manton Pushrods®

Leaders in Valvetrain Development

manton Rockerarms®

Product Catalog

ABOUT MANTON

The Manton Family has been involved with the Motorsports Industry since the late 1960's. The Manton name became commonly associated with hardcore valvetrain hardware, the highest quality race car engine components and exceptional service.

In 1978, at the age of eleven Terry Manton assembled his first pushrods while working for Sig Erson Racing Cams. By 1983 Terry was manufacturing Pushrods under the Manton name with his parents. In 1995 Terry and myself opened Manton Racing Products which is the start of what we are today. Just as Terry branched out on his own and left the family business (Manton Engineering), our son Trevor was born the same year. By the turn of the century Trevor was following in his fathers footsteps and Jordan was born. At this time, I was dedicated to the business end of the daily operations of the company. Terry's focus was innovating solutions to our customer's issues and exceeding their expectations of quality. At that time we both juggled raising the boys as they grew up in the business.

With the passing of Terry Manton is early 2012, his legacy will continue to thrive because of the foundation Terry and I built.

Since Terry's passing, led by myself, Manton Pushrods & Manton Rockerarms is the leader in Pushrod and Rockerarm technology, setting the bar for the next generation in valvetrain. The innovation that drives this company forward comes from a team of highly skilled and motivated individuals. This team has been assembled over many years and each member has a passion for motorsports.

Today, we take a big step forward seeing several new rockerarm packages developed by the third generation of Manton Boys, Trevor and Jordan.

I would like to thank our employees, customers, race teams and family for your support and loyalty. Manton Racing Products would not be what we are today with out everyone doing their part.

– Robin Manton

Terry, Trevor & Jordan at the races.

The boys practicing the trade with Grandpa.

manton Pushrods

manton Rockerarms







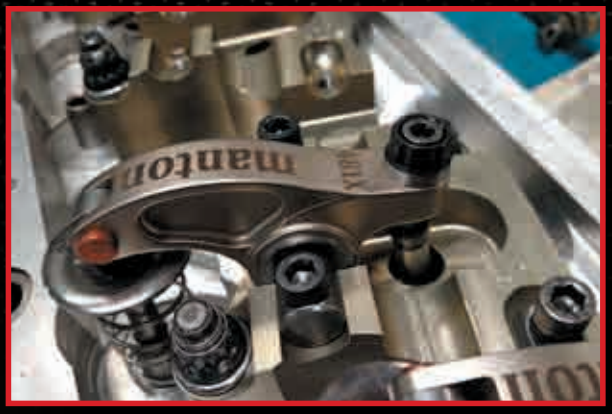


manton
Rockerarms

CUSTOM ROCKERARM SYSTEMS

Manton Racing Products has been in the manufacturing business from the start. Our multi axis CNC Mazak Milling and Turning Centers can make just about any product needed in the racing industry. Whether it is a simple bushing, heat treated washer, or an intricate system of a part, we are here to help.

We manufacture a multitude of parts for our valvetrain systems working with a wide variety of materials, manufacturing styles and heat treatment process'; becoming very efficient at what we do. If you have a product you need manufactured , please contact us and we can help take your idea from concept to product . We offer 3-D prototyping services which allows for you to check your designs before we ever start machining.



Billet Big Block Rockerarm Upgrades

After many requests from engine builders and race teams, our 1.650 front fulcrum roller tip Big Block Rockerarm has been added to our product line. The standard features of the Manton "I -Beam" rockerarm are incorporated into the design with the prime intention of increasing the strength, stiffness, stability, and reliability required in the higher abuse applications.

The I-beam rocker design is not a new idea, in fact it is far from it. No one can claim to have the original I-beam rockerarm; many rockerarms designed back as far as 1918 were I-beam shaped. With that said, it is the preferred design theory when it comes to strength and stiffness. This theory is superior whether we are designing a bridge, a building, or a rockerarm.

The Manton roller tip I-beam rockerarm provides the highest strength-to-weight ratio of any design configuration. We use only the highest grade steel to manufacture all of our rockerarms; this is not a forged rockerarm. Each rockerarm body is heat treated to a tensile strength of 305,000 psi. These are true billet rockerarms, providing a perfect grain alignment which improves reliability and consistency. We have also incorporated "nitrided" tool steel rockerarm shafts to minimize the possibility of the shaft wearing out or breaking.

This rockerarm has been designed to incorporate a pressure fed, high load bushing. The oil coming up from the lifters supplies oil to the adjusting screw, which is drilled to allow oil to pass through to the body and into an oil band in our rockerarm shaft. By removing the needle bearing, it will allow the valve spring to retain control of the valve up to a higher rpm level before surge will occur. This is achieved by removing a multitude of negative frequencies being emitted by the needle bearings (Valvetrain noise on the Dyno or Spintron will be noticeably quieter). We also tried to address roller-to-valve time alignment issues. Use of shim washers between the stands and rockerarm body will allow for the roller to be located over the center of the valve tip. While at the same time, these shims are limiting the oil spillage coming up via the pushrods. By adjusting the rockerarm body to the rockerarm stand clearance, pressure between the shaft and bushing can be tailored to meet your engines specific needs.

We couldn't stop there, we have also increased the area of both the pushrod loading surface and the roller loading surface to handle higher abuse and increase rpm capability. The standard adjusting screws for Big Blocks has been 5/16 cups for many years; we have shifted to something we feel is more adequate. We now incorporate the same 3/8 ball adjusting screws that we use in Top Fuel and Blown Alcohol rockerarm assemblies. This valvetrain option with the cup on the pushrod and the ball on the rockerarm has proven to be a much better performing combination. This prevents unnecessary pushrod and adjusting screw galling, caused from lack of oil on fire up. In the nose of the rockerarm, the roller wheel has been increased in size to a very large .571" with a .275" pin. This combination will handle higher engine speeds and cylinder pressures. The pin and roller along with the adjusting screw, have proven their durability in applications with high cylinder pressure and engine speeds in excess of 11,000 rpm.

The Manton billet rockerarms can be used in high abuse applications as a direct replacement of your T&D or Crower rockerarms with the same ratio, bolting directly onto their stands.

PART #	Description
RA BBC-SYS	BBC Rockerarm System - Rockerarms, Stands, Shafts, Shims & Bolts
RA BBC-STD	Rockerarm 1.65 FL x 1.75 Ratio & Shaft .625 x 2.000 for Non Offset T&D or Crower Rocker Stands
RA BBC-120R	Rockerarm 1.65 FL x 1.75 Ratio & Shaft .625 x 2.000 for .120 Right T&D or Crower Rocker Stands
RA BBC-120L	Rockerarm 1.65 FL x 1.75 Ratio & Shaft .625 x 2.000 for .120 Left T&D or Crower Rocker Stands
RA BBC-080R	Rockerarm 1.65 FL x 1.75 Ratio & Shaft .625 x 2.000 for .080 Right T&D or Crower Rocker Stands
RA BBC-080L	Rockerarm 1.65 FL x 1.75 Ratio & Shaft .625 x 2.000 for .080 Left T&D or Crower Rocker Stands
LSN-RKR-STD	Rockerarm 1.75 FL x 1.75 Ratio
RA 481X-SR20	Rockerarm 1.875 FL x 1.75 Ratio

-T After part number indicates T&D Stands. -C After part number indicates Crower Stands.

Manton Tool Steel LS & LT Roller Rockerarms

We are proud to have developed Tool Steel roller rockerarms for the Gen IV & V, LS & LT series GM engine platforms. Our rockerarms incorporate decades of Manton family valvetrain engineering experience from the highest levels of all racing such as Top Fuel, Blown Alcohol, Cup, GTP, Baja, Pro Mod, Pro Stock, etc. We have completely re-engineered these rockerarms to be the highest level of bolt on upgrade systems that could be designed and also wouldn't require cylinder head modification.

