

EGR FUNCTION TESTING

1988 Toyota Celica

1988 EXHAUST EMISSION SYSTEMS
TOYOTA EGR FUNCTION TESTING

TESTING

EGR TEST

- 1) Ensure modulator filter is clean and in good condition prior to performing test. Clean filter with compressed air if necessary. Disconnect vacuum hose from EGR valve.
- 2) Using a "T" connector, connect a vacuum gauge in EGR valve line. Check that engine starts and runs at idle. This ensures proper seating of EGR valve.
- 3) The BSV, TVSV, VSV and EGR modulator can be checked with engine coolant below minimum temperature and specified engine RPM in accordance with application. See EGR SPECIFICATIONS table. Different valves are used depending on model. See Figs. 1 through 16.
- 4) Operate engine with engine coolant below minimum temperature and specified RPM. No vacuum reading should be obtained when operated with engine coolant below minimum temperature.
- 5) Operate engine at normal operating temperature and specified RPM. See EGR SPECIFICATIONS table for specified engine RPM. Low vacuum reading should be obtained.
- 6) Vacuum reading of 2.6 in. Hg should be obtained on Cressida and Supra models. On Cressida, Land Cruiser, Pickup and 4Runner (3.0L) and Supra non-turbo models, check that no vacuum is shown at idle. Also check Corolla models with EFI, Corolla FX-16 and the MR2 models at 5000 RPM. No vacuum should exist.
- 7) Disconnect hose from the "R" port of EGR vacuum modulator on all models except the Celica 4WD, Tercel Wagon, Pickup (turbo) and Supra (turbo) models. See Figs. 1 through 16.
- 8) Using additional hose, connect "R" port directly to intake manifold. High vacuum reading should be obtained at specified engine RPM. See EGR SPECIFICATIONS table.

NOTE: Engine should misfire due to large amounts of exhaust gas being injected into intake manifold.

- 9) Disconnect vacuum gauge and install vacuum hoses. To check EGR valve, apply vacuum directly to EGR valve with engine idling. Engine should run rough. If system did not operate within specifications, each component should be tested. See COMPONENT TEST in this article.

EGR SPECIFICATIONS TABLE

Model	Minimum Temperature	Engine RPM
Camry		
2.0L	113°F (45°C)	(1) 2500
2.5L	104°F (40°C)	2500
Celica		
2WD	113°F (45°C)	2500
4WD	129°F (45°C)	2500
Corolla		
Carbureted	122°F (50°C)	2000
EFI	95°F (35°C)	3500
Corolla FX	122°F (50°C)	2000

Corolla FX-16	95°F (35°C)	3500
Cressida	135°F (57°C)	2500
Land Cruiser	127°F (53°C)	2500
MR2	95°F (35°C)	3500
Pickup		
2.4L		
Carbureted	113°F (45°C)	3000
EFI	86°F (30°C)	(2) 3500
3.0L	118°F (48°C)	3500
Supra	135°F (57°C)	2500
Tercel		
Sedan	104°F (40°C)	3000
Wagon	122°F (50°C)	3000
Van	104°F (40°C)	3500
4Runner		
2.4L	86°F (30°C)	(2) 3500
3.0L	118°F (48°C)	3500

- (1) - Check at 3500 RPM with hose from EGR to manifold.
(2) - Check at 3000 RPM with hose from EGR to manifold.

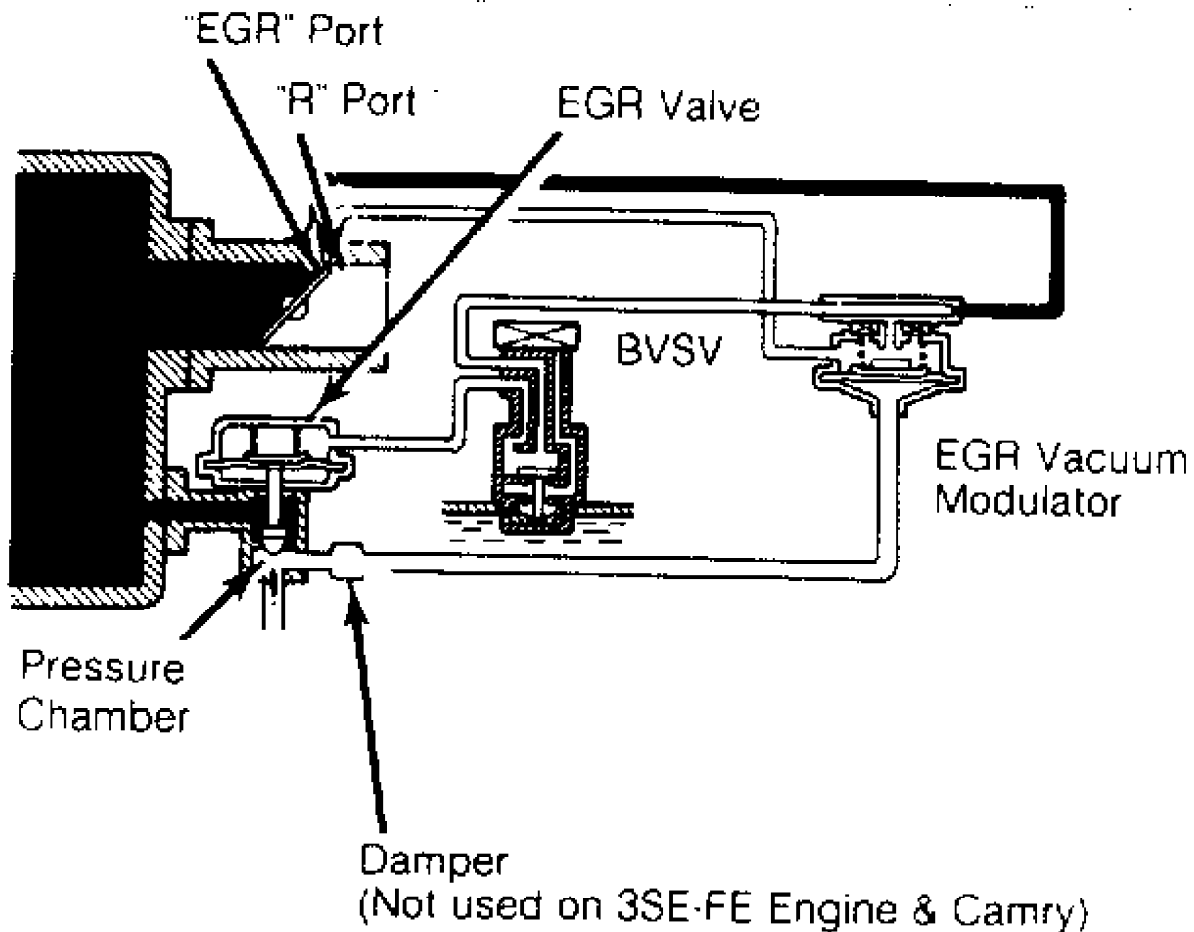


Fig. 1: Camry & Celica (2WD) EGR System
Courtesy of Toyota Motor Sales, U.S.A., Inc.

