

WINDSOR SR. SMALL BLOCK FORD CYLINDER HEAD**Technical instructions for assembled & bare head part numbers:**

053040	I-061	Bare head, 20° valve angle, 180cc intake runner, 64cc chamber
053040 - 1		Assembled head, for Hydraulic flat tappet camshaft
053040 - 2		Assembled head, for Mechanical flat tappet or hydraulic roller camshaft
053040 - 3		Assembled head, for Solid roller camshaft

**Specifications:****Intake Runners:** 200cc Port Dimension: 2.070" x 1.100"**Exhaust Runners:** 64cc Port Dimension: 1.300" x 1.220"**Combustion Chamber Volume:** 64cc**Valve Guides:** Integral cast iron guide**Valve Guide Spacing:** Ctr-Ctr 1.860" Stock Location**Valve Seats:** Intake = integral cast iron seat, Exhaust = Durabond Powdered metal seat .006" press fit**Valve Seat Dimension:** Exhaust = O.D. 1.650" x 1.280 x .375"**Valve Seat Angles:** Intake = 38°-(45°(.040"))-60°-75° Exhaust = 38°(45°(.060))-500radius-75°**Intake Valves:** 2.020" 11/32" x Std Replacement part # 702810BP (For -1 Head assemblies)
2.020" 11/32" x Std Replacement part # 702810SF (For -2 Head assemblies)
2.020" 11/32" x.100" Replacement part # 702815RM (For -3 Head assemblies)**Exh. Valves:** 1.600" 11/32" x Std Replacement part # 702705BP (For -1 Head assemblies)
1.600" 11/32" x Std Replacement part # 702705SF (For -2 Head assemblies)
1.600" 11/32" x.100" Replacement part # 702705RM (For -3 Head assemblies)**Valve Locks:** 7 degree stamped steel locks. Replacement part # 702155-16 (for -1 &-2 head assemblies)
10 degree machined steel locks. Replacement part # 702156-16 (for -3 head assemblies)**Valve Seals:** Umbrella valve seal. Replacement part # 702177-16 (for -1 &-2 head assemblies)
Teflon valve seal. Replacement part # 702179-16 (for -3 head assemblies)**Valve Springs:** 1.250" O.D. single valve spring. Seat pressure 100 lbs. @ 1.810 Replacement part # 702202-16 (for -1 head assemblies)
1.437" O.D. dual valve spring. Seat pressure 125 lbs. @ 1.810 Replacement part # 702204-16 (for -2 head assemblies)
1.550" O.D. dual valve spring. Seat pressure 200 lbs. @ 1.900 Replacement part # 702206-16 (for -3 head assemblies)**Spring Retainers:** 1.250" O.D. single valve spring Replacement part # 702102-8
1.437" O.D. single valve spring Replacement part # 702104-8
1.550" O.D. single valve spring Replacement part # 702106-8**Pushrod Guide Plates:** flat style hardened steel guide plate. Replacement part # 702352-8.

NOTE: Hardened pushrods MUST be used with guideplates. The plates MUST be adjusted to obtain proper rocker/ valve tip alignment.

Pushrods: To obtain proper rocker geometry, pushrod length will need to be determined by using an adjustable checking pushrod.**Rocker Arms:** adjustable Stud mounted Rocker arms. If using stock style stamped steel rockers a Manley fulcrum kit will be needed.

NOTE: When using rocker arms greater than a 1.5 ratio, it may be necessary to elongate the pushrod guide holes in the cylinder head.

Rocker Arm Studs: 3/8 rocker arm stud. Screw in style Replacement part # 702300-8 (for -1 head assemblies)
7/16 rocker arm stud. Screw in style Replacement part # 702302-8 (for -2 head assemblies)
7/16 rocker arm stud. Screw in style Replacement part # 702304-8 (for -3 head assemblies)**Rocker Stud Girdle:** Stock girdle will work. World Products 7/16" part# 702453**Head Bolts:** standard SBF head bolt hardware (ARP bolts 154-3607)**Head Studs:** standard SBF head Stud hardware**Head Gaskets:** Fel Pro 1011-2**Intake Manifold:** any conventional SBF intake manifolds**Intake Gaskets:** Felpro 1262 or equivalent**Header Gaskets:** Fel Pro 1415 or equivalent. NOTE: Use FelPro# 1487 for wide bolt pattern**Pistons:** Most 20° aftermarket pistons**Spark Plugs:** .460" reach, 5/8" hex plug, recommended starting point Accel #276 or equivalent. Clearance issues try Accel 276S.**Emissions:** To activate the smog rail, you will need to drill five holes in each cylinder head. One in each exhaust port and one in the heat crossover on the intake side. To begin, the heads will need to be disassembled before drilling. Then in the roof of each exhaust port, make a center punch mark in the center of the port ¼ of an inch in. Use a 3/16 drill bit to drill an intersecting hole from the roof in the exhaust port into the smog rail. In the center of the head, on the intake side is the heat crossover passage. There you will need a ¼ drill bit six inches long to drill through the heat crossover passage to the exhaust bowl. This procedure will activate the smog rail making the cylinder head emission legal.

