

PLYMOUTH

SUPER STOCK



Your new

SUPER STOCK 426-III

Plymouth

You are to be congratulated for selecting this 426 Cu. In. Super Stock powered Plymouth as it is one of the finest products of the American automobile assembly lines specifically designed and developed for performance competition. This booklet covering the special features and specifications has been specially prepared to supplement your 1964 Plymouth Operating Instructions.

The Super Stock 426-III engine is equipped with specially refined components which combine to produce maximum power output. The scientifically designed induction system, a development pioneered by Chrysler engineers, provides sonic and inertia tuning at high engine speeds giving more horsepower than conventional V-8 multiple carburetor manifolds.

The Super Stock 426-III engine has the operating characteristics of a very high output engine. A high idle speed is required to minimize roughness and to keep the engine running. Since there is no heat on the intake manifold, the engine will be slow to warm up. In cold weather, a surging condition, misfiring, and an unstable engine operation will be encountered which is considered unacceptable for normal passenger cars. THE 1964 SUPER STOCK 426-III ENGINE IS DESIGNED FOR USE IN SUPER-VISED ACCELERATION TRIALS. IT IS NOT RECOMMENDED FOR GENERAL EVERY DAY DRIVING BECAUSE OF THE COMPROMISE OF ALLAROUND CHARACTERISTICS WHICH MUST BE MADE FOR THIS TYPE OF VEHICLE.

FEATURES

The components used in the Super Stock 426 engine are far from ordinary. Many new, special and modified parts have been used to achieve the outstanding operating performance you can expect with the Super Stock 426-III. A general description of components follows.

Fan: Fluid drive with 7 blades, non-thermal.

Intake Manifold: One piece aluminum short-ram (15") designed for maximum output at high engine speeds. The manifold fits between the rocker covers and also serves as a tappet chamber cover. It is tuned to increase output in the higher speed ranges (above 4000 r.p.m.) and has generous tapered branches.

Exhaust Manifold: New cast iron "header" type, streamlined, high-capacity with 3" outlets.

Cylinder Head Assembly: This special head has larger ports, streamlined intake valves and larger exhaust valves than standard heads. The heat cross-over passage has been eliminated and the deck structure made stronger for more positive head-gasket sealing.

Cylinder Head Gasket: Constructed of stainless steel.

Valves—Intake and Exhaust: The new intake valves are streamlined for higher air flow; exhaust valves are ½" larger diameter than standard valves.

Camshaft Assembly: Ground for a 300° intake valve duration and a 308° exhaust valve duration and approximately .520" lift. Designed to run at speeds in excess of 6000 r.p.m.

Valve Train: Has dual high-load springs and extra heavy-duty retainers. The outer spring and damper are used with an inner spring. The push rods are similar to the 1964 Chrysler 300-K FirePower 390 but slightly longer. Rocker arms are also similar to the 300-K FirePower 390 but include a locknut on the lash adjusting screw.

Pistons: High-strength forged aluminum with a standard compression ratio of 11:1. Pistons with a ratio of 12.5:1 are optional, offer

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increased thermal efficiency for higher output and require use of the highest octane gasoline available. These pistons are practical only for limited application.

NOTE: Wide-open throttle bursts with these pistons must be limited to 15 seconds to prevent engine damage. They require high clearance, and do not have a pin offset nor bi-metal thermal correction. They will operate noisier than standard pistons, particularly when cold.

Piston Rings: Top compression rings are chrome plated, highstrength cast iron. Lower oil control rings are one piece, low tension cast iron. Standard intermediate rings are retained.

Cylinder Block: Serviced in short engine only. Block is bored to 4.25'' with main bearing caps selected for high-output performance. Bores are notched for the $1\frac{7}{8}''$ exhaust valve clearance.

Crankshaft: Journals are hardened and the fillets shot peened. Journals are ground .001" under the standard shaft size to accommodate F-77 tri-metal heavy-duty bearings.

Connecting Rods: Specially designed and of selected quality to assure excellent performance. All are magnaflux inspected.