EGR Vacuum Modulator

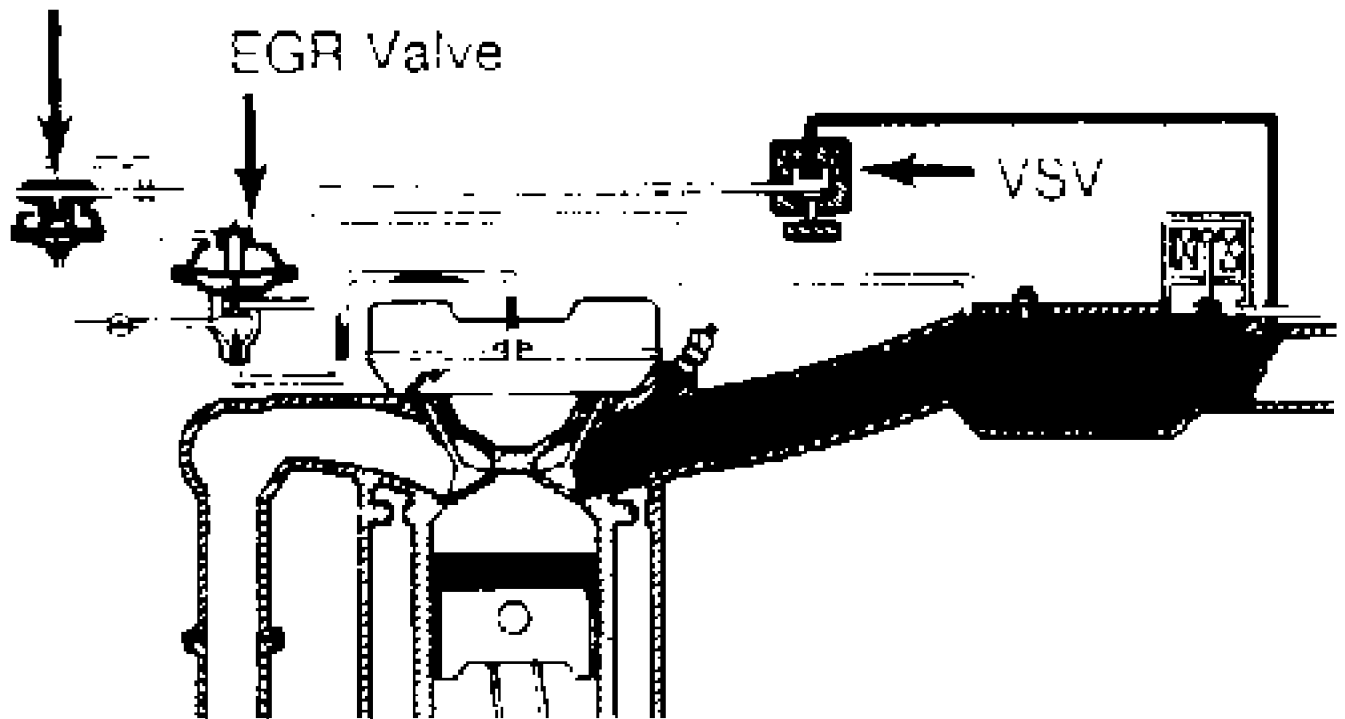


Fig. 2: Celica (4WD) EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

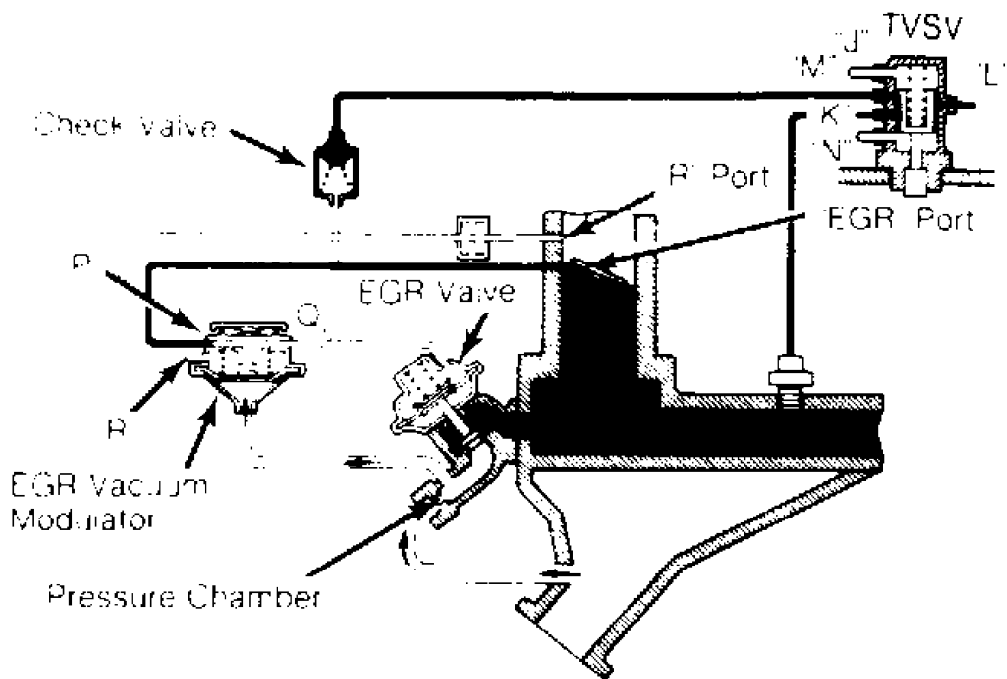


Fig. 3: Corolla FX EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

