

Norton Notice

THE NEWSLETTER OF THE NORTHERN CALIFORNIA BRANCH
NORTON OWNERS CLUB

NO. 116

DEC., 1987

Merry Christmas



WARRIOR

WARRIOR



**** DECEMBER 11 ****

ILLUSTRATION ERIC GUSTAVSON

THE ANNUAL CHRISTMAS PARTY!!!



THE NEWSLETTER OF THE NORTHERN CALIFORNIA BRANCH



Norton Notice

is published by the Northern California Branch of the Norton Owners Club. Its purpose is to inform and entertain members regarding all aspects of the Norton motorcycle, including history, technical advice, and preservation of the marque.

NORTON NOTICE is a reflection of its readership, who are encouraged to submit any article, technical tip, photograph (original or otherwise) as long as it is in good taste, so that other Norton enthusiasts may enjoy it. For Branch members who cannot attend club meetings or club rides, the NORTON NOTICE affords an opportunity to share experiences and information with the membership of the Branch, and to bring the Branch members closer together.

The deadline for items to be submitted for publication is the 15th of each month.

Membership in the Northern California Branch of the Norton Owners Club is available for \$30.00 per year.

Membership dues are payable to the Branch Secretary/Treasurer.

Renewal dues are payable at the end of the individual's membership year, that month being designated by the last number of the individual's membership number as located on the mailing label of the NORTON NOTICE or the membership card. For example, 745/2 denotes member 745 with dues expiring on the 1st of February.

All changes of address should go to the Branch Secretary/Treasurer, not the NOTICE Editor.

Subscription to the NORTON NOTICE only is available for \$18.00 per year. This does not include membership in the Northern California Branch of the Norton Owners Club, nor does it afford any of the rights or privileges of membership in the NOC.

Membership in the Northern California Branch of the Norton Owners Club entitles a member to monthly issues of the NORTON NOTICE and bi-monthly issues of ROADHOLDER magazine, which is sent directly from England, keeping members informed of Norton owners' activities worldwide. Membership provides voting privileges at all NOC and Branch meetings, and allows one to purchase Norton spares directly from England, at significant savings, through the NOC Spares Program.

ON THE COVER: Commando drawing from "Great Bikes of the 70s," Petersen Publishing.

* CLUB OFFICERS *

PRESIDENT

John Covell
1183 Alemany Blvd.
San Francisco, CA 94112
(415) 334-1183

Secretary/Treasurer

Alan Goldwater
1780 Chanticleer Ave.
Santa Cruz, CA 95062
(408)475-7505

Recording Secretary

Louis Mendelowitz
2153 Oberlin St.
Palo Alto, CA 94306
(415)857-1835

Editor

Lou Caputo
1058 Peralta Ave
Albany, CA 94706

Paraphernalia

Suran Meissner
5300 Tie Gulch Rd.
Santa Cruz, CA 95065

Ride Coordinator

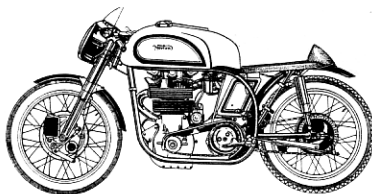
Margie Siegal
625 Fairmount Ave.
Oakland, CA 94611
(415)654-1933

NORTON OWNERS CLUB

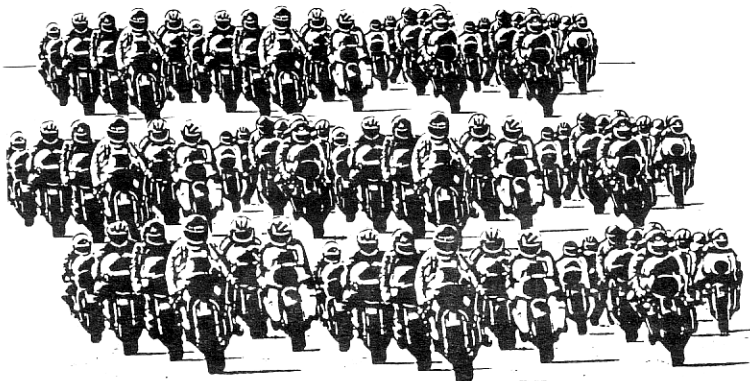
Important!

(Please take note of the following fine print.)

