Valve Tech

Kiwi Valves:

Kiwi valves: Are manufactured by Eaton Corp who were the original suppliers to Indian. Valves have been redesigned using the latest processes, materials and technology to improve their operational performance under all conditions. Kiwi/Eaton valves are designed to run with unleaded fuel and under extreme operating conditions.and are the best you can buy for Indian motorcycles, period. Indian engines are a Flathead design and operate in extreme temperatures under harsh conditions with no lubrication. This differs greatly from what is found in an automotive engine or any racing application. Over the years many claims have been made as to new and improved technologies but none have proved the test of time. This is one area that does not pay to cheap out as it will cost you in shortened top end life. Spend the extra few dollars here, skimp out on a few beers or a desert and put the money where it is so rightly deserved. Pay a little extra now or do it all again in a few thousand miles and then turn around and buy all the good parts

Eaton is OEM (Original Equipment Manufacturer) to Indian and there is no finer quality valve made for Indians today. Eaton is the supplier to the major domestic and many international engine manufacturers and manufactures the best valves in the world, period. The Eaton name is on every Kiwi valve for quality you can trust.

Valves and guides: Everyone today claims to have the best valves and guides even with new ones being introduced to the market regularly however the only way one can claim to have the best is to put serious miles on them over a period of time and that's something we've been doing since 1992. While many suppliers make claims, our products perform with tens of thousands of miles on them with no measurable wear. New styles of valves and guides and surface treatments come and go over the years but the proof is always in the pudding and Eaton stands up to the test every single time.
A little explanation is in order to clear the air and provide the facts. Indian engines are a flat head design and the exhaust stem lacks lubrication and operates in extreme heat. What works in your car engine or a drag racer will not hold up in your Indian engine.
Stainless steel: There are many grades of stainless steel and Eaton/Kiwi valves have the highest grade with 4% nickel content. 21-4N, the best you can buy period. This offers superior strength and excellent corrosion resistance with the use of unleaded fuels under extreme operating conditions: Conclusion: Extremely durable & long lasting

Hardchrome stem: This offers superior wear and galling resistance along with a very high surface finish. Hardchrome is extremely hard (&durable) and offers the best wear resistance in a lack of lubrication environment such as is found in Indians. Hard chroming is quite the misused term as all other competitor valves are sold as hardchrome stems however they are just flash plated which means the hardchrome thickness is super thin (barely on them). After some use it becomes non existent and rapid stem wear takes place. Conclusion: Zero wear with true hard chrome stems.
Hardened tips: Valves have a hardened wafer tip micro welded to the end of the stem (not flash heat treated) so as to withstand high impact forces from mechanical (non hydraulic) tappets. This eliminates wear (and stem mushrooming) where it comes into contact the tappet bolt. Conclusion: No wear means less tappet adjustments.
Fully machined surfaces and undercut stems: Reduces weight and helps improve gas flow for optimum performance and ensures each valve has consistent head shape. Conclusion: Consistent and superior quality.
Redesigned head: Utilizing today's designs and stainless steel, valve heads have been redesigned to improve gas flow, reducing weight & enables the use of a common intake and exhaust valve while also increasing overall strength and durability.
Valve guides: While there are many claims as to having the best valve guides, to date we have found the best guides come from the original Indian manufacturer to Indian whom we still use today. While all valve guides look the same, what is most important is the grade of material they are made from and what heat treatment process has been applied. Kiwi valve guides are made from a cast iron material that is used in severe/extreme service conditions and the only other engine manufacturer to use the same material is Caterpillar in their extreme service applications. Valve guides go through a critical heat treatment process that brings the hardness up to Rc44 for added wear resistance & durability while still leaving some lubricating properties within them. No other valve guide comes even close. Quality you can count on.
Valve train conclusion: We are the only manufacturer who rides Indians almost every day and logs on tens of thousands of test miles on our engines every year. Our rides are documented and shown on our website for all to see the true facts. With so many valuable miles of R&D and inspection tear downs, it allows us to develop and confidently prove that our engine components are the best, bar none, period. When valve train components are used in conjunction with our cam train components you will see 1st hand the minimal valve adjustments that will be made to the tappets. Superior Kiwi developed products result in near zero wear resulting in virtually next to no valve adjustments over thousands of miles.