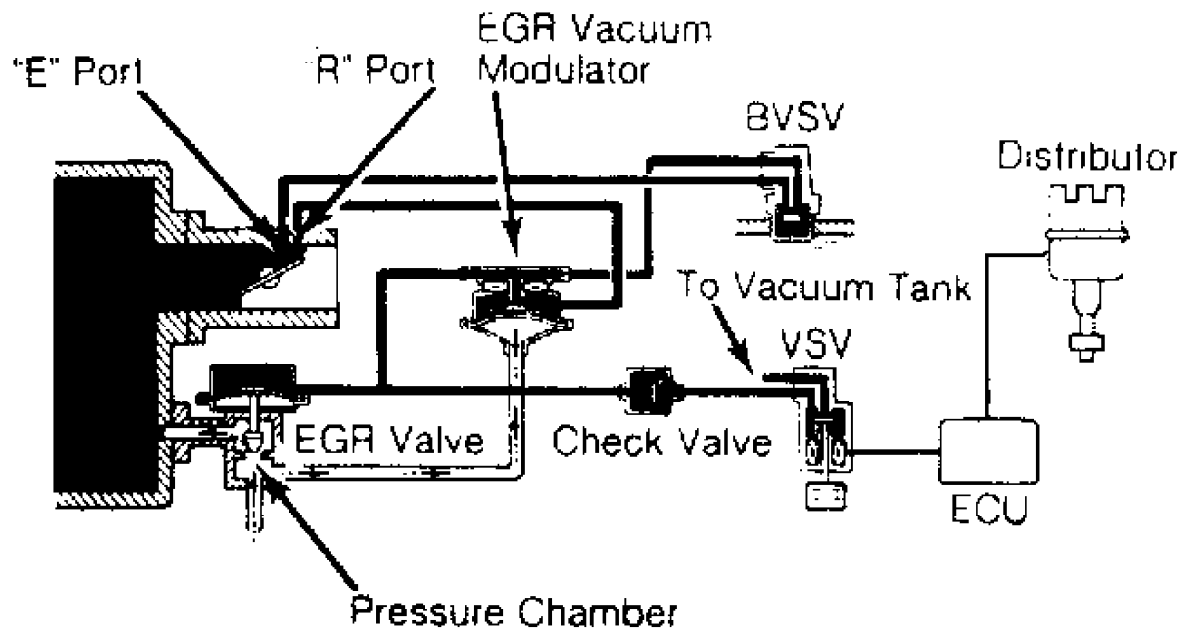


Fig. 4: Corolla (EFI), Corolla FX-16 & MR2 EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

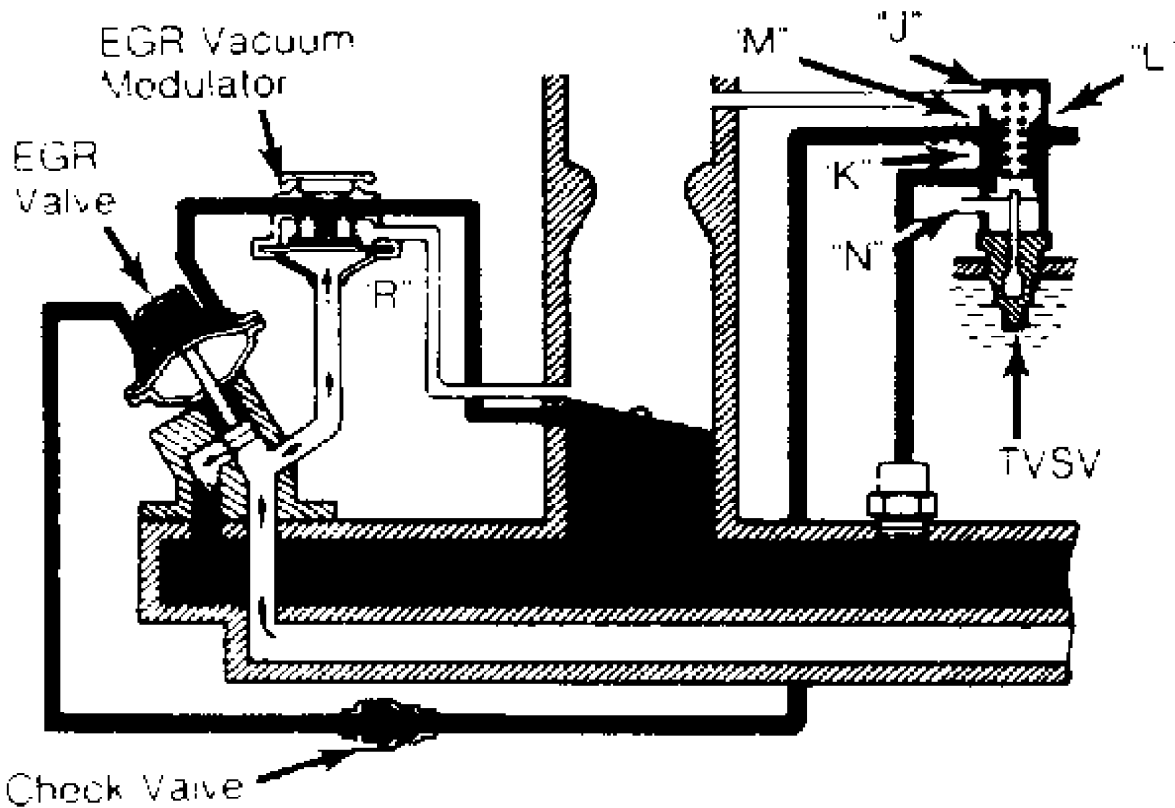


Fig. 5: Corolla EGR System (Carbureted)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

