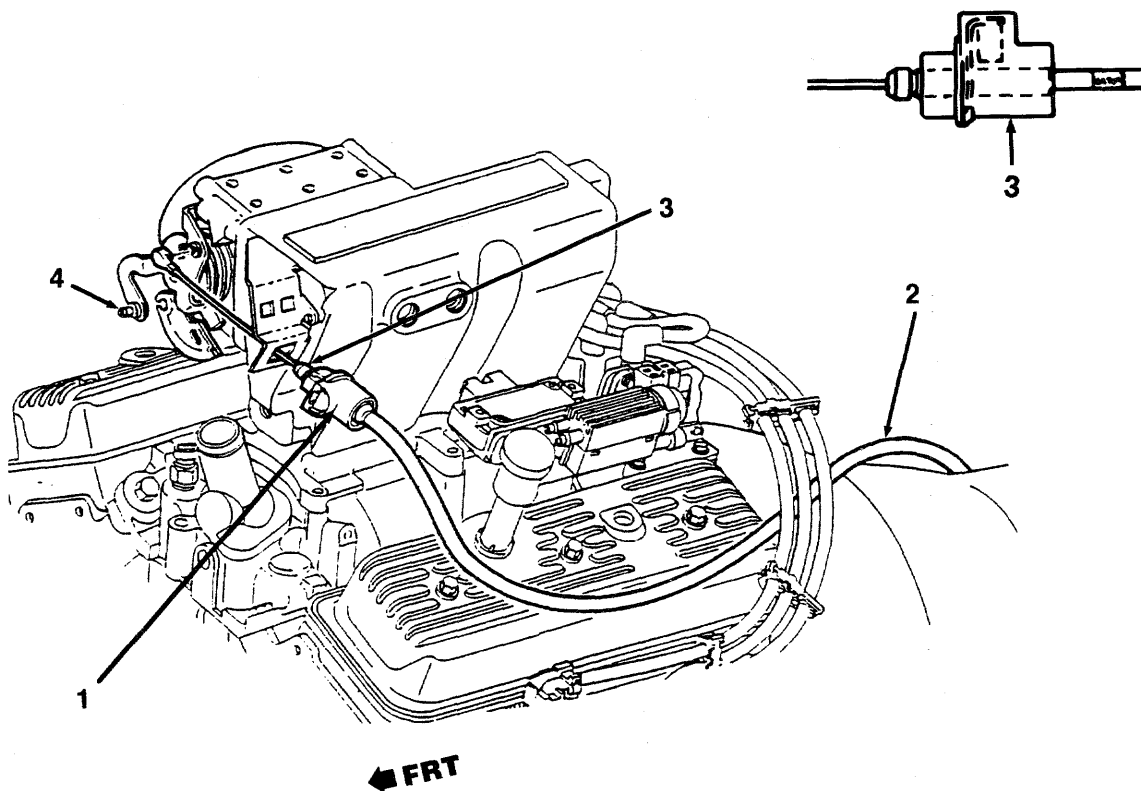
NOTE: Adjustment of the TV cable must be made by rotating the throttle lever at the throttle body. Do not use the accelerator pedal to rotate the throttle lever.

■ TO ADJUST TV CABLE

- 1 Remove the driver side floor mat to prevent a false throttle setting.
- 2 Depress and hold down the metal re-adjust tab (1) at the engine end of the TV cable (2).
- 3 Move the slider (3) toward the passenger side until it stops against the fitting.
- 4 Release the readjustment tab (1).
- 5 Rotate the throttle lever (4) to its "full travel position."
- 6 The slider (3) must move or ratchet toward the lever when the lever is rotated to its full travel position.

NOTE: Check that the cable moves freely. The cable may appear to function properly with the engine stopped and cold. Recheck after the engine is hot.

- 7 Road test the vehicle to verify the repair.