With that said, we designed this system to be used in all applications, from your daily driver to your hot rod. We have a non-adjustable version for a hydraulic lifter set-up that can easily withstand a 2,500+ HP Tube Chassis race car. There's also an adjustable version for solid lifters that will live through just about anything.These new systems feature fully pressure fed oiling and have been converted to a ball pivot on the rockerarm, making the pushrod a ball/cup. We have incorporated our choice of materials in each component used in these systems, using the exact materials used in one of our 10,000 HP rated Top Fuel rockerarm bodies.

Our LS/LT rockerarm bodies incorporate a taller stance for increased strength. Therefore, these rockerarms will not fit under factory covers and we will be including Billet aluminum valve covers with each set of rockerarms we sell. These Billet valve covers are available in 2 choices; with or without coil mounts.

PART #	Description
LS1-RKR-KIT-A	Roller Rockerarm System - Adjustable - Billet Valve Cover - LS1, LS2, LS6
LS1-RKR-KIT-F	Roller Rockerarm System - Non Adjustable - Billet Valve Cover - LS1, LS2, LS6
LS3-RKR-KIT-A	Roller Rockerarm System - Adjustable - Billet Valve Cover - LS3
LS3-RKR-KIT-F	Roller Rockerarm System - Non Adjustable - Billet Valve Cover - LS3
LS7-RKR-KIT-A	Roller Rockerarm System - Adjustable - Billet Valve Cover - LS7
LS7-RKR-KIT-F	Roller Rockerarm System - Non Adjustable - Billet Valve Cover - LS7
LT-RKR-KIT-A	Roller Rockerarm System - Adjustable - Billet Valve Cover - LT1, LT4, L83, L86
LT-RKR-KIT-F	Roller Rockerarm System - Non Adjustable - Billet Valve Cover - LT1, LT4, L83, L86
LS-COVER	LS Billet Aluminum Valve Cover - Billet Fill Cap - Baffled Breather, O-Ring
LT-COVER	LT Billet Aluminum Valve Cover - Billet Fill Cap - Baffled Breather, O-Ring
LS-100	LS/LT Billet Tool Steel Trunnion
LS-100-Kit	LS/LT Billet Tool Steel Trunnion Kit Kit includes: 16 Trunnions, 32 Bushings, 32 Shims, 32 C-Clamps, G-Hone, Install Tool

Manton Gen III Hemi Hardware

In the last decade just as its previous counterparts, many have pushed the limits with the Gen III Hemi engine family. With valvetrain stability being our main focus, we have made several key improvements to the rockerarm system. This will ensure improved overall performance and service life of your valvetrain, regardless of power output or application. Our system incorporates decades of Manton family Hemi valvetrain engineering experience from the highest levels of all racing such as Top Fuel, Blown Alcohol, Pro Mod, Pro Stock, etc.

We have designed this system to be the ultimate bolt on upgrade that could fit within the constraint of the OEM cylinder heads. We have designed this system to be useable in all applications, from your daily driven hot rod all the way up to you 2,500+ HP Tube Chassis Race Car. This system has been engineered to live through just about anything. Furthermore, our .250 wall chromoly rockerarm shafts are designed and manufactured to help stiffen the overall system. To stiffen the valvetrain even furthur, we have developed a special pushrod tip end to allow the use of our 3/8 diameter pushrods. This will provide more than double the strength of the OEM 5/16 diameter pushrods.

All in all, we have engineered this system to provide the strength and reliability you need to rest easy while increasing the power of your Gen III Hemi engine.

Includes: Non-adjustable intake & exhaust rockerarms, .250 wall nitrided shafts, shaft collars & tie bars, ARP retention bolts

Hellcat Billet Aluminum Valve Covers

Manton's Hellcat Hemi Billet Aluminum Valve Covers are cnc machined from solid bar stock. These premium covers have a fully baffled (-12) breather on each cover and also include a fill port on one of the covers with a billet cnc machined aluminum fill cap. The coil mounts have been directly machined into the billet covers, not welded, to ensure proper coil placement everytime. We have increased valve cover height to accommodate the taller heights of most aftermarket rockerarms. This will also allow clearance for large valve lift camshafts. These are fully o-ringed at all of the surfaces which meet with the cylinder head, as well as incorporating an o-ring into the fill cap. Our covers have a very distinct look to them which has been accomplished by ball milling the entire 3D shape of the cover to improve the visual quality.

Available for 5.7L & 6.4L late model Hemi's.

PART #	Description
GEN3-KIT-F	Roller Rockerarm System - Non Adjustable - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
RA 3070	Rockerarm Shaft - Intake or Exhaust - .250 Wall Nitrided - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
RA 2351-16	Shaft Collar Clap - Aluminum - 22mm I.D. - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
RA 090-GEN3	20 ARP Rockerarm Shaft Bolts - 20 Washers - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
RA 2361-10-E	Shaft Straps - Eagle Cylinder Head - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
RA 2361-10-A	Shaft Straps - Apache / Thitek Cylinder Head - Gen 3 Hemi - 5.7L, 6.1L, 6.4L
GEN3-HELL-COVER	Gen 3 Hemi Billet Valve Covers for Hellcat w/ Breather
GEN3-STD-COVER	Gen 3 Hemi Billet Valve Covers for 5.7, 6.1 & 6.4

Top Fuel/426 Street Hemi Intake & Exhaust Roller Rockerarms

Manton is proud to announce we have engineered both intake and exhaust roller rockerarms for the Top Fuel and original 426 Street Hemi cylinder heads. These were developed with key improvements to its overall design for increased durability and performance in even the most demanding environment, while staying in line with existing valvetrain formats used today in NHRA and IHRA.

This system is designed to excel in the most stressful of situations with the use of high impact resistant Tool Steel bodies, along with our proven aerospace grade hardware that has also been incorporated. Our engineers have increased the pin and roller diameter in these bodies to handle even the most extreme abuse. Further improvements have been made by increasing load capacity in both the intake and exhaust rockerarms through more robust 7/16 x 20 adjusting screws featuring a 3/8 ball to take much higher impact forces. The adjusting screws will remove the heat that is being created at the pushrod cup via the pressure fed oil coming from the rockerarm shafts. This reduces the chance of damaged or worn pushrod cups.

We used proven design techniques to allow for maximum performance potential of your valvetrain no matter what the application may be.

PART #	Description
RA 426SH-I	Top Fuel & 426 Street Hemi Tool Steel Intake Rockerarm - 1.8 Ratio
RA 426SH-E	Top Fuel & 426 Street Hemi Tool Steel Exhaust Rockerarm - 1.7 Ratio

Stage 4 481X Rockerarm System

We are proud to offer a complete 481X rockerarm system for the Stage 4 cylinder heads which provides superior durability, reliability and strength. This system has been designed to offer a much higher load capacity which will allow stability of the valvetrain to be maintained to a much higher rpm and cylinder pressure. The needle bearings have been completely removed from the rockers by incorporating a high load capacity bushing which will reduce the negative frequencies within the entire valvetrain. Lastly, we have incorporated a pressure fed tool steel ball adjusting screw which provides more than double the bearing surface area on both the adjusting screw and pushrod.

PART #	Description
RA 481X	481X Rockerarm Assembly - for Stage 4 cylinder heads (includes rocker bodies, stands, shafts, shims, studs & nuts)
RA 481X-SR20	Rockerarm 1.875 FL x 1.75 Ratio

High & Low Ratio Fathead Rockerarm Shaft Assemblies

Our long term goal is to provide valvetrain products capable of providing superior performance, reliability and durability in applications where engine speeds will exceed 10,000+ RPM and provide stability far past that number. When first approaching this project we found several issues needing attention. As we worked through the design process we incorporated a solution to each one of the following issues:

Rockerarm Geometry: Proper rockerarm geometry is critical in any engine assembly, especially with engine speeds in excess of 10,000+ RPM. There is nothing magical or mysterious about the subject, so instead of just a guess we followed some basic rules and corrected the geometry of our rockerarm assemblies. We incorporate this basic geometry theory in everything we design. Manifold boost and cylinder pressure are also a major consideration in this process. We feel rockerarm geometry to be dynamic, not static.

