Closing Out the Year

It’s that time of the year again. Time for model change-over, which means learning all about a new product and revised or entirely new service procedures. But, we Technicians have an equally important responsibility to the owners of 1965 models.

The ’65s will be coming in for service for a long time yet—three or four years, at least. It’s our responsibility to see that these cars and customers get the best of care. By keeping them satisfied, we can increase the probability that they’ll come back to our house when they’re ready to trade again. So, it just makes good sense to keep as well informed as we possibly can about the latest production changes and revised service procedures.

This reference book describes some of the running changes on the 1965 models and a procedure for tracing those elusive wind noises we run into occasionally. There are some tips on air-conditioning service, too. It’s the kind of useful information that will come in mighty handy until you’ve serviced the last of the 1965’s.

A table of contents for the entire 1965 season’s Master Tech sessions is included at the back of this reference book. Use it as a quick index to all the reference books you’ve been saving throughout the year. Some of the items in this session were covered in detail in previous sessions. So, hang onto all your reference books, and build yourself a complete service library.

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TORQUEFLITE "SOFTER" CLUTCH
A mid-year change in the A727-B TorqueFlite transmission cushions the rear clutch application when the transmission is shifted from neutral to drive. A wave spring and a spacer ring were added to the rear clutch between the Belleville washer (piston spring) and the clutch pack. The wave spring provides a gradual clutch application, preventing a "lunging" condition. In addition to the wave spring and spacer ring, the clutch retainer, clutch discs and pressure plate were changed.

Because of the new parts, the clutch pack clearance has been increased. On early production transmissions, the clearance was .026 to .054 inch. With the new parts, the clearance is .037 to .060 inch. As you know, the clutch pack clearance is adjusted by using a selective fit outer snap ring.

To prevent a long delay in the clutch application, the rear clutch feed orifice in the valve body divider plate is slightly larger. None of the new parts mentioned here are interchangeable with earlier production parts.

NOTE: The A727-B TorqueFlite is used with the 361-, 383-, 413- and 426-cubic-inch V-8 engines.

ANNULUS SUPPORT AND THRUST PLATE
Another mid-year TorqueFlite change started with transmission serial number 1589953. A new rear annulus gear support has greatly improved gear operation. This new support, in conjunction with a hardened steel thrust plate, have reduced the gear noise to a very low level. The thrust plate is splined to the output shaft between the annulus gear support and the reverse planet carrier assembly. It is not possible to install this thrust plate in a transmission built prior to serial number 1589953 unless the rear annulus gear support is also replaced with the later type.
**SUSPECTED CLUTCH FAILURES**

Sometimes a transmission performance complaint has all the earmarks of clutch failure. When you get such a complaint, pull out the transmission dipstick and smell the oil. A strong, burnt odor removes all doubt about the cause—the clutch discs are burned. If there is no burnt odor, check the oil level. It could be low enough to prevent the development of correct line pressure. If the oil is low, check for seal leaks.

An improperly adjusted manual valve control cable can cause eventual clutch failure, among other things. If the valve is slightly out of position, the clutch feed passages will be restricted, slowing down the clutch application. Continued slow applications will wear out the clutch packs prematurely.

**REVERSE BUZZ**

Some of the early production TorqueFlite transmissions make a harsh buzzing noise when they are shifted into reverse. The noise is most likely to happen after the car has been standing idle for some time and the transmission oil is cold. The oil level is slightly lower in reverse than in any other position. When the oil is cold, this condition is accentuated to the point where the pump can pick up some air with the oil, causing aeration.

When the bubbles reach the outlet portion of the pump, the outer pump rotor is forced away from the pump housing momentarily. The increased clearance releases the pressure and the rotor moves back against the housing. All this happens repeatedly and very rapidly, so you might say that the noise is the result of rapid oscillation of the pump outer rotor.

The noise can't cause any harm to the transmission, so the best way to handle one of these complaints is to explain to the owner that the noise is caused by bubbles, that it happens only in reverse, and that it won't hurt anything. Later production TorqueFlites have been revised to eliminate the noise.

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**Fig. 4—Causes of clutch slippage**

Improperly adjusted throttle linkage will also cause shifting problems that might mistakenly be blamed on the clutches. Linkage that is set too short will cause insufficient throttle pressure, resulting in premature upshifts. On the other hand, if the linkage is too long, the pressure will be high, delaying the upshifts.