- (1) Re-Adjust
- (2) TV Cable
- (3) Slider
- (4) Throttle Lever

3RD TO 4TH GEAR W.O.T. UPSHIFT

■ 3RD TO 4TH GEAR W.O.T. UPSHIFT

■ NO 3RD TO 4TH GEAR W.O.T. UPSHIFT

The 4L60 transmission installed in the Syclone and Typhoon is unique to these trucks and is the only transmission that has a W.O.T. 3rd to 4th upshift at 100 mph. Occasionally this 3rd to 4th gear upshift will not occur W.O.T. at 100 mph, but will remain in 3rd gear until the engine reaches the 4800 R.P.H limiter and shuts down. The transmission must be replaced to solve the problem. Note below.

■ TRANSMISSION ORDERING INFORMATION

In some of the Service Parts Manuals there is a misprint that indicates that transmission #8673920 is a replacement for the original Syclone transmission. This is incorrect; the only transmissions that are used in these vehicles are coded LHM. Any other transmission will fail soon after installation.

FUEL LINE NOISE

■ FUEL LINE NOISE

- Customer may complain about noise (tapping sound) coming from the lower instrument panel area. This noise sounds as if the fuel injectors are inside the vehicle. However, from the outside the engine sounds normal.

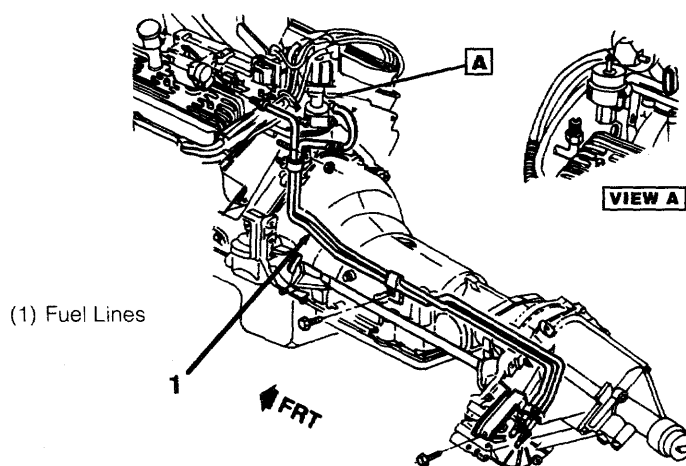
- Cause:

There are two probable causes; check out both:

- 1 FUEL LINES (1) IMPROPERLY ROUTED OVER THE TRANSMISSION.

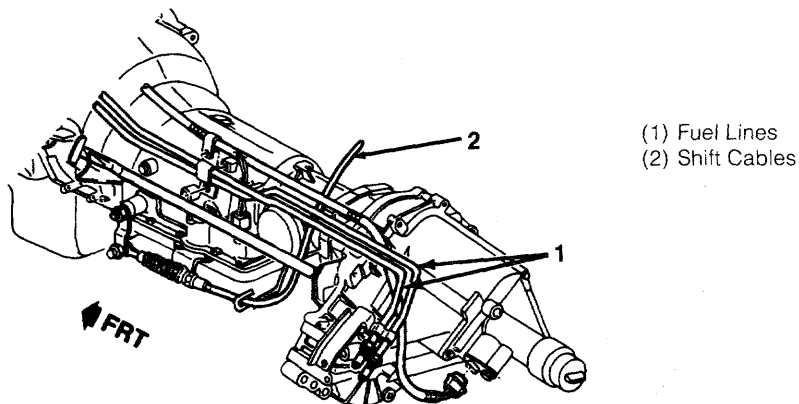
Correction: Adjust fuel line to achieve proper clearance from both the floor pan and the transmission.

NOTE: Verify the repair by going on a test drive with the customer before delivery.



- 2 Fuel line is vibrating against the shift cable.

Correction: It is generally not necessary to remove the shifter cable to obtain clearance from the fuel line. Re-index the shifter cable by turning the cable housing at the cable bracket on the transmission. Adjust fuel line to achieve clearance from the shift cable.