Oil Transfer and Oil Leaks: We oil our assembly through the fourth cam bearing as with most Chrysler type blocks. From there, through a series of transfer passages, the oil fills both shafts. Radial transfer passages provide full time oiling to the intake and exhaust adjusting screws / pushrod cup interface through the adjusting screw. This is commonly referred to as "Forced Oiling". Very tight clearances between the rockerarm stands and the shafts help to eliminate the majority of the excess oil spillage and pressure loss. Threaded plugs are used in each shaft to minimize the possibility of pressure loss out the ends of the shafts. When changing over from the stock rockerarm assembly to the Manton assembly you can expect an oil pressure increase of 10 to 15 pounds. Our rockerarm assemblies DO NOT require the use of restrictor jets.

Strength, Stability and Rigidity: By adding the strength and support of a load screw at each rockerarm we have more than doubled the strength of the assembly. By using heavy duty rockerarm shafts and attaching the shafts to the stands with the load screws we have again strengthened the assembly. Each of the materials used have been selected for their ability to do its specific job. The heat treat procedure and preparation for each material also has been carefully selected. Bottom line is we have produced a finished product that has the ability to maintain valvetrain control at engine speeds over 10,000 RPM. Over a decade of race day testing and hundreds of hours of lab tests have allowed us to offer a suggested valvetrain combination that is stable far past 11,200+ RPM and at the same time, the service life of the valve springs, roller lifters and all valvetrain components will be extended. The strength and rigidity of each component in combination with each other allows for a finished product that performs very well, in the most extreme environment. Some say, "a little flex is good". We Respectfully Disagree. Our response is, "If a little flex is better than why do F1 and INDY engines not use Pushrods"?

We refer to our stands as Low and High ratio. This reference is to the exhaust rockerarm ratio. Low being 1.6 to 1 and high being 1.7 to 1. The intake ratio remains the same in either choice.

Rockerarm Assemblies

PART #	Description
RA 47080BP	Fat Head, Low Ratio w/ Manton Roller Tool Steel 1.6BP Exhaust Rockerarms & 1.8BP Intake Rockerarms
RA 45080BP	Fat Head, High Ratio w/ Manton Roller Tool Steel 1.7BP Exhaust Rockerarms & 1.8BP Intake Rockerarms
RA 46080BP	Fat Head w/ Raised Exhaust Shaft, High Ratio w/ Manton Roller Tool Steel 1.7BP Exhaust Rockerarms & 1.8BP Intake Rockerarms

Intake & Exhaust Rockerarms *(Fat Head using Manton Rocker Stands)*

PART #	Description
RA 2808BP	Intake Tool Steel Rockerarm Fat Head BP, 1.80 to 1 Ratio w/ 3/8 Ball Adjusting Screw
RA 2700 LR	Exhaust Tool Steel Rockerarm Fat Head 1.60 to 1 (Roller Tip)
RA 2700 R	Exhaust Tool Steel Rockerarm Fat Head 1.70 to 1 (Roller Tip)

Rockerarm Stands

PART #	Description
RA 4400-R	Raised Rockerarm End Stand - Manton Assembly
RA 4401-R	Raised Rockerarm Center Stand - Manton Assembly
RA 4400	Standard Rockerarm End Stand - Manton Assembly
RA 4401	Standard Rockerarm Center Stand - Manton Assembly

Rockerarm Shafts

With valvetrain stability being our main concern we manufacture our shafts to be very stiff. Our choice of material is .250" wall thickness 4130 Chromoly steel. Each pre-heat treated shaft is prepared in a four axis milling center, then center-less ground undersize, hard chromed oversize and finish ground to size. This leaves a hard chrome surface .008" deep, providing excellent wear protection in any application, including use in your daily driven street Hemi. Our Fat Head shafts feature a new type of radial oil transfer passage which provides full time oiling to the pushrod and adjusting screw. Without this new oiling feature the stock oiling passage is shut off as soon as the rockerarm starts to open the valve. All of our shafts use a threaded plug to seal each end. This eliminates any chance of an oil leak from worn or poor fitting O-rings.

PART #	Description	Size	Application
RA 3010	Rockerarm Shaft (Intake)	.250 Wall	426 Chrysler Hemi
RA 3020	Rockerarm Shaft (Exhaust)	.250 Wall	426 Chrysler Hemi
RA 3030	Rockerarm Shaft (Intake)	.250 Wall	Alcohol Head Manton Stands
RA 3040	Rockerarm Shaft (Exhaust)	.250 Wall	Alcohol Head Manton Stands

Spark Plug Tubes

Small diameter spark plug tubes minimize the possibility of rockerarm to tube contact. These tubes are a direct replacement for your existing tubes. Top and bottom ends are billet aluminum and the tube body is 4130 steel. The steel body will not dent or wear if the rockerarm rubs during operation. The tube diameter allows for an additional .040 of clearance. (O.D. = 1.180).

"A minor modification must be made to the spark plug boot to allow the boot to enter the tube".

PART #	Description	Application
RA 0240	Small Plug Hole Spark Plug Tube, Stock Length 5.980	Street Hemi
RA 0245	Small Plug Hole Dual Spark Plug Tube, Stock Length 5.980	Top Fuel - BAE, AJPE, Venny
RA 0250	Small Plug Hole Spark Plug Tube, Length 7.770	Noonan X1, BAE, AJPE, Muscle, Total Flow
RA 0255	Large Plug Hole Spark Plug Tube, Length 7.770	Noonan X1, BAE, AJPE, Muscle, Total Flow
RA 0270	Large Plug Hole Spark Plug Tube, Length 6.915	Noonan Billet Cover

Rockerarm "Shaft Springs"

Rockerarm shaft springs have been preferred by most over locating clamps. Springs are trouble free, require no attention and allow you to service the engine without the worry of leaving a screw untightened. Coiled from music wire they provide 7.5 pounds of pressure at 1.950" height. This pressure is slightly higher than the common spring. Rockerarm shaft shims are made from spring steel and heat treated for wear resistance.

PART #	Description	Application
RA 2200	Spring Kit (7 Long / 1 Short / 24 Shims)	Chrysler Hemi (One Head)
RA 2201	Spring Kit (8 Long / 24 Shims)	Fat Head (One Head)
RA 2210-1	Shims .876 x 1.210 O.D. x .016 (1 each)	All with .875 (7/8") Diameter Shaft
RA 2211-1	Shims .625 x 1.000 O.D. x .015 (1 each)	All with .625 (5/8") Diameter Shaft

Rockerarm "Shaft Clamps"

Rockerarm shaft clamps do a very good job of holding the rockerarm in position during operation. Most HEMI engines use a spring to statically push the rocker against the rocker stand and the angularity of the pushrod maintains the rocker in that position. During valvetrain surge the only alignment provided is from the interference of the pushrod and the access hole in the cylinder head. The good stability is achieved by using a large diameter pushrod, which limits the lateral travel of the rocker body on the shaft. By using a shaft clamp the rocker body is held in position even during harsh valve float.

PART #	Description	Application
RA 2350-8	.875 I.D. Aluminum Clamps (8 pcs.)	All with .875 (7/8") Diameter Shaft
RA 2350-16	.875 I.D. Aluminum Clamps (16 pcs.)	All with .875 (7/8") Diameter Shaft

Hardware

PART #	Description
RA 0737-1	3/8 Flange Washer .745 x .501 x .450
RA 0220-20	Stud Kit - Rocker Stand to Head 3/8 x 2.750 (10 Step & 10 Std)
RA 2315-20	Load Screws (Manton Rockerarm Stand) 5/16 x 1.750 Socket Head (20 ea)
RA 2400-8	Pipe Plugs 1/16 NPT x Brass (8 each)
RA 2405-8	Pipe Plugs 1/8 NPT x Brass (8 each)
RA 2410-8	Oil Restrictor 1/16 NPT x .080" Socket Head (8 each)
RA 2420-8	Oil Restrictor 1/16 NPT x .125" Socket Head (8 each)
RA 2430-8	Shaft Plugs 7/16 x 20 x .375 (8 each)
RA 0800-1	Pin & Roller for Manton Fat Head Intake Rockerarm - Old Style (6 mm x .760)
RA 0802-1	Pin & Roller - Standard Big Pin (7 mm x .8275) & Roller

manton Pushrods®

CUSTOM MADE PERFORMANCE

Mantons versatility in engineering, design and manufacturing results in the highest quality and best performing solutions possible. We can create and produce both pushrods and rockerarms stronger, more durable and better performing for your engines needs. All of our products are made from the highest quality materials on earth. Our specific selections of steels are used for their specific characteristics. This allows us to manufacture pushrods and rockerarms designed to enhance your specific engine combination.

