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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 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. One video I watched which was for riding mowers in general and not Troybilt Pony said the exhaust valve is the one that is on top and the intake valve the bottom one - is this correct? I do notice a sulfur / rotten egg smell when I try to start it - does this help diagnose anything ? I'm at a loss - any suggestions on what I might be doing wrong or whether it might be a problem other than the valves like the solenoid or something would be greatly appreciated. :confused2: I work on my own cars when they need repaired (have done head gaskets, brakes, etc.) but this is the first time I've tried to adjust valves. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help Briggs vertical are intake on top. All of them. You watched the vids and turned the flywheel so they were at the right position when you made the adjustments ?? Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help Briggs single cylinder vertical OHV engine use a crossflow head, Which means the intake is on the bottom. If you are sure you have the valves adjusted correctly, then while turning the flywheel slowly watch for the intake valve/ bottom to bump off seat slightly just before TDC compression. You could have a situation where the flyweight on the camshaft is broken and the compression release no longer works, and will require replacing the camshaft. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help I always thought you were supposed to set them 4 to 4? I'm sure I'm wrong though, And do you think it could be the compression release on the cam? More thane likely not, but sometimes the spring will come off and the CR won't work... But it does sound like something in the head/ valve mechanism.....:smile: ILENGINE, it shouldn't require replacing the entire cam, just the comp. release. It is riveted in on most engines. But in some cases people just go ahead on put a new cam in, it's a lot simpler. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help I did 4 over the summer this year. In all cases the decompression mechanism was in about 10 pieces laying in the sump of the engine. On some engines the valve clearances are .004-.006 for both on others it is .004-.006 for intake and .005-.007 for exhaust. So most people will just say 5 and 5. Briggs doesn't normally offer just the decompression mechanism as a replacement part. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help "ILENGINE, it shouldn't require replacing the entire cam, just the comp. release. It is riveted in on most engines." Let me know where to get the parts. Walt Conner Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help "ILENGINE, it shouldn't require replacing the entire cam, just the comp. release. It is riveted in on most engines." Let me know where to get the parts. Walt Conner Walt is that a statement or a question. I am slightly confused by your post. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help I use pro parts direct.com, they have the ACR but need to call for avaliabilty .... I know cub cadet (kohler) makes the ACR for their cam. I AM JUST GOING OFF OF WHAT I HAVE SEEN ON MOST LAWNMOWERS Cam wise. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help Walt is that a statement or a question. I am slightly confused by your post. Me too, i think he's saying " Good luck finding one"..?? Page 2 Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help I use pro parts direct.com, they have the ACR but need to call for avaliabilty .... I know cub cadet (kohler) makes the ACR for their cam. I AM JUST GOING OFF OF WHAT I HAVE SEEN ON MOST LAWNMOWERS Cam wise. the one that they list on their website for the ACR is for the Courage single. I replaced one of those this summer, and then had to go back in and replace the cam gear because evidently it was slightly warped causing the ACR to hang up and not work sometimes. The compression release on the camshaft in this guys case is pushed through the cam gear and then pressed into the rotating counterweight with a halfmoon part of that same pin that acts as the compression release. There are no rivets that hold it attached. The weight gets broken around were the pin in halfmoon shaped, and ends up in about 4-5 pieces, the rotating pin normally will be 2-3 pieces and then the spring is found damaged sometimes and not others. pull up a picture of the briggs 793880 camshaft and you will see what cam he has in this engine that is possibly the cause of his start issues. Oct 19, 2017 / Briggs and Stratton 17.5 valve adjustment help Oops I stand corrected. I don't know why I had a L head stuck in my brain. I guess it's all the L heads Iv'e been working on in the last month. Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help Ilengine - could you or anyone else explain in a bit more detail how to determine if it's the compression release that is bad on my mower ? I should be able to replace the camshaft if that's what it is. Also does the rotten egg/ sulfer smell mean anything, or is that just the battery trying to hard to turn the engine ? Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help Not sure about the smell, i'd try my best not to breath it in a lot. As far as i know, the only way to see if the compression release is bad, take the cylinder head COVER off, spin the engine over by hand, and the exhaust valve should just barely "bump" open after the intake...... Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help Compression release should be on the intake for this engine. Bottom valve is closest to the compression release mechanism on the camshaft. Remove the valve cover, and the spark plug, Rotate the engine over by hand and watch the valves open and close. Just before TDC compression stroke you should see the intake valve completely close and then the rocker will tighten up and push the valve open just a few thousandths of an inch before it closes. Without that bump the compression release isn't working and then you get into replacing the camshaft. Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help I'm not sure about the 'bump' - maybe because i don't see it happening. One video i watched said if after adjusting valves engine still turns over hard tightening the valves a bit more would help release the compression, so i set both intake and exhaust at .002 to see if it did anything and I still had the same result - engine turns a little and stops, turns a little and stops. Would this suggest the compression release mechanism being bad to you guys ? I'm looking at some videos on compression release mechanism to see if one might show the 'bump' so i'll know a little more what to look for. Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help That bump is about 1/8 inch of valve movement. Sometimes I will hold the rocker and turn the flywheel. Went the effected valve completely closes, and then shortly thereafter you can feel it tighten up the rocker, and have a slight movement before quickly releasing the tension on the rocker. I suspect that you are dealing with a broken release Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help Compression release should be on the intake for this engine. Bottom valve is closest to the compression release mechanism on the camshaft. Remove the valve cover, and the spark plug, Rotate the engine over by hand and watch the valves open and close. Just before TDC compression stroke you should see the intake valve completely close and then the rocker will tighten up and push the valve open just a few thousandths of an inch before it closes. Without that bump the compression release isn't working and then you get into replacing the camshaft. Do you mean exhaust not intake, the compression has to go out the exhaust.... Oct 20, 2017 / Briggs and Stratton 17.5 valve adjustment help No I mean intake. the compression release mechanism operates the valve closest to the cam gear, and since the engine uses a cross flow head that puts the intake valve on the bottom of the head which is closest to the gear, therefore the compression release is on the intake valve. On Briggs horizontal OHV engines the compression release is on the exhaust. 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. 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. During the Second World War, the United States military used Briggs & Stratton engines to power generators on the front lines, and integrated the company's ignition systems into planes for the Air Force.[4] The company thrived under the leadership of Charles Coughlin, who served as its president from 1935 until 1972.[5] During Coughlin's tenure, Briggs & Stratton revolutionized the lawn and garden industry by producing the first lightweight aluminum engine.[6] As suburbanization grew after World War II, demand for home and garden equipment exploded. The aluminum engine accounted for nearly 80% of all Briggs & Stratton product orders in 1957.[7] The company had become one of the country's leading producers of small engines by the 1970s. 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 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. Click the image to learn more. 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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 With over 110 years of experience, Briggs & Stratton is trusted by millions of people around the globe and backed by the largest service network in the industry. We are the world's largest small engine producer, the number one marketer for pressure washers, and a leading manufacturer of power generation, lawn and garden turf care and job site products. Learn More About Briggs & Stratton > 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 Incorrect valve clearance can lead to issues such as reduced power, increased fuel consumption, misfiring, or even severe engine damage. This blog post provides a detailed overview of Briggs & Stratton valve clearance, its importance, and a comprehensive chart covering valve clearance specifications for various engine models, presented in an easy-to-read table format.Model SeriesIntake Valve Clearance (inches)Exhaust Valve Clearance (inches)600000.005 – 0.0070.007 – 0.009800000.005 – 0.0070.007 – 0.009900000.005 – 0.0070.007 – 0.00910A000–10M0000.005 – 0.0070.007 – 0.0091100000.005 – 0.0070.007 – 0.0091200000.005 – 0.0070.007 – 0.0091300000.005 – 0.0070.009 – 0.0111700000.005 – 0.0070.009 – 0.0111717000.005 – 0.0070.009 – 0.0111900000.005 – 0.0070.009 – 0.0111917000.005 – 0.0070.009 – 0.0112200000.005 – 0.0070.009 – 0.0112500000.005 – 0.0070.009 – 0.0112800000.005 – 0.0070.009 – 0.011Model SeriesIntake Valve Clearance (inches)Exhaust Valve Clearance (inches)2300000.007 – 0.0090.017 – 0.0192400000.007 – 0.0090.017 – 0.0193200000.007 – 0.0090.017 – 0.019Model SeriesIntake Valve Clearance (inches)Exhaust Valve Clearance (inches)4000000.004 – 0.0060.007 – 0.0094200000.004 – 0.0060.007 – 0.0094600000.004 – 0.0060.007 – 0.009Related Kohler Valve Clearance Chart(For All Models Series)Model SeriesIntake Valve Clearance (inches)Exhaust Valve Clearance (inches)500000.004 – 0.0080.004 – 0.008854000.002 – 0.0040.002 – 0.00497700, 997000.005 – 0.0070.005 – 0.007115400, 117400, 1184000.002 – 0.0040.002 – 0.004120000 (Horizontal Shaft)0.004 – 0.0060.009 – 0.011120000 (Vertical Shaft)0.004 – 0.0060.004 – 0.0061384000.002 – 0.0040.002 – 0.0041854000.002 – 0.0040.002 – 0.0042000000.004 – 0.0060.004 – 0.006210000 (Horizontal Shaft)0.004 – 0.0060.004 – 0.006210000 (Vertical Shaft)0.004 – 0.0060.004 – 0.006235400, 2454000.004 – 0.0060.004 – 0.0062800000.003 – 0.0050.005 – 0.0073100000.003 – 0.0050.005 – 0.007Related Toro TimeCutter Valve Adjustment(In 5 Quick Steps)Valve clearance refers to the small gap between the valve stem and the rocker arm or tappet in an internal combustion engine.This gap ensures that the valves can fully open and close at the right time during the engine's cycle, allowing for proper air and fuel intake and exhaust expulsion.Briggs & Stratton engines, whether single-cylinder, V-twin, overhead valve (OHV), or L-head (side valve), require periodic valve clearance checks and adjustments to maintain optimal performance.Incorrect valve clearance can cause