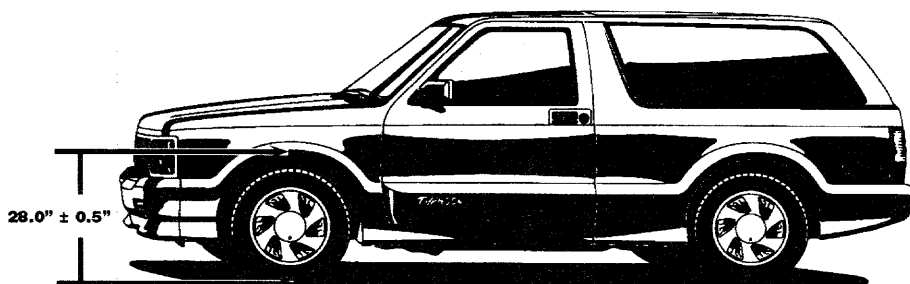
RIDE HEIGHT

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■ FRONT WHEEL OPENING MEASUREMENT

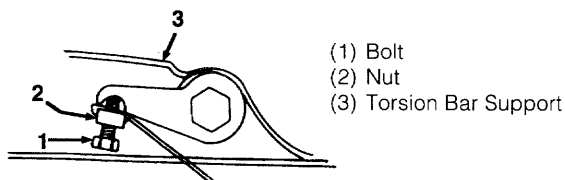
- Measure the distance between the top edge of the front wheel opening and the ground. The correct height should be 28" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.



■ FRONT WHEEL TRIM HEIGHT ADJUSTMENT

- **To raise the trim height:** Rotate the bolt (1) into the nut (2) one complete revolution for each additional 6 mm or .2 inches of height.
- **To lower the trim height:** Rotate the bolt (1) out of the nut (2) one complete revolution for each reduction of 6 mm or .2 inches of height.
- Measure trim height to determine the accuracy of the adjustment. Repeat the adjustment process again, if necessary.

NOTE: 1 mm (0.04 inches) clearance must be provided between the adjuster arm and nut after adjustments are completed.



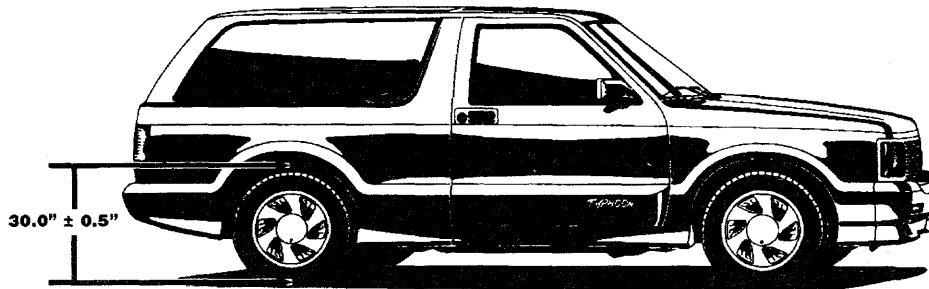
RIDE HEIGHT (CONT.)

■ RIDE HEIGHT

■ REAR WHEEL OPENING MEASUREMENT

The proper ride height can be determined by measuring the distance from the top of the wheel opening to the ground. The correct height should be 30" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.

■ REAR WHEEL OPENING ADJUSTMENT



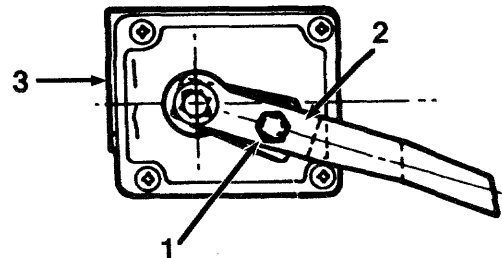
■ Cyclone:

The Cyclone rear trim height cannot be changed. If the actual measurement shows a significant difference from the 30 inches, look for tampering or owner abuse.

■ Typhoon:

Rear trim height can be changed in the following manner:

- 1 Loosen the lock bolt (1).
- 2 Adjust the plastic actuating arm (2) up or down depending on the correction:
 - TO RAISE the vehicle trim height move the plastic actuating arm (2) upward. Tighten lock bolt (1).
 - TO LOWER the vehicle trim height move the plastic actuating arm (2) downward. Tighten lock bolt (1).
- 3 Measure the new trim height in the above manner and repeat the adjustments, if necessary.