Valve face/seat angle: 35 degrees
Valve to guide clearance: .004. (Less than .004 is not better for Indians and may result in seized valves)
Guide interference .002-.003
Tappet clearance: Cold, intake .004-.006, exhaust .006-.008

Tappet tightening: Do not over tighten tappet bolts or lock nuts otherwise breakage or fracturing can result. Be gentle.
35W242 Tappet wrench: These wrenches are specially made with a thin head and suitable length to allow for easier tappet adjusting. 2 wrenches are required.
Valves for pre 35 models: 42545/6 valves can be used but they require modifications to the 41875 collar if you intend to use the original small diameter valve springs and covers. Use 42550 key.
918001 insulating washer: While this was introduced by Indian in the late 40's, it is retrofitable back to 1939. When fitting it is advised to check for valve spring coil binding. If you choose not to use this washer, a good quality flexible sealant should be applied between the cover and valve guide seat.
39909T Valve compression tool: Is used in conjunction with a drill press or bench press. This tool makes valve disassembly and assembly a “piece of cake”.
Cracked cylinders: Some cylinders crack between the intake seat and cylinder bore. We have developed a process that successfully reclaims these cracked cylinders and that holds up over time While most forms of welding give out after some time we have found a welding process that works very successfully for this repair.
Valve cover thread oil leaks: To eliminate typical oil seepage found around valve cover threads use Loctite 567 (Teflon paste) on the push rod guide threads before screwing the cover on. Most folks often mistakenly blame the push rod guide fit into the crankcase for the oil leak however the oil comes from creeping down the threads. Loctite 567 does not dry hard and still allows for easy removal of the valve cover. No pre cleaning is required, just brush it onto the threads and screw the cover on with the Kiwi valve cover pliers # 101826. Done deal, it’s that easy.
Pre fitting cylinders: Before fitting pistons to rods, pre fit the cylinders to the cases and adjust the valves just by feel. Now rotate the engine over to ensure there is no binding in any of the valve train and pay attention to valve spring coil binding. If spring coil binding occurs, spring breakage will result.
Valve guide tech: We have found trimming the valve guide length so it protrudes no more than 1/8” into the ports increases the valve guide life and increases gas flow resulting in better overall performance. Shortening the exhaust valve guides is especially recommended as it greatly reduces “coking” of the valve in its guide. Coking results when this unsupported area protrudes into the heat path and gases/oil turn to coke from the extreme heat which results in binding of the valve into its guide “Coking” seems to be an on going problem these days for Indians, mainly since lead has been removed from fuels. We have put a lot of effort into trying to solve this problem however do keep an eye on our website www.KiwiIndian.com for more up to date information.
Valve guide installation: We highly recommend our 43647T valve guide installation tool. Indian valve guides are extremely hard (for wear resistance) which makes them very brittle. If they are installed by pressing on the end of the guide you can break the flange off the body. These will not be under warranty. Press guides in using 43647T tool. Do NOT tap or impact guides in.

Cleaning valve guides: Clean thoroughly prior to final assembly with an inside brush. Flush thoroughly
Valve springs: Newer improved alloy steel and shot peened for maximum life. Conical valve springs: We have developed these to reduce the chances of coil bind for higher lift cams and to increase seat pressure for those looking for better performance. These are sold as a kit (mating collars, spacers and keepers and are a direct retrofit into existing covers.
General: We recommend upgrading valves, guides, springs and covers for the utmost durability in today's harsh operating environment. The Indian top end is one of the serious weak links and only the highest quality components should be used.
For up to date information: For additional and up to date top end information check our website www.KiwiIndian.com. With fuels continually being reformulated there is no doubt we will have to over come even more issues in the years to come. Keep in mind that many fuels are locally blended for particular markets so when you ride your Indian out of town or across country you could be exposing your engine to new challenges. The flat head engine valve train has characteristic problems and Indians are no exception. Pay close attention to the valve train component quality and use only the best components money can buy. They will reward you well for many thousands of miles to come.