several problems:Too tight: Valves may not close fully, leading to compression loss, overheating, or burnt valves.Too loose: Excessive clearance can cause noisy operation, reduced power, and accelerated wear on valve components.Neglecting adjustments: Over time, valve clearances can change due to wear, leading to poor engine performance or failure.Regular valve clearance maintenance, guided by the correct specifications for your engine model, ensures smooth operation, fuel efficiency, and a longer engine lifespan.Related Common Kubota Hydraulic Valve Problems (With Solutions)1. Prepare the Engine: Ensure the engine is cold, as valve clearances are typically measured with a cold engine to account for thermal expansion. Remove the spark plug and secure the spark plug lead away from it to prevent accidental starting.2. Access the Valves: Remove the valve cover using a socket wrench or nut driver. You may need to remove other components, such as the air cleaner assembly or muffler, depending on the engine model.3. Set Piston Position: Rotate the crankshaft until the piston is at the top dead center (TDC) on the compression stroke. For some models, Briggs & Stratton recommends setting the piston 1/4 inch (6 mm) past TDC to avoid interference from the compression release mechanism.4. Measure Clearance: Use a feeler gauge to measure the gap between the valve stem and the rocker arm. Compare the measurement to the specifications for your engine model.5. Adjust Clearance: If the clearance is outside the recommended range, loosen the lock nut on the rocker's arm and turn the adjustment screw to achieve the correct gap. Tighten the lock nut while holding the screw in place, then recheck the clearance.6. Reassemble and Test: Reinstall the valve cover with a new gasket if needed, reassemble any removed components, and test the engine to ensure smooth operation.Related Briggs and Stratton Carburetor Diagram(Complete Guide)If valve clearance is not within the specified range, you may encounter:Hard Starting: Excessive clearance can reduce compression, making the engine difficult to start, especially when hot.Backfiring or Smoke: Incorrect clearance may cause blow-by or improper combustion, leading to backfiring through the carburetor or smoke from the crankcase.Overheating or Wear: Tight clearances can prevent valves from closing fully, causing overheating or accelerated wear on valve seats and guidesProper valve clearance is essential for the efficient operation of Briggs & Stratton engines. By adhering to the specified clearances for your engine model, you can ensure longevity and optimal performance.Regular maintenance and adjustments, as outlined above, will help prevent common engine issues and maintain the reliability that Briggs & Stratton engines are known for. @papasmurf1 valve clearance with valve springs installed and piston 1/4in (6mm) past top dead center (check when engine is cold): Intake............0.003-0.005 in. (0.08 - 0.13 mm) Exhaust..........0.005-0.007 in. (0.13 - 0.18 mm) Valve Clearance Adjustments Adjust Valve Clearance Valve clearances should always be adjusted on a cold engine. 1. Remove the valve cover. 2. Rotate the crankshaft in the normal direction until you get to TDC (Top Dead Center) of the compression stroke. 3. Insert a narrow indicator (screwdriver or small rod) into the spark plug hole against the piston to indicate piston movement. 4. While watching the indicator, rotate crankshaft clockwise (CW) past TDC until piston is 0.25 in. (6mm) down from TDC. This is to prevent the compression release (if equipped) from affecting adjustments. 5. Loosen the jamb nut on the rocker arm. 6. Insert the proper feeler gauge. While moving it back and forth, carefully tighten the adjustment screw until a slight amount of resistance is felt on the feeler gauge 7. Tighten the jamb nut without moving the adjustment screw Fig. 46, 47, 49, 49. 8. Rotate the crankshaft through a few revolutions and recheck the clearance. Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. When doing small engine repair and maintenance, you may need to find specific parts and specifications for your engine. You will need to know your small engine model if you've asked: What oil type does my engine need? What is the valve clearance for my small engine? What is the head bolt torque for my engine? What type of gas should I put in my lawn mower? What parts do I need for a horizontal or vertical shaft replacement? To find basic small engine specs like torque, fuel & oil type, filter or cylinder info, check out specific product pages for your snow blower, lawn mower, pressure washer, or portable generator. The complete source of specification information would be your engine's Repair Manual (Lookup Repair Manual by Model Number). Knowing your small engine model number also provides basic specifications such as valve settings, bore, stroke, etc. American manufacturing company Briggs & Stratton CorporationCompany typePrivateIndustryManufacturingFounded1908; 117 years ago (1908)FounderStephen Foster BriggsHarold M. StrattonFateBankrupt and sale under section 363 to KPS Capital partnersHeadquartersWauwatosa, Wisconsin, U.S.Key peopleJoseph T. Liotine (CEO)ProductsGasoline enginesRevenue US$1.786 billion (2017)[1]Operating income US$86 million (2017)[1]Net income US$57 million (2017)[1]Total assets US$1.451 billion (2017)[1]Total equity US$559 million (2017)[1]OwnerKPS Capital PartnersNumber of employees5,200 (2019)Websitebriggsandstratton.com Briggs & Stratton Corporation is an American manufacturer of small engines with headquarters in Wauwatosa, Wisconsin. Engine production averages 10 million units per year as of April 2015.[2] The company reports that it has 13 large facilities in the U.S. and eight more in Australia, Brazil, Canada, China, Mexico, and the Netherlands. The company's products are sold in over 100 countries across the globe.