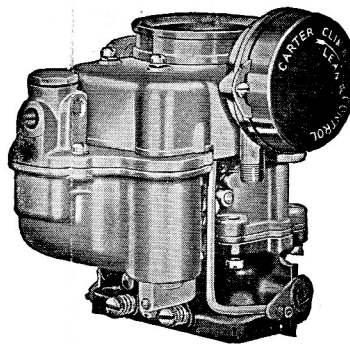


## MOTOR SERIAL NUMBERS

1948-49—G-400015 and up

1949-50—H-400016 and up



Cut shows 643S Carburetor

Casting No. 377 on Face of Flange (643S), No. 561 (643SA)

## PACKARD SUPER EIGHT

MODELS 2202-2222-2232

1948-49

MODELS 2302-2322-2332

1949-50

INDUSTRIAL ENGINE MODEL  
I-D-327WDO Dual Down-Draft Climatic Control Carbs.—**Models 643S-643SA** (Super 8)

## CARBURETOR SPECIFICATIONS

For Packard (Super) 8 Cyl. Eng.: 3 1/2" Bore, 4 1/4" Stroke

**Dimensions:** Flange size, 1 1/4 inch dual, 4 bolt type.

Primary venturi, 1 1/32 inch.

Secondary venturi, 1 9/32 inch.

Main venturi, 1-7/32 inch.

**Float Level:** Distance from float bowl cover, when needle is seated to be 5/32 inch. (Use gauge No. T109-154.)**Vents:** Outside, No. 10 drill—four holes. Inside, none.**Gasoline Intake:** Square vertical needle. Size No. 38 drill hole in needle seat.**Low Speed Jet Tube:** Jet size, No. 70 drill.

By-pass, size No. 52 drill.

Economizer, size No. 50 drill.

Idle bleed, size No. 52 drill.

**Idle Ports:** Upper port, slot type, length .180 inch; width .030 inch.

Opening: .127 to .133 inch above upper edge of valve with valve closed tight.

Lower Port: (For Idle Adjustment Screw) Size, .0615 to .0655 inch diameter.

**Set Idle Adjustment Screw:** 3/4 to 1 1/4 turns open. For richer mixture, turn screw out. Do not attempt to idle engine below 350 r.p.m.**Main Nozzle:** In primary venturi, angle 45°. Closed tip.

Inside diameter No. 30 drill.

Upper hole: .0292 inch diameter on 45° angle.

Lower hole: .0635 inch diameter on 60° angle.

**Metering Rod:** (Vacumeter Type) Economy step .0655 inch diameter.

Middle step tapers to .0585 inch diameter.

Power step .051 inch diameter.

Length of rod 2-59/64 inches.

**Metering Rod Jet:** 2.3 mm (.09055 inch) diameter.**Metering Rod Setting:** Use gauge, part No. T109-113 (2.280 inches).**Accelerating Pump:** High pressure type (spring operated lever).

Pump discharge jets (twin), size No. 72 drill.

Intake ball check, size No. 40 drill.

Discharge (needle seat), size No. 50 drill.

Outside relief to pump jet, none.

**Pump Adjustment:** 28/64" plunger travel (full throttle position). Use gauge T109-117S.**Choke:** Carter Climatic Control, set at index. Butterfly type, offset valve. Choke heat suction hole, in body size No. 37 (.104") drill.**Vacuum Spark Port:** (643S) .054-.056 inch diameter, (643SA) .103 to .105 inch diameter. Top of port (643S) .050 to .054 inch above valve

(643SA) .060 inch above valve.

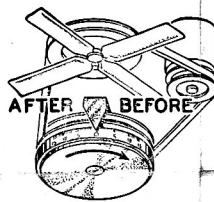
## Motor Tune-Up—Be Accurate! Always Use Feeler Gauges!

**CAUTION:** Change worn or leaky flange gaskets. Tighten manifold bolts and test compression before adjusting carburetor.