- (1) Lock Bolt
(2) Plastic Actuating Arm
(3) ELC Height Sensor

FUEL LEVEL

■ FUEL LEVEL

- If the fuel level on the Syclone is below 1/4 full, the engine may cut out abruptly on a W.O.T. acceleration due to the fuel being pulled away from and starving the fuel pump. Also see Ride Height.

E VIBRATION

■ **CONDITION:**

VIBRATION

■ **SYMPTOM:**

Customer complains that under certain operating conditions, vibrations are noticed.

■ **CHECK:**

FRONT PROPSHAFT JOINT FAILURE

FRONT PROPSHAFT INDEXING

FRONT AXLE FLANGE RUN-OFF

WHEELS

RIDE HEIGHT

TCC SHUDDER

Note: The above items are unique to the GMC Syclone and Typhoons. Other conditions may cause vibration. It is important to refer to the VIBRATION section of the GMC TRUCK SERVICE MANUAL for other causes of vibration.

IMPORTANT: On all repairs to Syclones and Typhoons (other than normal maintenance) make sure you check ServiceNet history on your DCS. This will alert you to tampering situations which may affect warranty.

FRONT PROPSHAFT JOINT FAILURE

■ FRONT PROPSHAFT JOINT FAILURE

- A general comment about failure of propshaft or joint . . . they generally reflect tampering to increase engine torque. Be sure to look for signs of engine modification. The most likely areas to check are:

- After market memcals.
- Modified wastegate adjustment.
- Turboboost control systems.

NOTE: On the test drive, put the vehicle into a tight right turn. If you hear tire chugging, as with a four wheel drive vehicle, it means the viscous coupling in the transfer case is locking up. If so, replace the transfer case. This problem can only occur as the result of improper towing. **CONTACT YOUR DSM PRIOR TO PERFORMING REPAIRS.**

■ REPLACEMENT PROCEDURE OF FRONT PROPSHAFT

- 1 Raise and support the vehicle in the approved manner.

NOTE: It is essential that the position of all driveline components relative to the propeller shaft be observed and reference marked prior to dis-assembly. These components include the propshafts, drive axles, pinion flange, output shafts, etc. All components must be reassembled in the same relationship to each other as they were removed to maintain the factory balance.

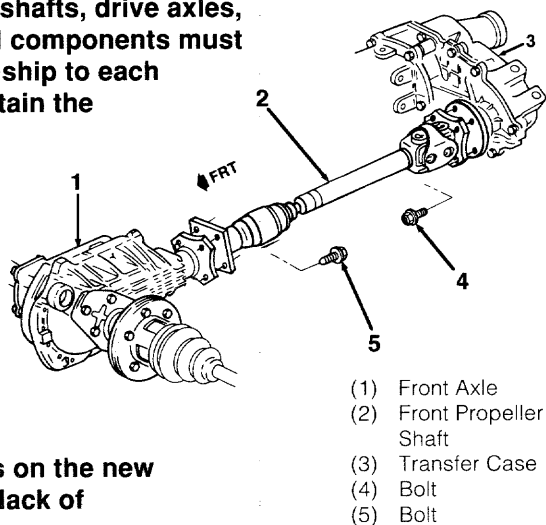
- 2 Remove the bolts (4) from the flange at the transfer case (3).
- 3 Remove the bolts (5) from the flange at the front axle (1).
- 4 Remove the propshaft by pulling forward and down.
- 5 Install the new front propshaft.

NOTE: Be sure to align the reference marks on the new shaft. Failure to do so could cause lack of balance in the assembly.

- 6 Install and tighten bolts (4) at the transfer case.
- 7 Install and tighten bolts (5) at the front axle.

NOTE: Tighten all bolts to 70 N.m (52 lb/ft.)

