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Click the image to learn more. Headquartered in Milwaukee for over a century, the Briggs and Stratton Corporation began in 1908 as a partnership between inventor Stephen F. Briggs and investor Harold M. Stratton.[1] The company initially focused on manufacturing automobile parts such as locks, igniters, and starter switches, the last of which accounted for most of the company's business as the automobile's popularity soared in the early decades of the twentieth century. In 1919 Briggs & Stratton acquired the A.O. Smith Motor Wheel, a small engine that would drive research and development toward the four-cycle gasoline engine.[2] These engines were later installed in washing machines, garden tractors, cultivators, and gas-powered generators.[3] As the demand for gas engines grew, Briggs & Stratton developed new models for different purposes. The company's engines were manufactured for personal use, agriculture, and military logistics. 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In 1981, its success landed the company on a Fortune 500 list that ranked Briggs & Stratton Corporation number 382 out of America's 500 most profitable companies.[8] But the oil crisis of the late 1970s, combined with concern for the environment and small engine competition from Japanese businesses, prompted major investment in engine research and development. The company experimented with gas-electronic motors and created Vanguard, a new line of industrial/commercial products.[9] It also aggressively pursued international markets by allying with the Daihatsu Motor Company and Mitsubishi Heavy Industries.[10] Briggs & Stratton expanded their brand by creating the Motorsports Division in the 1990s, producing engine parts, racing gear, and the most racing engines by any one company in the world.[11] As of 2011 Briggs & Stratton employed over 3,000 people across the United States, producing more than nine million small engines every year. Over 16,000 dealers and retailers stocked and sold Briggs & Stratton products throughout the country and internationally.[12] Matthew Costello Anderson, Harry H. and Frederick I. Olson. Milwaukee: At the Gathering of Waters. Milwaukee: Milwaukee County Historical Society, 1981. Gurda, John. The Making of Milwaukee. Milwaukee: Milwaukee County Historical Society, 1999. Rodengen, Jeffrey L. The Legend of Briggs & Stratton. Fort Lauderdale: Write Stuff Syndicate, 1995. View Location on Map See Also Economy Industrial Landscapes City of Wauwatosa Roman Kwasniewski's 1924 photograph of a gear twice as tall as a man reflects industrial Milwaukee's special skill in metal fabrication. Milwaukee county residents enjoy summer sunshine and sand on Lake Michigan's shoreline in 1985. Image of David Lenz's Wishes in the Wind courtesy of David Lenz and the Suzanne and Richard Pieper Family Foundation. This photograph from around 1920 shows the Basilica from the lagoon in Kosciuszko Park. Automobiles and boats traverse Milwaukee's downtown by the Michigan Avenue Bridge in this 1974 photograph by Harold Mayer. The German sense of conviviality and comfort animated social gatherings among Milwaukeeans of various ethnic backgrounds, even at this "Hard Time party" taken by Roman Kwasniewski in 1924. Roman Kwasniewski's 1924 photograph of a gear twice as tall as a man reflects industrial Milwaukee's special skill in metal fabrication. Welcome to the Encyclopedia of Milwaukee, a Digital Humanities Project sponsored by the History Department in the College of Letters and Science at the University of Wisconsin-Milwaukee. The EMKE offers approximately 700 entries on Milwaukee history topics ranging from arts and culture to philanthropy and nonprofit organizations to business and labor. We invite you to explore our content, learn more about the development of the project, and read our Frequently Asked Questions. Expand the "Explore More" button at the bottom of entries to read user comments and additional stories about how our authors wrote their contributions. If you would like to offer public feedback on an entry, you may register for a user account (look on the right hand side of the blue bar above) and then scroll down to the Comments section of the entry you would like to