[3] In 1908, inventor Stephen Foster Briggs and investor Harold M. Stratton started an informal partnership to capitalize on the growing automobile industry. Eventually Briggs and Stratton settled on manufacturing automotive components and small gasoline engines. In 1919 Briggs & Stratton purchased the manufacturing rights for a small, simple two-seat vehicle with a gasoline engine called the Smith Flyer from the A.O. Smith Company in Milwaukee. The Flyer had a small gasoline engine mounted on a fifth wheel, or motor wheel. Briggs & Stratton made engine improvements that raised the horsepower and renamed the vehicle the Briggs & Stratton Flyer. The Guinness Book of Records lists the Flyer as the most inexpensive car of all time, selling at US$125 to US$150 (equivalent to $2020 to $2430 in 2021). In 1925 they sold the rights to the Flyer to Automotive Electric Services Corporation. Briggs & Stratton kept the motor that had been the heart of the motor wheel and adapted it to power other applications such as reel lawn mowers and small equipment such as washing machines. The company went public on the New York Stock Exchange in 1928. During World War II, Briggs & Stratton produced generators for the war effort. Some pre-war engines were made with aluminum, which helped the company develop its expertise in using this material. This development, along with the post-war growth of 1950s suburbs (and lawns), helped secure Briggs & Stratton's successful growth throughout the 1950s and 1960s. Stephen Briggs went on to purchase Evinrude and Johnson Outboards and start the Outboard Marine Corporation. Frederick P. Stratton Sr. (the son of Harold Stratton) served as Chairman of Briggs & Stratton until his death in 1962 (Harold also died that year). Frederick P. Stratton Jr. served as Chairman until his retirement in 2001. In 1995, Briggs & Stratton sold the automotive component business. The resulting company is Strattec Security Corporation. In 2000,[4] the company acquired its consumer generator business from the Beacon Group and formed Briggs & Stratton Power Products. The Beacon Group had previously purchased the Consumer Products Division of Generac Corporation (now Generac Power Systems) in 1998. In 2005, the company added Simplicity Manufacturing Inc, and Snapper, Inc, to the Briggs & Stratton Power Products line. Murray, Inc, one of its largest customers, collapsed owing the company $40 million, and to minimize the loss Briggs & Stratton purchased the name, marketing rights and product designs of that company. In 2008, Briggs & Stratton announced it would be acquiring the Victa Lawn Care business from GUD Holdings Limited Australia for A$23 million. In 2019, Briggs & Stratton announced they would be closing their engine factory in Murray, Kentucky, with production being moved to their Poplar Bluff, Missouri facility.[5] On July 20, 2020, Briggs & Stratton filed for Chapter 11 bankruptcy.[6] KPS Capital Partners purchased a majority of the company stake for $550 million.[7] On September 22, 2020 KPS Capital Partners closed on the acquisition of Briggs & Stratton. This sale waives the $900 million that Briggs & Stratton owed going into bankruptcy.[8] Farymann Diesel GmbH (1979–1984) – Based in Lampertheim (near Mannheim) in Germany, this was the first foreign acquisition Briggs & Stratton had ever made and was a poor fit with the company's acknowledged expertise in high volume, low cost production. They officially completed the acquisition on May 29, 1979.[9] Despite investing in new production methods, Briggs & Stratton never understood the very low volume, highly customized nature of the air-cooled diesel engine market. After considering adding Italy's Lombardini to increase its presence in the diesel market, as well as a failed attempt to develop its own designs, Briggs & Stratton accepted defeat and sold the company to a private investor for a minimal amount to avoid further liabilities. Since the energy crisis had not affected the US market's preference for gasoline engines, enthusiasm waned rapidly at management level for diesel engines.[10] Daihatsu Briggs & Stratton (DBS) – In an effort to stave off Japanese competition during the 1980s, Briggs & Stratton entered a 50/50 joint venture with the Toyota subsidiary Daihatsu Motor Company in Japan. Located in Shiga Prefecture (50 miles (80 km) from Osaka, Japan), construction on the then-57,000-square-foot (5,300 m2) plant began in December 1986 and was completed in April 1987. This joint venture was notable for the manufacture of vertical and horizontal crankshaft engines from 12.5 to 22 hp (16 kW) under the Vanguard brand. Today the plant employs roughly 100 people on two shifts and manufactures Vanguard V-twin engines ranging from 14 to 36 hp (27 kW).[11] By the end of 2017, Briggs & Stratton is planning to move the production of Vanguard V-twin from Japan to USA [12] The Mitsubishi Agreement – The Vanguard line initially consisted of three single-cylinder engines and several V-twin engines. The V-twins, made by DBS, had sold very well but the single-cylinder engine models, originally produced at Briggs & Stratton's Menomonee Falls, Wisconsin plant, didn't fare so well. Briggs & Stratton needed to solve this problem, so, following discussions with several Japanese engine manufacturers, it entered into an agreement with Mitsubishi Heavy Industries Ltd. of Tokyo, Japan. Briggs & Stratton produced only certain parts for the engines, while Mitsubishi was responsible for overall production and shipping. The completed single-cylinder engines were shipped directly to customers worldwide. Briggs & Stratton had exclusive marketing rights for the resulting products only in North America, Europe and Australia/New Zealand. MHI had exclusive marketing rights (under their own brand name) in Malaysia, Taiwan, South Korea and Japan. In other countries both companies competed with the same product under their own brand names which led to considerable friction, and together with escalating production costs in Japan, caused this otherwise successful relationship to fail. Briggs & Stratton commenced marketing alternative U.S.-made single-cylinder engines under the Vanguard brand in early 2007.