Because every single engine is different, we do not mass produce any of our products. Pushrods are only made custom to order, with an average lead time of only 2 – 48 hours. We feel it is unnecessary to compromise valvetrain geometry by offering off the shelf pushrods. We take pride in knowing we produce the absolute highest quality valvetrain components available anywhere on earth. If you have a need for a product that we do not normally produce, please call us and we will be happy to discuss making it for you.


manton
Part # 905-B
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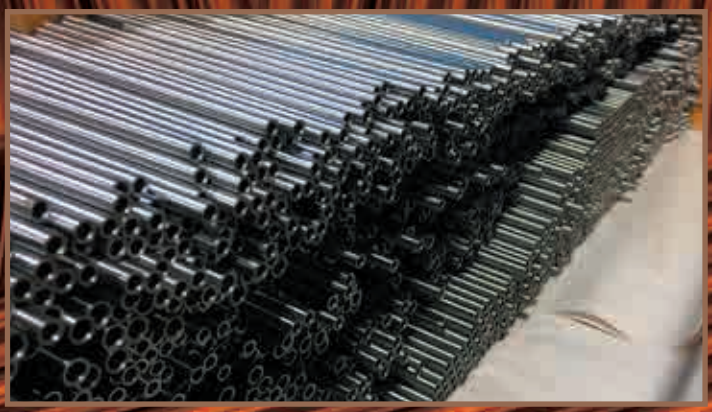


WHY 3 PIECES?

1 Each end of a pushrod must be compatible with the mating components specific material, heat treatment and surface preparations. This requires the use of materials that function as a bearing material and an impact surface (see tip material on page 5). As an added benefit, the center section of the pushrod becomes dramatically stronger by reducing the length of the tube.

2 A three piece pushrod allows us the flexibility to create "unique" tapers for any clearance issues. Another benefit is the ability to create any wall thickness, diameter or harmonic frequency required (frequency can predetermine valvetrain surge points).

3 The column of a pushrod MUST be made out of a different material and heat treated differently than its tips. This provides the strength necessary to withstand the combined abuse of high engine speed and cylinder pressure. By using dissimilar materials from the pushrod end, we are not limited to a simple carburize and case procedure used when making a single piece pushrod. However, our custom blend of chromoly steel tubing can be heat treated to provide the specific attributes required to increase service life and performance. In our series 2 & 4, we impregnate carbon into the surface of the tubing after heat treatment. This provides durability and wear resistance for guide plate use. For our series 5, we use a multi stage proprietary heat treating process to increase the material value to a Rockwell of approximately 46 "C" to the core. This is critical to the performance and durability of a pushrod. We also offer a proprietary tool steel material that can be heat treated to PSI material values higher than any custom blend chromoly. It is very impact resistant and is the perfect material for the most extreme applications.

In our professional experience, the only reason to produce a one piece pushrod would be to cut the cost of manufacturing.

MATERIAL COMPATIBILITY

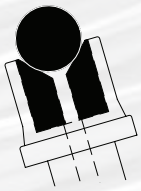
To ensure proper wear of pushrod tip and adjusting screw surfaces we offer three different material options.

The most commonly used by Manton is high grade bearing steel. This same material is often used when manufacturing high grade gears. This material when heat treated correctly, exhibits excellent wear properties and is very impact resistant. We heat treat our tips to mate properly with lifter and rocker bearing surfaces.

When using rockerarms with higher end adjusting screws made of tool steel, it is common for the surface hardness to be in excess of 70+ Rockwell "C" after heat treatment. In applications like this, we must use an upgraded tip material which is also tool steel. We are very particular about the heat treat characteristics of our tool steel tips and adjusting screws. This is done to provide higher maximum loads before failure.

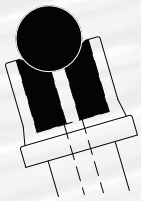
In some applications our proprietary hybrid copper alloy insert is utilized. This insert is pressed into a tool steel receiver cup for support. This copper alloy cup is for use in conjunction with a tool steel ball adjusting screw in the rockerarm. The reason we use copper is because of its excellent coefficient of friction and superior lubricity characteristics. This combined with the use of low viscosity oil has decreased the issue of premature wear in applications such as Pro Stock, Pro Mod, Super Stock, Comp Eliminator and Sprint Car. The copper alloy cup combination is extremely durable and reliable in this type of environment.

V-CUP DESIGN



The V-Cup design was the original answer to a major fit problem that started to become an issue as the rockerarm ratios approached 2 to 1. The lack of working room between the rockerarm body and the pushrod had been reduced to the point where it became necessary to decrease the adjusting screw ball diameter and the problem was solved. Several other problems then appeared mainly because of the very small contact ring in the pushrod end. We have made a few small changes that have shown excellent results.

Copper Radius Cup Advantages



The increased surface area in the Copper Radius Cup provides several advantages:

- Reduced heat generation = Improved reliability.
- Reduced surface loading = Resulting in extended service life.
- Depth of engagement = Reduces the possibility of damage during valvetrain surge.
- Overall design = Durability and cost effective.
- Longer hydrodynamic wedge = Cooler running temperature.

This style Pushrod end is most commonly used in the following applications:

- Pro Stock, Competition Eliminator, Pro Mod, Super Stock.
- Pulling Trucks and Tractors.
- Sprint Cars.

Pushrod Tips

Manton Pushrod Tips are CNC machined in house to ensure quality control and versatility. They are made from high impact, wear resistant, bearing steel bar stock. We then put them through a three stage heat treatment regime.

In addition, we also offer a variety of tips made from our proprietary tool steel. This material is put through an even longer, more intensive heat treatment regime. Tool steel pushrod tips are most commonly used in conjunction with tool steel rockerarm adjusting screws.

We also have two designs of our proprietary copper alloy inserted tip available for our .281 and 5/16 ball adjusting screws, which are offered in both v-cup and radius cup shapes.

To view a complete list of pushrod ends visit our website.

Rockerarm Adjusting Screws

Our Rockerarm Screws are made of tool steel that is heat treated, triple tempered and nitrided for wear resistance. This combination of materials and heat treat procedures makes the most durable and reliable screws available anywhere. All screws are manufactured with rolled threads and broached to accept an allen wrench. The screws are available with or without oil holes for pre-lube and oil grooves for pressure feed oiling. Manton makes custom screws on request, minimum quantities may apply.

Stocked Sizes:

.281 Ball - 3/8 x 24 Thread

.281 Ball - 7/16 x 20 Thread

5/16 Ball - 3/8 x 24 Thread

5/16 Ball - 7/16 x 20 Thread

3/8 Ball - 3/8 x 24 Thread

3/8 Ball - 7/16 x 20 Thread

13/32 Ball - 12 mm x 1.0 Thread

10 mm Ball - 3/8 x 24 Thread

13/32 Ball - 7/16 x 20 Thread

5/16 Cup - 3/8 x 24 Thread

5/16 Cup - 7/16 x 20 Thread

Important Special Instructions and Suggestions

1 It is very important to determine proper pushrod length. Improper pushrod length can cause a number of problems including excessive valve guide wear, lessened valve lift, valve stem side thrust, coil bind, improper valve to piston clearance and also rockerarm to retainer interference (in some cases lash caps can be used to help correct rockerarm to retainer clearance problems).

2 Check the radius of the lifter receiver cup and rockerarm cup/ball before ordering to help prevent mistakes. Improper ordering may result in parts failure. Watch for variations from stock radius in aftermarket lifters.