tell us more about. You may also use the Contact page to send us a direct message or the Support page. Margo Anderson and Amanda I. Seligman, Editors Robert George "Bob" Uecker was best known as a Milwaukee Brewers' radio broadcaster, but he also gained fame as a national baseball commentator, actor, author, and commercial spokesman. Born in Milwaukee on January 26, 1935,... Read More Chosen Solution Jeff, double check your numbers. I believe it should be 31C777-0173-E1 which makes your engine a MODEL 310000 VERTICAL SERIES Valve Clearance – Intake .003 - .005 in. (.08 - .13 mm) Valve Clearance – Exhaust .005 - .007 in. (.13 - .18 mm) Hope this helps, good luck Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help I have a 2013 Troy Bilt Pony 42" lawn tractor with the Briggs and Stratton 17.5 engine. It does the thing where when i turn the key it turns a little stops at compression turns a little more stops again at compression, etc. If I take the spark plug out and turn the key it turns over normally. The battery is good and every thing I've learned by googling and watching youtube videos says to adjust the valves. I've adjusted both valves to .004 as one youtuber suggests, and to .004 intake and .006 exhaust as others say). I've tried both settings several times and keep having the same problem when I put the spark plug back in and turn the key. both the intake and exhaust enter and exit near the top of the valve housing so I'm not certain which valve is which. 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Release mechanism next to gear. faces sump cover which on side shaft engines is under the muffler, but on Vertical engines with the cross flow head the intake is closest to the sump cover and the compression release next to the gear therefore opens intake. Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help Releasing compression via the Intake valve has been a long standing practice with B&S whether flat head or OHV. Not all of them but a lot. Walt Conner Click the image to learn more. Headquartered in Milwaukee for over a century, the Briggs and Stratton Corporation began in 1908 as a partnership between inventor Stephen F. Briggs and investor Harold M. Stratton.[1] The company initially focused on manufacturing automobile parts such as locks, igniters, and starter switches, the last of which accounted for most of the company's business as the automobile's popularity soared in the early decades of the twentieth century. In 1919 Briggs & Stratton acquired the A.O. 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If you would like to offer public feedback on an entry, you may register for a user account (look on the right hand side of the blue bar above) and then scroll down to the Comments section of the entry you would like to tell us more about. You may also use the Contact page to send us a direct message or the Support page. Margo Anderson and Amanda I. Seligman, Editors Robert George "Bob" Uecker was best known as a Milwaukee Brewers' radio broadcaster, but he also gained fame as a national baseball commentator, actor, author, and commercial spokesman. Born in Milwaukee on January 26, 1935,... Read More Chosen Solution Jeff, double check your numbers. I believe it should be 31C777-0173-E1 which makes your engine a MODEL 310000 VERTICAL SERIES Valve Clearance – Intake .003 - .005 in. (.08 - .13 mm) Valve Clearance – Exhaust .005 - .007 in. 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The Legend of Briggs & Stratton. Fort Lauderdale: Write Stuff Syndicate, 1995. View Location on Map See Also Economy Industrial Landscapes City of Wauwatosa To correctly adjust the valves, the valve springs must be removed (L-head engines only) and have the piston at 1/4″ past TDC on the power stroke. Model Series Intake Valve min/max Exhaust Valve min/max60000-120000 .005/.007″ .007/.009″130000-280000 .005/.007″ .009/.011″230000-240000; 300000,320000 .007/.009″ .017/.019″Twin Cylinder Vanguards 290000, 303000, 350000 .004/.006″ .004/.006″400000, 420000, 460000 .006″/.008″ .009″/.011″28N700, 28P700, 28Q700, 28S700, 28U700, 28W700, 287700 .003″/.005″ .005″/.007″310700, 312700 .003″/.005″ .005″/.007″85400 .002″/.004″ .002″/.004″97700, 99700 .005″/.007″ .005″/.007″104700 .003″/.005″ .003″/.005″115400, 