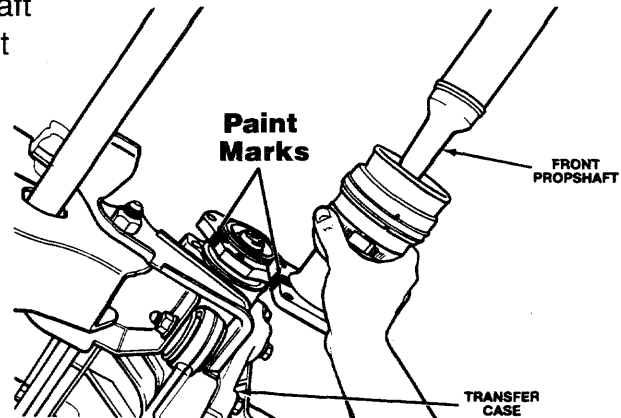
- 8 Test drive the vehicle to verify repair.



FRONT PROPSHAFT INDEXING

■ FRONT PROPSHAFT INDEXING

- When replacing the front propshaft in either a Syclone or Typhoon, it is critical that the white painted stripes on the front axle flange and the propshaft are lined up and that the propshaft is seated properly against the flange before the bolts are installed. If one or both of these steps are not done, the result could be vibration.



FRONT PROPSHAFT FLANGE RUN-OUT

■ FRONT PROPSHAFT FLANGE RUN-OUT

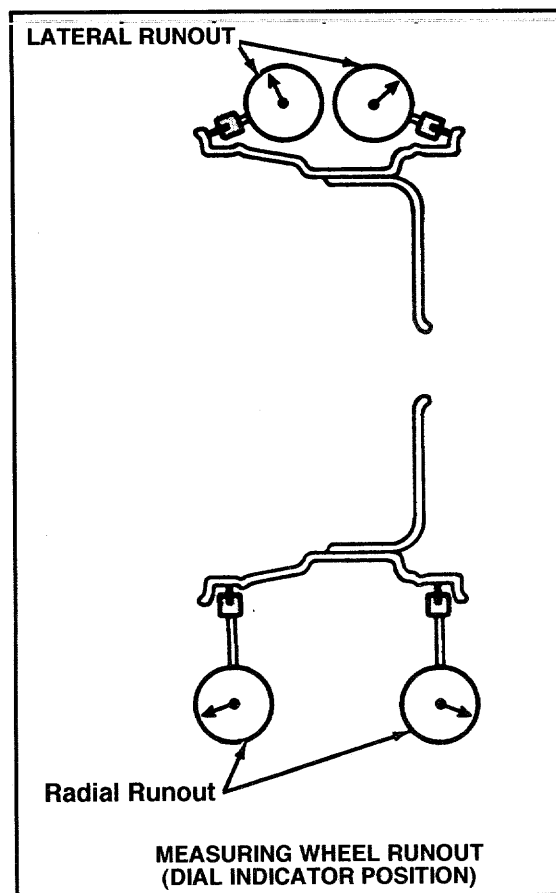
- The front differential propshaft flange is very sensitive to run-out. With the front propshaft removed, check the radial run-out of pilot as well as the lateral run-out of the mounting surface on the flange. If the combined run-out of both dimensions is greater than .005", replace the flange.

WHEELS

■ WHEELS

- The wheels on the Syclone and Typhoon are of lightweight welded construction of the cast center and rolled rim.
- These wheels are very sensitive to vibration resulting from deformation due to denting or out-of-specification manufacture. Should any of these wheels be found to be out of the .030" lateral or radial GM specification, they should be replaced under warranty.
- However, defective wheels found AFTER PDI should not be replaced until consultation with your DSM.

NOTE: In the event a customer cannot find their wheel-lock key, the master key set can be found at a Chevrolet dealer since the locks are the same as used on Corvettes.