3 Make sure significant oil volume reaches the rockerarm end of the pushrod. This will help prevent galling due to excessive heat generation and lack of lubrication. To prevent interrupted oil flow to the pushrod, it is very common and sometimes necessary to modify the lifter body so oil flows through it no matter where it's positioned in the lifter bore (call for details). Oil restriction in the engine block is not normally recommended.

4 Many problems occur when a pushrod is inadequate for the application. When possible, try to use larger diameter pushrods to spread out the load and lower the stress on the tube. This will help lessen pushrod deflection. Heavy wall tubing can minimize compression of the column.

5 In high load applications large diameter heavy wall tubes are a must. These applications include the use of a blower, turbo charger, nitrous oxide, nitromethane, high spring pressures, and engine speeds over 7,000 rpm.

6 Do not allow over clearancing for the pushrod. This may cause the pushrod to move around or deflect more than needed. Clearance of .010 at the closest point of contact is sufficient. The surface of the cylinder head or engine block can often be utilized like a large guide plate and dampening device which stabilizes the pushrod. Make sure there are no pushrod binding or interference problems when turning the engine over during assembly.

7 Tapered pushrods should not be used in guide plate applications. Improper clearance and interference problems are sure to occur. Use only straight tube pushrods, specifically surface hardened for guide plate use in this application. Note: See series #2 and #4 for guide plate applications.

8 If you are using a tool steel rockerarm adjusting screw, it is almost always suggested that a tool steel pushrod tip be used at the rockerarm end. This will ensure proper compatibility.

9 In race applications and engines with flat tappet camshafts, it is imperative to use engine oil containing sufficient friction modifiers. The most commonly known friction modifiers are zinc, phosphorus, sulfur and soluble moly disulfide. Read the bottle or contact your oil supplier.

10 When installing new pushrods in an engine or after replacing pushrod tips in repaired pushrods, it is a good idea to carefully check the rockerarm adjusting screws to make sure the contact surface of the screw has not been damaged. A damaged screw surface will damage the new pushrod tip.

11 When using Manton pushrods, adjustments to valve/cam timing, valve to piston clearance and fuel curve may be required. This is due to increased rigidity in the pushrod column, making valve action more accurate and efficient.

Column Strength

A pushrod is an eccentrically loaded column due to angularity load and arc motion throughout pushrod travel. Pushrods want to deflect most toward the bottom of the column near the lifter side of the pushrod. This is because of the angularity load. In most cases it is best to use the largest diameter pushrod that will fit in the engine. The increased diameter will lessen deflection and allow better valvetrain control.

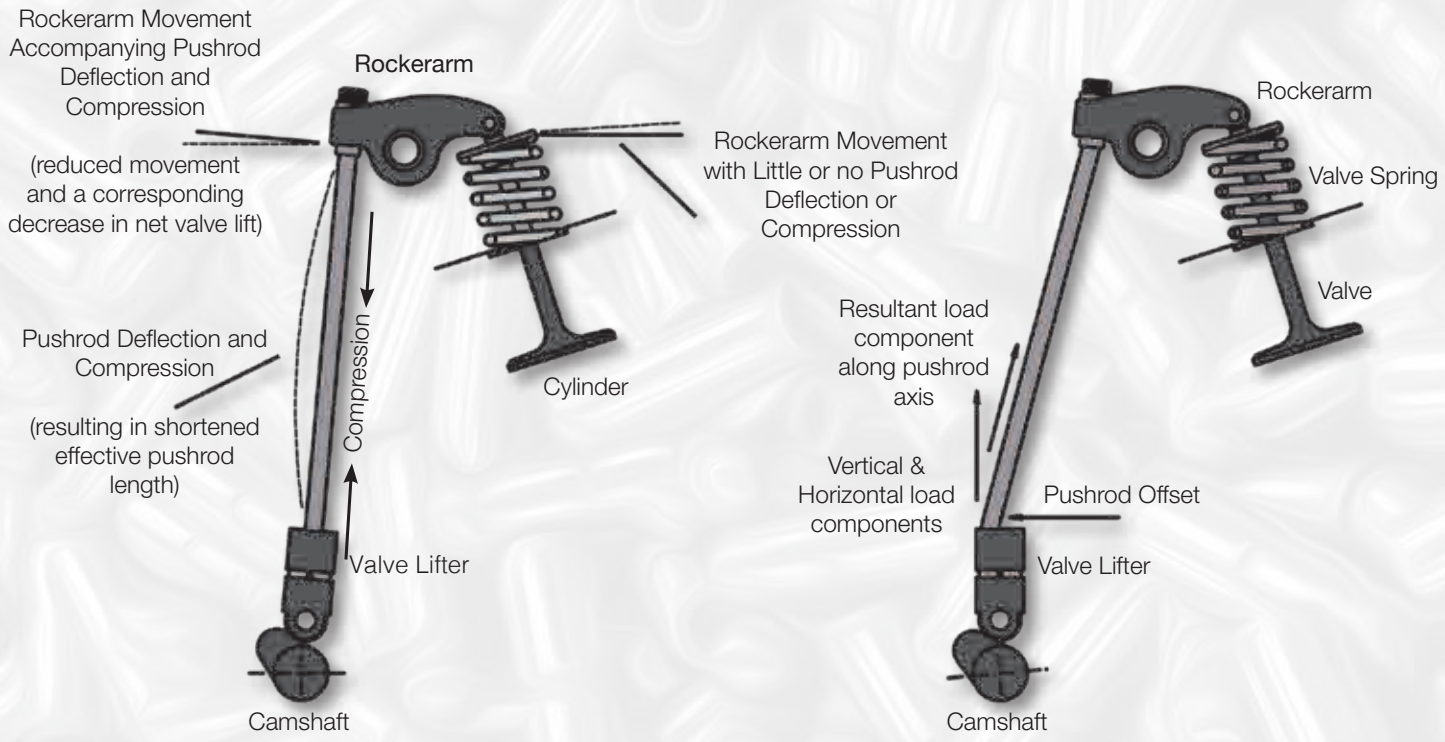
When checking and fitting for pushrod diameter it may be necessary to use a single taper or dual offset taper design, with the large end being toward the bottom. This places the larger diameter and increased mass properly to stiffen the pushrod where it wants to flex the most. The added clearance that the tapered design gives through the head and near the rockerarm can really be helpful. The taper on the tube can also help dampen harmonics in the valvetrain.

With a stiffer pushrod column, increased valvelift should be able to be measured statically in applications using a lot of spring pressure. The higher the engine speed the greater the increase will be at running speed. Keep in mind that by increasing wall thickness to a pushrod column does add strength, the percentage of increase is very small. The large gain in column strength comes from increasing the pushrod diameter.

Do not be overly concerned about pushrod weight. The pushrod is on the slow moving side of the valvetrain. The additional weight of a heavy wall pushrod usually provides a much needed increase in valvetrain stability.

Pushrod Deflection and Compression Diagrams

Schematic Illustration of compound Load Angles on Typical Pushrod



Note: In this simplified illustration, you can see that pushrod deflection and compression can cause reduced net valve lift, the result of a foreshortened pushrod. Valve timing (duration and timing) can also be affected by inadequate pushrod stiffness.

Note: Adding to the complexity of pushrod loading are compound angles resulting from offset pushrod cups (in lifters) and angularity relationships among the pushrod, valve lifter and rockerarm. Oblique angles contribute to side-loading and complex load patterns placed on the pushrod. Although some degree of pushrod "shock absorbing" is virtually unavoidable, minimizing such deflection and compression is critical for maintaining proper valve timing.

Rockerarm Geometry and Proper Pushrod Length

Many variables directly affect determining proper pushrod length. Pushrod length is affected by all of the variables listed below.

- Block deck height
- Head deck height
- Cam base circle diameter
- Head stud boss height / rockerarm stand mounting pad
- Rockerarm design
- Lifter receiver cup height
- Valve stem height
- Adjusting screw placement per manufacture

Remember that every engine is different because the combination of these variables change from one engine to another. Take the time necessary to determine proper pushrod length with each engine you build. Do not assume that your pushrod length is the same as your friends engine. We have given some guidelines in this section to help you determine proper pushrod length for both roller rockerarms and shoe rockerarms. Each type of rockerarm style has different instructions.