[13] The Komatsu Zenoah Venture – In May 1987, Briggs & Stratton entered into an agreement with yet another Japanese company, executing a 10-year contract with the Komatsu Zenoah Company of Tachikawa, Japan. Under the terms of the contract, Komatsu would manufacture a 2-cycle, 4 hp (3 kW) engine, in which Briggs & Stratton would purchase and distribute in the United States, Europe, Australia and New Zealand. Said Fred Stratton, "This venture was not successful, because the rising price of the yen made the engine too expensive in the U.S."[14] The Toro Agreement – In 1999, Briggs & Stratton made a license agreement with The Toro Company of Bloomington, Minnesota. to produce the Toro R*Tek piston ported version of their E series 2-stroke engine (AKA Lawn-Boy DuraForce) for use in Toro Snow Throwers. The engine was a 141cc 2-cycle that produced from 4 hp to 6.5 hp at 3700 to 4000 rpm on a 50:1 gas & oil mix. A higher power 7-HP model was made (Engine Model# 84330) for use in heavier duty machines such as the single stage Snow Commander (2001–2008) and 2 stage Power Max 726TE/6000 (2004–2008); the extra horsepower was obtained using transfer ports in the piston and cylinder wall, and this model ran at the same operating speed as the 6.5 hp engines (4000rpm). Production stopped in 2011. The aluminum engine – This was introduced in 1953 as a means of having a lighter-weight engine for applications such as rotary lawn mowers. It was improved five years later in 1958 with the introduction of the Kool-Bore (all aluminum) and Sleeve-Bore (aluminum, with a cast iron cylinder liner). Easy-Spin Starting – This compression release, implemented as an extra hump on the intake lobe of the camshaft, was introduced in 1961 to reduce the effort required to start an engine.[15] In 1982, a new U.S. federal safety regulation required lawnmower blades to stop spinning within three seconds of the operator letting go of the handle. The least costly, most common way of complying with the new regulation was to put a flywheel brake on the mower engine, to stop the engine (and therefore the blade) immediately when the handle was released. Briggs & Stratton engineers found engines with the Easy-Spin camshaft were unacceptably difficult to restart after being braked to a quick stop. The Easy-Spin lobe hump was moved to the exhaust valve, but this reduced engine performance. The intake-side Easy-Spin remained in use on Briggs & Stratton's engines larger than those used on mowers subject to the brake requirement, but was discontinued in 1997 due to tightening emission regulations.[16] The Synchro-Balanced Engine – This 1966 innovation was designed to attenuate vibration caused by the reciprocating mass of a single-cylinder engine. The design was a series of counterweights opposing the crankpin.[17] The Twin Cylinder Engine – This engine was introduced in 1977 as a means of competing with Briggs & Stratton's rivals, particularly Japanese firms like Honda who were cutting into traditional Briggs & Stratton markets by producing lawn mower engines (and later, complete lawn mowers). These first models were rated 16 hp (11.9 kW) and displaced 40 cubic inches (656 cc), but were joined in 1979 by 42 cubic inch (694 cc) models rated at 18 hp (13.4 kW). The original price for the 16 hp (12 kW) version was $70 lower (at US$228) than their single-cylinder cast-iron version bearing the same power rating.[18] Industrial/Commercial (I/C) – This series of engines, initially ranging from 3 to 20.5 hp (15.3 kW), was introduced in 1979 as Briggs & Stratton's answer to high quality commercial-duty engines produced by competitors. These engines include heavy-duty features such as Stellite exhaust valves, upgraded bearings, cast iron sleeved cylinder bores and high-capacity air cleaners.[19] The Briggs & Stratton Gasoline/Electric Hybrid Car – In 1980, at the tail end of the energy crisis, Briggs & Stratton developed the first gasoline-electric hybrid automobile concept car. "The Hybrid" was designed by Brooks Stevens, had six wheels and was powered by a twin-cylinder 16 hp (11.9 kW) Briggs & Stratton engine and a large bank of 6v lead-acid electric batteries.[20][21] Only the second axle was driven, with an extra rear axle added to support the weight of the batteries. Magnetron Ignition – This solid-state ignition system introduced by Briggs & Stratton in 1982[22] eliminated the points-and-condenser system, the performance of which steadily degraded between required periodic maintenance service. Magnetron was made available for retrofitment to Briggs & Stratton engines made since 1963. Competitor Tecumseh had made a capacitor discharge ignition setup since 1968 for their cast iron engine models, expanding its availability and making it standard equipment on vertical shaft engines powering lawn mowers in late 1976, five years before the advent of the Briggs Magnetron. Defunct competitor Clinton Engines commercialized a piezo "Spark Pump" ignition without breaker points in the early 1960s.[23] The Briggs & Stratton logo was always a masthead, but it has been changed several times over the course of the company's 80-plus years. Pre War logos (1931–1943) – This logo started off with a diamond shape and read Briggs & Stratton and its home city of MILWAUKEE, WIS., U.S.A. below it; in the middle, it had the words 4 CYCLE on the top mast and the words GASOLINE MOTOR and phrase MADE IN U.S.A. on the bottom mast. About 1934 Briggs & Stratton added the more familiar shape of a diamond split across the center with a banner. Gold Logo (1948–1963) – This logo had the name BRIGGS STRATTON and its home city of MILWAUKEE, WIS., U.S.A. below it; in the middle, it had the words 4 CYCLE on the top mast and the words GASOLINE ENGINE and phrase MADE IN U.S.A. on the bottom mast. Gold Logo (II) (1963–1976) – Although similar to the last logo, this had differently arranged wording: The name BRIGGS STRATTON was written in a new logotype, however, this design also included the horsepower rating above the gold logo in the white field, its city of location was in the middle as before, only this time the patent numbers were eliminated (if you look at a decal on a production engine) from the bottom portion of the mast. There were some engines produced until 1977 that used the prior logo from 1948. The Red, White, and Black Logo (1976–present) – This is the company's current logo. The logo has the name BRIGGS STRATTON in black letters on the white midsection of the masthead. The words 4 CYCLE ENGINE are on the red top portion of the mast and the city line MILWAUKEE, WISCONSIN, U.S.A. is written on the black bottom portion of the mast. Although the logo hasn't been changed much since then, the wording on the top and bottom sections of the mast were removed in 1985, although the company continued to use these two sections with the respective wordings ORIGINAL (red section) and SERVICE PARTS (black section) until 1989. Flathead with gravity-feed float carb unless otherwise noted Number series 5 (1950–1957) 5S (1949–1957); suction carburetor 6 (1952–1957) 6H (1950-1955) 6S (1949–1957); suction carburetor[24] 8 (1949–1957) 9 (1948–1962) 14 (1948–1963) 19 (1957–1965) 19D (1963–1965) 23 (1949–1957) 23A (1956–1965) 23C (1961–1963) 23D (1963–1965) 191400 and 193400 (1965–1966) 200400 (1966–1974) 231400 (1965–1966) 233400 (1965–1991) 243400 (1965–1991) 300420 (1966–1971) 301430 (1971–1972) 302430 (1972–1977) 320420 (1969–1971) 325430 (1971–1972) 326430 (1972–1991) Letter series A (1933–1948) [25] B (1934-1948) F "Full Power" (1921-1922); suction carb, overhead valve FB "Full Power" (1922-1925); suction carb, overhead valve FC "Full Power" (1924-1925); suction carb, overhead valve FE (1925); suction carb, overhead valve FG (1927); overhead valve FH (1925–1933); suction carb, overhead valve FHI (1929); float carb, overhead valve FI (1927–1933); overhead valve FJ-1 (1929-1937); aluminum parts, used exclusively on military generators FJ-2 (1930–1932); cast iron civilian version of FJ-1 H (1933–1940) I & IS (1940–1949)[26] IB & INT (1938-1942) K (1933-1940) L & LA (1930–1932); suction carb, used on washing machines M & MJ (1930–1934) N, NS & NP (1940–1954) P (1920); F-head PB (1923–1935); F-head PC-WI-100 (1941-1943); power charger with WI engine PC-200 (1936-1938); power charger with Y engine; used as a generator set PC-300 (1938-1944); power charger with I engine; used as a generator for the M33 multiple gun mount PC-304 (1943); power charger with I engine; used as a generator for the M45 multiple gun mount PC-WM (1936-1938); power charger with WM engine; used as a generator set PC-WMB (1938-1940); power charger with WMB engine Q (1925–1933); first flathead model R, RA, R2 & RC (1929–1933) R1 & RH (1929-1932) S (1920?) S (1930–1933); suction carb T (1930–1931) U (1940–1945); suction carb W & WA (1931–1933) WI, WR & WMB (1938–1957); suction carb[27] WM & WMI ('Washing Machine', 1936–1941); cast iron, suction carb; WMI was an industrial version WMG (1937–1941); cast iron, suction carb; WM with generator Y (1931–1940); cast iron, suction carb Z and ZZ (1931–1949) Many variations and submodels were available on the basic series mentioned above. Some variations include: gear reduction (gears bolted to the back of the engine to slow the speed of the PTO shaft) first offered in 1934, on models A B K and Z later on I U N and WI. Designated by an "R" after the basic model, then a 2, 4, or 6 to designate the reduction ratio. high speed models (higher intake capacity to run higher rpm) available on the A B K M R and Z series. designated with an "H" after the basic model. lightweight models (some aluminum parts to save weight) available on the A B I K R and Z series. Designated with an "L" after the basic model inboard marine engines (special base, no governor, thrust bearing on PTO side) available on models A B H I K N and Z. Designated with an "M" after the basic model. Some models also had forward neutral and reverse transmissions. These engines have an "T" or "G" after the "M" 6B (horizontal shaft) (1955–1959) 6BH (vertical shaft) (1953–1958) 6BHS (vertical shaft; suction carburetor) (1953–1958) 6BS (horizontal shaft; suction carburetor) (1955–1958) 8B (horizontal shaft) (1955–1958) 8BH (vertical shaft) (1953–1958) 60100 (horizontal shaft) (1958–1991) 80100 (horizontal shaft) (1958–1977) 80200 (horizontal shaft) (1960–1991) (horizontal shaft) and 190700 (vertical shaft) (1969–1997) 90000 97000 Europa OHV (vertical shaft) 100000 110000 120000 130000 140000 (horizontal shaft) (1958–1966) 170000 252410 (horizontal shaft) and 252700 (vertical shaft) (1977–1991) 280000 310000 OHV 400000 Twin Cylinder 420000 Twin Cylinder 460000 Twin Cylinder 81300 and 81400 (horizontal shaft) (1979–1985) 82200 (horizontal shaft; Quiet Power) (1982–1994) 82300 and 82400 (horizontal shaft; Quiet Power) (1982–1994) 114900 (vertical shaft; Quiet Power) (1982–1991) 131200 (horizontal shaft) (1979–1985) 132200 (horizontal shaft; Quiet Power) (1982–1994) 131900 (vertical shaft) (1979–1989) 132900 (vertical shaft; Quiet Power) (1982–1995) 192700 and 193700 (vertical shaft) (1983–1994) 195400 (horizontal shaft) (1979–1994) 221400 (horizontal shaft) (1979–1985) 255400 (vertical shaft) (1984–1994) 281000 (vertical shaft) (1981–1991) Briggs & Stratton/I/C 283H07-0399-E1 (050923AZ) (16-hp) (vertical shaft) Briggs & Stratton/I/tC 130g32-0059-h1 World Formula 16 HP OHV[28] Animal 6.5 HP OHV Raptor 5 HP flathead 084300 (Horizontal shaft) (1999–2011) Made under license for Toro as the R*TEK 141cc E Series Snow Thrower 062030 (Horizontal shaft) (1980–1993) 095700 and 096700 (Vertical shaft) (Years Unknown) Made under a contract with Komatsu Zenoah Eshelman John I. Beggs – former Chairman Briggs & Stratton builds over 9,000,000 engines in the USA each year. The company employs over 3,000 employees in six states. Wauwatosa, WI, is home to the company's headquarters and R&D center. Manufacturing plants are located in Poplar Bluff, MO; Auburn, AL; Statesboro, GA; and Sherrill, NY. The company also has a proving grounds and testing facility located in Fort Pierce, FL.[29] ^ a b c d e "Financial Statements for BGG - Morningstar". Morningstar.com. 2017-07-03. Archived from the original on 2018-10-06. Retrieved 2018-06-11. ^ "Briggs & Stratton Engines - Small Engine & Lawn Mower Parts". briggsandstratton.com. Retrieved 12 June 2015. ^ "2016AnnualReport". 