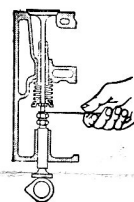
**Spark Plug  
Gap**  
.028"  
± .0025"



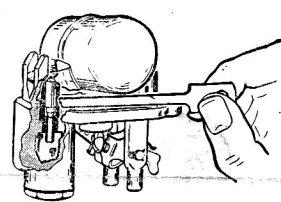
**Breaker Point  
Setting**  
.0125" to .0175"



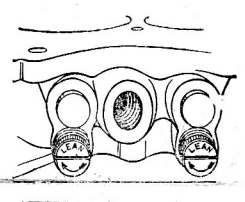
**Ignition Timing**  
Breaker Points to Open  
6° B. T. D. C.  
Plus 0°, Minus 1 1/2°



**Valve Setting**  
Intake .007"  
Exhaust .010"



**Float Setting**  
(Use Gauge T109-154)  
5/32"



**Idle Adjustment  
Screw Setting**  
3/4 to 1 1/4  
Turns Open

## CARBURETOR ADJUSTMENTS

**PUMP ADJUSTMENT:** With pump connector link in place and throttle adjustment screw backed out, pump plunger should travel 28/64" from closed to wide open throttle position. Measure pump travel by placing gauge T109-117S on raised portion of bowl cover around the plunger shaft. Projecting portion of indicator should be placed on top surface of connector link where it extends through the plunger shaft. The difference between readings at wide open and closed throttle positions should be "28" (28/64"). Adjust by bending throttle connector rod at lower angle.

**METERING ROD ADJUSTMENT:** Must be made when re-assembling carburetor or when leaner than standard rods are installed. Do not disturb pump adjustment. Procedure is as follows: (a) Back out throttle lever adjustment screw until throttle valves seat. Insert one metering rod gauge T109-113 in place of metering rod. Be sure gauge seats in jet. (b) Install metering rod pin and pin spring in vacuum piston and link assembly. (c) Press lightly on top of vacuum piston link until lip contacts tongue on anti-percolator arm. There should now be less than .005" clearance between metering

rod pin and shoulder in notch of gauge with throttle valves seated.

Adjust by bending tongue on pump arm. Remove gauge and metering rod pin and install metering rods, discs, spring, and metering rod pin, and hook spring to metering rod. Vacuum piston and link must not bind or drag in any position.

**ANTI-PERCOLATOR ADJUSTMENT:** After adjusting pump and metering rods, and with throttle valves seated, insert .015" flat feeler gauge T109-72 between anti-percolator stems and lips on anti-percolator arm. Center of indicator lines must be flush with top of anti-percolator plug. Adjust by bending lips, be sure both valves are adjusted evenly.

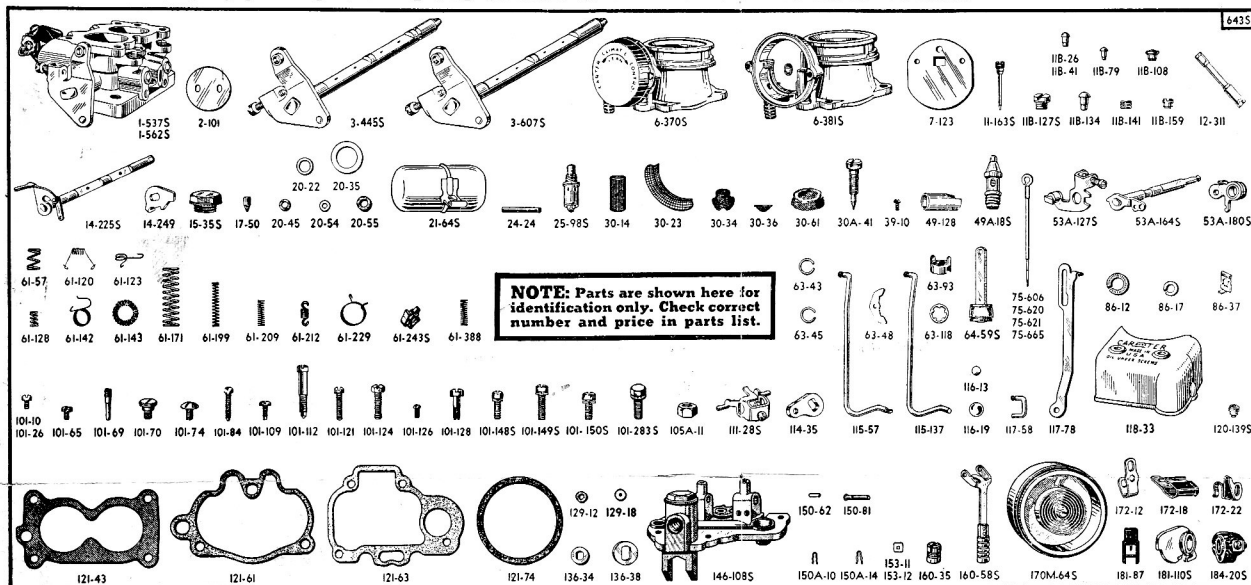
**UNLOADER ADJUSTMENT:** With throttle wide open, distance between upper edge of choke valve and inner wall of air horn should be 11/64" (gauge T109-166). Adjust by bending lip on fast idle connector link. When unloader is adjusted properly, with throttle valve wide open, move choke valve to wide open position and choke valve will lock in open position.