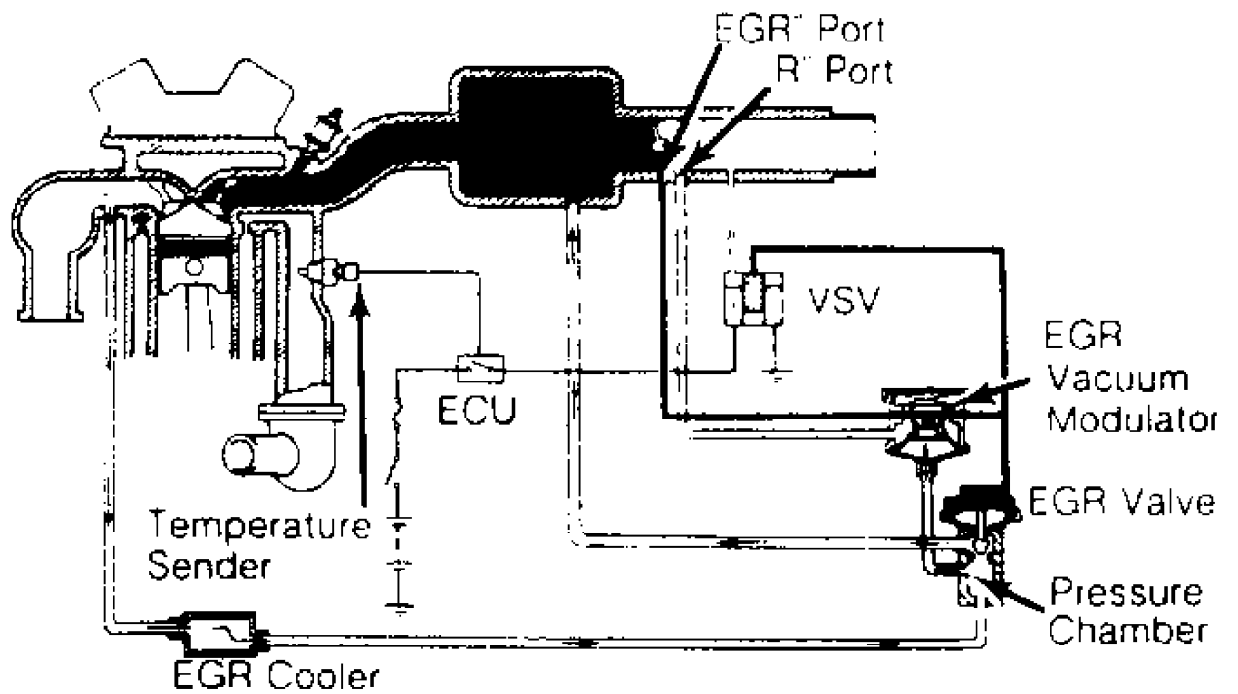


Fig. 6: Cressida EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

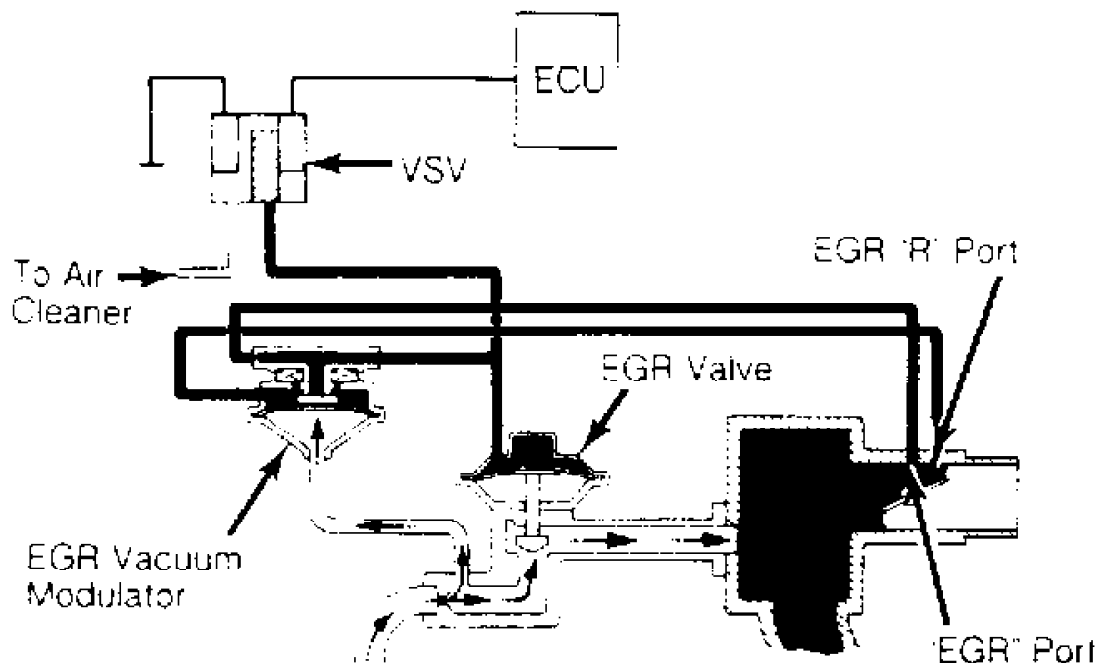


Fig. 7: Land Cruiser EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

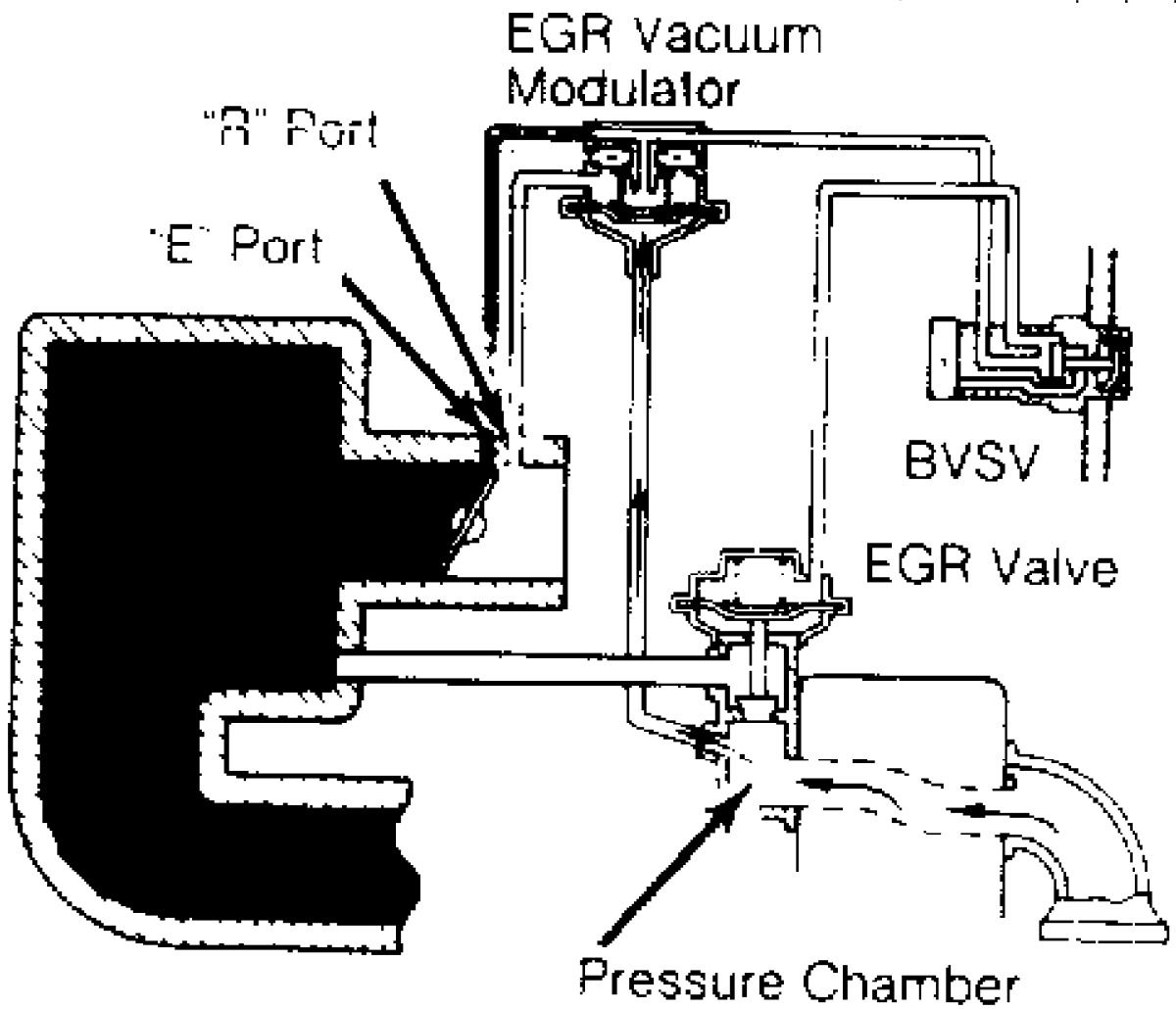


Fig. 8: Pickup & 4Runner EGR System (2.4L Non-Turbo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

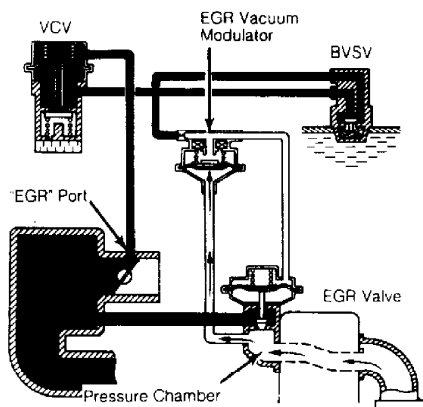


Fig. 9: Pickup EGR System (2.4L Turbo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

