BRITISH CYCLE SUPPLY COMPANY

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BCS
Megacycle Cam Catalogue

MEGACYCLE CAMS

IMPORTERS AND DISTRIBUTORS OF PARTS AND ACCESSORIES
FOR CLASSIC TRIUMPH, BSA AND NORTON MOTORCYCLES
HELPING TO KEEP BRITISH MOTORCYCLES ON THE ROAD SINCE 1977!

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BCS MEGACYCLE CAM CATALOGUE FOR BRITISH MOTORCYCLES

(Click on the rectangles to go to the cam pages)

ARIEL SQUARE FOUR

Hardfaced cam on customer core only.
Tappets - grind and hardface.

513x1	.303"	221°	107.5°	Reproduction of STOCK profile. Cam lift at	3 btc/38 abc
	.303"	221°	107°	Top Dead Center is .048" intake and exhaust.	38 bbc/ 3 atc

BSA twin A-10

Hardfaced cam, on core.
Re-radius tappets on core.

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
544-x1	.347"	262°	107°	Reproduction of stock A-65 cam with	24 btc/58 abc	.006"
	.341"	262°	100°	timing retarded 3° for more top-end.	51 bbc/31 atc	.007"
544-x2	.354"	266°	106°	Improved mid-range and top-end pull.	27 btc/59 abc	.005"
	.354"	266°	106°		59 bbc/27 atc	.007"
544-x4	.380"	244°	106°	Mid-range throttle response.	16 btc/48 abc	.006"
	.380"	244°	106°	Torque and acceleration.	48 bbc/16 atc	.008"
544-x3	.400"	280°	103°	Road race profile. Mid-range and top-end	37 btc/63 abc	.008"
	.400"	280°	103°	power. Use racing springs and pistons.	63 bbc/37 atc	.008"
544-x5	.349"	262°	103°	Copy of stock 67-357 cam.	28 btc/54 abc	
	.343"	262°	103°		54 bbc/28 atc	

Allow sufficient time for welding, grinding, etc. Hardfaced lobes solve the lobe wear problems and provide extra long-wearing surface.

*

*

MEGACYCLE CAMS

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BSA B-50, 250, 441, 500 singles, TRIUMPH TR-5 MX

Note: Must specify
keyway width narrow = .125" (1/8")
wide = .156" (5/32")
journal diameter
both ends same diam. .747"± / .747"±
or 1 small / 1 large .558"± / .747"±

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	TAPPET STYLE	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
541-x8	.358"	270°	104°	radiused	TT style power. Good mid-range and some	31 btc/59 abc	.008"
	.358"	270°	104°	¾"	added top-end. Best off-road cam.	59 bbc/31 atc	.008"
541-x1	.400"	268°	103°	radiused	Must use modified piston and springs.	31 btc/57 abc	.008"
	.400"	268°	103°	¾"	Good for ½ mile and off-road riding.	57 bbc/31 atc	.008"
541-x2	.400"	282°	105°	radiused	Must use racing piston and springs. Short	36 btc/66 abc	.010"
	.400"	282°	105°	¾"	course road-race with tight infield corners.	66 bbc/36 atc	.010"
541-x4	.400"	282°	108°	radiused	BEST road-race profile. Mid-range,	33 btc/69 abc	.010"
	.400"	282°	108°	¾"	maximum top-end power. Race only.	69 bbc/33 atc	.010"
541-20	.397"	284°	105°	flat	Good mid-range and top end power.	37 bbc/67 abc	.008"
	.397"	284°	105°		Use racing springs and piston.	67 bbc/37 atc	.008"

Send cam with gear on, we will remove and replace the gear with the proper tools taking special care not to damage the keyway. If radiused tappets are required, use BSA B-40 SS tappets or send tappets to be re-radiused. Allow sufficient time.

