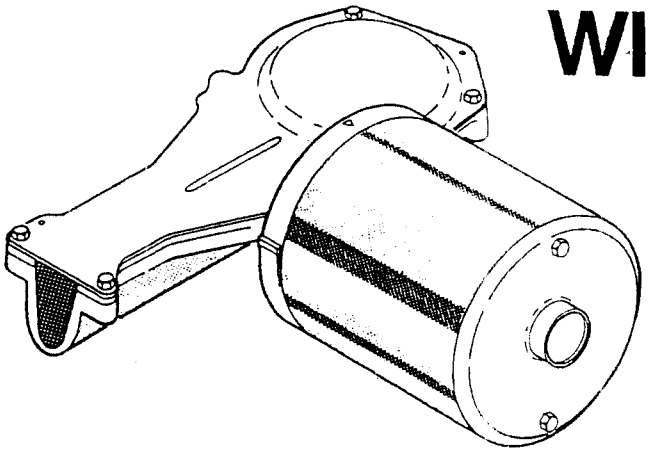
WIPER MOTORS



INTRODUCTION

The modern wiper motor is a permanent magnet type incorporating two ceramic magnets housed in a cylindrical steel yoke. This type of arrangement produces a higher torque output than a normal wire-wound field system and consequently wiper arms having increased spring pressure can be used.

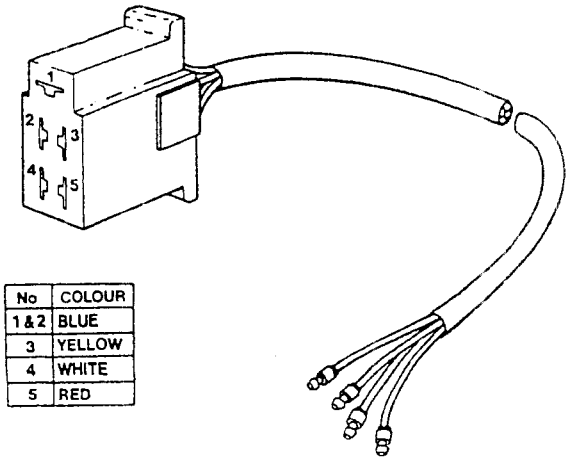
"Permanent magnet" wipers are produced in either single- or two-speed form. The high speed requirements are provided by a second positive brush position to which the supply is connected when the higher speed is required.

A further feature of this unit is dynamic or regenerative braking when the wiper switch is moved to the park position. The control for this operation is on the gearbox casting.

These motors are also available in "self-switching" or "self-parking" versions.

The "self-switching" unit will stop at the end of its normal wiping arc.

The "self-parking" motor, when switched off, will reverse its rotation, operate an eccentric coupling and extend its length of stroke to park beyond the normal wiping arc (usually off the screen).



No	COLOUR
1&2	BLUE
3	YELLOW
4	WHITE
5	RED

Fig. 88 Wiper motor test plug

WIPER TEST PROCEDURE

Testing of wiper switching and circuits could become an exceedingly complex procedure. We therefore recommend a quick but simple method of establishing whether the fault lies in the wiper motor itself or the switching. This involves the use of a made-up test plug.

The plug is the common wiper plug (easily obtainable), as used on all present-day permanent magnet motors, connected with four leads, red, blue, yellow and white as shown in Fig. 88.

Note: Plug connections 1 and 2 should be linked at rear of plug (blue lead).

Remove the wiper motor plug on the vehicle and insert the test plug.

By connecting a 12V supply with ammeter in series across the various combinations of the test plug leads as shown in the following tests, it will be possible to determine:

(a) That the motor is operating correctly.

(b) The current consumption of the motor (2–4 amps).

ALL TESTS WITH SCREEN WET.

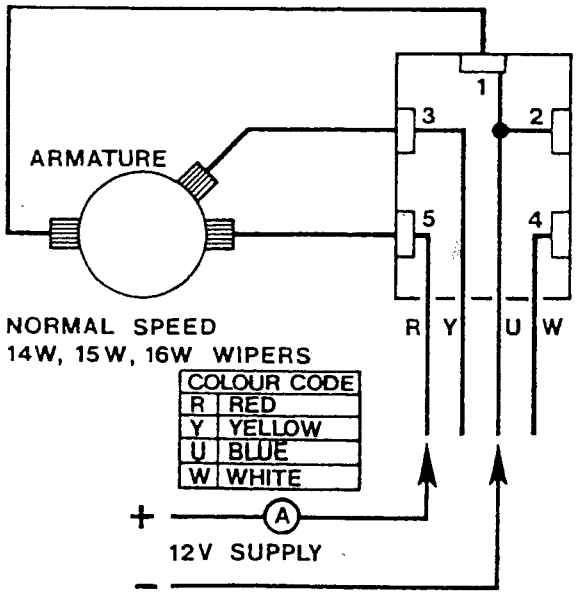


Fig. 89 Test 1. 14W, 15W and 16W wipers

Connections Batt. '+'	Batt. '-'	Type of motor	Result
TEST 1. (Fig. 89) Red	Blue	All types	Motor runs at normal speed
Do not disconnect battery supply from plug while the wiper blades are in the parked position.			
TEST 2. (Fig. 90) Yellow	Blue	2-speed motors only	Motor runs at high speed
TEST 3. (Fig. 91) Red	White	Self-switching types only	Motor should run to park position then stop
TEST 4. (Fig. 92) White	Red	Self-parking types only	Motor should run to extended park position then stop