**Fig. 5—Check manual valve positioning**

**Fig. 6—Causes buzzing noise**
HEAVY-DUTY 3-SPEED MANUAL

LOW-REVERSE INTERLOCK

A new, improved low- and reverse-interlock went into production in April on all cars equipped with the A-745 heavy-duty, three-speed manual transmission. Before April, a similar interlock was available only on police and taxi options. The new interlock features a one-piece lever and pawl, eliminating the pawl adjustment.

The interlock prevents partial low or reverse gear tooth contact by blocking off clutch engagement. Before the low and reverse lever can be moved from one position to another, the clutch must be fully disengaged. After the shift is made and the clutch is released, the interlock pawl must either enter a slot in the low and reverse lever, if the lever is in neutral, or clear the lever completely if the shift was to either low or reverse. If the driver attempts to release the clutch before completing the shift, the clutch will not engage. The clutch pedal must be depressed again in order to complete the shift, because the pawl and the shift lever arms are serrated.

ELECTRICAL

VARIABLE-SPEED WIPERS

The 1965 variable-speed wiper motor has two field windings. The series field windings create the magnetic field that drives the armature. But, since there is no provision for regulating current flow to the series field windings, the motor would run at the same speed all the time, so we need some method of controlling the strength of the magnetic field.

The second winding in the variable-speed motor, called the shunt field winding, creates a second magnetic field that is in opposition to the series magnetic field. So, the shunt field weakens the series field by creating lines of force that travel in the opposite direction.

Fig. 7—Explain to the customer

Fig. 8—Low and reverse interlock

Fig. 9—Shunt field opposes series field
**SHUNT FIELD STRENGTH GOVERNS SPEED**

The strength of the shunt field is varied by a rheostat in the instrument panel switch. When the rheostat is in the slowest speed position, the shunt field is at its strongest value. (Even at the strongest value, the shunt field is somewhat weaker than the series field.) Turning the rheostat toward the fastest speed position adds more resistance to the shunt circuit, so the shunt field gets weaker, allowing the series field to drive the motor faster.

![Fig. 10—More resistance means faster speed](image)

**GROUND FOR TROUBLE**

The shunt circuit is grounded at the case of the instrument panel switch. On some of the early production cars, the shunt ground failed. This, of course, caused the wiper motor to overspeed, or "run away". But, even more serious was the possibility of the motor burning out when the switch was turned off. Here's how it happens.

**MOTOR REVERSES TO PARK**

When the wiper switch is turned off, current flow is reversed through the series field and shunt field windings, which reverses the rotation of the motor. This actuates the special over-travel assembly in the linkage to provide depressed, or off the glass, parking. (The complete story on the over-travel assembly is in reference book 65-2.)

![Fig. 12—Motor reverses to park](image)

The current flow for the parking cycle is from the switch P terminal to the parking switch at the motor. From the parking switch, the circuit becomes parallel. One branch goes through the armature to ground. The other branch goes through the series field windings.

![Fig. 11—Shunt grounded at switch](image)

![Fig. 13—Fields fed through parking switch](image)
and back to the A terminal at the instrument panel switch. Inside the switch, the A terminal is connected to the F2 terminal, which feeds the shunt field windings. The current then flows back to the instrument panel switch F terminal and grounds out through the switch.

**NO GROUND, NO CIRCUIT**

As you can see in the circuit diagram of the parking cycle, losing the ground in the instrument panel switch kills the circuit through the series field and shunt field coils. So, the motor stops as soon as the switch is turned off, without going through the parking cycle, and the wiper blades will stop at some point inside the wiping pattern.

**ARMATURE CIRCUIT IS "HOT"**

Even though the motor is stopped, and the wiper switch is turned off, the armature circuit is still being fed through the parking switch. And, it’s taking full voltage and current. (Remember, when the panel switch is on, the series field reduces the voltage available to the armature.) Adding to the problem is the fact that only a portion of the armature windings are being fed. Since the armature is not turning, only one or two commutator contacts are touching each of the brushes. The electrical energy is not doing any work, so it generates heat. And, as the heat increases, the resistance increases, too, which causes even more heating.

**CIRCUIT BREAKER IS BUSY**

When the armature coil heats up, the circuit breaker in the instrument panel will break the circuit. It’s logical to think that this would prevent the motor from burning out, but the circuit breaker will close again as soon as it cools off enough. Unfortunately, the motor will hold its heat for a much longer time. Each time the circuit breaker closes, more heat is generated in the motor until it finally burns out.