With shaft mounted rockerarms, raising or lowering the stands to change the rockerarm shaft height is usually necessary to obtain proper rockerarm geometry. With stud mounted rockerarms, changing the pushrod length achieves the same effect.

1. Obtain an adjustable checking pushrod (available from Manton).
2. Light duty checking springs must be used in place of valve springs to allow you to rotate the valvetrain and check for proper contact pattern on the valve stem.
3. You will need an accurate measuring device to measure your adjustable pushrod once you have locked your adjustable pushrod at the correct length.
4. Ball/Ball designs are to be ordered by overall length measurement. (The standard flat diameter on the ends of the pushrods is .100)
5. Ball/Cup designs are most properly ordered by the effective length. This length is measured from the bottom of the cup radius to the tip of the ball. Overall length can also be given but tell us how deep the cup depth is. Make sure when ordering ball/cup pushrods that you specify effective or overall length.

Proper Pushrod Length With a Shoe Rockerarm

See “Diagram A” for Shoe Rockerarm

When using your adjustable pushrod checking tool and checking springs you want the contact spot to start on the intake side of the valve tip with the lifter on the base of the camshaft (position #1). At approximately 1/3 lift the contact spot should be in the center of the valve tip (position #2). At full lift the contact spot should be the same distance past the center of the valve tip toward the exhaust side as it was when the lifter was on the base of the camshaft (position #3). Fully closed is back to position #1.

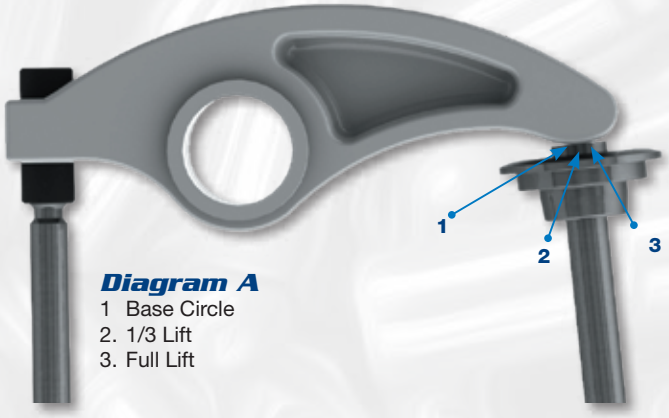


Diagram A
1 Base Circle
2. 1/3 Lift
3. Full Lift

Proper Pushrod Length With Roller Rockerarms

See “Diagram B” for Roller Rockerarm

As in diagram A you should use a checking spring during this procedure. This allows you to rotate the valvetrain without damaging the checking pushrod and eliminates the unwanted deflection that would occur from spring pressure.

To obtain the roller positions listed below you will be re-locating the rockerarm pivot point (rocker shaft). By moving the shaft up or down the roller contact position on the valve will change.

Diagram B
1. Valve is closed and the lifter is on base circle of camshaft
2. Half lift on opening side of the cam lobe
3. Full Lift
4. Half lift on closing side of cam lobe
5. Valve closed

With the valve completely closed and the lifter on the base circle of the camshaft, the roller should contact the valve at position #1 as shown in the diagram. As the valvetrain is rotated to 1/2 lift the roller will have traveled as far as it can and will stop at position #2. Continue to rotate the engine and at full lift the roller contact will be at its starting point. We will call this position #3. If the roller is not in exactly the same position at full lift as it was when the valve was completely closed, the rocker shaft must be moved. If the roller stops early the shaft must be shimmed up. If the roller stops late the shaft must be moved down. As you continue to rotate the valvetrain the roller will move back to position #4 when the valve is at half lift on the closing side and will finish at position #5 when the valve is completely closed.

Series Definitions

SERIES 1

Mild performance: *Non-guide plate use.* 4130/4135 chromoly tubing is much stronger than a stock pushrod. Provides 140,000 psi tensile strength. Not recommended for use with hardened guide plates or roller camshafts.

Sizes: 3/16" • 1/4" • 3/8" diameters. Straight tube, any length.

Mainly used in small engines from go carts to Volkswagens with low valve spring pressures and up to 250 hp.

SERIES 2

Mild performance: *Guide plate use.* 4130/4135 chromoly tubing is much stronger than a stock pushrod. Melonite™ processed for excellent wear resistance/durability. Provides approximately 150,000 psi tensile strength.

Sizes: 5/16" • 3/8" diameters. Straight tube, any length.

Mainly used to replace factory style guide plate pushrods for many different applications.

SERIES 3

Semi to high performance: *Non-guide plate use.* Hard drawn 4130/4135 seamless chromoly tubing, the highest quality available from mills. Originally formulated for aerospace/aircraft use. A higher quality pushrod which provides approximately 170,000 psi tensile strength. (Note – Shaft or pedestal style rockerarms should be used in conjunction with this series of pushrod because we do not case harden the tube for guide plate use.)

Sizes: 5/16" • 11/32" • 3/8" • 7/16" • 1/2" • 9/16" diameters. Straight tube or tapered, any length or variation of taper.

Used for multiple applications such as Sportsman, Diesel, and Factory Performance engines.

SERIES 4

Semi to high performance: *Guide plate use.* Hard-drawn 4130/4135 seamless chromoly tubing, the highest quality available from mills. Originally formulated for aerospace/aircraft use. Melonite™ processed for durability and excellent wear resistance. A higher quality pushrod which provides approximately 180,000 psi tensile strength.

Sizes: 5/16" • 11/32" • 3/8" • 7/16" diameters. Straight tube any length.

Used with any guide plate pushrod engine.

SERIES 5

The strongest most durable chromoly pushrod ever produced in the world. *Non-guide plate use.* This series of pushrods are manufactured for the most extreme applications possible. Utilizing 4130/4135 chromoly tubing and proprietary heat treating techniques we are able to achieve a 275,000 p.s.i. tensile strength from the tubing without causing it to become brittle. (Note – Shaft or pedestal style rockerarms should be used in conjunction with this series of pushrod because we do not case harden the tube for guide plate use.)

Sizes: 5/16" • 11/32" • 3/8" • 7/16" • 1/2" • 9/16" • 5/8" • 3/4" diameters. Straight tube or tapered, any length or variation of taper.

Mainly used in Cup, Top Fuel, Pro Stock, Pro Modified, Blown Alcohol, Pulling Tractor, Sprint Car and Offshore Marine.

TOOL STEEL

Our 3 piece all billet high speed tool steel pushrods are the strongest pushrod ever produced. This solid bar body pushrod is superior to all other pushrods available today. We use variety of materials and heat treatments that are specifically chosen for each customers engine.

Standard – Can be used in applications up to 8,000 hp engines and has bearing steel tip inserts. These pushrods can be shortened up to .150 and tip can be replaced one time.

Top Fuel – Our new style multi blend tool steel pushrod is an upgraded design for use in 12,000 + hp engines. This style pushrod has upgraded proprietary tool steel tip inserts with no pocket behind the tip. This provides a much stiffer and more durable component in the most extreme applications. This pushrod can not be refurbished due to the uncontrolled combustion environment.

Sizes: 3/8" • 7/16" • 1/2" • 9/16" diameters. Straight tube or tapered, any length or variation of taper.

Mainly used in Top Fuel, A Fuel, Blown Alcohol, Pro Modified, Nostalgia, Pulling Tractor.

Order form available on website.

Products

We offer many wall thicknesses which allows you to vary the frequency and column strength of the pushrod. This provides a unique tunable valvetrain tool.