BSA GOLDSTAR 500

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
543-x2	.428"	264°	100°	Road race profile. Use modified piston	32 btc/52 abc	.006"
	.428"	264°	104°	and springs. Mid-range and top-end.	56 bbc/28 abc	.008"
543-x1	.444"	304°	Stock intake #65-2442			.006"
	.403"	284°	Stock exhaust #65-2246			.006"
543-x6	.397"	270°		Roller profile.		
	.433"	272°				
543-x7	.433"	272°		Roller profile. H & C 1412		
	.433"	272°				

BSA twin A-50, A-65, A-70

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
542-00	.347"	262°	107°	Reproduction of stock A-65 cam with	24 btc/58 abc	.006"
	.341"	262°	100°	timing retarded 3° for more top-end.	51 bbc/31 atc	.007"
542-x2	.356"	276°	106°	Improved mid-range. OK with stock	32 btc/64 abc	.005"
	.356"	276°	106°	pistons, springs and tappets.	64 bbc/32 atc	.007"
542-x12	.375"	274°	102°	Best all-around road race cam. Use high perf.	35 btc/59 abc	.010"
	.375"	274°	103°	pistons and R/D valve springs. New design strong mid-range and top-end power.	60 bbc/34 atc	.012"
542-x3	.380"	244°	106°	Mid-range throttle response, torque	16 btc/48 abc	.006"
	.380"	244°	106°	Use modified pistons and springs.	48 bbc/16 atc	.008"
542-x1	.400"	280°	103°	Road race profile. Mid-range and top-end	37 btc/63 abc	.008"
	.400"	280°	103°	power. Use racing springs and pistons.	63 bbc/37 atc	.008"
542-x8	.400"	290°	103°	Full race profile. High R.P.M. power.	42 btc/68 abc	.008"
	.400"	290°	103°	Sifton 460 reproduction.	68 bbc/42 atc	.010"

Hardfaced lobes solve the lobe wear problems and provide extra long-wearing surface.

MATCHLESS G-50

New billet cam, no exchange.

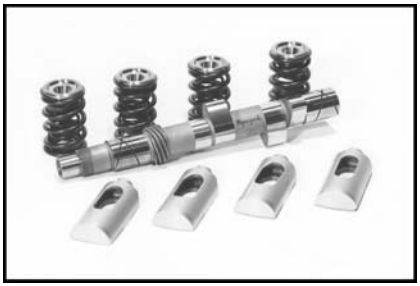
CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
582-x1	.500"	300°	108°	Road race profile. Team Obsolete grind.	42 btc/78 abc	.007"
	.420"	294°	110°		77 bbc/37 atc	.009"

MATCHLESS G-80 and AJS

Hardfaced on customer cores, per pair.

581x2	.397"	288°	100°	High performance profile.	44 btc/64 abs	.005"
	.397"	288°	106°		70 bbc/38 atc	.007"
581x3	.375"	280°	106°	All around, mid range power.	34 btc/66 abc	.008"
	.355"	280	110°		70 bbc/30 atc	.010"
581-00	.477"	293°	105.5°	FULL RACE PROFILE. Requires extensive	41 btc/72 abc	.008"
	.477"	293°	108.5°	modifications	75 bbc/38 atc	.010"

NORTON 750/850 TWINS (also 500 ATLAS and 650)



When flat follower is specified, it is O.K. to substitute the 3" radiused follower.
However - when 3" radiused folower is specified, only radiused follower can be used.

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	TAPPET STYLE	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
560-N-R	.350" .350"	280° 280°	104° 104°	flat	Best all around performance for 750cc. Strong low and mid-range power band. Good torque. .139" lift at overlap intake and exhaust.	36 btc/64 abc 64 bbc/36 atc	.013" .013"
560-00	.395" .395"	277° 277°	104.5° 104.5°	3" radius	Best all around road/road race performance. Strong mid-range, increased top-end. Wide smooth power band. OK with stock pistons in 850 Commando. Check in all others models. Must use spring kit #901-N. or equivalent.	34 btc/63 abc 63 bbc/34 atc	.010" .010"
560-20 "SSS"	.400" .355"	283° 275°	103.5° 106.5°	3" radius	Updated SSS profile to use with radiused tappets. Use racing piston and springs.	38 btc/65 abc 64 bbc/31 atc	.008" .010"
560-SS	.390" .335"	276° 272°	104° 104°	flat	Reproduction of factory "SS" profile. Use modified pistons and springs.	34 btc/62 abc 60 bbc/32 atc	.006" .008"
560-NSS	.359" .359"	284° 284°	104° 104°	flat	Norris SS profile. This is not the same as the factory SS profile shown above. This provides **added <u>top-end power</u>**. Especially good in 850cc and larger motors. Springs recommended.	38 btc/66 abc 66 bbc/38 atc	.008" .010"
560-D+	.405" .405"	296° 296°	105° 105°	flat	Norris fuel/drag competition cam. Racing springs, and pistons required. Race only.	43 btc/ 73 abc 73 bbc/ 43 atc	.015" .015"
560-N480	.436" .436"	312° 312°	106° 106°		**Full race cam for top-end power. Must use racing pistons and springs. This is the Norris 480 profile. ** Special BSA A-65 follower.	50 btc/82 abc 82 bbc/50 atc	
560-x10	.328" .328"	260° 260°	106° 106°	flat	Stock Atlas profile reproduction.	24 btc/56 abc 56 bbc/24 atc	.008" .010"
Stock	.330"	268°			850 Commando for reference.		