2016-07-03. Archived from the original on 2017-06-06. Retrieved 2016-10-30. ^ "Our History". basco.com. Retrieved 12 June 2015. ^ Adams, Jasmine (August 15, 2019). "Briggs and Stratton facility to close in Murray, Ky.; consolidate with Poplar Bluff plant". KFVS-TV. Retrieved July 20, 2020. ^ "Briggs & Stratton Files for Chapter 11, in Pact with KPS (1)". Bloomberg Law. 20 July 2020. Retrieved 20 July 2020. ^ Boulton, Guy. "Wisconsin small gas engine maker Briggs & Stratton files for bankruptcy protection". USA TODAY. ^ Briggs & Stratton, LLC. "Briggs & Stratton Announces Completion of Sale to KPS Capital Partners". PRNewswire (Press release). ^ Briggs & Stratton 1980 Update Seminar, form #MS-7865-10/79 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 12, pages 138-140 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, 1995, Chapter 12, page 149 ^ "Briggs & Stratton to Move Production from Japan to its Plants in Statesboro, Georgia and Auburn, Alabama". Briggs & Stratton News (Press release). ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, 1995, Chapter 12, pages 149-152 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, 1995, Chapter 12, pages 153-154 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 11, pages 120-121 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 11, page 121 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 11, pages 121-122 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 11, page 127 ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 12, pages 140-141 ^ Carney, Dan (July 3, 2013). "Briggs and Stratton that was green, even off the grass". BBC. Archived from the original on 2013-12-03. Retrieved March 16, 2020. ^ "1980 Briggs & Stratton Hybrid six-wheeler visits Jay Leno's Garage". Motor Authority. 19 March 2020. Retrieved 2020-03-24. ^ The Legend of Briggs & Stratton by Jeffrey L. Rodengen, Chapter 12, pages 141-142 ^ "No coil, no points, no condenser: Spark Pump Fires Engine": Popular Science, July 1961 ^ "Briggs Model 6S Engine". Google Sites. ^ "Briggs and Stratton Model A". Google Sites. Archived from the original on January 15, 2010. ^ "Briggs and Stratton Model I". Google Sites. Archived from the original on June 28, 2014. ^ "Briggs and Stratton Model WI". Google Sites. Archived from the original on January 24, 2013. ^ "Racing Engines for Go Karts & Snocross - Briggs & Stratton". briggsandstratton.com. Retrieved 13 March 2018. ^ "American Engine Company in USA - Briggs & Stratton Small Engines". briggsandstratton.com. Retrieved 12 June 2015. Rodengen, Jeffrey L. The Legend of Briggs & Stratton. Ft Lauderdale, Fl: Write Stuff Syndicate, 1995. ISBN 0-945903-11-1 Official website Briggs & Stratton SEC Filings [Article on Small SI Briggs & Stratton Retrieved from " Understand valve clearances for your Briggs & Stratton model with this guide. Learn measurement techniques, common issues, and adjustment steps to boost performance and extend engine life. Valve Clearance Definitions Definition Overview Ever wondered what valve clearance means and how it affects your engine's performance? Essentially, valve clearance is a crucial measurement in engines that ensures proper timing between the camshaft and the valves. Imagine a clock where each part needs to be precisely synchronized; valve clearance serves as the small gap or space needed for this synchronization. In technical terms, it's the distance left between the rocker arm (or lifter) and the valve stem tip when the engine is at its compression stroke. This gap might seem insignificant, but understanding what valve clearance does and why it matters can unlock a world of performance enhancements and engine longevity. Let's delve into these details to see just how crucial this seemingly small space can be. Importance of Correct Clearances Performance Enhancement When it comes to driving a car, do you ever wonder what makes your engine perform at its best? Well, one key factor that can significantly impact performance is valve clearance. Think of valve clearance as the gap between the valves and their respective seats. Just like how the perfect fit of a shoe enhances your step, proper valve clearance ensures smooth and efficient engine operation. For instance, if the valve clearance is too tight, it's akin to having shoes that are too small—your feet won't move freely, and you might even feel discomfort or performance drops. Conversely, if the clearance is too loose, it's like wearing oversized shoes; everything moves around without proper control, leading to inefficiencies. Therefore, maintaining correct valve clearance is crucial for enhancing your car's performance. Engine Durability Now, let's consider the long-term health of your engine—doesn't everyone want a reliable and durable powerplant? Proper valve clearance plays an essential role in ensuring that your engine stays strong over time. Imagine an engine as a well-tuned musical instrument; every part needs to work harmoniously for it to produce beautiful sounds. In the same way, valves need to open and close at precise times to maintain optimal combustion and prevent wear. Incorrect valve clearances can lead to premature failure of critical components such as pistons, rings, and even the cylinder head itself. It's like neglecting to replace worn-out strings on a guitar; it might still play for a while, but eventually, the sound quality will suffer, and the instrument may break down altogether. By keeping your valve clearances in check, you're essentially ensuring that all parts of the engine are working together seamlessly. This not only enhances performance but also prolongs the life of your vehicle's powertrain, making it a smart investment for both performance enthusiasts and everyday drivers alike. Common Issues with Incorrect Clearances Reduced Power Output Imagine your engine is like a finely tuned musical instrument. When the valve clearances are off, it's like tightening or loosening the strings too much—it doesn't play as well and can even go out of tune. This misalignment between the valves and the pistons means that the air intake isn't optimal, leading to reduced power output. Your car might feel sluggish, especially when you press on the gas pedal. Increased Fuel Consumption Incorrect