

45.3 General Motors 350 cubic inch engine

Below are the engine rules for the 350 engine option, stating specifically what is allowed for its use. Any modification or components not listed below are not allowed.

- 45.3.1 Engine parameters:** Maximum displacement - 358 cubic inches. Compression ratio - 9.19:1 (+ 0.1 or 9.29:1 Max)
- 45.3.2 Block:** Stock cast iron production GM V-8 style block with standard external measurements only, no V-6 or 4 cylinder blocks allowed. Identification numbers may not be removed. No grinding or lighting allowed.
- 45.3.3** A maximum of three cylinder bores and/or a maximum of seven lifter bores may be sleeved. (No indexing lifter bores)
- 45.3.4** Only aftermarket engine block permitted; Dart SHIP P/N: 31161111.
- 45.3.5 Crankshaft:** Steel magnetic crankshafts only, minimum weight: 50 lbs. including balancing. Unaltered in any way except for normal cleanup and balancing. May not be contoured or sculptured. Stock aftermarket "as cast" (over the counter) "knife edge" from major manufacturer is allowed. No modifications after purchase allowed. Stroke: 3.480" \pm 0.010". Stock main journal (2.4450") and rod journal (2.100") sizes only (undercut maximum: 0.030").
- 45.3.6 Connecting Rods:** Any large journal magnetic steel type connecting rods only. Maximum length: 5.700" \pm 0.010". Minimum weight: 600 grams including cap, bolts, and/or nuts. Must use full floating pins. No titanium or aluminum rods.
- 45.3.7 Pistons:** Any piston may be used. Pistons must remain in stock configuration. Piston skirt must be a full round. No FSR style pistons. No portion of the piston may protrude above the top of the block (measurement excludes head gaskets). No gas porting of piston ring lands and no top of piston coating of any kind. Ring lands must remain in standard location. Minimum distance between top of piston and top of first ring (compression): 0.180". The weight of each piston should not be less than 590 grams including the wrist pin and "C" clips and rings. Maximum size over standard piston allowed (0.040").
- 45.3.8 Piston Rings:** Must be of the type supplied by General Motors. The 1st and 2nd rings (compression) must be 1 piece design. 3rd ring (oil) must be 3 pieces design, consisting of 2 rails and 1 expander. Moly file fit rings allowed. Minimum thickness of rings 1/16" for top and second. 3/16" for oil control ring. No gapless rings allowed.
- 45.3.8.1 Options 1 Camshaft:** Purchase and/or alteration must be done through the APBA Inboard office (586) 773-9700 or Regates de Valleyfield committee. Michel Pourier (450) 371-6144 ext. 223. During the inspection process the maximum valve lifts are as follows: Intake: 0.467" Exhaust: 0.480".
- 45.3.8.2 Option 2:** Comp Cams part # 12-675-4.
- 45.3.9 Valvetrain:** Stock diameter magnetic steel hydraulic or solid flat tappets with a maximum diameter of 0.842". Stock sized push rods only. Size 5/16" all the way (no titanium or exotic material). No mushroom or roller tappets. No rev kits. Double roller or standard timing chain only, no gear drive or belt drive systems. Roller rocker arms allowed. No shaft rocker arm systems. 1.50 Ratio only. Stud girdles allowed. Valve Springs - Any valve spring may be used, maximum diameter: 1.250" (\pm 0.010"). Spring retainer: Steel only, no exotic material. Standard diameter cam bearing only, no cam roller bearing allowed.
- 45.3.10 Head:** Purchase and/or alteration must be done through the APBA Inboard office (586) 773-9700 or Regates de Valleyfield committee. Michel Pourier (450) 371-6144 ext. 223 The only allowable head for use is Dart Part #:10021070 Dart Iron Eagle S/S 165 and must have the official APBA or ACHA stamp on at all times. Heads must remain unaltered in any way except for flat milling of deck. (No angle milling allowed). Machining outer edge of valve guide for smaller valve seals and bronze liner allowed. Combustion chamber, intake and exhaust ports must be in the original 'as cast' configuration. Minimum volume of the combustion chamber: 64 cc. Head intake runner volume: 175cc (\pm 2cc). Head exhaust runner volume: 70cc. (\pm 2cc). Valves must be in stock location and at stock angle. Screw in studs (maximum size 0.4375") and guide plates allowed. No gasket matching. Any evidence of sanding, polishing, relieving, grinding, porting, chemical treating, ceramic work, abrasive blasting, and alteration of the original form or the addition of material to the ports or combustion chambers are prohibited. Dart Iron Eagle S/S 165 tech sheet will be used for thorough inspection.
- 45.3.11 Valves:** Any manufacturer may be used, no titanium or exotic material. Seat angle must be 45 degrees. Swirl polish allowed. Maximum exhaust diameter: 1.500" with a minimum stem diameter of 0.340". Maximum intake diameter: 1.940" with a minimum stem diameter of 0.340". Valve stem must remain the same size all the way. No back-cut allowed.
- 45.3.12 Intake Manifold:** Only an Edelbrock 7101 dual plane aluminum intake manifold is allowed. Cooling bleed lines allowed. Any evidence of sanding, polishing, relieving, grinding, porting, chemical treating, abrasive blasting, ceramic work, addition of material or any alteration and modification of the original form is prohibited.
- 45.3.13 Carburetor/Spacer:** Holley 4412 carburetor or Holley HP #80583-1 allowed. Venturi size: 1.375", Throttle bore: 1.687". The carburetor must pass top and bottom dimension tool specs. Choke plate may be removed but no removal of choke housing. No other visible modifications allowed on or inside the carburetor. Standard boosters only and must be tightly mounted. No annular boosters. Epoxying or safety wiring of boosters recommended. No vacuum leaks. No turtles or other induction performance enhancing devices. No other systems allowed. The use of two return springs is mandatory. An over-center throttle stop is recommended. Carburetor adapter (Spacer) Bicknell #376 (Max. 1.00") only, no modification allowed to adapter except for attaching hardware such as a throttle bracket. An additional maximum size thickness straight bore spacer of 1.00" may also be used. Maximum of 3 gaskets for a total thickness of 0.266" allowed.
- 45.3.14 Method for checking the camshaft profile for the 350 cam:**
- **Tools required:** One 6" or 8" degree wheel attached to rotor button in the distributor; one 500 thousandths travel dial indicator and a wire pointer.
 - **Procedure:** Rotate engine in normal direction until the lifter is on the heel of the camshaft lobe. Set dial indicator on valve spring retainer. Adjust valve lash until dial indicator reads .001. Set dial indicator back to zero. Rotate engine in normal direction until indicator reads .050 stop. Set degree wheel to zero degrees or TDC mark on degree wheel. Rotate engine in normal direction and check every .050 thousandths lift. Read degrees on degree wheel.
- Lobe separation:** Comp Cam: 110° ACHA Cam: 112°