117400 .002″/.004″ .002″/.004″138400 .005″/.008″ .005″/.008″161400 .003″/.005″ .003″/.005″185400 .002″/.004″ .002″/.004″235400, 245400 .004″/.006″ .004″/.006″260700, 261700 .003″/.005″ .003″/.005″ Home | Questions? updated 11-14-04 FORUM! Dear visitors, now our site has a FORUM where you can ask all your questions and share your experience. The Briggs and Stratton 31R977 is a 501 cc (30.6 cu·in) single-cylinder air-cooled four-stroke internal combustion gasoline engine, manufactured by Briggs and Stratton. The B&S 31R977 engine has an OHV (overhead) design and a vertical PTO shaft. This engine is equipped with float type carburetor, integral type fuel pump and an electronic ignition system. The B&S 31R977 engine used a paper cartridge air filter. It is equipped with an electric starter (12V). The cylinder bore is 90.6 mm (3.57 in) and the piston stroke is 77.8 mm (3.06 in). This engine produced 17.7 PS (13.0 KW; 17.5 HP) at 3,600 rpm of horsepower. The breakdown of the engine code is as follows: 31 – Displacement R – Basic design series 9 – Vertical PTO-shaft 7 – Plain bearing, Pressure lubrication 7 – Electric starter General information Engine Specifications Model B&S 31R977 Type 4-stroke, OHV, single-cylinder Displacement 501 cm 3 (30.6 cu-in) Max. horsepower 17.7 PS (13.0 KW; 17.5 HP) at 3,600 rpm Max. torque – Fuel system Float type carburetor Cooling system Forced-air Ignition system Electronic Lubricating system Full pressure Starting system Electric starter Fuel used Gasoline Fuel tank capacity – Cylinder Block and Head Cylinder block Bore x Stroke 90.6 mm X 77.8 mm (3.57 x 3.06 in) Sleeve internal diameter 90.500-90.600 mm (3.563-3.5669 in) Number of piston rings (compression / oil): 2 / 1 Side clearance Top 0.05-0.12 mm (0.002-0.005 in) Second 0.05-0.12 mm (0.002-0.005 in) Oil 0.05-0.12 mm (0.002-0.005 in) Ring end gap Top 0.150-0.230 mm (0.0059-0.0091 in) Second 0.350-0.450 mm (0.0138-0.0177 in) Oil 0.150-0.250 mm (0.0059-0.0098 in) Connecting rod small end ID 20.330-20.370 mm (0.8004-0.802 in) Piston pin outer diameter 20.310-20.290 mm (0.7996-0.7988 in) Cylinder Head Valve Arrangement: OHV (overhead) Valves: 2 Valve steam diameter INTAKE 5.920-5.970 mm (0.233-0.235 in) EXHAUST 5.920-5.970 mm (0.233-0.235 in) Tightening torque specs Tightening torque specs Air cleaner base 6.0 Nm; 4.4 ft·lb Alternator 2.0 Nm; 1.5 ft·lb Armature 3.0 Nm; 2.2 ft·lb Blower housings 10.0 Nm; 7.4 ft·lb Blower housing brackets 10.0 Nm; 7.4 ft·lb Breather 3.0 Nm; 2.2 ft·lb Carburetor to intake manifold 8.0 Nm; 5.9 ft·lb Carburetor solenoid 5.0 Nm; 3.7 ft·lb Connecting rod 17.0 Nm; 12.6 ft·lb Control bracket 5.0 Nm; 3.7 ft·lb Crankcase sump 25.0 Nm; 18.5 ft·lb Cylinder head 25.0 Nm; 18.5 ft·lb Cylinder shield 5.0 Nm; 3.7 ft·lb Exhaust manifold / adapter 19.0 Nm; 14.0 ft·lb Flywheel nut 135.0 Nm; 100.0 ft·lb Flywheel fan 16.0 Nm; 11.9 ft·lb Fuel pump 10.0 Nm; 7.4 ft·lb Governor lever nut 5.0 Nm; 3.7 ft·lb Intake manifold to cylinder head 10.0 Nm; 7.4 ft·lb Muffler 10.0 Nm; 7.4 ft·lb Oil drain plug 11.0 Nm; 8.1 ft·lb Oil fill tube 10.0 Nm; 7.4 ft·lb Oil pump cover 10.0 Nm; 7.4 ft·lb Regulator / Rectifier 5.0 Nm; 3.7 ft·lb Rewind starter 3.0 Nm; 2.2 ft·lb Rocker ball set screw or nut 5.0 Nm; 3.7 ft·lb Rocker cover 7.0 Nm; 5.2 ft·lb Starter motor 16.0 Nm; 11.9 ft·lb Service Information Engine Max speed 3,600 rpm Valve clearance Intake valve clearance 0.08-0.13 mm (0.003-0.005 in) Exhaust valve clearance 0.13-0.18 mm (0.005-0.007 in) Oil system Oil type API SF, SG, SH, SJ or higher Recommended oil Summer: SAE 30, 10W-30 Winter: SAE 5W-30 Oil capacity (with filter) 1.42 L (1.5 US. qt, 1.25 Imp. qt.) Ignition system Spark plug Champion RC12YC Spark plug gap 0.7-0.8 mm (0.0276-0.0315 in) ATTENTION! Dear visitors, this site is not a trading platform, an official dealer or a spare parts supplier, so we do not have any price lists or spare parts catalogs. We are an information portal and provide the technical specifications of gasoline and diesel engines.We try to use verified sources and official documentation, however, differences between sources or errors in entering information may occur. We do not provide advice on technical issues related to the engines operation or repair. We do not recommend using provided information for engines repairing engines or spare parts ordering, use only official service manuals and spare-parts catalogs. FORUM! Dear visitors, now our site has a FORUM where you can ask all your questions and share your experience. Share — copy and redistribute the material in any medium or format for any purpose, even commercially. 