Accessories and Drive: A smaller than standard crankshaft pulley is used to limit belt speeds. All pulleys have deep grooves. An air conditioning type water pump is used.

Carburetors: Fitted to the manifold are two 4-barrel AFB carburetors with a hand-operated choke. Air cleaners are high-capacity, low restriction, and non-silenced.

Fuel Pump: This is a standard three valve pump with an increased spring load for higher capacity.

Exhaust System: Consists of high-capacity, streamlined "Tri Y" designed exhaust headers and 3"-diameter exhaust pipe and by-pass outlets with factory installed removable lake pipe caps, where state law permits. The mufflers and tailpipes are the same as used on 1964 Chrysler New Yorker models.

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Battery: Ninety-amp. hr., mounted in the luggage compartment for better weight distribution.

Ignition: The distributor has a special cam and dual breaker points which are designed to operate at high engine speeds. It does not have a vacuum advance unit. Metal core ignition cables and cold range spark plugs are used.

Engine Oil Pan: A new pan is used having a deeper sump than standard pans for additional oil capacity. Special anti-slosh baffles are included to control oil during acceleration.

Clutch Pressure Plate and Housing Assembly: A new $10\frac{1}{2}$ " O.D. clutch is used having a pressure plate made of high-strength Pearlitic malleable iron, a new high-burst speed disc and a clutch release torque shaft with added strength. Clutch housing is cast steel.

Manual Transmission Assembly: A floor-mounted T-85 three-speed close ratio transmission is standard. Gears, shafts and extension are new. Ratios are: Low—2.10:1; Intermediate—1.44:1; Direct—1:1. A new 4-speed manual A-833 floor-mounted transmission is optional.

TorqueFlite Automatic Transmission: Heavy-duty 3-speed, optional. Up to 5600 r.p.m. upshift and high-capacity components.

Propeller Shaft: High-speed cemented boot, selectively chosen for low run-out and balance. Shorter but similar to the shaft used in police cars.

Rear Axle Assembly: A "Sure-Grip" assembly is standard (3.9:1 ratio). A heavy-duty pinion bumper assembly is included. Optional ring gear and pinion set ratios are available.

Springs and Shock Absorbers: Heavy-duty police car springs are standard. Optional rear springs and shock absorbers are available.

Wheels and Tires: Fourteen x $6\frac{1}{2}$ K wheels are available as optional equipment for rear wheels only. Nine-hundred x 14 tires can be mounted on $14 \times 6\frac{1}{2}$ K wheels.

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Sheet Metal: A light-weight aluminum front end package is available for more favorable weight distribution, consisting of aluminum fenders, dust shields, bumper support brackets and hood, when ordered with the new car order.

Caution: Use care to avoid denting the aluminum sheet metal. Do not use a bumper jack to lift the car. The aluminum hood has a built-in air scoop to direct air into the carburetors through a special air horn and flame arrestor, thereby effecting a gain in power output. To gain maximum benefits from the air flow it is recommended that Carter jet part number 120-165, (.086"), four required, be used.

GENERAL OPERATING CHARACTERISTICS

- The long-duration camshaft provides maximum high-speed output. However, this benefit causes a rough, high-idle operation and lazy low-speed response.
- 2. Since there is no heat cross-over on the intake manifold, the engine will be slower to warm up and carburetor icing may occur. During cool weather (30° F.—55° F.) this problem can be reduced by partially covering the radiator and using a gasoline with anti-icing additives. In winter weather, a rich surging condition, misfiring, and unstable engine operation may be encountered which may be severe and make ordinary street driving extremely difficult and undesirable.
- The increased amount of lubrication to the valve train, and the use of special piston rings may result in higher than normal oil consumption.
- 4. Since the carburetors are calibrated for maximum power and a high numerical axle ratio is used for good acceleration, the gas mileage of a conventional car cannot be expected.
- 5. The increased piston clearance and mechanical valve train result in above normal engine noise.

- 6. For optimum engine output the ignition system must be kept in perfect condition. This makes it necessary to inspect, adjust and replace the spark plugs and ignition points more frequently than would be necessary on a conventional engine.
- 7. Keeping the engine oil clean is a must in this precision engine. The oil should be changed frequently.
- The automatic transmission band adjustment must be checked frequently.