Cylinders & Pistons

Indian top ends are a characteristic weak link in the engine assembly. For this reason we have dedicated a huge amount of our expertise and resources into Indian top ends and we offer the best parts money can buy. While this does cost more than others top end components, we are of the mind set to provide the best quality parts for your Indian period so as to avoid regular top end rebuilds. Spend a little extra up front but save a lot in the long run.

Kiwi cylinders are sold in pairs and suit 74,80,84, 88 &92" engines. We have taken great care to develop a superior set of cylinders in every single respect. Metal has been added between the intake manifold nipple and head gasket surface which results in the head gasket surface having more support which increases gasket sealing in this area, a typical Indian weak spot. Kiwi cylinders have upgraded cast iron to meet the latest SAE automotive specifications which has resulted in Kiwi cylinders being harder for greater cylinder wear resistance and higher overall tensile strength. 40-53 cylinders can be fitted to 35-39 models (fin size differs). Cylinder base strength has been increased and has been premachined for rod clearancing for 80" strokes (also works for 74" strokes).Cylinder bores are finished slightly undersize for final sizing. We will gladly finish cylinders any way you would like in our service dept, e.g. cylinders honed to size to suit your pistons, valve guides installed, valve seats and valves ground and lapped, powder coating, etc. There is no doubt that Kiwi top end components are the best money can buy for your Indian.
93074 Performance cylinders. Cylinders are supplied with valve guides but not installed (for those that want to do some additional porting & polishing work) .

Kiwi performance cylinders have been totally redesigned for performance at no sacrifice to reliability. The valves and ports have been modified for increased flow, resulting in additional performance gains. Please visit our website www.KiwiIndian.com for the latest and greatest developments. Requires use of 42546P performance exhaust valves. 40-53

Note: Kiwi performance cylinders have been designed with performance, wear resistance and strength in mind right from the start. We spent countless hours on the flow bench with various cam and follower profiles to develop the most advanced cylinders ever produced for Indian motorcycles. We would be happy to supply these cylinders to you with valve guides installed, valve seats cut, pistons fitted and fully assembled upon your inquiry.

93074PK Cylinder kit: Suits Kiwi performance cylinders. Includes pistons, pins, rings, bores honed to match pistons, rings gapped, pistons fitted to bores, performance valve guides, valves and seats cut, valves installed. Assembled with valve covers (chrome or cad),, springs, collars, keys, insulating washers and ready to fit to your engine. Cylinders are powder coated.. 40-53

93074E Stock cylinders: Includes valve guides

93074EK Cylinder kit: Stock. Includes pistons, pins, rings, bores honed to match pistons, rings gapped, pistons fitted to bores, valves and seats cut, valves installed. Assembled with valve covers (chrome or cad), springs, collars, keys, insulating washers & ready to fit to your engine. Cylinders are powder coated. 40-53

93072 Cylinders: Bonneville, includes valve guides 40-53

93072K Cylinder kit: Suits Bonneville cylinders. Includes pistons, pins, rings, bores honed to match pistons, rings gapped, pistons fitted to bores, valves and seats cut, valves installed. Assembled with valve covers (chrome or cad), springs, collars, keys, insulating washers & ready to fit to your crankcases. Cylinders are powder coated. 40-53

KI-10126 Cylinder bore hardening: We offer a hardening process by impregnating Silicone Carbide into the matrix of the bore that dramatically increases wear resistance yet is compatible with all types of rings. We have used this process for over 30,000 miles with no measurable wear. If you want your stock cylinders to go a huge amount of extra distance this is something we highly recommend. It's also a big plus when upgrading to multi piece oil control rings.