Inspectors note: If the engine to be inspected is using hydraulic lifters, the inspector should have among his inspection tools two solid lifters and two adjustable push rods.

Exhaust Lobe			Intake Lobe		
Cam	Comp	ACHA	Cam	Comp	ACHA
Lift	Degrees		Lift	Degrees	
0.050	0	0	0.050	0	0
0.100	6	5.5	0.100	5	5
0.150	11	10.5	0.150	10	10
0.200	16	15.5	0.200	15	15
0.250	20.5	20	0.250	20	19.5
0.300	25.5	25	0.300	24.5	24.5
0.350	31	30.5	0.350	30	30.5
0.400	37	37	0.400	36.5	37.5
0.450	46.5	47	0.450	46.5	49.5
0.476*	60.5		0.469*	56.5	
0.471**		59.5	0.458**		57.5
0.450	73.5	72	0.450	69	66
0.400	82	81	0.400	78	77.5
0.350	88.5	87.5	0.350	85	84
0.300	94	93	0.300	90	89.5
0.250	98.5	98	0.250	95	94.5
0.200	103.5	103	0.200	99.5	99
0.150	108.5	108	0.150	104.5	104
0.100	113.5	113	0.100	109.5	109
0.050	119.5	119	0.05	116	114.5

*Measured Max lift and degree of Comp Cam

** Measured Max lift and degree of ACHA Cam

45.3.15 Ignition: Any factory stock HEI type ignition only. No crank triggers. No external super coils. No aftermarket multiple spark discharge control boxes. Firing order must remain stock GM: 1.8.4.3.6.5.7.2.

45.3.16 Oil system: Aftermarket oil pans and breather allowed. Wet sump Oil pump must remain in stock location. Dry sumps allowed. Maximum three stages only. Oil coolers allowed 'Aeroquip' type oil lines only.

45.3.17 Fuel: See General Technical 40.18.12, a. through e. only allowed.

45.3.18 Fuel & Oil lines: Fuel lines must mount in a position to reduce damage, usually on front side of pump. No fuel lines shall pass through the driver's compartment. No plastic fuel filters. No plastic pressure lines - No pressurized fuel tanks. Any type of fuel pump is allowed. (Electric pump must be connected to oil pressure switch)

45.3.19 Miscellaneous: The following items may be of any manufacture: gaskets, spark plugs, wires, bearings, filters, fuel lines, hoses, fittings, valve covers, breathers, nuts, bolts, washers, fittings and exhaust system unless specified in these rules.

45.4 General Motors 305 cubic inch engine - Modified

Below are the engine rules for the 305 - Modified engine option, stating specifically what is allowed for its use. Any modification or components not listed below are not allowed.

The word "stock" as used in these rules is understood to mean the part in question will be used as it was supplied to the general public by the original motor manufacturer. The term "stock replacement" is understood to mean the part is sold to the public as a direct replacement for a stock part, without modification. Its marketed purpose must be for use in rebuilding an engine to stock specifications; not to increase power. The intent of stock replacement parts being included in these rules is to keep cost down and allow the use of readily available parts. No titanium parts are permitted.

45.4.1 Maximum displacement - 313 cubic inches

45.4.2 Block: The engine must be a General Motors V-8 305 Cubic Inch 4 barrel carburetor motor. Grinding, polishing or blasting any internal part that results in smoothing, recontouring or enlarging is prohibited. Parts must be used as furnished by General Motors. Alterations are not permitted except as specified herein. Bore 3.781" max. This allows the use of .040" oversized dished pistons. Stroke 3.480" plus or minus .010. Block may be bored, honed, align bored, deburred and resurfaced in order to achieve the desired deck height or protrusion of the pistons. The block may be decked. Top of piston must be below the top surface of the compressed head gasket a minimum of .030". Deburring is not to be confused with grinding/polishing. Grinding and polishing are prohibited. For the purpose of salvaging a damaged cylinder block, a maximum of four cylinders and/or a maximum of four lifter bores may be sleeved. Engines may be painted internally to enhance oil flow. External parts may be painted or chromed to enhance appearance. All unnecessary parts outside of the engine may be removed to permit installation into the boat. Water and Oil passages may be blocked, water passages may be modified. Lifter valley baffles, stand pipe and/or screens are permitted. Water and oil passages may be blocked.