Series 1 *Mild Performance - 4130/4135 Normalized*

PART #	Straight Pushrods				Non-Guide Plate Use
103	3/16	x	.035	Wall	
104	1/4	x	.049	Wall	
102-035	3/8	x	.035	Wall	
102	3/8	x	.058	Wall	

Series 2 *Mild to Medium Performance - 4130/4135 Normalized Melonite™ Processed*

PART #	Straight Pushrods				Guide Plate Use
201	5/16	x	.065	Wall	While Supplies Last
202	3/8	x	.058	Wall	While Supplies Last

Series 3 *Medium to High Performance - 4130/4135 Hard Drawn*

PART #	Straight Pushrods				Non-Guide Plate Use	
301	5/16	x	.083	Wall		
301-118	5/16	x	.118	Wall		
302	11/32	x	.120	Wall		
304	3/8	x	.095	Wall		
304-145	3/8	x	.145	Wall		
305	7/16	x	.120	Wall		
305-168	7/16	x	.168	Wall		
306	1/2	x	.120	Wall		
306-156	1/2	x	.156	Wall		
306-188	1/2	x	.188	Wall		
307-156	9/16	x	.156	Wall		
307-188	9/16	x	.188	Wall		
310	11/32	to	5/16		.120 Wall	Single Taper
311	11/32	to	5/16		.120 Wall	Dual Taper
312	3/8	to	5/16		.095 Wall	Single Taper

Order form available on website.

Series 3 contd. *Medium to High Performance - 4130/4135 Hard Drawn*

PART #	Tapered Pushrods			Non-Guide Plate Use	
312-145	3/8	to	5/16	.145 Wall	Single Taper
313	3/8	to	5/16	.095 Wall	Dual Taper
313-145	3/8	to	5/16	.145 Wall	Dual Taper
314	3/8	to	11/32	.095 Wall	Single Taper
314-145	3/8	to	11/32	.145 Wall	Single Taper
315	3/8	to	11/32	.095 Wall	Dual Taper
315-145	3/8	to	11/32	.145 Wall	Dual Taper
316	7/16	to	3/8	.120 Wall	Single Taper
316-168	7/16	to	3/8	.168 Wall	Single Taper
317	7/16	to	3/8	.120 Wall	Dual Taper
317-168	7/16	to	3/8	.168 Wall	Dual Taper
318	1/2	to	7/16	.120 Wall	Single Taper
318-156	1/2	to	7/16	.156 Wall	Single Taper
318-188	1/2	to	7/16	.188 Wall	Single Taper
319	1/2	to	7/16	.120 Wall	Dual Taper
319-156	1/2	to	7/16	.156 Wall	Dual Taper
319-188	1/2	to	7/16	.188 Wall	Dual Taper
320-156	9/16	to	1/2	.156 Wall	Single Taper
320-188	9/16	to	1/2	.188 Wall	Single Taper
321-156	9/16	to	1/2	.156 Wall	Dual Taper
321-188	9/16	to	1/2	.188 Wall	Dual Taper

-S After tapered part number indicates that there is a special grind.

Series 4 *Medium to High Performance - 4130/4135 Melonite™ Processed*

PART #	Straight Pushrods				Guide Plate Use
401	5/16	x	.083	Wall	
401-118	5/16	x	.118	Wall	
402	11/32	x	.120	Wall	
404	3/8	x	.095	Wall	
404-120	3/8	x	.120	Wall	While Supplies Last
404-145	3/8	x	.145	Wall	
405	7/16	x	.120	Wall	
405-168	7/16	x	.168	Wall	

Series 5 *Maximum Performance - 4130/4135 Salt Heat Treated to 275,000 p.s.i. Tensil*

PART #	Straight Pushrods				Non-Guide Plate Use
501	5/16	x	.083	Wall	
501-118	5/16	x	.118	Wall	
502	11/32	x	.120	Wall	
503	3/8	x	.095	Wall	
503-145	3/8	x	.145	Wall	
504	7/16	x	.120	Wall	
504-168	7/16	x	.168	Wall	
505	1/2	x	.120	Wall	
505-156	1/2	x	.156	Wall	
505-188	1/2	x	.188	Wall	

Order form available on website.

Series 5 contd. *Maximum Performance - 4130/4135 Salt Heat Treated to 275,000 p.s.i. Tensil*

PART #	Straight Pushrods				Non-Guide Plate Use	
507-156	9/16	x	.156	Wall		
507-188	9/16	x	.188	Wall		
508-188	5/8	x	.188	Wall		
509	3/4	x	.120	Wall		
509-156	3/4	x	.156	Wall		

PART #	Tapered Pushrods			Non-Guide Plate Use	
510	11/32	to	5/16	.120 Wall	Single Taper
511	11/32	to	5/16	.120 Wall	Dual Taper
512	3/8	to	5/16	.095 Wall	Single Taper
512-145	3/8	to	5/16	.145 Wall	Single Taper
513	3/8	to	5/16	.095 Wall	Dual Taper
513-145	3/8	to	5/16	.145 Wall	Dual Taper
514	3/8	to	11/32	.095 Wall	Single Taper
514-145	3/8	to	11/32	.145 Wall	Single Taper
515	3/8	to	11/32	.095 Wall	Dual Taper
515-145	3/8	to	11/32	.145 Wall	Dual Taper
516	7/16	to	3/8	.120 Wall	Single Taper
516-168	7/16	to	3/8	.168 Wall	Single Taper
517	7/16	to	3/8	.120 Wall	Dual Taper
517-168	7/16	to	3/8	.168 Wall	Dual Taper
518	1/2	to	7/16	.120 Wall	Single Taper
518-156	1/2	to	7/16	.156 Wall	Single Taper
518-188	1/2	to	7/16	.188 Wall	Single Taper
519	1/2	to	7/16	.120 Wall	Dual Taper
519-156	1/2	to	7/16	.156 Wall	Dual Taper
519-188	1/2	to	7/16	.188 Wall	Dual Taper
520-156	9/16	to	1/2	.156 Wall	Single Taper
520-188	9/16	to	1/2	.188 Wall	Single Taper
521-156	9/16	to	1/2	.156 Wall	Dual Taper
521-188	9/16	to	1/2	.188 Wall	Dual Taper
522-188	5/8	to	9/16	.188 Wall	Single Taper
523-188	5/8	to	9/16	.188 Wall	Dual Taper

-S After tapered part number indicates that there is a special grind.

Tool Steel Solid Bar Pushrods *Top Fuel, A Fuel, Blown Alcohol, Pro Modified, Nostalgia*

PART #		
903-B	3/8	Straight
904-B	7/16	Straight
905-B	1/2	Straight
906-B	9/16	Straight
916-B	7/16 x 3/8	Single Taper
917-B	7/16 x 3/8	Dual Taper
918-B	1/2 x 7/16	Single Taper
919-B	1/2 x 7/16	Dual Taper
920-B	9/16 X 1/2	Single Taper
921-B	9/16 X 1/2	Dual Taper

-H After part number indicates there are tool steel tips both sides (710 x 2)

Order form available on website.

Adjustable Checking Tools

PART #	Description
660 - *E, M, K, O, U, R*	3/8 Adjustable Tool 6.000 to 7.000
670 - *E, M, K, O, U, R*	3/8 Adjustable Tool 7.000 to 8.000
680 - *E, M, K, O, U, R*	3/8 Adjustable Tool 8.000 to 9.000
690 - *E, M, K, O, U, R*	3/8 Adjustable Tool 9.000 to 10.000
610 - *E, M, K, O, U, R*	3/8 Adjustable Tool 10.000 to 11.000
611 - *E, M, K, O, U, R*	3/8 Adjustable Tool 11.000 to 12.000
612 - *E, M, K, O, U, R*	3/8 Adjustable Tool 12.000 to 13.000
613 - *E, M, K, O, U, R*	3/8 Adjustable Tool 13.000 to 14.000
628	Gen 3 Hemi Adjustable Tool Kit 6.000 to 9.000
629	3/8 Adjustable Tool Kit 6.000 to 14.000 (Includes 8 tubes, 8 - 5/16 balls, 2 - 5/16 cups, 2 - 3/8 cups, 2 v cups, 2 springs)
630	Chrysler 3/8 Adjustable Tool Kit 10.000 to 14.000 (Includes 4 tubes, 2 - 5/16 cups, 2 - 3/8 cups, 2 springs)
631	Pair of Checking Springs
632 *E*	5/16 Ball Checking Tool Tip
633 *M*	5/16 Cup Checking Tool Tip
634 *K*	3/8 Cup Checking Tool Tip
635 *O*	V Cup Checking Tool Tip
636 *U*	13/32 Cup Checking Tool Tip
637 *R*	Radius Cup Checking Tool Tip
620	7/16 Sleeve for 3/8 Checking Tool
621	1/2 Sleeve for 3/8 Checking Tool
622	9/16 Sleeve for 3/8 Checking Tool
623	5/8 Sleeve for 3/8 Checking Tool
624	4 Piece Sleeve Kit for 3/8 Checking Tool