All Norton billet cams manufactured by Megacycle use 1/4-28 UNF threads in the threaded hole which secures the ignition advance mechanism. Some of the Norton original stock cams are threaded 1/4-26 BSW. In this case it will be necessary to replace your original bolt with the proper 1/4-28 bolt.

NORTON MANX

Hardfaced on customer cores per pair.

CAM NUMBER	VALVE LIFT	DURATION AT .040"	LOBE CENTERS	TAPPET STYLE	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
589-x1	.545" .465"	296° 269°			Road race profile. TDC lift IN = .282", EX = .170"	43 btc/73 abc 58 bbc/31 atc	.014" .020"

All timing is quoted at .040" lift at the valve with zero checking clearance unless otherwise stated.

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ROYAL ENFIELD

Hardfaced on customer core.

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
550-x1	.355"	264°	107°	Race profile.	25 btc/59 abc	.006"
	.355"	264°	111°		63 bbc/21 atc	.008"
591-x1				Reproduction of BSA profile 65-2442.		

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TRIUMPH 650/750 Twin (1960—1973)

Tappets — "R" = 1 1/8" radius
"STD" = ¾" radius
When R is specified you can also use STD which will produce more low RPM power.

CAM NUMBER	CAM LIFT	DURATION **AT .020"**	LOBE CENTERS	TAPPET STYLE	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
510-05	.348" .348"	282° 282°	100° 102°	"R"	Best for low-end and some mid-range increase. Street/road performance 2500 to 7000 R.P.M. Should clear stock pistons, check clearance. Uses stock springs	41 btc/61 abc 63 bbc/39 atc	.010" .010"
510-15	.355" .355"	297° 297°	105.5° 105.5°	"R"	The legendary Kenny Harman #15 grind. (Also known as JOMO 15). TT, flat track, all around use. Must use modified pistons and springs.	43 btc/74 abc 74 bbc/43 atc	.007" .009"
510-x1	.401" .401"	308° 308°	102° 106°	"STD" only	Reproduction of Sifton 460. Racing Use. Mid-range and top-end power.	52 btc/76 bbc 80 bbc/48 atc	.008" .010"
510-65	.355" .355" TDC LIFT	292° 295°	101° 104.5° .163" in .150" ex	"R"	For 650 or 750. Best all around street and road cam. Broad power band, mid-range and top-end. TT style performance. Use modified pistons and springs. (Recommended by Motorcyclist Magazine)	45 btc/67 abc 72 bbc/43 atc	.010" .010"
510-75 TDC LIFT @	.400" .400"	326° 326° 102° LC = .159" 105° LC = .146"	102° 105°	"STD" only	Racing use only. Must remove material from the tappet guide blocks to install this cam. High R.P.M. power. Must use racing springs and pistons. Check clearances.	61 btc/85 abc 88 bbc/58 atc	.008" .008"
510-x2 Base circle diameter = .812"	.375" .375"	296.5° 296.5°	103° 105°	"R"	New race profile. Best all around road-race. Best peak horsepower. May need to trim flywheel clearance. Use racing pistons and springs. TDC LIFT in = .174" @ 1.1 rocker ratio/with lash ex = .153"	45.5 btc/71 abc 73.5 bbc/43 atc	.008" .010"
510-95	.400" .400"	340° 340°	108° 108°	"STD" only	Full race only. All racing components required. High R.P.M. drag race, grass track, competition.	62 btc/98 abc 98 bbc/62 atc	.008"-.014" .008"-.014"
Stock 650	.322" .322"	272° 272°			.322" 278° Stock for your reference. .322" 278° 750 short rod		

Since the 1984 purchase of Kenny Harman's K.H. Cams by Megacycle – K.H. grinds are available upon request.

TRIUMPH 500 Twin

All cams listed below will work with "R" or "STD". tappets.