**FAST IDLE ADJUSTMENT:** Hold choke valve tightly closed and adjust fast idle arm screw until there is .026" (T109-189) clearance between edge of throttle valve and bore of carburetor, side opposite idle port.

**FLANGE ASSEMBLY:** Assemble 1-562S in the following manner in order to center throttle valves properly and eliminate excessive endplay in the throttle shaft. Install throttle shaft and lever assembly and place throttle shaft retaining ring firmly on stub of shaft with prongs extended outward. Take out all endplay by pressing retaining ring on shaft as

far as possible. Then install throttle valves with "c" in circle toward the idle port when viewed from the manifold side. To center valves tap lightly holding in place with fingers while tightening screws.

**STARTER SWITCH:** The Carter starter switch must be qualified with Carter protractor gauge T109-155S. Switch must make contact between 30° and 45° throttle opening. When qualifying the starter switch, do not use more than three 153-11 (.018" shim) and two 153-12 (.006" shim) and not less than one 153-11 shim.



## Packard—1948-1950—Carburetors Nos. 643S-643SA

WHEN SERVICING, USE GASKET ASSORTMENT No. 156; REPAIR PACKAGE No. 1375B  
PART NAMES IN CAPITAL LETTERS, LISTED BELOW, INDICATE CONTENTS OF REPAIR PACKAGE