The object of the Northern California Branch of the Norton Owners Club is to promote, encourage and develop all motor-cycling activities. The Club's members are owners of Norton motorcycles, and they often submit for publication in the Norton Notice technical tips pertaining to motorcycles of the Norton marque. Technical tips so published have been reviewed for technical content and are believed to be both acceptable and workable, but no guarantee is made or implied that they will work correctly, nor is any liability assumed by either the Norton Owners Club or the authors for any problems resulting from use of these technical tips. The Club also assumes no responsibility for the acts or omissions of its members in connection with Club activities. Norton Notice articles or other material express the authors' views only and not necessarily the official policy of the Norton Owners Club or its Northern California Branch. The editor reserves the right to accept, reject or alter all editorial and advertising material submitted for publication. Advertising published does not imply endorsement of products, goods or services. Now you know.



1963 catalog drawing of Manx 30M and 40M



UPCOMING EVENTS

NOTICE: Riders should have plenty of oil and gasoline by the scheduled departure time and all personal problems taken care of. In other words . . . **FULL TANKS AND EMPTY BLADDERS.** In the event of inclement weather phone the ride leader to find out about the status of the ride.



DATE	DAY	EVENT
*Dec. 11	Fri.	*Annual Christmas Party, Class Reunion, 2700 El Camino Real, Palo Alto, 7:30 P.M. Come join us for the festivities!



*Dec. 20	Sun.	*Branch ride. Susan Wood leads the merrie band through the East Bay hills. Meet at TT Motors, 10:00 A.M. 849-2518.
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*Jan. 14	Thurs.	*Branch meeting. Zuka's, 1 Gilbert St., S.F. (across Bryant St. from the Hall of Justice at 7th and Bryant), 7:30 P.M.
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Jan 22-24	Fri.-Sun.	Great American Motorcycle and ATV Show, Cow Palace, S.F.
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*Jan 24	Sun.	*Branch ride. Mt. Hamilton Freeze Ride. THE Classic winter event. Lead by Louis Mendelowitz Meet at Howard Johnson's, First St., S.J. (First St. off ramp on 101), 10:00 A.M. Louis' phone is (415)857-1835.
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DOWN THE ROAD:

April 10 Laguna Seca (FIM)



DECEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		





TWISTGRIP TWADDLE

The November meeting at the Prince of Wales was a good one, well attended, with five or more Norton racers present to talk about their endeavors and answer questions from the crowd. On behalf of the Branch, I thank all of them for coming. A motion was made, and passed by acclamation, to make all Norton racers honorary recipients of the Norton Notice; they need only provide their mailing address to the Secretary-Treasurer. This will be a start to broadening the communication between the N.O.C. and the guys who are actually out there doing it at the track, so that non-racers can learn from those with experience, and so that any needs the racers have can be made known to potential supporters and providers of assistance (and perhaps occasional parts?). Keep your eyes on the N.N. We may do a project bike yet.

Speaking of the Notice, this is Lou's valedictory edition, so read and enjoy, and hope the incoming editor can fill Lou's rather large shoes. Better yet, volunteer yourself and ensure it happens.

The annual Holiday Party/General Meeting and Election is coming right up: Friday, December 11th, at the Class Reunion in Palo Alto. It will be the usual jolly occasion, so be sure to bring yourself along, and spouses/significant others/friends are welcome, too.

That's it for this month. Best holiday wishes to you all, and Happy '88.

Nort'nly yrs,

[Signature]
 Prez.

Ed. note: John's column originally contained a plea for motorcyclists to make their views about the Danforth bill known to their senators. The Dec. issue of the AMA journal AMERICAN MOTORCYCLIST reports that the Danforth bill is dead. "This bill won't go anywhere," Danforth promised. "Let's face it, no politician is going to support this when every time he's on a (telephone)call-in program, a couple of people will call up and say "WHAT are you doing?" Danforth has pledged to work with the AMA to draft sensible motorcycle safety legislation.

Nov. 18, 1987

Hello Lou,

Thought I'd pass a bit of information on to the club concerning a recent restoration of my second Commando. First of all, for those interested in getting those rusty "age spots" off of their trusty steed, check out Powders By Clarence III in Santa Clara. For about \$150 your frame, engine mounts,

(cont. p7)

CLUB MEETING SCHEDULE

1988- first 8 months

- A. (San Francisco) Jan. May
 Zuka's
 1 Gilbert St.
 S.F.
- B. (East Bay) Feb. June
 Currently Margie's house but we need a restaurant or bar. Any ideas?
- C. (San Mateo) Mar. July
 Prince of Wales Pub
 106 E. 25th Ave.
 San Mateo
- D. (Palo Alto) Dec. April
 Class Reunion
 2700 El Camino Real
 Palo Alto

The August meeting is usually at the Annual Rally.