86516 Piston kit: Kiwi performance design, 74” & 80”. Available in STD, .010, .020, .030, .040, .050 & .060. State size

86516S Piston kit: Stock design. Original split skirt and 4 ring design. Available in STD, .010, .020, .030, .040, .050 & .060. State size

86516R Piston kit: Kiwi design, 84” & 88”. Available in STD, .020, .030 & 040. State size. Coatings extra

Note: All pistons are supplied with rings, pin and clips & are priced per piston (per cylinder). State stroke when ordering. 84” pistons come level with top of the cylinder require the use of 93102 stock 74" heads (no piston protrusion). 88” pistons protrude 1/8” above the cylinders (like Bonne 74”) and require the use of

93106 Bonne heads. 92” pistons protrude 3/16” above the cylinders (like 80”) and require the use of 350016 heads.
Kiwi Indian pistons offer a superior design utilizing the latest engineering. Never before has so much R&D been put into updating Indian pistons.
Kiwi pistons feature:
Solid slipper skirt design increases skirt rigidity (less flexing & increased strength) which reduces piston noise.
Skirts have a special Kiwi cam grind for greater piston stability during all operating temperatures and engine rpm ranges. Also reduces noise.
Pistons skirts come Moly coated. Moly allows for easy break in, reduces the chances of seizing, reduces friction and noise.
Wrist pin is offset from the center of the piston (towards the major thrust face, rear) for quieter operation.
Wrist pin bosses have oil troughs for added pin lubrication and increased life.
Low expansion alloy ideally suited for Indian air cooled engines.
Top ring groove is farther down from the top of the piston to keep direct combustion temperatures away from the top ring especially for 80” engines.
Ring grooves have been redesigned to a 3 ring piston (2 x 1/16” wide compression and a 5/32 oil ring) which allows for gentle cylinder wall contact, increases cylinder bore life (less friction) while providing superior combustion sealing. For reordering rings, order p/n 41811R
The end result is the most superior designed pistons ever developed for Indian motorcycles.

Note: We also custom make forged pistons for any stroke (74”, 80”, 84”, 88” & 92” in any oversize. We do advise the use of 86516C skirt coatings with forged pistons. Forged pistons are supplied with 41711R rings. State oversize. Priced per pair.
Note: Correctly match stroke and piston with its matching cylinder head.
86516C Piston coating: Proprietary skirt coating. Piston coatings are priced per pair. Recommended for forged pistons and non Kiwi pistons (Kiwi pistons already come coated).
41711R Ring set: Available in STD, .010, .020, .030, .040, .050 & .060. State size. 22-53
Note 41711R ring set suits Kiwi (3 ring) and forged pistons and are sold per cylinder. Rings are supplied with a 1 piece cast iron ring. Optional 3 piece oil rings must be ordered separately
41711RT Ring set: Advanced ring set w/3 piece oil ring, suits Kiwi and forged pistons, State size
General: The Indian top ends are one of the serious weak links and only the highest quality components should be used. Do NOT skimp in any way.
Rebuilding service: We can rebuild your original cylinders. We offer sleeving, boring & honing, hardened valve seat inserts, valve and seat jobs, valve guide installation, head gasket face machining, welding broken fins, cracks and broken base flanges, replacing stripped threads (no Helicoils), loose intake nipples, etc.

Our valve seats are cut with a Serti machine for the best valve seat job you will ever see.