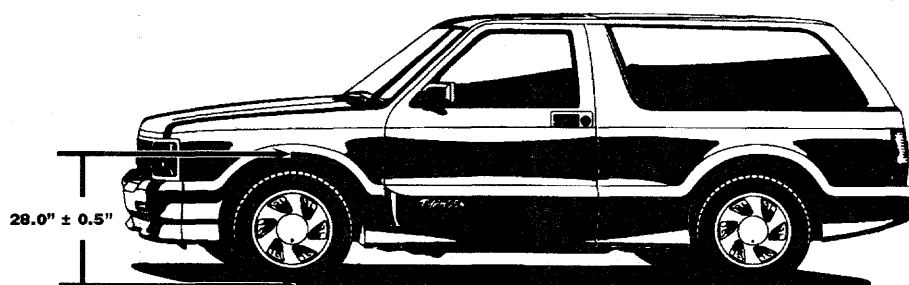
RIDE HEIGHT

■ RIDE HEIGHT

- It is very important that the ride height be checked on Typhoons and Sycloes for different reasons. Incorrect ride height on the Typhoon can be due to a malfunctioning ELC system. If the rear height of the vehicle is incorrect, the result is poor handling and premature front tire wear.
- In the case of a Syclone, a common practice is to modify the Syclone by lowering the rear of the vehicle to obtain a "level" look. When the rear of the truck is lowered, it amplifies the fuel level problem of starving the fuel pump on acceleration. Instead of starving the fuel pump at 1/4 tank of fuel or less, it will stall at 1/2 tank or less, depending on how much the vehicle is lowered.
- Ride height can be easily checked by comparing the following illustration and dimensions to the vehicle being worked on.

■ FRONT WHEEL OPENING MEASUREMENT

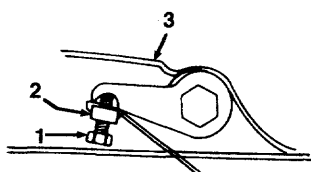
- Measure the distance between the top edge of the front wheel opening and the ground. The correct height should be 28" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.



■ FRONT WHEEL TRIM HEIGHT ADJUSTMENT

- **To raise the trim height:** Rotate the bolt (1) into the nut (2) one complete revolution for each additional 6 mm or .2 inches of height.
- **To lower the trim height:** Rotate the bolt (1) out of the nut (2) one complete revolution for each reduction of 6 mm or .2 inches of height.
- Measure trim height to determine the accuracy of the adjustment. Repeat the adjustment process again, if necessary.

NOTE: 1 mm (0.04 inches) clearance must be provided between the adjuster arm and nut after adjustments are completed.



- (1) Bolt
- (2) Nut
- (3) Torsion Bar Support

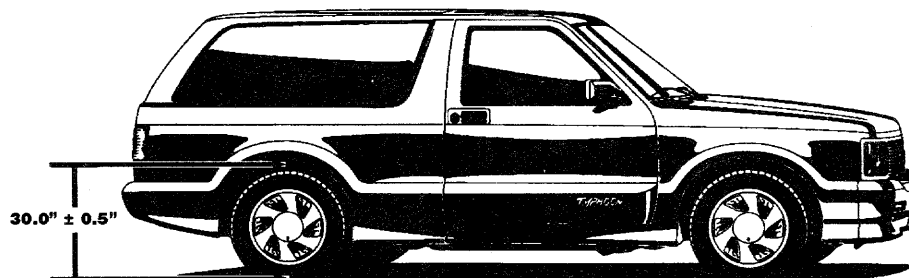
RIDE HEIGHT (CONT.)

■ RIDE HEIGHT

■ Rear Wheel Opening Measurement

The proper ride height can be determined by measuring the distance from the top of the wheel opening to the ground. The correct height should be 30" plus or minus .5". If you find a difference from this height, look for tampering and correct the condition.