BRANCH TREASURER'S REPORT NOVEMBER 1987

After paying current bills and depositing checks on hand, the current balance is \$93.01 in checking and about 40.00 in petty cash. With the pound currently trading at about \$1.78, almost \$17.00 of each renewal goes to UK, leaving only 87 cents per member-month for branch use. Fortunately, Lou has been able to keep down the cost of publishing the Notice without sacrificing quality and so we are still breaking even.

I'm happy to see an increase in both the renewal rate and in ride participation in recent months. Your enthusiasm and support are what makes this job worth doing. It's been especially nice riding with some new members on my new bike (my first Commando!). I'm finally getting to use all the great tips gleaned from years of NN reading and bench racing. Here's my 'tip of the month': if you use the later (thin) clutch plates, you can adjust the 'feel' and operating force of the clutch lever by substituting one or more of the thicker fiber plates. In my clutch, two fiber plates gives maximum pressure right at the beginning of lever movement, and the force becomes progressively lower as the lever is pulled in - ideal in my view. Be sure the clutch releases fully though. If you make the stack too thick, the pressure plate may jam against the spring disk.

I'd like to extend best holiday wishes to those club members in other parts of the country and others unable to attend our Christmas bash/agn. I hope enough of you do come that we can collectively inspire someone to take over the Notice from Lou. This is critical to the club's continuing vitality and membership service. Safe and happy riding in the coming New Year.

Alan



EDITOR'S NOTES



Hi Folks,

This is my 24th and final effort at producing a newsletter which tries to "inform and entertain members regarding all aspects of the Norton motorcycle, including history, technical advice, and preservation of the marque." I have tried my hardest to find or create original material. Early on I realized that Norton owners preferred wrenching to writing, so I began to collect as much information as I could to make it through the winter months when motorcycling events were scarce. Later on I made time for interviews and organized the "Tech Talk" which, judging from chats with club members and from reading our limited amount of mail, was a popular feature. Most of the photos came from my faithful Pentax.

My energies have come from a genuine enthusiasm for the sport of motorcycling. My chief objective has been to provide reliable information presented in a readable manner. I have also been aware that the newsletter provides the glue, via the Prez' message and the club calendar, which helps to hold the club together.

In the final analysis, of course, it's the membership which holds itself together by attendance at meetings, rides, etc.

The NN can be made better. 82% of members when polled in early 1986 indicated that the NN should have more tech tips (either specific to Norton or of a general nature). Tech tips don't grow on trees and there is little point in reprinting those already widely available (although a suggestion has arisen that tips in early NOTICES which newer members may not have seen could be reprinted). It still remains a puzzle to me how these gems can be collected. The vehicle for their publication exists; the stimulus to get them to the Editor apparently isn't strong enough. Should we offer rewards?

I mention all this because I believe the next Editor, unless he can write tech articles, will struggle with this same issue. His success will in part depend upon your willingness to share information. That effort involves a certain amount of risk; your suggestions, after all, might sound silly to someone with 10 or more years of experience working on Nortons. It also involves time-- time spent away from the garage and invested instead in holding a

pencil and making funny squiggles on a piece of paper. But then consider the benefits. If others take the time to write we could end up with a lively monthly exchange.

Such an encouraging start may be taking shape with Pete Serrino's problem, "Why does my Norton wobble at high speeds?" People have taken the time to respond with suggestions. Maybe YOU have a question that you haven't been able to answer. If so, send it in and perhaps another member can offer some of his experiences. For openers you might consider the following:

1. How do you make an electric start work every time?
2. What's the best procedure for tuning a Norton?

By the way, now is a good time to think about suggestions for format changes in the NOTICE. If the graphic on the Upcoming Events page has finally gotten to you, or if you think the ads deserve different treatment, or whatever, get ready to send those suggestions to the new Editor. Or, bring your list of changes to the Christmas Party and hand them over then. I'll be bringing mine.

My thanks to all of the people who have sent items in. This includes other clubs which have cooperated with us through the NOTICE. And I'm especially grateful to the folks who took the time to participate in the Tech Talk-- Alan, Mike, Harvey, Phil, Lee, and Burton. It was fun and I hope you, the readers, found it informative.

Now, then, I think I'll just go out and finally get to that head gasket....

Lou

*****Don't forget your chance to volunteer for the post of Paraphernalia or Recording Secretary. Both positions will be unfilled as of January.