CAM NUMBER	CAM LIFT	DURATION **AT .020"**	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
512-05	.348" .348"	282° 282°	100° 102°	Designed for stock pistons and springs. Good Throttle response/ all around performance.	41 btc/61 abc 63 bbc/39 atc	.010" .010"
512-65	.355" .355"	292° 295°	101° 104.5°	Best all-arround street/road race profile.	42 btc/67 abc 72 bbc/43 atc	.010" .010"
512-x5	.293"	237°		1938 Triumph 500 Twin stock reproduction.		
512-x8	.375" .375"	296.5° 296.5°	103° 105°	on "R" Best competition road-race profile. Maximum peak horsepower and throttle response. Must use racing pistons and valve springs. Trim flywheel for clearance. on "R"	44.5 btc/71 abc 73.5 bbc/43 atc	.008" .010"

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TRIUMPH and BSA 3-cylinder

"STD" tappet profile never came in triples stock, so stock tappets must be re-radiused. Please inquire.

CAM NUMBER	CAM LIFT	DURATION AT .040"	LOBE CENTERS	TAPPET STYLE	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE	RUNNING CLEARANCE
511-05	.345" .345"	282° 282°	98° 102°	"STD"	Best all around profile, road and touring. Use modified pistons and springs. This was the factory road race profile used by Dick Mann at Daytona. Smooth power band.	43 btc/59 abc 63 bbc/39 atc	.005" .007"
511-x5	.375" .375"	287° 287°	104.5° 107.5°	"STD"	Road race profile. Strong mid-range, top-end. All out racing. Use modified pistons and valve springs.	39 btc/68 abc 71 bbc/36 atc	.008" .010"
511-35	.346" .346"	268° 268°	104° 104°	"STD"	Short road race where throttle response is most important. Less top-end than the 511-00. Very strong mid-range.	30 btc/58 abc 58 bbc/30 atc	.008" .010"
511-75	.400" .400"	274° 274°	108° 108°	"STD"	Full race. Must trim tappet guide blocks. High R.P.M. race application. Race components.	29 btc/65 abc 65 bbc/29 atc	.008" .010"
511-95	.400" .400"	288° 288°	100° 100°		Special application race profile.	44 btc/64 abc 64 bbc/44 atc	
Stock	.328"	262°			For reference.		

VELOCETTE

Hardfaced cams per pair on customer cores.

587-x1	Pushrod single.
587-x2	Pushrod single.
587-x3	KTT 350 MK III.

VINCENT

Per pair, new billet cams or hardfaced on customer cores/same price.

Above timing figures are taken and .050" valve lift
(NOT at .005" as in the Vincent manual).
All cams will have new bushings installed and honed after finish grinding.

CAM NUMBER	VALVE LIFT	DURATION **AT .050"****	LOBE CENTERS	DESCRIPTION AND APPLICATION	INTAKE OPEN/CLOSE EXHAUST OPEN/CLOSE
554-x1	.330"	268°	104°	Improved version of Mark I profile.	30 btc/44 abc .001"-.003"
	.330"	268°	104°	Touring profile.	44 bbc/30 atc .001"-.003"
554-x2	.365"	268°	97°	Improved version of Mark II profile.	37 btc/51 abc .001"-.003"
	.365"	268°	97°	Race Profile	51 bbc/37 atc .001"-.003"

All timing is quoted at .040" lift at the valve with
zero checking clearance unless otherwise stated. *

GLOSSARY OF TERMS

Here is a listing of some terms which will be used throughout this catalog and their definitions as used. The brief descriptions given are to be taken only as general definitions, as in some specific cases the technically correct meaning of the word may be slightly altered. When such is the case, we will try to make note in the catalogue. Although we have tried to make all of the technical information as complete and understandable as possible, it cannot substitute for years of experience and training necessary to become a truly proficient engine mechanic. If you are a beginner, you will naturally make some mistakes as you learn. In some cases these mistakes can be very costly; especially with newer, more sophisticated motorcycles currently produced. We suggest that if you have to pay for help, the money will be well spent—saving you the costly consequences of serious mistakes.