■ Rear Wheel Opening Adjustment



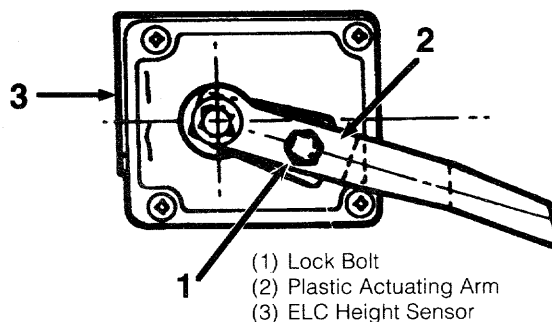
Syclone:

The Syclone rear trim height cannot be changed. If the actual measurement shows a significant difference from the 30 inches, look for tampering or owner abuse.

Typhoon:

Rear trim height can be changed in the following manner:

- 1 Loosen the lock bolt (1).
- 2 Adjust the plastic actuating arm (2) up or down depending on the correction:
 - TO RAISE the vehicle trim height move the plastic actuating arm (2) upward. Tighten lock bolt (1).
 - TO LOWER the vehicle trim height move the plastic actuating arm (2) downward. Tighten lock bolt (1).
- 3 Measure the new trim height in the above manner and repeat the adjustments, if necessary.



TCC SHUDDER

■ TCC SHUDDER

■ Complaint:

Customer complains of a shudder vibration at 40 to 45 MPH, which stops with a slight increase or decrease in acceleration.

■ Cause:

The probable cause of this condition is Torque Converter Clutch Shudder - TCC Shudder. This means that the torque converter is repeatedly attempting to lock-up, but is unable to do so.

■ Correction:

There is no way to repair a torque converter experiencing this type of problem. Remove and replace it.

IMPORTANT: All Syclone and Typhoon transmissions have "LHM" code on them.

NOTES

REFERENCE

■ TECHNICAL ASSISTANCE:

- All Syclone and Typhoon problems that cannot be repaired through the Service Manual and are not covered in service bulletins go through the GMC Truck Technical Assistance Center. Customers and Dealers should not contact PAS Inc. directly.

■ PAS, INC. INVOLVEMENT:

PAS, Inc. is the small volume manufacturer that produces the Syclones and Typhoons for GMC. Their contract involvement on support issues are as follows.

- **SERVICE PARTS:** Service parts are handled through the current GM SPO system. PAS, Inc. supports GM SPO and all parts currently used on Syclones and Typhoons are available as well as listed in the standard dealership parts books. PAS, Inc. cannot distribute parts and should not be called upon for parts or parts information.
- **CUSTOMER CONTACT:** PAS, Inc. will not deal directly with customers. On occasion, PAS, Inc. will get customer calls which are forwarded to the GMC Customer Relations Department or TAC, whichever is appropriate.
- **TECHNICAL ASSISTANCE:** PAS, Inc. has an individual assigned to assist TAC with service calls and technical questions. PAS, Inc. is not to be contacted directly by dealers or customers.

■ TAMPERING:

- This subject refers to any unauthorized modification performed on the powertrain. Modifications to the vehicle will void Warranty if found to be the cause for the damage and/or repair.
- The correct procedure for documenting tampering is as follows:
 - 1 Complete the Tamper/Overboost Checklist.
 - 2 The dealership service technician is to notify TAC of a problem or condition.
 - 3 TAC opens a case and documents the findings on the Tamper/Overboost Checklist.
 - 4 The TAC representative will give you instruction on how to proceed.
 - 5 TAC gives a printout of the case and a copy of the Tamper/Overboost Checklist to the applicable District Service Manager if tampering is suspected.
 - 6 The District Service Manager then will arrange a review of the status of the vehicle.

REFERENCE

■ FRONT PROPSHAFT SEAL FAILURE:

- Due to a tooling problem, the front propshaft seals on some Sycloones have a tendency to split along the clamp edge. If this problem is seen, a new propshaft must be installed.

■ DECALS AND LABELS:

- All Syclone and Typhoon decals are available through GM SPO except for the "Syclone" windshield decal and the "INDY" side body decals. These are available through:

Graphic Concepts
23555 Research Dr
Farmington Hills, MI 48335
Attn: Bill or Joe Rupp
Phone: 1-800-969-8990

■ LOOSE ITEMS SHIPPED IN VEHICLES:

- The following items are shipped with the vehicles and should be verified when the vehicle arrives at the dealership. These items are documented to be in the vehicles before shipment and will not be replaced under warranty. All parts are available through GM SPO. For Glove Box Kits, see below.