CARB Exemption: When the smog rail is activated this product is certified as 50 State Legal under E.O. # D-343. The included exemption sticker MUST be placed next to your vehicle's emission sticker.

Head Bolt Torque Specs: (with oil) 289 - 302: Upper Row 80 ft. lbs. Lower Row 70 ft. lbs. **351W:** All bolts 100 ft. lbs. NOTE: Refer to the factory service manual for proper head bolt tightening sequence.

Rocker Arm Studs: 55 ft. lbs. w/oil

NOTE: Specs are for reference only. Always measure before machining. REMEMBER: MEASURE TWICE, CUT ONCE.

Maximum Valve Diameter: 2.080 Intake & 1.600 Exhaust.

Maximum Spring Seat Depth: Spring seat is cut to accept a 1.550 spring. IT IS NOT RECOMMENDED TO CUT THE SPRING SEAT DEEPER

Maximum Spring Diameter: 1.625

Maximum Flat Mill: .040

Maximum Angle Mill: .175

Approximate Milling Guidelines: .0065 per 1cc

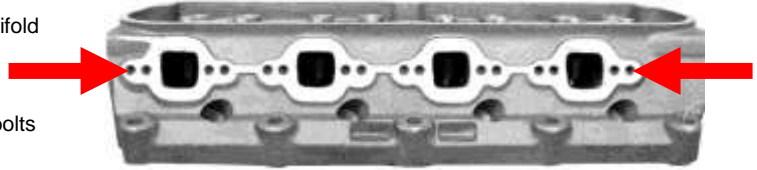
Drilling Block Water Holes for OE 289 Ford Engines:

When using Windsor Jr. heads on original 289 blocks, follow this procedure. Using a 302/351W head gasket as a template, drill the small holes to the left of the top center head bolt holes in the block using a 1/4" drill bit. Also check the intake manifold for bolt pattern. Some early intakes used more bolts. Plug extra manifold holes.



WINDSOR SR. Head Modification:

If the outer exhaust flange bolt holes are not used with your exhaust manifold or header installation, it is advisable to plug those holes. Use a 3/8 - 16 threaded set screw with thread sealant and secure tightly.



If the holes are required for exhaust headers, use thread sealant on the bolts each time they are removed and installed.

Brackets and Accessories:

1. If you need to use the AIR Reactor hole in the cylinder head to mount your accessories, a reducer bushing will need to be used. The part is available from Ford under part # F4ZZ6E086A.
2. Due to relocated cooling passages in the head, the accessory bolt hole closest to the exhaust side of the head has been moved approximately 1/8 inch. If this bolt hole is needed, the locating hole in the bracket will have to be slotted for proper alignment.

Before Final Assembly:

Please inspect castings for defects or damage prior to modification, assembly or installation. Cylinder heads that have been modified, installed or used ARE NOT RETURNABLE. At this time install the cylinder head to the block with no head gasket and snug the bolts.

1. Due to different ratio rockers and different deck height blocks, now is the time to check for pushrod to cylinder head interference. If the pushrod has interference with the cylinder head, remove the head, grind the casting the needed amount. Clean the head after grinding then reinstall the head using the mock up procedure and recheck the clearance. Repeat the procedure as necessary until the desired clearance is achieved.
2. Once everything has been checked and all the desired clearances and specifications achieved, final assembly may begin.
3. If a new flat tappet camshaft is being installed with a-2 cylinder head, it is HIGHLY RECOMMENDED to remove the inner valve spring during the camshaft break in procedure. After the cam is broken in, reinstall the inner valve spring.
4. If you bought bare castings then remember, you must wash the heads before assembly.

ATTENTION:

As a safety precaution, due to the nature of all sand castings occasionally an exhaust, valve cover, intake manifold and rocker arm studs may go through into the water jacket or an intake port some are by design. This is rare but can happen and will not always be evident by the naked eye or even sometimes may pass a pressure test. So with that said and to insure that you do not run into a problem of leaks, we recommend that you use thread sealer on these bolts or studs. Better safe than sorry!

WARRANTY CLAIMS: (See Warranty Sheet that came with item for specific details)

Contact Customer Service to obtain a Return Material Authorization number directly from World Products for any warranty return. **DO NOT CONTACT YOUR DEALER. DO NOT RETURN PARTS WITHOUT AUTHORIZATION.** Returned product must be shipped prepaid. Collect shipments will be refused. Returned parts must have RMA number on the outside of the package, a copy of original bill of sale inside and a written explanation of the suspected defect. If the item is found defective, World Products will repair or replace it at its discretion and return it freight prepaid. No additional labor claims will be paid. There will be no exceptions to this rule.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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