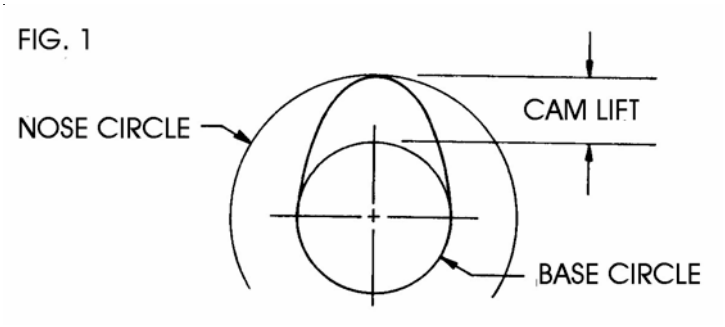
I. VALVE LIFT:

The total amount of movement imparted to the valve by the entire valve train, including any rocker arm multiplication. This is a theoretical number as it does not account for any loss of lift due to deflection within the valve train. This is sometimes referred to as "gross valve lift." In most cases the actual valve lift will be slightly less because of valve lash and deflections due to bending of pushrods, rocker arms, or even flex in the camshaft itself—caused by valve spring and inertia forces.

II. CAM LIFT:

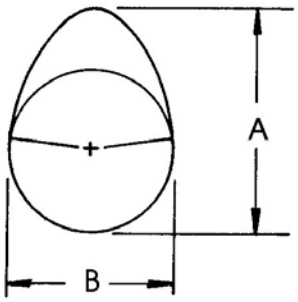
The total amount of rise and fall from the base circle of the cam lobe to the peak and back to the base circle again. See fig.1 to the right:

FIG. 1



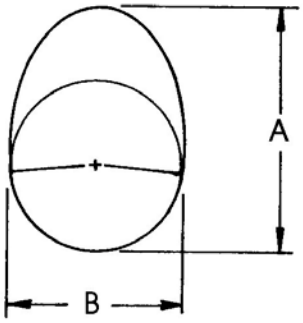
The best way to measure the cam lift is to rotate the cam between centers and measure the rise and fall with a dial indicator. In some cases an accurate lift measurement can be made with a micrometer by subtracting the smallest dimension across the lobe (B in fig. 2) from the largest (A in fig. 2). Many lobes have some lift for more than 180° of rotation so the smallest dimension measured across the lobe will NOT be the true base circle (B in fig. 3). In such cases, you can NOT accurately measure the cam lift with a micrometer or caliper; you must rotate the cam against a dial indicator.

FIG. 2



CAM LIFT = A - B

FIG. 3



CAM LIFT ≠ A - B

GLOSSARY OF TERMS—*CONTINUED*

III. VALVE LASH (also called running clearance, valve or tappet clearance)

For an engine to run properly the valves must close completely and seal well against their seats. For this reason, a certain amount of clearance or "lash" must be maintained in valve train. Just a thousandth of an inch would suffice, except that due to thermal expansion and contraction, some engine parts will change size more than others—thus the valve lash will change with the temperature of the engine. For this reason, most engines require at least several thousandths of an inch clearance when cold. Too little valve lash will result in loss of power, uneven running, over heating and burning of the valves and seats. Too much clearance will cause excessive noise and wear, and in the extreme will cause valve bounce or "float"—resulting in valve and valve spring breakage. There is usually a few thousandths latitude between tight and loose valve lash. An experienced mechanic can determine this range by careful experimentation. The clearance can be changed within the range to tailor the engine performance to a particular application.

In general: More clearance will sharpen up the low and mid range and reduce top end. Please start by installing your cam with the valve lash settings listed on the timing card supplied with each Megacycle Cam. Adjust valve lash according to the application.

IV. VALVE FLOAT

Once the valve train has been set in motion by the camshaft, the inertia would cause continued and uncontrolled opening of the valve. It is the function of the valve spring to provide sufficient force opposing this motion to keep all components in the valve train in contact with one another until the valve is properly returned to its seat. The spring force required to do this is determined by the mass of the valve train, the engine operating speed and the profile of the cam. If any of these three factors causes the spring force requirement to exceed that available, the valve train will separate from the camshaft or "float". Valve float will usually cause a sharp loss of power, increased noise, and if allowed to continue—will result in rapid and disastrous failure of valve train components. Valve float can occur with no audible indication and no noticeable power loss. Serious damage can result. Valve float damage is caused either by contact between the valve and the piston, or severe impact—created when the valve train contact is finally resumed.