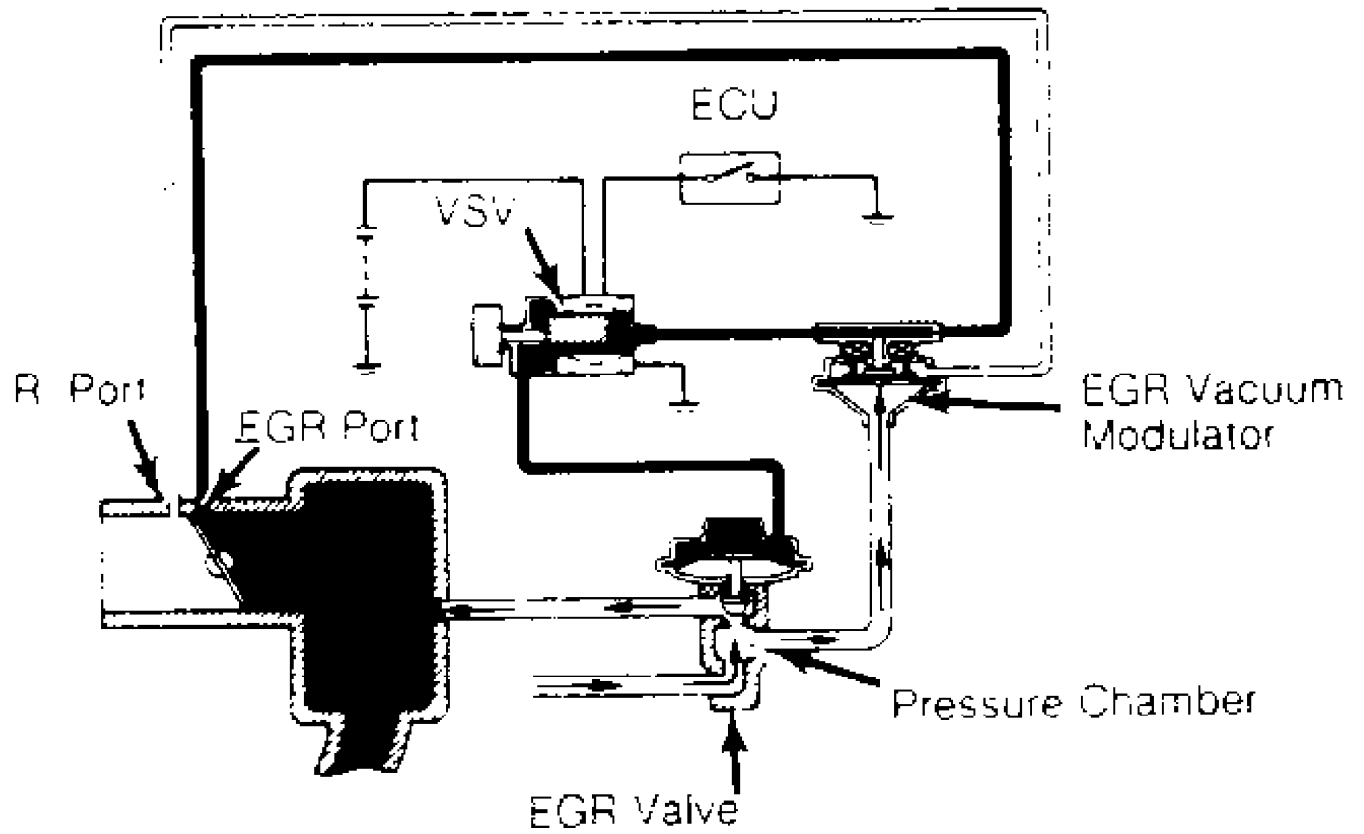


Fig. 10: Pickup & 4Runner EGR System (3.0L)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

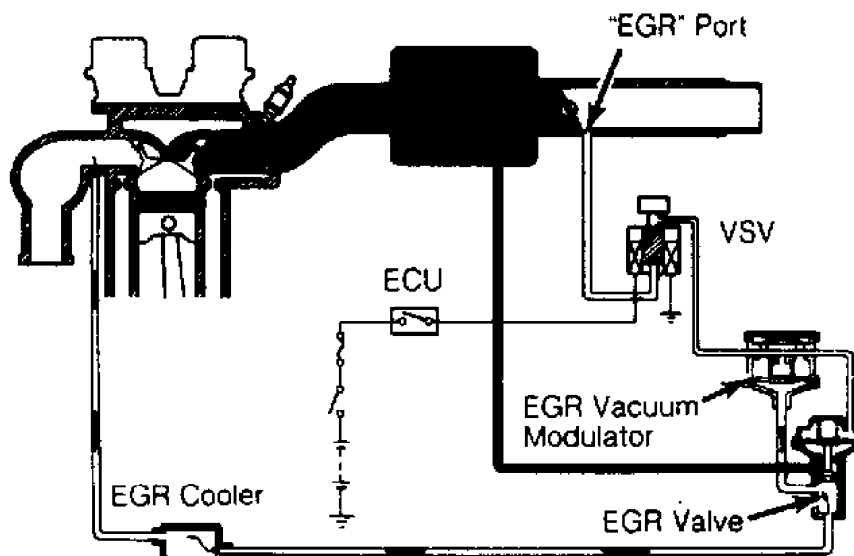


Fig. 11: Pickup EGR System (2.4L Carbureted)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