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For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Jul 22, 2019 / Briggs 17.5 PROPER valve Adjustment method Debate Hello all, Ok, watched 1000 videos and read a ton. Can you guys tell me best way to adjust the valves on a Briggs single cylinder OHV engine? Debate is: Method 1- These people say set to TDC and a little past (engines with compression release) and then adjust both valves to specs. Method 2- These people say turn engine until 1 valve is completely compressed and the adjust the other valve to spec. Then turn engine and repeat procedure on the opposite valve. (as an aside, many people say set both to .004 and disregard Briggs specs). So.... which camp are you in? I am trying to set these valves and do not want to burn a valve by setting them too tight! Please weigh in and let me know which method you use and why its better then the other. It seems that the manual recommends the TDC method. I AM CONFUSED. Jeff Jul 22, 2019 / Briggs 17.5 PROPER valve Adjustment method Debate I set mine at spec using method 2 ,have NEVER had a problem doing it that way. Jul 22, 2019 / Briggs 17.5 PROPER valve Adjustment method Debate It's taught and taught my students method #1. Haven't ever had a problem. Method #1 is what you will find in every manufacturers service manual. Jul 22, 2019 / Briggs 17.5 PROPER valve Adjustment method Debate It matters not which one you use they both give the same result. Method 1 is what Briggs recommend Method 2 is what most auto mechanics are taught. They are both right so stop obsessing over it. The reason for method 2 is a lot of air cooled MOTORCYCLE engines have closing ramps ground into the cams.' These are designed to make the valve shut slowly which drastically reduces the amount of noise that the valve train makes so it does not sound like your engine is about to blow up every time you run the engine; Indian motorcycles use them and Harleys do not If you ever hear them side by side the Indian engine is a lot quieter , note this is clatter from the engine, not exhaust . Quietening ramps cost power and create more wear on the cam followers. The ideal cam shape would be a sawtooth profile so the valve opens very quickly then slams shut under spring pressure with no resistance from the cam. This is one reason why race engines are so mechanically noisy. Depending upon the grind the gap between the valve stem & the rocker can make a big difference to the engine and is there to allow for thermal expansion. The size of it controls when the valve opens , when it closes & how long it will stay open. Just how critical it is depends totally on the grind (shape) of the pimple on the end of the cam. With a tall and narrow pimple a difference of 0.0001" cam has a massive effect where as on a short & wide pimple (most mowers) 0.001" makes almost no difference. Mower engines have what is called a "Soft" grind where the valves lift slowly, stay open for a long while & close slowly. This robs the engine of potential power but it makes the engine a lot more robust. Because of the soft grind there is a wide range of valve lashes over which the engine will run just fine. Because the exhaust valve gets yellow hot during use while the inlet valve only gets to around 300 deg the exhaust valve needs a bigger space to allow for the extra thermal expansion. Thus the valve lash for the exhaust valve is bigger than the lash for the inlet. On a Briggs engine 0.004" is near the maximum for the inlet & minimum for the exhaust . So to make it easier for those who have no idea about why they are setting the valve lash or are just plain lazy, a lot of techs will use 0.004" on both Thus it rules out the chance that Mr brain dead sets the inlet to the max clearance for the exhaust and the exhaust to the min space for the inlet. To get your head around how "softly tuned" a mower engine is look a the Hp of a single cylinder motorcycle engine of the same c