V. CAMSHAFT CONSTRUCTION

There are several manufacturing methods suitable for producing high performance cams. Different lobe surfaces are required for the rocker arm, pushrod and "bucket" follower motors. We offer hardfaced cam lobes on most models. We also offer billet or needle bearing cams for many models. Naturally the type of cam you choose will affect the cost and life of the finished part. The four major cam types we offer are listed on the following pages; they are—Hardfaced cams. New billets—cast iron or steel. Needle bearing replacement cams. Reground, heat-treated cams.

1. HARDFACED CAMS: (the most durable cam lobe surface)

Cam lobes are subjected to high surface stress and impact loading—and to severe frictional wear in all applications except those using roller followers. The best material to withstand this combination of loads is a nickel or cobalt based hard surfacing alloy. One of these alloys must be welded to the lobe surface only (as they are not suitable for use in the body of the camshaft). The hardfacing may be applied to a new steel or iron billet at add wear resistance, or it can be applied to a worn stock cam which has been properly prepared, thus providing additional grinding stock for high-lift profiles. The stock cam (or stock "core") can then be ground to almost any desired lobe shape. Much skill and painstaking effort goes into the production of hardfaced cams by Megacycle. The result is the most durable (and often the most expensive) cam lobe surface available. Megacycle has developed techniques which enable us to offer hardfaced cams that are priced equal to or below what other cam grinding companies charge for reground or cast iron billet cams.

2. CAST IRON BILLETS:

Most motorcycles are originally equipped with cast iron camshafts. Cast iron cams are relatively inexpensive to produce in volume compared to steel cams—and they wear better than steel cams in cases of sliding cam-to-follower contact. We offer cast iron replacement cams in mild and high performance profiles for most Japanese four-cylinder motors. We purchase these billets with unground lobes, we then grind the desired profile to our specifications (depending on your application). All castings are induction or flame-hardened before grinding which is adequate for some applications. Megacycle goes one step further than most cam grinders to insure reliability by nitriding all cast iron cams after grinding. This extra step explains why Megacycle billet and re-ground cams might cost a few dollars more than our competition. The extra-long life of these heat-treated billet cams more than offsets the few dollars in extra cost. Unfortunately, we can only offer cast iron billet cams for models where the production volume can justify the high initial cost of tooling and the large minimum castings runs required. When cost permits, we offer steel billet cams for models with smaller production volume. (see item 3 below).

GLOSSARY OF TERMS—*CONTINUED*

V. CAMSHAFT CONSTRUCTION

3. STEEL BILLET CAMS: (including needle bearing billet cams)

Megacycle manufactures steel billet cams on the premises for many models. This includes all Megacycle needle bearing cams for Honda, Kawasaki, Suzuki and Yamaha models. By manufacturing our own steel billet cams, we can offer a wide variety of lobe profiles and stock **or** oversize bearing diameters for many models. All of our steel billets are specially heat-treated (some offer hardfaced lobes for extra long wearing surfaces). These billet cams are sold outright—no exchange core is needed when ordering these items. Our NS cams feature stock diameter journals so they can be installed in the cam tower or cylinder head without machining the bearing surfaces. Our NB cams have oversized journal diameters and they do require machine work to remove the damaged aluminum from the cylinder head and/or cam cover to allow installation. The NB cams will allow the customer to salvage an otherwise ruined cylinder head and gain added performance (mild or racing) at the same time. We machine cylinder heads on a 20 day rotating schedule. We also provide instructions if the customer would prefer to have the necessary machine work performed by a local machine shop.

4. REGRINDS:

Cam lift is the nose circle radius minus the base circle radius. By leaving the nose circle radius intact and reducing only the base circle radius (grinding the back side of the lobe), both cam lift and duration can be increased. Also, the new profile can be advanced or retarded slightly on the shaft. Regrinding is usually suitable for mild lobe shape changes. A drastic change would result in an unacceptably small base circle and would remove the case hardening of the original lobe surface. All Megacycle reground stock camshafts are heat-treated by the nitriding process after grinding to prevent lobe-wear. We only offer mild/stock replacement profiles in reground cams.

GENERAL INFORMATION

For best performance we recommend that all cams be “degreed in” using a dial indicator on the valve collar or bucket and degree wheel on the crankshaft. In some cases it will be necessary to slot or elongate the bolt holes in the cam sprocket to allow adjustment of the cam timing (to achieve our recommended opening and closing figures). We offer specially drilled cam sprockets for many models to allow quick and accurate timing adjustment.