TUNE-UP TIPS

1. Carburetor Shield

In hot weather, performance of the carburetor and fuel supply system can be improved by installing sheet aluminum shields next to the exhaust manifolds. This shielding will protect carburetors and fuel lines from exhaust manifold radiant heat.

2. Importance of Tachometer Use

A reliable tachometer should be used to limit engine speed to the optimum shift point of 6500 r.p.m. Excessive engine speed could cause expensive and premature engine failure.

3. Identification of Intake Manifold Bolts

The numbers on the intake manifold near each of the attaching screw access holes indicate the length (tip to under head) of the screw that is installed through a given hole.

NOTE: The intake manifold passage inner surfaces have been machined in production to improve alignment with the cylinder head ports.

CAR OPERATION FOR BEST PERFORMANCE

For peak performance while participating in acceleration trials,* the following practices are recommended:

Spark Plugs: Use correct spark plugs as shown in General Specifications, page 13.

*NOTE: It is important that acceleration runs be made only at supervised events that have proper governing bodies, safety regulations and are controlled by experienced personnel.

Ignition System and Valves: Inspect the following items frequently: valve clearance, spark plug condition, ignition system condition and spark timing. This is necessary because the full output of the engine may not be obtained with faulty plugs, weak ignition and/or insufficient valve clearance, even though misfiring or backfiring are not observed. However, excess valve gear noise and valve breakage may result from clearance settings that are too high.

Engine Operation: Do not operate the engine over 6500 r.p.m. Wide-open throttle operation must be limited to fifteen seconds in duration.

Gasoline: Use high octane premium gasoline, approximately 102 octane or higher.

Rear Springs: For better traction, additional spring clips may be used to tie the ends of each leaf to the rest of the spring.

Front Suspension: The front end alignment should be set at the correct specifications (Refer to 1964 Plymouth Service Technical Manual).

Brakes: Adjust brakes to eliminate any possible drag.

Tires: Use large tires of high Butyl content on the rear since they improve traction on most surfaces. Increase air pressure in the front tires to reduce rolling resistance. Do not exceed 45 p.s.i.

ADDITIONAL SUGGESTIONS WHICH YOU MAY WISH TO CONSIDER:

Compression Ratio: The combustion chamber volume and pistonto-block deck height should be at the minimum factory tolerance to get the maximum allowable compression ratio.

Carburetor: Carburetors have been calibrated for maximum power. (Leaner mixtures should be used at altitudes above 4000 ft.) Throttle blade angles have been set for maximum power on the dynamometer and should not be changed, see page 13. Cool air should be routed to the carburetor by whatever means the rules permit (see Sheet Metal, page 5).

SUGGESTIONS (Continued)

Valve Springs: The valve springs should be set to the minimum specified heights.

Assembly Procedure: When the engine is being assembled, all parts must be kept clean and MoPar Engine Oil Supplement, Part Number 1879406, should be used.

Fan: A smaller fan, Part Number 2265034, may be used when temperature conditions permit. When using this fan use spacer Part Number 2120510.

Fuel Pump: Two electric fuel pumps, available from a local Bendix dealer, may be installed in parallel and close to the fuel tank as added protection against high-temperature vapor lock.

Rear Springs*: Optional right rear spring, Part Number 2196937, may be installed to give maximum traction.

Shock Absorbers*: Rear shock absorbers, Part Number 2275848, should be used for optimum wheel control.

Axle Pinion Bumper*: Shim the pinion bumper so that it contacts the floor pan with the car in its ready-to-run height. Use bumper Part Number 1857682.

Rear Wheels: The optional $6\frac{1}{2}$ K wide rear wheels, Part Number 2122468, may be used to facilitate the use of 9:00 x 14 tires.

*These modifications are not recommended for street driving because of increased riding harshness.