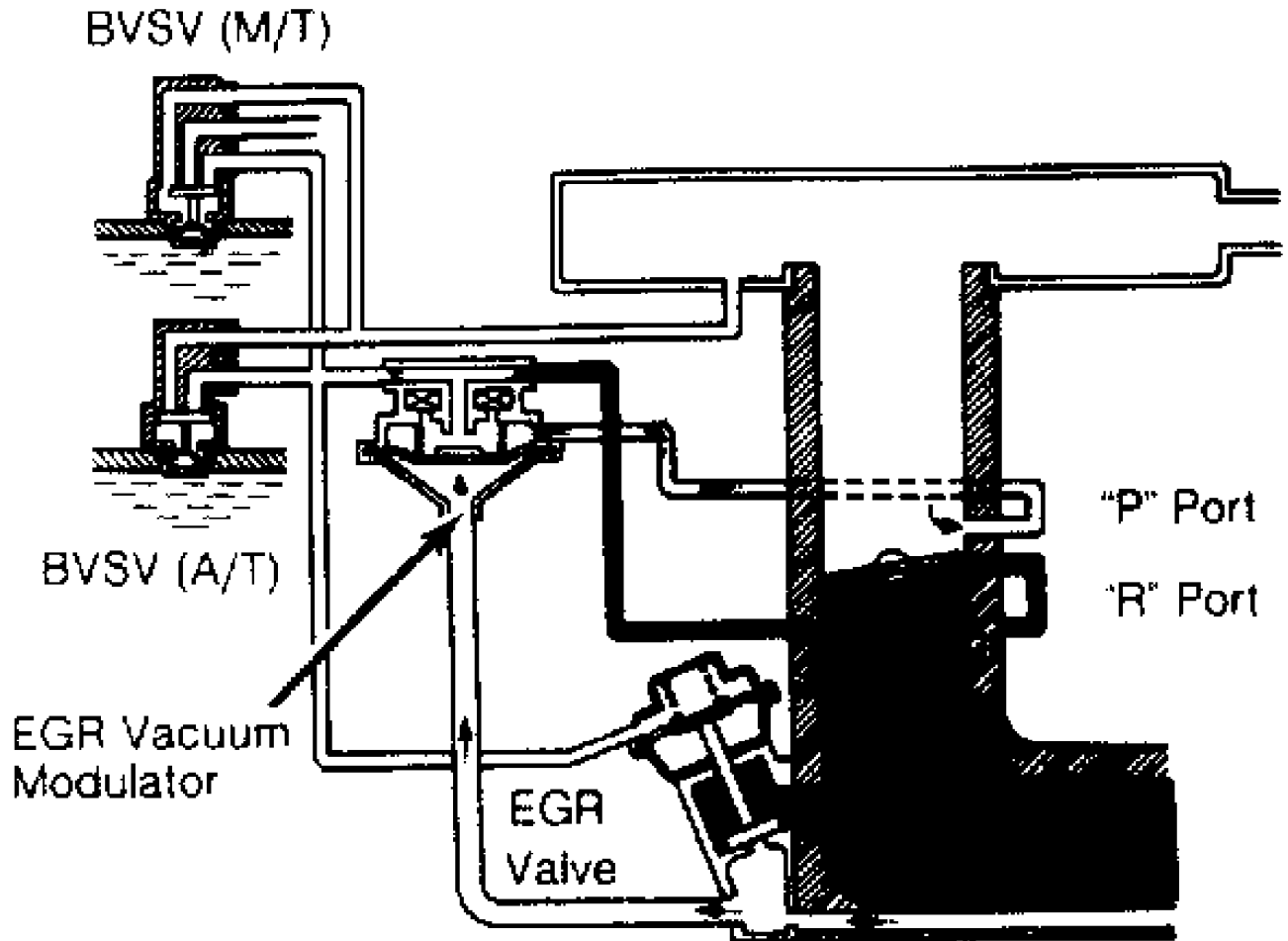


Fig. 12: Supra EGR System (Non-Turbo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

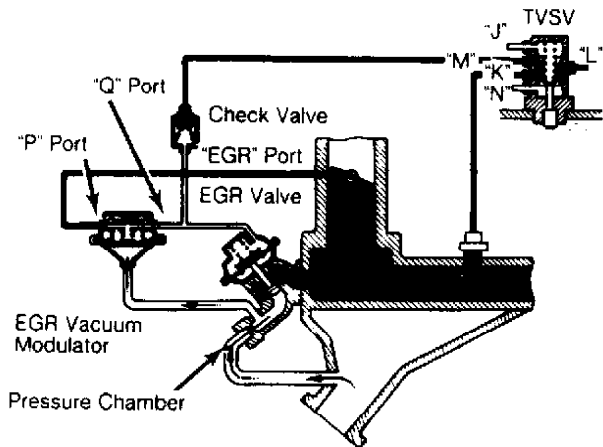


Fig. 13: Supra EGR System (Turbo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