Part No.	PART NAME	Part No.	PART NAME
1-537S	Body flange and switch assembly (Sup. by 1-562S)	75-620	Metering rod—1 size lean—.067"—.067" to .0605"—.0535"
1-562S	Body flange and switch assembly	75-621	Metering rod—2 sizes lean—.0685"—.0685" to .0625"—.056"
1A-39	Flange gasket	75-665	Metering rod (Industrial only)—.0655"—.0655" to .0585"—.042"
2-101	Throttle valve	86-12	Flange stud lock washer
3-445S	Throttle shaft and lever assembly (Use with 1-537S)	86-17	Body flange lock washer (Sup. by 101-283S)
3-607S	Throttle shaft and lever assembly (Use with 1-562S)	86-37	Terminal lock washer
6-370S	Air horn and climatic control assembly	101-10	Anti-percolator arm clamp screw
6-381S	Air horn and pump jet assembly	101-26	Coil housing attaching screw
7-123	Choke Valve	101-65	Choke shaft attaching screw
11-163S	LOW SPEED JET ASSEMBLY	101-69	Throttle centering screw (Use with 1-537S)
11B-26	Body flange passage plug	101-70	Fast idle arm attaching screw
11B-41	Pump discharge passage plug	101-74	Throttle shaft arm attaching screw
11B-79	Rivet passage plug	101-84	Fast idle adjustment screw
11B-108	IDLE PORT PASSAGE PLUG	101-109	Switch terminal screw
11B-127S	Nozzle passage plug assembly	101-112	Terminal cap attaching screw
11B-134	Rivet passage plug	101-121	Throttle lever adjustment screw
11B-141	Nozzle retainer plug	101-124	Body flange attaching screw (Sup. by 101-283S)
11B-159	BY-PASS BLEEDER SCREW PLUG	101-126	THROTTLE VALVE ATTACHING SCREW
12-311	Nozzle	101-128	Air horn attaching screw—special
14-225S	Choke piston lever, link and shaft assembly	101-148S	Bowl cover attaching screw and washer assembly
14-249	Choke trip lever	101-149S	Body flange attaching screw and washer assembly
15-35S	Strainer nut assembly	101-150S	Air horn attaching screw and washer assembly
17-50	PUMP CHECK NEEDLE	101-283S	Body flange attaching screw and washer assembly
20-22	Needle seat gasket	105A-11	Flange stud nut
20-35	BOWL STRAINER GASKET	111-28S	Anti-percolator arm and screw assembly
20-45	NOZZLE GASKET	114-35	Throttle shaft arm
20-54	Metering rod jet gasket	115-57	Throttle connector rod (Sup. by 115-137)
20-55	IDLE PASSAGE GASKET	115-137	THROTTLE CONNECTOR ROD
21-64S	Float and lever assembly	116-13	BALL
24-24	Float lever pin	116-19	Ball (Switch)
25-98S	NEEDLE AND SEAT ASSEMBLY	117-58	Pump arm link
30-14	Bowl cover strainer	117-78	Fast idle connector link
30-23	PISTON HOUSING STRAINER	118-33	Dust cover
30-34	PUMP STRAINER	120-139S	METERING ROD JET ASSEMBLY
30-36	Switch strainer (Sup. by 30-61)	121-43	BODY FLANGE GASKET
30-61	SWITCH STRAINER	121-61	AIR HORN GASKET
30A-41	Idle adjustment screw	121-63	BOWL COVER GASKET
39-10	Choke valve attaching screw	121-74	COIL HOUSING GASKET
49-128	Switch plunger	129-12	Metering rod disk (Sup. by 129-18)
49A-18S	Anti-percolator valve plug assembly	129-18	Metering rod disk
53A-127S	Fast idle arm, pin and screw assembly	136-34	Choke shaft washer
53A-164S	Pump operating lever and countershaft assembly	136-38	Throttle shaft washer
53A-180S	Pump arm and collar assembly	146-108S	Bowl cover assembly
61-57	Idle adjustment screw spring	150-62	Piston pin
61-120	Metering rod spring	150-81	Metering rod pin
61-123	Connector link spring	150A-10	PIN SPRING
61-128	Connector rod spring (Use with 115-57)	150A-14	PIN SPRING (COUNTERSHAFT)
61-142	Fast idle arm spring	153-11	Contact spring shim (.018")—(Switch)
61-143	Plunger spring	153-12	Contact spring shim (.006")—(Switch)
61-171	Pump spring	160-35	Choke piston
61-199	VACUUM PISTON SPRING	160-58S	Vacuum piston and link assembly
61-209	Switch return spring (Sup. by 61-388)	170M-64S	Thermostatic coil and housing assembly
61-212	Pump arm spring	170M-64SU	Unitized package (Consists of 1—170M-64S, 3—63-48, 3—101-26, 1—121-74)
61-229	Fast idle cam spring	172-12	Hold down clip (Terminal cap)
61-243S	Switch contact spring and washer assembly	172-18	Cable clip
61-388	Switch return spring	172-22	THROTTLE CONNECTOR ROD RETAINER
63-43	Switch strainer retainer ring (Use with 30-36)	181-87	Guide block (Switch)
63-45	Check ball retainer ring	181-110S	Fast idle cam assembly
63-48	Thermostatic coil housing retainer	184-20S	Terminal cap assembly
63-93	Spring retainer (Use with 115-57)	192-11U	Carter starter switch unit
63-118	Throttle shaft retaining ring		
64-59S	PUMP PLUNGER AND ROD ASSEMBLY (Identify by shaft No. 49-119)		
75-606	METERING ROD—STANDARD—.0655"—.0655" to .0585"—.051"		

NOTE: Figures in parentheses indicate number of pieces used in one carburetor. Where no figure is shown, only one is used.