![Fig. 15—Breaker closes, motor still hot](image)

**CHECK THE SWITCH**

Before replacing a burned-out wiper motor, check out the instrument panel switch and the connector. Separate the connector at the firewall and connect a jumper between the blue and black switch leads. Then, hook a test lamp between the red and yellow switch leads and turn the ignition switch to the “Accessory” position with the wiper switch turned off. If the test lamp doesn’t light, you’ll have to replace the switch, as well as...
the motor. Refer to the wiring diagram to be sure you get all the wires on the correct terminals.

**WIPER ARMS AND BLADES**

The wiper arm is locked onto the pivot by a small retaining clip. If the clip should become distorted, it’s possible for the arm to be thrown from the pivot. The same thing can happen if the arm is not installed all the way onto the pivot. To avoid either problem, use tool C-3982 to remove or install the arm.

The blade can be lost, too, if not properly installed. Push the blade onto the arm without pressing the blade release. You’ll know it’s in place when you hear a click.

**ELECTRIC WINDOW Lifts**

A new permanent-magnet window lift motor was adopted late in the model year on Furys, Polara’s, 880’s, Monacos and Chryslers. The motor, identified by a red dot on the brush end of the housing, has an improved seal between the gear housing and the regulator assembly and new gaskets in the motor housing. Internal friction was reduced by the addition of a thrust washer and bronze spacer on the end of the worm shaft and a thrust washer on the brush end of the armature shaft.

The new seal is especially important, since most window lift motor failures are caused by moisture entering the case. The seal can be installed in early production motors, but none of the other parts are interchangeable.

**ELECTRIC DOOR LOCKS**

Correct positioning of door lock solenoids is very important, especially in the front doors. An improperly adjusted front door solenoid can hold the key-operated locking switch in the locking position. As a result, all four of the solenoids will have constant current to the locking windings. The circuit breaker will open the circuit after a short time, but only for as long as it takes the bi-metal strip in the circuit breaker to cool and again close the points. Meanwhile, the solenoids will have retained most of the heat generated before the circuit breaker opened. Every time the breaker closes, more heat is added to the solenoids, and they’ll eventually burn out. There’s a very good signal when this condition exists. Every time the circuit breaker closes, you’ll be able to hear the solenoids apply.

**ADJUST THE SOLENOIDS**

To adjust the solenoids, disconnect the
battery, remove the door trim panel and loosen the two solenoid attaching screws. Push the solenoid all the way down. Then, carefully pull upward on the solenoid link until the door locks. Hold the link in this position and tighten the solenoid attaching screws.

NOTE: Don’t hold the solenoid down while pulling up on the link. You want to lift the solenoid by the link, to put the link in the fully extended position.

AIR-CONDITIONING SERVICE

CONDENSATION
Some of the cars with combination heater-air conditioner installations have a tendency toward heavy condensation under certain weather conditions, such as hot, humid days. In most instances, the evaporator drain pan and drain tubes will eliminate the normal condensation from the evaporator coil. But, under these extreme weather conditions, some of the moisture may be carried through the outlet ducts by the air flow.

WINDOW FOGGING
During the spring and fall seasons, there are times when the days are hot enough for air conditioning, and the evenings are cool enough to require heater operation. The excess moisture, carried through the outlet ducts by the air flow during air-conditioner operation, accumulates in the ducts. When the heater or defroster is turned on, the moisture is blown out through the defroster outlets, and deposited on the windshield. In extreme cases, all the windows will be fogged. There is no known cure for this problem, except to explain it to the customer and advise him to operate the air conditioner on MAX COOL for about 30 seconds before turning on the heater or defroster. This will blow the moisture out of the air-conditioning outlets, instead of the heater and defroster outlets.

CUSTOMER EDUCATION HELPS, TOO

Fig. 20—Heat, humidity cause condensation

Fig. 21—Condensation causes fogging

Fig. 22—Vents must be closed
You may hear a complaint from a customer that his air conditioner doesn't cool as well as he'd like it to, and besides, a lot of moisture forms at the air-conditioning outlets. This is usually an easy one to fix. Chances are pretty good that he's been operating his air conditioner with the independent side vents open. If so, he's pouring hot outside air into the car in competition with the air conditioner. In addition to fighting the cooling, the hot, humid outside air condenses when it hits the cold outlets.

**CONDENSATE DRAINS**

Regardless of the reason for condensation, the evaporator drain pan and tubes must be kept clear to get rid of the water. Remember, all factory-installed units have two drain holes, except those used on Dart, Valiant and Barracuda, which have only one drain hole.