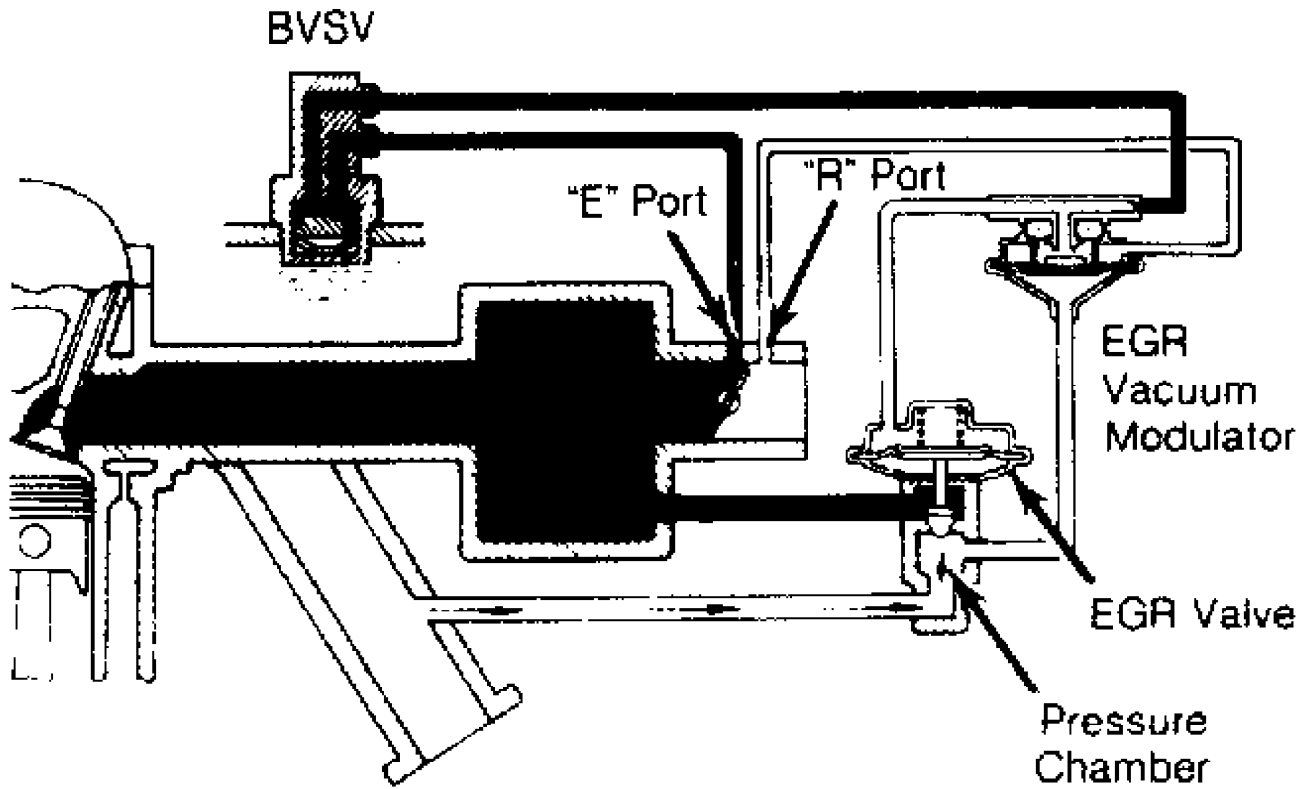


Fig. 14: Tercel Sedan EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

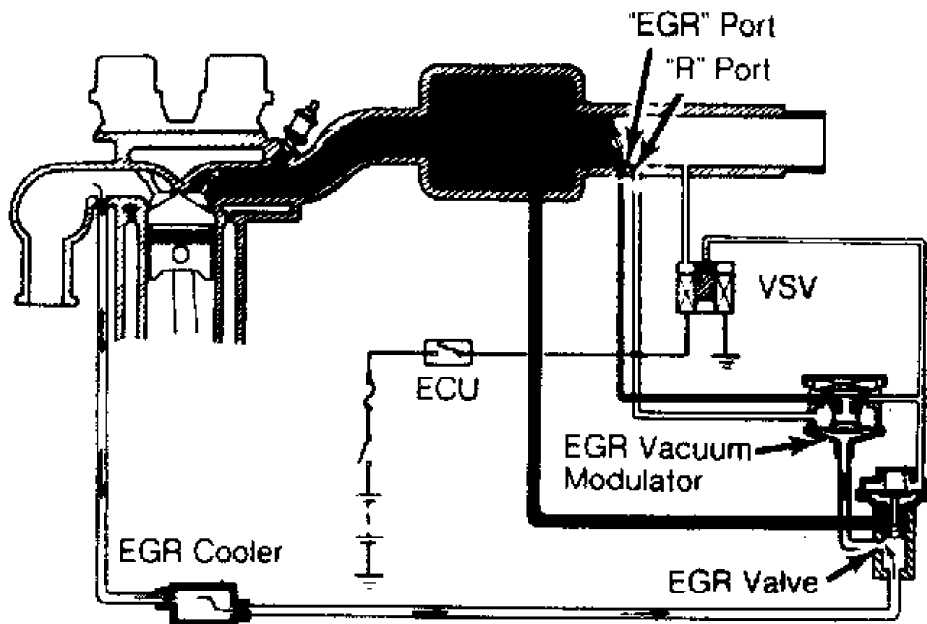


Fig. 15: Tercel Wagon EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

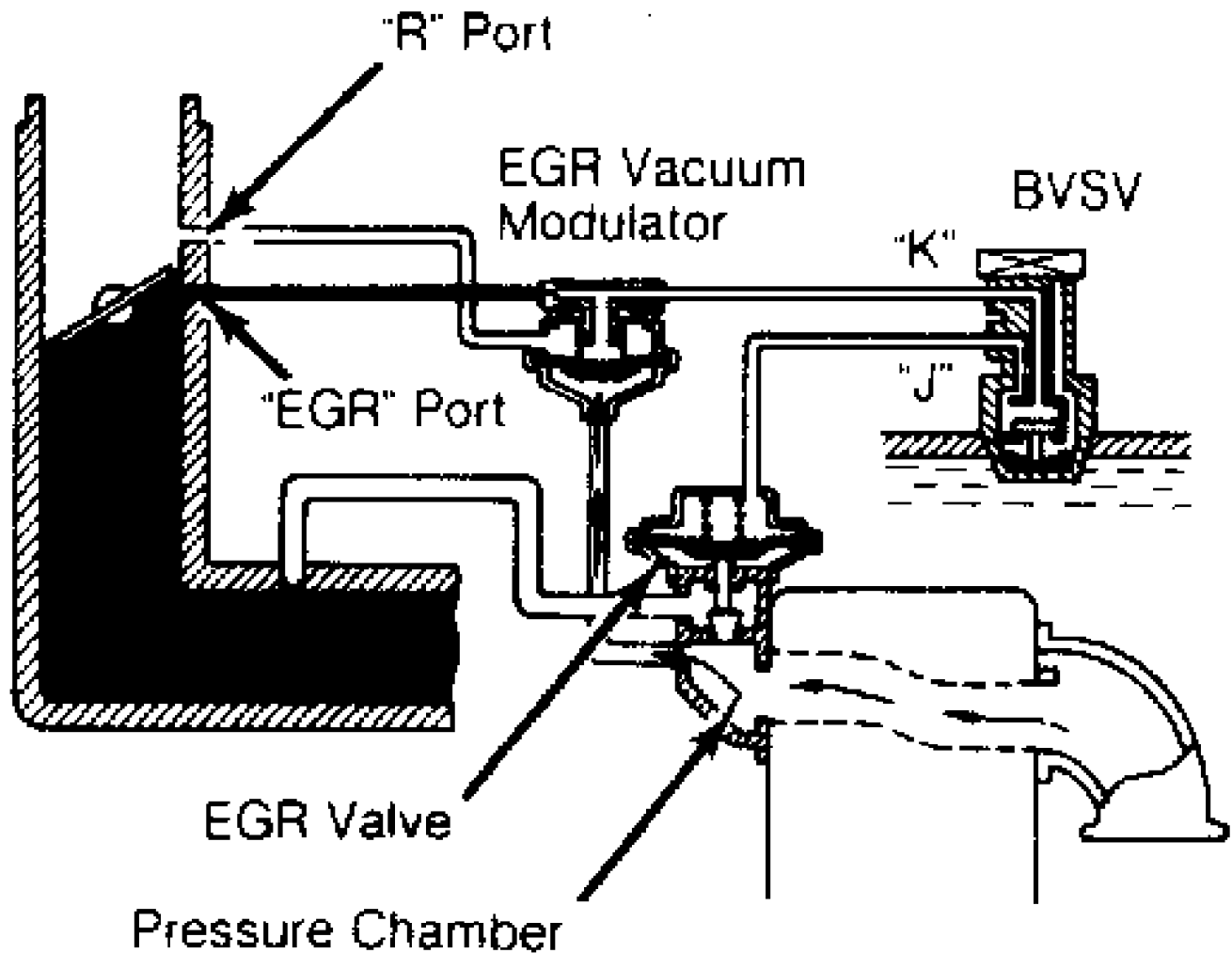


Fig. 16: Van EGR System
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

COMPONENT TEST

EGR VACUUM MODULATOR

- 1) EGR vacuum modulator may be a 2 port or 3 port depending on application. On 2 port models, disconnect hoses from vacuum modulator. Plug one end of hose connection on EGR vacuum modulator.
- 2) Apply air pressure through remaining port. Air should pass freely through air filter side. On 3 port models, disconnect all hoses. Block "P" and "R" ports. Apply air pressure to "Q" port. See Fig. 17. Air should pass through the air filter side freely.