CORRECTION NOTICE

DE

Combustion Chamber Volume on this page should be changed to read as follows:

FNOINE	3-1-1					
Type	Minimum	86	C. C.;	Maximum	92	C.C.
						4 250"
Stroke						3.750"
Compression Ratio	***********************			11 to 1	(stan	ndard); ntional)
Piston Displacement	t				.426	cu. in.
Compression Ratio	t and Output (Standard)		11 to	1;415 h.p. @	5600	r.p.m.;
			12.5 to	470 ft. lbs. @ 1; 425 h.p. @ 480 ft. lbs. @	5600 4400	r.p.m.; r.p.m.
COMPRESSION RATIO						1550
(To reduce the the head surface For each .010"	er Volumevolume of the combustion volume of the combustion ce. The cylinder head surf removed from the cylinde le of the intake manifold	cham ace fi er hea	nber 1 c.c., nish shoul ad .012" m	, .005" must be d be 100-120 m just be removed	mille nicro-i 1 fron	d from inches.
Distance from ton o	f the lower flat of piston					
to the block de	ck			Minimum 015	5" (11	to 1);
				.018	" (12	5 to 1)
			N	/laximum — .045	5" (11	to 1);
	5 P				" (12.	5 to 1)
throttle at mini	ire with engine warm, spar imum cranking speed of 12	k plu 0 r.p.	m	d, wide-open 140-180 p.: 150-190 p.s.	s.i. (1 i (12	1 to 1) 5 to 1)
Maximum Variation	between Cylinders				2	5 p.s.i.
CYLINDER NUMBERING	3					
CYLINDER BLOCK						
Cylinder Bore	of-Round (maximum allowa		****		.250"	-4.252"
Cylinder Bore Out-o	of-Round (maximum allowa	ible b	efore reco	nditioning)		005"
Cylinder Bore Tape	r (maximum allowable before	ore re	econditionii	ng)	2020 20	010"
Reconditioning	Working Limits (for taper	and o	ut-of-roun	ıd)		001"
Maximum Allowable	e Oversize (cylinder bores)					050"
Dietributer Lower D	ter rive Shaft Bushing (press	fit in	blook		UCOL.	9058" " 004"
Roam or Rurnis	sh to	nt m	DIOCK)		1965	* 199"
Shaft-to-Bushing Cl	earance				0007"	0027"
INTAKE MANIFOLD						
Type					Sho	rt Ram
Attaching Bolt Torq	ue				30	ft. ibs.
CRANKSHAFT AND MA		.96	200200	a 7 % 1	12.52	884
Bearings	Counter-Bala				Ťr	i-metal

DETAILED SPECIFICATIONS (Continued)

ADAMIZOHAET	ABID	BEALEL	DEADINGE	101:
CRANKSHAFT	AIVI	VIAIN	BEARINGS	(Conminueo)

Diameter Connecting Rod Journal	
Number of Main Bearings Clearance Desired	0015"- 0040"
Maximum Clearance Allowable Before Reconditioning.	
End Play	
Finish at Rear Seal Surface	Diagonal Knurling
Interchangeable Bearings	ver Nos 1 2 4 5
Main Bearing Bolt Torque	85 ft. Ibs.
MAIN BEARINGS	
Crankshaft Bearings in Standard and the	
following Undersizes	
	ailable for Service
CONNECTING RODS AND BEARINGS	
TypeDrop-	Forged "I" Beam
Length.	6.766″-6.770″
Weight (less bearing shells). Bearings	842-850 gms.
Diameter and Length	2.376" x .927"
Clearance Desired	
Maximum Allowable before Reconditioning	
Side Clearance	ilable for service)
D. I. D. I. N. I. T.	
Connecting Rod Nut Torque	50 ft. lbs.
	50 ft. lbs.
CAMSHAFT	50 ft. lbs.
CAMSHAFT Drive	50 ft. lbs.
CAMSHAFT Drive Bearings Ste Number	
CAMSHAFT Drive Bearings Ste Number Thrust Taken by	
CAMSHAFT Drive Bearings Ste Number Thrust Taken by Desired Clearance	
CAMSHAFT Drive Bearings. Ste Number. Thrust Taken by Desired Clearance. Maximum Allowable Before Reconditioning.	
CAMSHAFT Drive Bearings Sten Number Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS	
CAMSHAFT Drive Bearings. Ste Number. Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning. CAMSHAFT BEARING JOURNALS Diameter	
CAMSHAFT Drive Bearings	
CAMSHAFT Drive Bearings Stenumber Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2	
CAMSHAFT Drive Bearings Sten Number Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2 No. 3 No. 4	
CAMSHAFT Drive Bearings Stenumber Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2	
CAMSHAFT Drive Bearings Sten Number Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2 No. 3 No. 4	
CAMSHAFT Drive Bearings. Ste Number. Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning. CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2 No. 3 No. 4 No. 5	
CAMSHAFT Drive Bearings Sten Number Thrust Taken by Desired Clearance Maximum Allowable Before Reconditioning CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2 No. 3 No. 4 No. 5 CAMSHAFT BEARINGS	
CAMSHAFT Drive Bearings	
CAMSHAFT Drive Bearings. Ste Number. Thrust Taken by Desired Clearance. Maximum Allowable Before Reconditioning. CAMSHAFT BEARING JOURNALS Diameter No. 1 No. 2 No. 3 No. 4 No. 5 CAMSHAFT BEARINGS Diameter (after reaming) No. 1 No. 2 No. 3 No. 4 No. 5	
CAMSHAFT Drive Bearings	