*****Thanks to Lee Steinmetz, Eric Swortsfigure, Mark Weisendanger, Rob Tuluie, Ken Whitney, and Dan Phillips all of whom showed for "Racer's Night" at the Prince of Wales Pub on Nov. 12. We would have had a clean sweep of Bay Area racers but Dave Neal phoned to say that he had just returned from a business trip and couldn't make the meeting. The group talked about some Norton mods for racing and then, on a motion from Alan, all club members present (a good turnout) agreed that any Bay Area Norton racer who competes in at least three race events in a year shall be entitled to an honorary membership in the Norton Owners Club.



THE NEWSLETTER OF THE NORTHERN CALIFORNIA BRANCH

PARAPHERNALIA

1. "My success is due to my unapproachable Norton" T-shirt, black with gold print. Large only. *red print on grey long sleeve. Sm, med, large* **\$8.00 /6.00**
2. NOC classic "N" T-shirt, *dark blue with white print. Large and X-large only.* 8.00
3. " " " " *black with white print. Large only.* 8.00
4. " " " " *white with black print. Medium and large only.* 8.00
5. Northern California Branch logo T-shirt, white with blue and red print. Small, medium and large. 8.00
6. Northern California Branch logo baseball jersey, white with blue and red print. X-large only. 9.50

NOTE: All T-shirts are \$1.50 postage.

7. Commando Service Notes, 45 pages compiled and printed in England by NOC. 5.00
8. 3"x 3" NOC machine badge. 6.00
9. 4 1/2" red NOC sticker **Send orders to:** 1.00
10. 2" " " " .50
11. 2 1/2" x 3 1/2" red, white, and blue NOC sticker Suran Meissner .75
12. 2" red, silver, and black NOC sticker 5300 Tie Gulch Rd. .75
13. 4" red and white embroidered cloth NOC patch Santa Cruz, CA 95065 2.50
14. 2" " " " (408)426-6526 1.50
15. red enamel NOC lapel pin 1.50
16. " " key fob 1.25
17. red, white, and blue enamel John Player Norton lapel pin 1.50
18. " " " " key fob **NOT IN STOCK** 1.75

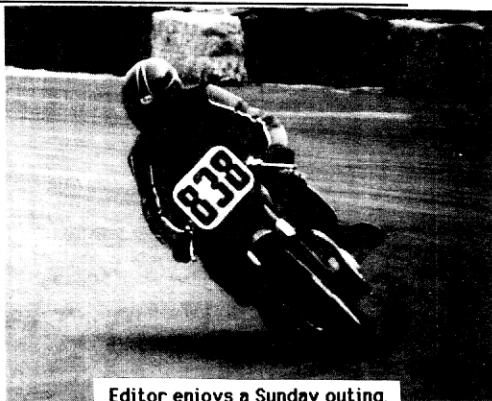
Call or write for details concerning availability and postage of items.

NORTHERN CALIFORNIA BRANCH TOOL LOAN-OUT PROGRAM

Get in touch with Harry Bunting if you need one or more of the following tools for working on your Commando. A refundable deposit equal to the replacement cost of the tool is required at the time you pick it up.

TOOL	DEPOSIT
exhaust lock ring tool.....	\$10
timing cover oil seal guide.....	5
clutch spring compressor.....	12
clutch locking tool.....	18
valve spring compressor.....	22
rocker spindle puller.....	25
crankshaft sprocket puller.....	22
timing pinion puller.....	20
gearbox layshaft bearing extractor..	15

Harry Bunting (415) 968-2020
1401 Gilmore St.
Mountain View, CA 94040



Editor enjoys a Sunday outing.

Genuine **Norton** Parts

means

FAIR SPARES AMERICA, INC.
Norton Specialists

PHIL RADFORD
(408) 292-6563

P.O. BOX 8224
SAN JOSE, CA 95155

Send SASE for current lists.
24-hour answer phone service.
10% discount for orders over \$200.
Orders over \$250 shipped free.
Mail Order. UPS. COD.

THE UNAPPROACHABLE



NORTONNORTONNORTONNORTONO

ADVERTISING RATES

	1/4 pg	1/2 pg	Full pg
6 mos	\$35	\$70	\$140
1 yr	\$60	\$120	\$240

Send ad copy and check to the Editor

NORTONNORTONNORTONNORTONT



\$ WANT ADS



ALL ADS WILL RUN FOR TWO MONTHS UNLESS YOU RESUBMIT THEM IN WRITING TO THE EDITOR.

FOR SALE

JPN fairing kit complete with mounting brackets. N.O.S. \$375.