There are a few common methods for “degreeing in” a camshaft, including the currently popular “lobe center” method. Which method you choose is not important provided you use it with care and consistency. In this way you can be sure that any changes in cam timing can be made accurately. It is not uncommon to encounter slight discrepancies between the timing figures you measure in your engine and those presented on the timing card packaged with the cam. We recommend that any differences be split equally between the opening and closing side of the lobe.

VALVE TO PISTON CLEARANCE

This clearance MUST be checked on ALL high performance cams. We recommend .060" clearance for both intake and exhaust valves. It is possible to run the intake clearance at .050" and it is safest to run the exhaust at .070". (We feel .060" on both is a good compromise.) Claying the piston is the safest way to check the clearance.

VALVE SPRING AND VALVE GUIDE CLEARANCE

Check to see that the spring retainer (top) will not contact the valve stem seal at FULL LIFT. At maximum lift there MUST BE at least .050" clearance between the retainer and stem seal (.050" to coil bind).

FOUR-CYLINDER PAIRS

When installing four-cylinder cams, take special care to tighten each bearing cap a little at a time. This is to avoid putting undue bending loads in the cam. Make certain that the cams are positioned properly with respect to one another during the tightening so the intake and exhaust valves are not being forced against one another or against the piston. Failure to observe these cautions may result in a broken camshaft. Cams broken during installation are not covered under warranty.

GENERAL INFORMATION — *CONTINUED*

CAMSHAFT SPECIFICATIONS

In this catalog, unless specifically noted, all timing specifications are quoted and may be checked as follows:

A) All pushrod type engines:

1) Stated lift is the total lobe lift or the total rise of the cam follower (tappet), NOT VALVE LIFT. To obtain the valve lift, it is necessary to know the actual rocker arm ratio. Since this ratio can vary with pushrod length and valve stem height, it is recommended that for valve spring shimming purposes you measure the actual valve lift.

2) durations and opening and closing angles are given at .040" tappet lift. We recommend that cams for these engines be degreed-in before installing the cylinder head

B) All overhead cam type engines:

1) Stated lift is the gross lift AT THE VALVE.

2) Durations and opening and closing angles are given at .040" valve lift, with zero checking clearance (lash). For engines with shim-adjusted valve lash it may be desirable to check the cam timing at running lash rather than zero lash, to avoid having to re-shim the valves after degreeing-in the cams. If you wish to check the cam timing at running lash, simply deduct the lash from .040" to obtain the correct checking lift. For example, if your running lash is .008", check opening and closing points at .032" valve lift (.040" minus .008" = .032") . In this way, you should obtain the specified timing figures.

When trying to compare different cams using quoted specifications, is is important to be sure that all specifications are given at the same checking point. Otherwise, direct comparisons are not valid. Megacycle chose .040" as a standard since this corresponds closely to one millimeter, which has become a standard checking point with most Japanese motorcycle manufacturers. Be aware, however, that many catalogs and workshop manuals quote cam timing figures at other, often unspecified, checking points.

SOME GENERAL NOTES PERTAINING TO CAM INSTALLATION

1) Don't check only valve opening OR closing. Check both opening AND closing and split any deviation from specifications equally between them. This way, you should come within 2 or 3 degrees of specifications.
2) ALWAYS check valve-to-piston clearance before running the engine. A quick and easy way to do this is to hold the crank at top dead center on the exhaust stroke, (overlap) and with the crank held in this position, pry the valves open with a lever. You should have a minimum of 1/16" movement before you feel the valve touch the piston.
3) If your stock cam sprockets are the type with rubber molded on them, it may be necessary to trim back the rubber to clear the larger-than-stock sprocket flanges on some billet cams. We recommend for all cams that you check to make sure the sprockets fit squarely on the cam and that the sprocket bolts thread in properly before installing the cams in the engine. Observing these precautions will prevent broken sprocket flanges. If for some reason the sprocket or sprocket bolts will not fit properly, please send them in for inspection before attempting installation, as broken sprocket flanges are not covered under warranty.
4) We recommend the use of slotted or vernier drilled cam sprockets to facilitate the degreeing-in of your cams. Megacycle offers such sprockets for many applications. In some cases, it may be necessary to elongate or slot the holes in your own sprockets if accessory sprockets are not available for your model.

ROCKER ARMS AND CAM FOLLOWERS

It is necessary to use new or reconditioned cam followers or rocker arms with each new or reconditioned cam.