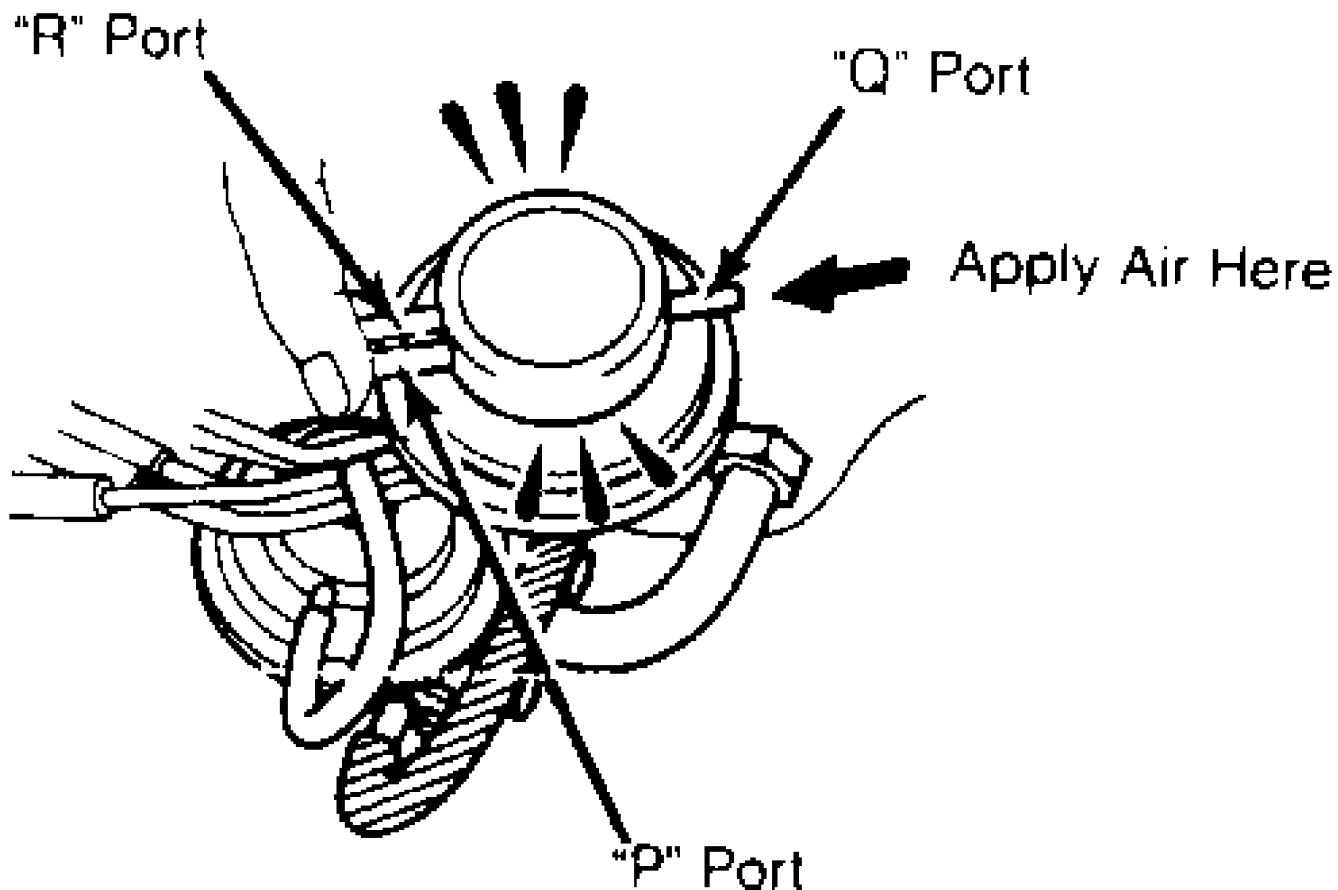


Fig. 17: Testing 3-Port Vacuum Modulator
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

3) On all models, operate engine at specified RPM. See EGR VACUUM MODULATOR SPECIFICATIONS table. Repeat previous test procedure. Strong resistance of airflow should be felt. Replace EGR vacuum modulator if resistance is not felt.

EGR VACUUM MODULATOR SPECIFICATIONS TABLE

Application	Engine RPM
2-Port Type	
Celica 4WD	2500
Pickup Turbo	3500
Supra Turbo	2500
Tercel Wagon	3000
3-Port Type	
Camry 2.0L	2500
2.5L	3500
Celica 2WD	2500
Corolla Carbureted	2000
EFI	3500

Corolla FX	2000
Corolla FX-16	3500
Cressida	2500
Land Cruiser	2500
MR2	3500
Pickup	
2.4L Carbureted	3000
2.4L Non-Turbo	3500
3.0L	2500
4Runner	
2.4L	3500
3.0L	2500
Supra	
Non-Turbo	2500
Tercel Sedan	3000
Van	3500

BI-METALLIC VACUUM SWITCHING VALVE (BVSU)

Camry (2.5L), Corolla (EFI), Corolla FX-16, MR2, Pickup (Turbo), Tercel Sedan & Van

1) Drain cooling system and remove BVSU. Using cool water, cool BVSU to below minimum temperature according to application. See BVSU SPECIFICATIONS table.

2) On all models except Tercel Sedan, apply air through top port of valve. Air should not exhaust through bottom port. Heat BVSU valve to above maximum temperature according to application. See BVSU SPECIFICATIONS table. Apply air in top port. Air should exhaust through lower port. Replace assembly if defective.

3) On Tercel Sedan with M/T, a 3 port BVSU is used while a 2 port is used on A/T applications. On both applications, cool BVSU to below minimum temperature. See BVSU SPECIFICATIONS table.

4) On A/T models, apply air to top port of valve. Air should exhaust from lower port. On M/T models, apply air to the center port. Air should exhaust from the upper and lower ports.

5) Heat BVSU valve to above maximum temperature. See BVSU SPECIFICATIONS table. On A/T models, apply air to top port. Air should not exhaust through lower port. On M/T models, apply air to the center port. Air should not exhaust through any port. Replace assembly if defective.

Camry (2.0L), Pickup (2.4L Carbureted & Non-Turbo), 4Runner (2.4L EFI) & Celica (2WD)

1) Drain cooling system and remove BVSU. Cool BVSU to minimum temperature according to application using cool water. See BVSU SPECIFICATIONS table.

2) Apply air to the lower port. Air should escape from air filter located on top of valve assembly. Heat BVSU valve to maximum temperature according to application. See BVSU SPECIFICATIONS table.

3) Apply air to the lower port. Air should exhaust from the upper port but not through the air filter. Replace assembly if defective.

BVSU SPECIFICATIONS TABLE

Application	Minimum Temperature	Maximum Temperature
Camry		
2.0L	113°F (45°C)	151°F (66°C)
2.5L	104°F (40°C)	129°F (54°C)
Celica 2WD	113°F (45°C)	151°F (66°C)

Corolla (EFI)	95°F (35°C)	129°F (54°C)
Corolla FX-16	95°F (35°C)	129°F (54°C)
Pickup		
2.4L Carbureted	113°F (45°C)	(1)
2.4L EFI & Turbo	86°F (30°C)	111°F (44°C)
MR2	95°F (35°C)	129°F (54°C)
Tercel Sedan	104°F (40°C)	129°F (54°C)
Van 2.4L	104°F (40°C)	129°F (54°C)
4Runner 2.4L EFI	86°F (30°C)	111°F (44°C)

(1) - California models is 147°F (64°C) and 151°F (66°C) on Federal models.