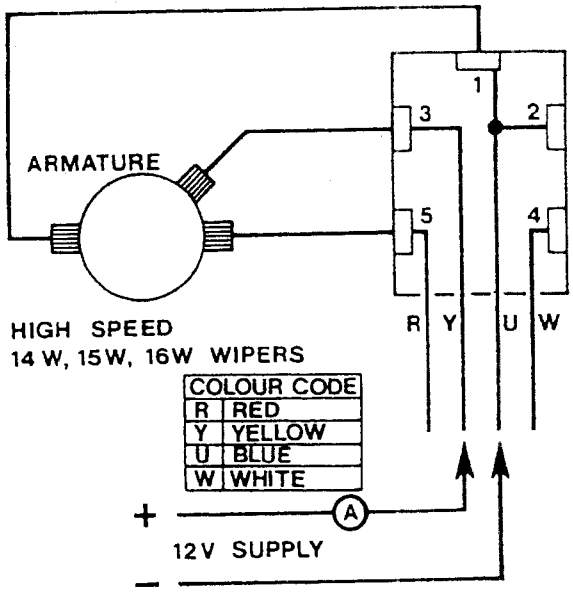


Fig. 90 Test 2. 14W, 15W and 16W wipers

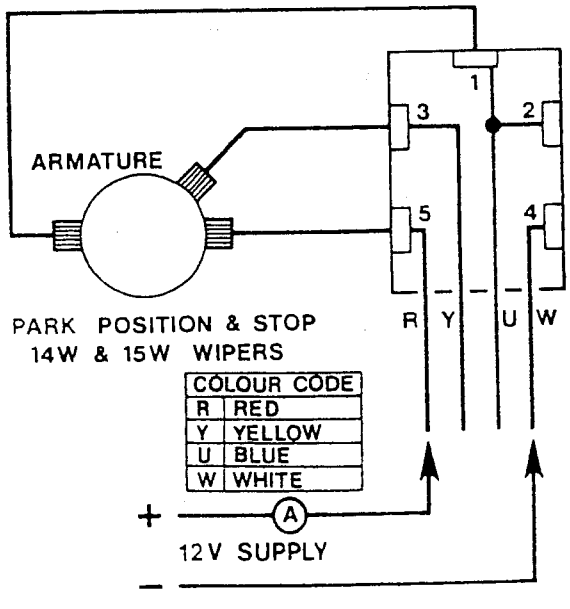


Fig. 91 Test 3. 14W and 15W wipers

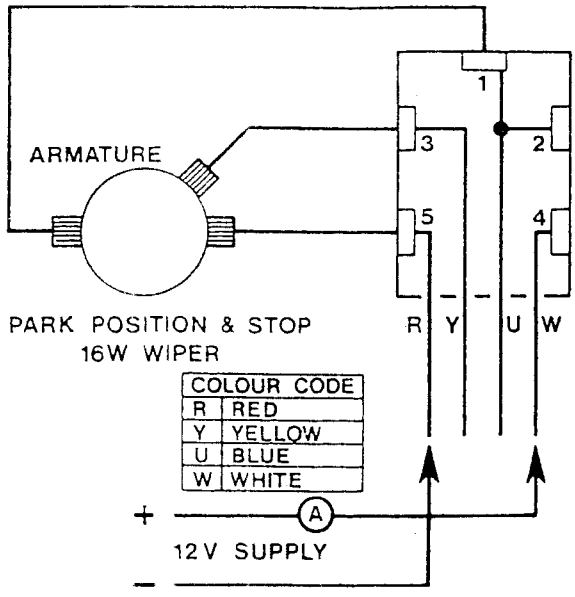


Fig. 92 Test 4. 16W wipers

If the motor fails to function in any one or more of the previous tests, a faulty motor is indicated. If, however, the motor is satisfactory, the fault lies in the switch or wiring on the vehicle.

Should the current consumption during the tests exceed 4 amps, remove the wiper arms and blades and repeat test. If current is still high this could indicate excessive friction in the rack or link drive mechanism. Disconnect the drive from the motor and again check current consumption. A high current reading now indicates a faulty motor. On the rack-type drive a pull of 6 lbf. applied to the crosshead with a spring balance should be sufficient to move the crosshead within the outer casing, see Fig. 93. If not, the assembly must be examined for faults.

Note: It should be remembered that where excessive friction exists, overloading will result. Replacing the motor will *not* solve the problem.

In cases where removal of the arms and blades lowers the current consumption the fault is due to either a contaminated screen or faulty arms or blades.

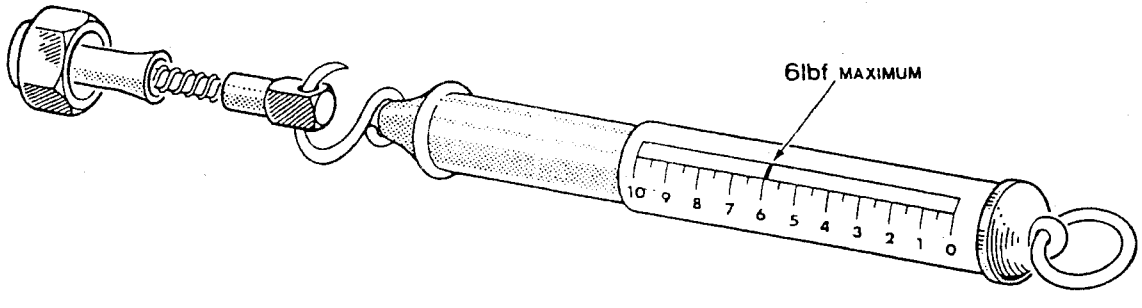


Fig. 93 Checking the wiper motor transmission