DETAILED SPECIFICATIONS (Continued)

TIMING CHAIN (Special Heavy Duty)
Adjustment None
Number of Links
Width
TAPPETS
Type Mechanical (solid) Clearance (in block) .0015"0028" Body Diameter .9030"9035" Available Oversize Std001", .008", .030"
Valve Tappet Clearance (engine cold)
Intake (engine cold) *.028" Exhaust (engine cold)
PISTONS
Type
Weight
(12.5 to 1) 4.44"
Pistons for Service
PISTON PINS
Type Press Fit in Rod Diameter Diameter 1.0935"-1.0937" Length 3.555"-3.575" Clearance in Piston .0006"0009" Interference in Rod .0007"0012" Piston Pins for Service Std. Only
PISTON RINGS
Number of Rings per Piston 3 Compression 2 Oil 1
Width of Rings Compression
0il
Piston Ring Gap013"050"
RING SIDE CLEARANCE
Compression
Upper .0020"0035" Intermediate .0020"0035"
Oil
VALVES—Intake
Head Diameter

DETAILED SPECIFICATIONS (Continued)

VALVES—Intake (Continued)
Maximum Allowable Before Reconditioning
Angle of Seat
Lift
VALVES—Exhaust
Head Diameter
Stem Diameter 371"- 372"
Stem Diameter .371"372" Stem Diameter Available for Service .005", .015", .030"
Stem-to-Guide Clearance
Stem-to-Guide Clearance
Angle of Seat
Angle of Seat 45° Lift .520" (zero clearance)
VALVE SPRINGS
Number
Free Length 1.867" (inner): 2.14" (outer)
Free Length
(outer) 90 to 100 lbs @ 155/4"
Valve Open (inner)
Valve Open (inner)
Valve Spring Diameter. 1.070"-1.090"
Surge DamperSpiral Type
VALVE GUIDES
Type
Guide Bore Diameter
CYLINDER HEAD
Combustion Chamber Wedge Type
Valve Seat Runout (Maximum)
Intake Valve Seat Angle
Intake Seat Width
Exhaust Valve Seat Angle
Exhaust Seat Width
Cylinder Head Gasket Compressed (thickness)
Cylinder Head Bolt Torque*70 ft, lbs
ENGINE LUBRICATION
Pump Type Rotary Full Pressure Capacity **5 qts. (add one qt. with filter change)
Capacity**5 qts. (add one qt. with filter change)
Pump Drive
Oil Pressure (at idle)
Oil Eilter Type Eull Flow
Oil Filter Type Full Flow Pressure Drop Resulting from Clogged Filter 7-9-lbs.
OIL PUMP—INSPECTION LIMITS FOR REPLACEMENT
The state of the s
Filter Base Surface
Outer Rotor Diameter 2,469" or less
Inner Rotor Length
Clearance Over Rotor—Outer
Inner
Outer Rotor Clearance
Tip Clearance Between Rotors
*Uses special hardened cylinder head bolt washer.
**Check oil level indicator (dip stick) and change if necessary to correspond to correct level.
Maintaining proper oil level is necessary during acceleration trials.