valve clearances are like trying to pour water from a jug with a leaky spout. If the clearance is too tight or loose, it disrupts the airflow into and out of the engine cylinders, making it work harder to get the same amount of power. This extra effort translates to higher fuel consumption. You might notice that your car's fuel efficiency isn't as good as usual. Engine Noises When valve clearances are off, the valves don't open or close at exactly the right times and amounts. It's like playing a drum set with one hand on each side of the cymbals but not in sync—loud, unharmonious sounds result. In an engine, this can lead to rattling, knocking, or hissing noises. These sounds are your car's way of saying it's unhappy and needs attention. These issues highlight why maintaining proper valve clearances is crucial for both performance and longevity. Regular checks and adjustments ensure your engine runs smoothly like a well-oiled machine. Tools Needed for Measurement Thickness Gauge When it comes to measuring valve clearances, you'll need a reliable thickness gauge. Think of this tool like a precise ruler that can measure very thin gaps—down to fractions of millimeters. These gauges come in various types, such as dial indicators or electronic probes, each offering its own advantages depending on your specific needs and the space constraints within your engine bay. Pry Tool Pry tools are another essential piece of equipment for this task. Imagine these tools as the key to unlocking a door that's stuck—just as you need to carefully apply pressure to open it without damaging anything, so too must you be gentle when using a pry tool. They help in gently lifting or separating components like rocker arms from their seats, allowing you access to those hard-to-reach valve clearance areas. “`markdown Preparing the Engine Before you dive into measuring valve clearance, it's important to ensure your engine is in a safe and stable state. Have you ever tried threading a needle without holding it steady? Just like that, your engine needs to be secure and cool before you can start measuring. First, park your vehicle on a flat surface and apply the handbrake. Then, let the engine cool down for at least 30 minutes to avoid any potential burns or damage. Identifying Camshaft Position Understanding where the camshaft is in relation to the valves is like finding the keyhole before you can unlock a door. You need this information to ensure accurate measurements. Most engines have markings on the timing cover or sump that indicate the position of the camshaft. If your engine has these marks, refer to your vehicle's manual for specific details. For those without visible marks, consider using a timing light to align the valves correctly. Measuring Individual Cylinders Now comes the fun part—measuring each cylinder individually! Think of it as setting up a personalized tune-up for each cylinder, ensuring they all play their part in harmony. Start by referencing your vehicle's service manual or diagram to locate the valve clearance adjustment points on each cylinder head. Use a thickness gauge to measure the gap between the valve stem and the rocker arm. Make sure you apply even pressure with the gauge to get an accurate reading. Preparation: Ensure all tools are clean and ready. Procedure: Measure the clearance for one cylinder at a time, recording your findings in a log or notebook. Consistency: Be meticulous; small differences can significantly affect performance. Recommended Clearances by Model Model 914ST When considering your trusty 914ST model, you'll want to ensure it's in tip-top condition for that perfect drive. The recommended valve clearance for this model is typically around 0.025 inches (or 0.64 mm) on both the intake and exhaust valves. This small yet crucial gap ensures your engine runs smoothly and efficiently. Model 850R Now, if you're diving into the high-performance world of the 850R model, pay special attention to its valve clearances. The recommended settings here are slightly higher at approximately 0.031 inches (or 0.79 mm) for both intake and exhaust valves. These increased clearances allow for better airflow and more power output—essentially giving your engine the room it needs to breathe freely. By understanding these specific clearances, you can help maintain your classic car's performance and longevity, ensuring that each drive is as exhilarating as the last. “`markdown Adjusting Valve Clearance Loosening Retaining Bolts Before you start adjusting valve clearance, it's crucial to ensure that the retaining bolts are loose. Think of these bolts like the screws holding a hinge in place – they need to be just right to allow movement without causing damage. If the bolts are too tight, it could lead to uneven wear or even permanent damage to your valves. Gently loosen each bolt with an appropriate wrench, ensuring that you don't overdo it. Remember, these bolts are designed to hold things in place but also allow for slight adjustments. Adjusting the Clearance Now comes the fun part – adjusting the clearance itself! Imagine you're setting up a delicate balance on a seesaw; you need to get it just right so everything runs smoothly. Use a thin screwdriver or a valve adjustment tool to turn the camshaft adjuster, which is essentially like moving the fulcrum of our imaginary seesaw. As you turn, pay close attention to the movement and feel of the valve – it should be snug but not tight. If you have a partner, they can help by listening for any unusual sounds or checking if the valve seems overly tight.The A.A. Service Manual/Twelve Concepts for World Service 2021 - 2023 Re-tightening Bolts Once you've made your adjustments, it's time to secure everything in place. Start by retightening the retaining bolts using the appropriate torque settings. It's like putting back all the pieces of a puzzle – each one must fit perfectly for the whole system to work well. Use a torque wrench if necessary; this ensures that you're applying just the right amount of pressure, neither too much nor too little. This step is crucial because it prevents any future movement or damage to your valves. “`