- 1 Glove Box Kit
- 2 Wheel Center Caps
- 3 Wheel Center Cap Lock and Key
- 4 Luggage Rack
- 5 Tonneau Cover Kit
- 6 Keyless Entry Transmitters (2)

■ OWNERS AND SERVICE MANUALS:

- Service Manual Supplements and Glove Box Kits are available through:
Adistra Corporation Phone: **1-800-627-5699**
- These manuals can be ordered under the following part numbers. It is recommended that customers purchase the 1992 Service Manual Supplement for their 1991 Syclone due to the inaccuracies in the 1991 edition.

X -9376	1993 Typhoon
X -9276	1992 Service Manual Supplement
PAS-55662	1992 Typhoon Glove Box Kit
PAS-55626A	1991 Syclone Glove Box Kit

REFERENCE

■ SYNTHETIC OIL

- All Syclones and Typhoons must use synthetic oil from the first commitment plus change on. Labels to place over the oil cap that clearly indicate this are available from GMC Truck TAC.

■ TOWING:

- The Typhoon is neither designed nor intended to tow a trailer. The Syclone has been approved for a maximum gross combination rating of 4800 pounds with a maximum trailer towing weight of 1100 pounds and maximum cargo weight of 250 pounds. See GMC Truck Service Bulletin #92-0A-64.

■ CLADDING REPAIR PROCEDURE

- A paint repair procedure has been developed specifically for Syclones and Typhoons to obtain the same gloss level and quality. It is necessary to use this procedure on service parts as well since the service parts do not come already painted. For this procedure, see GMC Service Bulletin #92-10-73.

REFERENCE

■ TAMPERING/OVERBOOST CHECK LIST:

SYCLONE/TYPHOON

OVERBOOST AND TAMPER ITEMS CHECKLIST

VIN #1GDCT1 ___ Z ___ M ___ CASE NUMBER _____ DEALER CODE T

- _____ DOES VEHICLE HAVE COMPLETE EXHAUST SYSTEM?
- _____ IS BOOST CONTROL SYSTEM INTACT WITH CLAMPS?
- _____ IS ECM LABEL INTACT?
- _____ ECM LABEL NUMBER?
- _____ IS PROM ID NUMBER 3051, 3961, OR 3971?
- _____ DOES WASTEGATE STILL HAVE ORIGINAL RETAINER?
- _____ IS WASTEGATE ADJUSTMENT AT 7/8 HOLE?
- _____ IS WASTEGATE STICKY?
- _____ DOES VEHICLE HAVE STOCK FUEL PRESSURE REGULATOR?
- _____ DOES VEHICLE HAVE STOCK AIR FILTER?
- _____ ARE ECM WIRES UNDERDASH PINCHED OR BROKEN?
- _____ IS TIMING SET AT 0 DEGREES?
- _____ HAS VEHICLE BEEN LOWERED?
- _____ HOW MUCH FUEL IS IN VEHICLE?
- _____ DOES WASTEGATE ACTUATOR HOLD 10 PSI?
- _____ DOES WASTEGATE SOLENOID HAVE 12V W/KEY ON?
- _____ IS WASTEGATE HARNESS ELBOW BOTTOMED ON TURBO CHARGER?

RETURN FAX TO GMC TECHNICAL ASSISTANCE 313-456-3267

ANSWER YES OR NO

S2232HCS.AUG/1
AUGUST 10, 1992

NOTES

NOTES

NOTES

Repairs outlined in this manual may need authorization. Publication in this manual does not authorize automatic reimbursement of warranty. If you have questions on warranty applicability, please check with your District Service Team and where noted, TAC.

We believe the sources and their equipment listed in this manual to be reliable. There may be additional manufacturers of such equipment. General Motors does not endorse, indicate any preference for, or assume any responsibility for the products or equipment from these firms or for any such item which may be available from other sources.