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DETAILED SPECIFICATIONS (Continued)

FUEL PUMP	
Pressure	
CARBURETOR	
Type	Two 4-Rhl Downdraft
Model	AFB 3705-SA
Throttle Bore	
Primary	
Secondary	
Main Venturi	
Primary	
Secondary	
Primary	104" (120-161)
Secondary	hrottle Lever Side .089" (120-159)
	Choke Lever Side .063" (120-176)
Step Up Rod (2 stage)	TENER PROPER TO THE TAXABLE PROPERTY OF THE PROPERTY OF THE PERSON OF TH
Standard	2 Stage; .0665", .053" (16-76)
Adjustments	177 # 21
Accelerator Pump (top of plunger to air horn) Idle Speed (engine hot)	1//32" (long stroke, inner hole)
Secondary Throttle Lever Adjustment	
Secondary Throttle Lockout Adjustment	.020″
Float Setting	
Float Drop	3/4 "
Idle Mixture (both screws open).	1½ Turns
Choke	
NOTE: Secondary Blades Stop 5° \pm 1° Before Vertical	al at Wide Open Throttle. Primary-
IGNITION SYSTEM	
Distributor Assembly (Prestolite)	Identification No. 2444335
Model Number (Prestolite)	IBB-4202-A
Type Advance Automatic Distributor Degress at Distributor r	Double Breaker
Advance Automatic Distributor Degress at Distributor r	o°-3.5° @ 5750° @ 425-575
	11°-13° @ 1030
Advance-Vacuum (distributor degrees at inches of mer	curv)
Breaker Point Gap	
Dwell Angle	
One Set Points	27°-32°
Both Set Points	34°-40°
Breaker Arm Spring Tension Timing	10° R T D C @ 200 engine r p m
Condensor Capacity	25- 285 mfd
**Shaft Side Play (new or rebuilt)	
Shaft End Play (after assembly)	.003″010″
Rotation.	
Spark Plugs	14MM 3/ / Pooch
Gap.	
Firing Order	
Coil	Chrysler (Prestolite); 2495531
**Service wear tolerance should not exceed 006"	Chrysler (Essex) 2444241
**Service wear tolerance should not exceed 1006"	

^{**}Service wear tolerance should not exceed .006"

DETAILED SPECIFICATIONS (Continued)

IGNITION SYSTEM (Continued)
Identification No
Essex 67-160-4 Primary Resistance @ 70°-80° F
Secondary Resistance @ 70°-80° F
Ballast Resistor
Resistance @ 70°-80° F
Current Draw (coil and ballast resistor in circuit)
Engine Stopped 3.0 amps. Engine Idling 1.9 amps.
CLUTCH
Free-Play Adjustment
REAR AXLE
Axle Shaft End Clearance
AUTOMATIC TRANSMISSION
Line Pressure
FLUID—Automatic and Manual Transmissions
CAPACITIES—Transmissions
Manual 3-Speed 3¼ pts Manual 4-Speed 7½ pts Automatic 18 pts

DETAILED SPECIFICATIONS (Continued)

IGNITION SYSTEM (Continued)
Identification No
Primary Resistance @ 70°-80° F
Secondary Resistance @ 70°-80° F
Ballast Resistor
Resistance @ 70°-80° F
Current Draw (coil and ballast resistor in circuit)
Engine Stopped 3.0 amps. Engine Idling 1.9 amps.
CLUTCH
Free-Play Adjustment
REAR AXLE
Axle Shaft End Clearance
AUTOMATIC TRANSMISSION
Line Pressure
FLUID—Automatic and Manual Transmissions
CAPACITIES—Transmissions
Manual 3-Speed 3½ pts. Manual 4-Speed 7½ pts. Automatic 18 pts.

NOTES