Cylinder Tech

Ring end gap: .015-.020
Piston to wall clearance: .0035-.0045. This depends on the type of piston, manufacturer and skirt coatings. Kiwi pistons are measured a little up from the bottom of the skirt.
Pin clearance: In rods .0005. Hone bushings to size. Do not ream
Cylinder bore finish: 240-280 grit
Sleeve interference: .003
Sleeve protrusion: Below cylinder base flange is 7/32
Cylinder base nut torque: 30-35 ft lbs
Head bolt torque: 55 ft lbs
Head gaskets: Pay close attention to the head, cylinder and washer surfaces. We highly recommend resurfacing these areas. The weak spots in each gasket are the front and rear center bolts (the bolt holes opposite each other where the valve pockets narrow down to the combustion chamber) and the shallow area above the intake port track. This area develops a low spot starting at the inner edge closest to the cylinder and widens out towards the intake manifold nipple and can consume 2/3rds of the surface sealing area over time. Blown head gaskets are a common weak link with Indians however by taking these precautions and using top quality gaskets you will greatly eliminate the chances of a blown head gasket.
Head bolts & holes: Some cylinder bolt hole depths vary in the cylinders and some head boltlengths vary as well so for or this reason we advise checking the depth of each bolt hole by fitting a bolt into each hole and measuring its free length. Do NOT take for granted the holes being deep enough. Once in a while the bolt will bottom out at the bottom of its threaded hole and give the impression the head gasket is clamped under pressure when in fact it is not. This will cause a blown gasket.
Boring cylinders: Always register off the cylinder base flange surface as this is the master machined surface. This will then put everything in its correct axis. We use a torque plate that the cylinders are bolted to before boring and honing to simulate them being fitted to the engine so as to ensure accurate bore sizing.
Modifying 74" pistons into 80" pistons: The factory used the same pistons as found in 74" engines for 80" applications except 3/16 is trimmed off the skirt (skirt length from center of wrist pin to bottom of skirt is1.250).
Stock piston differences: There is an easy way to tell if you have a stock 74", Bonneville 74" or 80" engine. Stock 74" pistons come flush with the top of the cylinder, Bonneville 74" pistons protrude 1/8" above the cylinders while 80" pistons protrude 3/16" above the top of the cylinder. Bonneville pistons come with narrower (1/16 wide) compression rings (stock is 3/32).
Piston skirt T slot: Original and competitors pistons use a T slot piston design: The T slot in these must face towards the front of the engine in both cylinders.

Piston pin diameter: The correct diameter is .750. Pay close attention as some pistons on the market come with 19mm diameter pins which is .749 (.001 smaller).

Wrist pin lock ring: When fitting wrist pin lock rings to the pistons never over squeeze them as this can affect the tension. Squeeze them just enough for them to fit into their groove. You will notice (look real close) that 1 side of the lock ring has sharp edges while the other side has rounded edges. Make sure the sharp edge side faces outwards (towards cylinder bore). Some replacement pistons on the market accept round wire type retaining rings. Make sure you match the type of retaining ring with the groove style.

Hastings rings: We supply Hastings rings for consistent quality that you can depend on, rather than cheaper imported rings.

Oil ring type: Most original stock Indian cylinders vary in hardness. Because of this it is difficult to come up with 1 oil ring that will work with every set of cylinders. The most ideal oil ring to use is a 3 piece assembly however it is not that easy. 3 pc oil rings vary a huge amount by brand and style. With some cylinders the 3 piece oil ring can wear out the cylinder prematurely. Flathead engines have a bore distortion problem that is characteristic with them and when at their operating temperature, the bore distorts out of round especially around the port area. A narrow radial rail oil ring allows for good flexibility for this type of bore distortion. The expander is what applies the tension to the rails and these too vary a lot by brand and design. The 3 pc oil ring we offer has a very low tension which we feel is the most compatible for Indian engines. We are continually testing oil ring types for continued refinement so for that reason please visit our website www.KiwiIndian.com for the latest conclusions.

4 ring pistons: The original Indian design piston has 3 compression and 1 oil ring. We recommend leaving off the 3rd compression ring as this increases cylinder life due to less friction without compromising its sealing abilities.

Stagger ring gaps: Make sure when assembling pistons into their cylinders that the rings are staggered. Ring gaps must NOT be in line with each other.

Ring sizing: One piece rings can safely be dropped down 1 bore size, e.g. if you have a .010 oversize cylinder use .020 rings and file end gaps to suit.