![Always Check Drain Tubes](Fig. 23—Drain tubes must be clear)

**USE THE RIGHT REFRIGERANT**

There are a number of different refrigerants on the market, each one designed for a specific purpose. There are enough differences in the characteristics of all the refrigerants to make them incompatible. Chrysler Corporation air conditioners are designed to use refrigerant 12, and nothing but refrigerant 12. Some independent air-conditioning "experts" have been known to use refrigerant 22 to recharge a system, or to add 22 to a system already partially charged with refrigerant 12. DON'T DO IT! You'll wind up with sky-high head pressures, ruined seals and corroded lines. Stick with refrigerant 12, exclusively.

![Wrong Refrigerant Causes High Pressure](Fig. 25—Wrong refrigerant causes high pressure)

**TRACING WIND NOISES**

Usually, the condition that causes an objectionable wind noise is pretty simple to take care of. A simple alignment, a small amount of sealer or just tightening a screw may be all
that's required. The part of the job that can
tax your patience is finding out just where
the alignment, sealer or tightening is required.
You might start tracing a whistle in one area
and wind up finding it in a spot that seems
to be totally unrelated.

NOISES ARE CHANGEABLE

One of the things that makes it tough to pin
down a wind noise is that the noise will change
according to operating conditions. For
example, different car speeds create different
pressure areas around the car. As little as
five miles an hour difference in car speed can
bring in the noise or eliminate it. Wind speed
and direction have the same kind of effect.
When you're driving into the wind, the noise
will probably be stronger than when you're
traveling with the wind. And, no two cars
are exactly alike, even though they're the
same model and body style. The one thing
you can be sure of is that some wind noises
can give a Technician a real bad time.

A GOOD PROCEDURE HELPS

You can take some of the uncertainties and
frustrations out of wind noise tracing if you
follow a few logical steps and procedures. The
basic operation, and probably the most impor-
tant step, is a thorough road test. But, there
are a few things you can do before the road
test that can make things a lot easier. First,
if possible, check with the owner and see if
he can tell you what kind of noise he hears
and where it seems to be coming from. Then,
check the alignment of all the doors and
windows. In many cases, a simple adjustment
of a door or window will eliminate the source
of the noise. This is especially true on hard-
tops, where the glass must seal against the

Fig. 26—Whistles can be misleading

Fig. 27—Wind noises are changeable

Fig. 28—Align doors and windows

Fig. 29—Check front-rear glass seal
roof rail weatherstrip. Don’t forget that the roof rail weatherstrip retainer is adjustable in and out. The attaching screw holes are slotted to allow a small amount of movement. It’s also important to inspect the seal between the hardtop front and rear windows. If any adjustments are necessary, you’ll find the adjustment locations and procedures in your service manual and in previous reference books.

IMPERIALS ARE DIFFERENT
On Imperial 4-door hardtops, the rear door glass seals against the roof rail weatherstrip with an interference fit. On some of these cars, because of necessary manufacturing tolerances, the interference may be enough to cause the door to stick slightly when it’s being opened. If you try to reduce the interference by adjusting the glass, you’ll run the risk of creating an air or water leak. Try a little Mopar Syl-Glyde lubricant on the weatherstrip in the “C” pillar area. If this doesn’t do the job, then set the “up” stop a little bit lower, being extra careful not to create a leak.

PRELIMINARY SEALING
Most wind noises center around the area of the vent wing, “A” pillar and windshield. Seal around the windshield reveal moldings before the road test. Press rope-type sealer into the opening and smooth it off with a trimstick.

Also, look the drip rail over carefully. If there are any openings, seal them up with rope-type sealer. Tighten any loose moldings and cover protrusions or openings in the moldings with masking tape.

DOOR OPENING AND VENT WING
Seal the vent wings and the openings between the front of the doors and the “A” pillars with masking tape. Use short, overlapping pieces of tape, so you can peel them off one at a time while the car is moving. Obviously, you’ll need a partner on the road test to handle the tape on the right side of the car. Drive the car at the speed at which the noise originally occurred, to see if the noise has been eliminated. If there is no noise with the sealer and tape applied, you can be pretty sure you’ve located the general area.

ZERO IN
While maintaining the noise-producing car speed, remove the tape from the door opening. Open the window, remove one section of tape and close the window. Repeat the procedure,
removing one section at a time, until the noise comes back. When it does, replace the last piece of tape removed and check the vent wing in the same way. A vent wing noise is usually a high-pitched whistle.