Tips styles are indicated by the following letters:

E = 5/16 Ball **M** = 5/16 Cup **K** = 3/8 Cup **O** = V Cup **U** = 13/32 Cup **R** = .281 Radius Cup

-H After letter for a 3/8 radius end instead of 5/16 radius end on adjustable tool "Length of tool is based on using a 5/16 Ball (E)"

624 - 4 Piece Sleeve Kit

629 - 3/8 Adjustable Tool Kit

Labor

PART #	Description
697	Set up fee - less than three piece order of pushrods
698	Set up fee - more than three lengths on a 16 piece order
699	Double grind fee
701	Shorten Pushrod
702	Replace Pushrod End
703	Straighten Pushrod
704	Shorten, Straighten & Replace One End
731	Grind Full Tube
700-TS	Expedite Fee - Tool Steel

Order form available on website.

Pushrod Tips

PART #	Description
706	Pushrod Tip 8620 Ball
709	Pushrod Tip H-13 Tool Steel
710	Pushrod Tip Upgrade to H-13 Tool Steel
711	.281 V Copper Cup Upgrade
712	.281 Radius Copper Cup Upgrade
713	.281 V Copper Cup
714	.281 Radius Copper Cup
715	5/16 Copper Cup
716	5/16 Copper Cup Upgrade

PART #	Description
706-C	Pushrod Tip 8620 Cup
792	Restricted Pushrod Tip Upgrade
793	Standard Cup Style Tip Upgrade
794	10mm or 12mm Cup Style Tip Upgrade
709-1	Pushrod Tip H-13 for 9/16 & 5/8 Tube
709-2	Pushrod Tip H-13 for 3/8 Tube
710-1	Upgrade Tip to H-13 for 9/16 & 5/8 Tube
710-2	Upgrade Tip to H-13 for 3/8 Tube
717	5/16 Radius Copper Cup Upgrade for 3/4 Tube
718	5/16 Radius Copper Cup for 3/4 Tube

Rockerarm Adjusting Screws

PART #	Description	
815	5/16 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	
816-I	.281 Ball 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	
817-I	.281 Ball 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
818	.281 Ball 3/8 x 24 Thread with Pressure Feed Side Hole H-13 Tool Steel	
819-I	.281 Ball 3/8 x 24 Thread H-13 Tool Steel	
820-I	.281 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	
821	3/8 Ball 7/16 x 20 Thread H-13 Tool Steel	
822	3/8 Ball 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	Length 1.300
822-L	3/8 Ball 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	Length 1.625
823-01	5/16 Ball 3/8 x 24 Thread H-13 Tool Steel	Length 1.250
823-02	5/16 Ball 3/8 x 24 Thread H-13 Tool Steel	Length 1.350
823-03	5/16 Ball 3/8 x 24 Thread H-13 Tool Steel	Length 1.450
824-01	5/16 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	Length 1.250
824-02	5/16 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	Length 1.350
824-03	5/16 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	Length 1.450
825	5/16 Ball 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
826	3/8 Ball 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
826-I	3/8 Ball 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
827	5/16 Ball 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	
828	3/8 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	Length 1.370
828-L	3/8 Ball 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	Length 1.600
829	13/32 Ball 12mm x 1.0 Thread H-13 Tool Steel	
830	13/32 Ball 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
832	13/32 Ball 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	
833	5/16 Cup 3/8 x 24 Thread with Oil Hole H-13 Tool Steel	
834	5/16 Cup 3/8 x 24 Thread with Pressure Feed Side Hole H-13 Tool Steel	
835	5/16 Cup 7/16 x 20 Thread with Oil Hole H-13 Tool Steel	
836	5/16 Cup 7/16 x 20 Thread with Pressure Feed Side Hole H-13 Tool Steel	
850	7/16 x 20 x .700 O.D. 12 Point Jam Nut	
850g	7/16 x 20 x .620 O.D. 12 Point Jam Nut	
851	3/8 x 24 x .700 O.D. 12 Point Jam Nut	
851s	3/8 x 24 x .568 O.D. 12 Point Jam Nut	

Assembly Lubricant

PART #	Description
710101	.5 oz. Ultra Gel Moly Lube - Syringe Sampler
710102	3 oz. Ultra Gel Moly Lube - Grease Gun Cartridge
710103	3 oz. Ultra Gel Moly Lube - Jar
710104	8 oz. Ultra Gel Moly Lube - Jar

Order form available on website.

MADE IN THE U.S.A

Our business growth is powered by our customers success!

manton Pushrods

manton Rockerarms

Terms and Conditions

Sales Policy

Prices: Due to the ever present fluctuation of material and labor costs, our prices are subject to change without notice.

Terms: All orders are C.O.D., cashier's check or credit card unless prior arrangements have been made. We accept Mastercard and Visa only. Any account responsible for a returned check will be placed on C.O.D. money order/ cashiers check only and will be charged a $20.00 returned check fee. Any business open account with an unpaid balance over 90 days will be placed on C.O.D.

Shipping: All orders will be shipped UPS ground unless prior arrangements are made. Remember we are located in California so if you are located far from us you may want to request faster service. It may take a week for packages to reach the east coast. The carrier has full responsibility for all merchandise once the package leaves our facility. All damage or shortage claims must be reported to the carrier immediately.

Inspection by Customers: The Customer acknowledges that they will inspect the materials immediately upon receipt from Manton Pushrods/Manton Racing Products within 5 working days of delivery. Any alleged damage, shortage, deficit or otherwise. Failure by customer to make any claim within such time shall constitute acceptance of the materials and waiver of all such claims.

Return Policy

No returns will be accepted without prior authorization. Any merchandise returned due to manufacturing defect or shipping error will be corrected at no charge. All orders that are custom made are NOT RETURNABLE. All other returns are subject to a 15% restocking fee.

Ordering

When ordering pushrods there are many factors in determining the correct pushrod for your application. Many questions will be asked of you during the ordering process. The correct answers to these questions are the responsibility of the customer. We will do our best in suggesting the proper pushrod for your application, but the final decision is the responsibility of the customer. Manton Pushrods will not be held responsible if the pushrods do not fit properly when you receive them unless it is due to a manufacturing error on our part.

Warranty

Manton Pushrods/Manton Racing Products will repair or replace at our discretion any item manufactured by our company that is found to be defective in material design and/or workmanship. The invoice must accompany the merchandise to verify the purchase. We reserve the right to inspect any merchandise returned for misuse, abuse, modification or defective installation. All merchandise distributed by Manton Pushrods/ Manton Racing Products is guaranteed in accordance with the manufacturers own terms of warranty. Due to the intended usage of the products sold by Manton Pushrods/Manton Racing Products they are sold WITHOUT WARRANTY OR ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR THE INTENDED PURPOSE. Manton Pushrods/Manton Racing Products shall not under any circumstances be liable for any special consequential or incidental damages, including but not limited to loss of profits or revenue, loss of other property or equipment, cost of purchased or replacement goods, or claims by customers of the purchaser which may arise and result from the sale, installation or use of these parts. Installation of parts intended for "off-highway" use could adversely affect the vehicle manufacturer's warranty coverage. Manton Pushrod/Manton Racing Products reserves the right to make changes in design, specifications, materials, or make product changes without incurring liability or obligation with respect to similar product previously manufactured. If technical advice is offered or given in connection with the use of any products it will be as an accommodation to Buyer and without charge and Seller shall have no responsibilities or liabilities whatsoever for the content or use of such advice.

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