Fitting cylinders to engine: We recommend to pre fit piston to its rod and rotate engine to ensure the piston skirt clears the crankcase baffles. Late 1946 and up model cases have the cylinder spigot (the diameter the cylinder spiggot fits into) deepened all the way to the baffles however earlier models will have a step 1/4" below the top surface. If using .040 or larger pistons this step will need to be removed and deepened all of the way to the baffles otherwise the piston skirts will be damaged.

It also pays to pre fit cylinders to the case if they have been sleeved especially when non Kiwi sleeves have been used. The original cylinder spigot outside diameter is approx 3.370 while the sleeve outside diameter is 3.375. Kiwi sleeves are the only ones to have the lower 7/32 (the amount protruding below the cylinder base flange) stepped .005 smaller (3.370) than the body of the sleeve in order for them to fit into the cases correctly.

The following is about the easiest way (if there is such a thing) to fit cylinders to the engine while the engine is still in the frame.
Make sure the cylinder base gasket is installed prior to fitting the cylinder otherwise you'll be regretting it.
1st fit one snap ring to the right side (valve side) of the piston making sure the piston is facing the correct way (front to the front, T slot to the front). Fit the piston into its cylinder by inserting it from the bottom side of the cylinder. Tap piston in until the piston skirt is about flush with the bottom of the cylinder. Position cylinder over the connecting rod and tap piston down so the wrist pin can be aligned and fitted. This usually takes 2 guys to pull off, 1 holding the cylinder while the other is gently tapping the piston down and aligning and fitting the wrist pin and lock ring. It is recommended during this procedure to cover the open area of the cases just in case the snap ring goes flying off during installation and it will not fall into the crankcase. Ensure everything is well lubricated prior to assembly and make sure all tappets are at their lowest point. Do NOT tighten cylinder to crankcase if there is any valve train tension holding the cylinder base off the case otherwise you risk the flange being broken off. Before tightening base nuts, screw valve covers onto their mating push rod guides and prefit the intake manifold but do not fully tighten as this ensures that these items line up properly. Due to the cylinders being able to move around somewhat upon the crankcase, proper aligning is necessary. Finding these things don't line up now can save you from back tracking a few hours from now. Tighten cylinder base nuts evenly in a cris cross pattern to ensure even pressure is applied at all points. Exercise caution as cylinder base distortion and breakage can result from improper tightening.
Helpful hint prior to cylinder fitting: Do a pre cylinder fit up to the crankcase with the pistons not installed in the cylinders but with the valve assembly installed. Adjust the tappets and turn the engine over slowly to ensure everything has clearance. Pay close attention that the cam followers clear the case at full lift especially the rear exhaust however this test should be carried out with the cam cover off and no pressure is on the valve train. Also make sure the valve springs do not coil bind. Basically this is just a pre test run to catch something that may have been accidentally over looked.
Cylinder base nut lock washers: Note: Do not use high collar lock washers as these can cause the cylinder flange to break.
Cleaning: Thoroughly clean cylinder walls with hot soapy water and blast off with high pressure water. Parts cleaners and solvents will NOT clean honing grit from bores. The final step to check for cleanliness is to use a white lint free cloth and add a small amount of clean 30 wt oil and rub the cylinder walls all over. Keep repeating until the cloth remains clean. Failure to clean cylinders properly will cause premature failure of your top end.

Recommended breaking in procedure

1/ Do not allow engine to idle too long upon initial start up. Preset timing and carburetion before starting. After doing an initial quick check to make sure oil is returning to the tank and no oil is leaking, redial in the carburetor and hit the streets as soon as possible.