And, remember that on hardtops, you can move the weatherstrip in or out by loosening the weatherstrip retainer attaching screws. A weatherstrip that doesn’t provide good sealing contact should be replaced.

WEATHERSTRIP PROBLEMS

A noise that originates between the front of the door and the “A” pillar is probably the result of poor weatherstrip contact. Look it over to see if it is distorted or loose. Check the weatherstrip contact by closing the door on a shipping tag or heavy paper. Pull the tag out of the door and note whether the weatherstrip is gripping the tag.

Sometimes, weatherstrip contact can be improved by inserting a piece of \( \frac{1}{8} \)-inch closed cell foamed plastic under the weatherstrip.

OTHER WIND NOISES

PLENUM CHAMBER

Some early-production Furys, Polara, 880’s, Monacos and Chryslers may have a noise in the plenum chamber, caused by a hole about nine inches left of the centerline of the car, between the dash panel and the cowl top panel. To stop the noise, remove the windshield lower reveal molding and the fresh-air grille panel. Then, work body sealer (about a one-inch ball will do it) into the opening. On all production after May 1, 1965, the hole doesn’t exist.
DOOR HINGE
Believe it or not, the front door hinges even get into the wind noise act. There’s a small oval hole through the outer hinge strap, that isn’t being used. You can see the hole easily with the door wide open. When the car’s in motion, air passing the hole at an angle creates a noise. It sounds about the same as the sound you get by blowing across the top of a pop bottle. Cover the hole by wrapping a turn of tape around the hinge strap.

DOOR DRAINS
Here’s one you might have spent hours trying to find. It’s at the drain holes in the bottom of the door. Sometimes wind whistles past the drain holes, and the sound travels up past the glass and into the driver’s left ear. Very annoying. We certainly don’t want to plug up the drain holes, but there’s a little trick to stopping the noise. The neoprene covers that snap into the brake backing plate to cover the adjusting hole will snap into the door holes and still leave enough openings for drainage.

TAG ENDS
Every once in a while, Tech has some little items he’d like you to know about that just don’t seem to fit properly into any section in the reference book. Well, that’s the situation here. We have some important changes that came along during the year, they don’t fit anywhere else, so here they are.

TAIL-GATE GLASS
The tail-gate glass, as you know, is tempered.

So, any deep scratch or chip means that the glass will eventually break all the way. Some of our station wagons were coming up with chips in the glass along the top. The chipping was caused by the upper glass run retaining screws when the window closed. There is a countersink in the glass run to allow for the screw heads. In some cases, there wasn’t quite enough clearance, so the glass hit the screw heads. If you run into one of these, use screws with thinner heads to retain the glass run.

STEERING SHAFT COUPLING
At the start of the production year, the steering shaft coupling was retained on the steering gear worm shaft by a lock bolt. Along about the middle of the year, this method of retaining was replaced by a roll pin. You can’t use the roll pin with the early-type coupling, but you can use the new coupling and roll pin in place of the old coupling and lock bolt.

If you remove the new coupling from the worm shaft, always use a new roll pin for installation.

NEW OIL FILTER
During the year, a new replaceable-element-type oil filter was introduced. It consists of the element, a metal can and a screw-on cap. When you replace the element in this assembly, you may need to use a wrench on the 1/8-inch hex pressed into the cap to break it loose. But that’s the only time you should ever put a wrench on that hex. The cap is to be hand-tightened only. Here’s why.
There's an "O"-ring-type seal in the cap of the container. When the cap is turned on the can, the seal compresses against the side of the can. If the cap is screwed on too far, the seal will be ruined by the threads on the can.

To keep the muscle men from turning the cap too far by hand, there's a stop built into the cap and can. When the cap is screwed on the right distance, a hole at the end of the cap threads stops against a bump extruded into the side of the can. If a wrench is used to tighten the cap, you might ruin not only the seal, but you could force the cap past the stop, ruining the cap and the can.

**NEW TIMING CHAIN AND SPROCKETS**

Another late engine change came along late in the year. On all 361-, 383-, 413-, and 426-cubic-inch engines, a new timing chain, camshaft sprocket and crankshaft sprocket went into production. The new camshaft gear has nylon teeth, fastened to an aluminum hub. The timing marks consist of a dimple on the crankshaft sprocket and a tab cast into the camshaft sprocket. All three of these parts are narrower than on previous production engines. Therefore, they are interchangeable with earlier parts only as a complete set.
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