2/ After riding a short distance to properly warm the engine up, accelerate several times through the gears to about mid rpm. This procedure provides rapid seating of the rings to their cylinders. Do a short ride of about 25 miles and let engine cool down. Re torque head bolts. Next time do 50 miles and re torque and do likewise until 500 miles have been completed. Retorque periodically after that. This depends on the type of head gasket you are using as some settle more than others. We suggest doing very regular head re torquing since it's an easier process than changing out head gaskets. James 75378J Multi Layer Steel and James copper head gaskets settle very little if any. Each time check spark plugs for correct color. They should be a light tan color if the fuel mixture is correct. Spark plug readings should be done as soon as you come off a ride (let bike cool down before removing plug). In other words don't sit in the driveway blipping the throttle as this will change the reading.
Do NOT run the engine too rich at any time especially during break in. The extra gas will wash the boundary oil lubrication off the cylinder walls which will destroy your top end. Some old guys say to run them rich in order to help keep the cylinders cool however this does more harm than good and will take out your top end.
3/ Avoid operating engine at prolonged high speeds and lugging as overheating and over stressing may cause ring scuffing and piston seizing.
4/ Vary speed when riding. Do NOT ride at a constant speed. Acceleration allows the rings to bed in while deceleration allows the rings and piston to cool down from the cool incoming fuel charge. A warm day is better for breaking in rather than a cold day (yes this is a correct statement). A cool day restricts the amount of expansion of cylinders which under certain conditions can increase the chances of a seizure.
5/ Use a straight 50 wt oil for breaking in. Breaking in is usually pretty much complete by 500 miles but still go tenderly until 1000 miles have been reached. After 1000 miles you can pretty much ride it like you stole it. NEVER ever run non detergent oils in your engine at any time as this WILL destroy your engine. Change oil after it's initial 50-100 miles of initial break in. Always use the internal Kiwi KI-10605 oil filter. This is most important and will catch any break in debris without restricting the oil flow.
Oil burning: For items and checks that might cause oil burning or leaks other than possibly a top end overhaul check the "Oiling sections" e.g. oil pumps, breather, etc.

Heads

Note: Kiwi heads are designed so as the spark plug threads directly into the cylinder head parent metal so as to eliminate the usual loosening problems associated with thread inserts. Kiwi heads have spark plug threads that are longer than stock to accept longer ¾" reach spark plugs (originals are 3/8 long). Heads also have more material on the gasket surfaces in critical areas so as to reduce the chances of blown gaskets. We have paid close attention to the depth of the combustion chamber to eliminate any potential problems with detonation. Heads are made from high end aircraft grade A356 T6 (heat treated to T6) for

Head Tech

Original heads: Check that valves do not make contact with the head. After many years of service (and who knows how many head gasket face resurface jobs) it makes this more likely. Using Bonneville or performance cams and followers increases valve lift making head contact all the more likely.

Head gasket surface: Blown head gaskets is a common problem with Indians. By re-machining the head gasket face flat greatly reduces the chances of a blown gasket. Deck the washer boss faces even though they look flat they are usually cupped and it is difficult for the head bolt and washer to apply even pressure. Once machined true again use 37618 hardened bolt washers to eliminate cupping.

Head gaskets: Pay close attention to the head, cylinder and washer surfaces. We highly recommend resurfacing these areas. The weak spots in each gasket are the front and rear center bolts (the bolt holes opposite each other where the valve pockets narrow down to the combustion chamber) and the shallow area above the intake port track. This area develops a low spot starting at the inner edge closest to the cylinder and widens out towards the intake manifold nipple and can consume 2/3rds of the surface sealing area over time. Blown head gaskets are a common weak link with Indians however by taking these precautions and using top quality gaskets you will greatly eliminate the chances of a blown head gasket.

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Head fitting in general: Make sure all faces are flat. It is best to machine head gasket, washer faces and cylinder faces to ensure they are flat. Re tap all head bolt holes. Measure the thickness of the head and check that the bolts have enough free length.

Spark plug thread lube: Before fitting spark plugs, lube threads with an anti galling compound like “Anti or Never seize”. This is important especially the 1st time. It’s not so important after that however we recommend doing this every time the spark plugs are re-installed.

Head bolt wrench: There is not 1 tool alone that will take care of every head bolt in every location. It usually takes 1 or 2 of your own custom made ones however the 2 we offer will take care of the majority of them.

Indian KIWI MotorCycle Co.