Gene Ross (Visalia)
(209)734-1951 days or
(209)732-3748 eves/wknds

FOR SALE

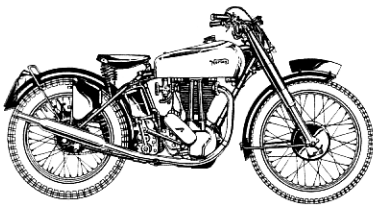
Dunstall kit in P.R. yellow. This includes tank, fairing, dualseat, and rearsets. Will also throw in rebuildable 2 into 1 into 2 headers. This kit has never been on a bike -- honest! \$450 or best offer.

Mike
(415)887-2720 after 5 P.M.

FOR SALE:

Breaking 1975 Norton MKIII. Everything like new and complete. Frame and swingarm just been painted. Reasonable prices for wheels, fenders, oil tank, etc. Call or write and let me know what you need.

Art Sirotta
1281 Laurel St.
Menlo Park, CA 94025
(415)327-3167



Model 500T in 1954 version

(Letter cont. from P.4)

swingarm, etc. get blasted, dipped, properly masked, powder coated in your favorite flavor, and baked to a glossy luster. 4-star quality. They're in the San Jose yellow pages.

For light machine work or good bead and blend of a broken alloy or iron fin, I've found Greg Griffin at RPM auto machine in Mountain View. He's more reasonable than most, and has so far done me right. This hole-in-the-wall shop is generally known for performance built V-8s with an occassional rice burner or Harley thrown in. And now, my Norton.

For repair of exhaust threads, I can't recommend anyone, only give extreme caution. A few months back, I had my 750 threads both done. A shop which I've dealt with for almost 15 years and whose main man I've almost regarded as family, really dealt me a bad hand. For a mere \$115, reduced from \$130 because of a bit of damage created by their sublet machinist (?), I received my once good head, back with its new threads welded in place. Also, the exhaust pipe diameters had been reduced from 1 3/8" to 1 1/16", the top forward cooling fin broken almost clear off, the exhaust guides' I.D.s were reduced in the center and enlarged on the ends, my highly lightened and polished rockers had turned to obsidian, and my brand new Tri Rate valve springs had completely collapsed. So, should you decide to have inserts welded into place, my suggestion is this:

- 1.- completely strip the head, both exhaust and intake sides as well as remove exhaust valve guides;
- 2.- have the insert welded at both the inside at the port and at the outside by the end of the threads. Then you can grind the weld at the port down a bit to keep the breathing satisfactory; or,
- 3.- find a used head with good threads.

Keep 'em Snortin'

Chris Nichols





LET'S GO

RACER PROFILE

This month's feature racer is Ken Whitney. I first met Ken when Rob Tuliue mentioned that there was this wild and crazy guy (not his exact words) in Berkeley who was setting up a Norton for racing. I called Ken up and he came over to help me wire up my race bike. Ken's a cheerful sort of guy, fun to be around, and we doubled up for the trips to the track this past season. Ken usually brings his daughter Sandra, ace plug checker and coach, along with him as well as half his garage. He races Formula Twins alongside Eric Swortzfigure, Lee Steinmetz, Rob, and Mark Weisendanger. Ken recently took his road Nort to Reno for the air races and then came back to the Bay Area the long way-- through Oregon. He's a careful rider both on the street and on the track and seems to be having a grand time with his new-found hobby.

As a teenager he competed in hydroplane racing, eventually moving up to crafts capable of 100mph. He fooled around with a 90cc Dot scrambler while working in England and used to watch roadracing there. He also ran around on a '57 BSA, '58 Triumph, and a '56 500cc AJS dirt bike.

Ken spent the next twenty years scuba diving, raising families, and working jobs around the world. He bought his first and only road Norton new in 1974 and has been chugging around on it ever since (when he's not riding his bicycle). Ken recently celebrated his 50th birthday and, while he's a pushover on the tennis courts, is in great shape.

Lou: You started racing this season but you were ready to go last year. What happened last year?

Ken: The racing season in northern California, the AFM races, got cancelled because of some insurance problems so I just sat on it for a year. I'd start the bike once a month and ride around the neighborhood. Actually this whole thing goes back three years when Corey Levenson had the idea that we should take the Superbike School. In those days they had the Kawasaki 550s. After that course I knew what my life's work should be. I needed to find a bike, preferably a Norton. I was doing a job in Berkeley at a site across from Whole Earth Access Company in Berkeley and right next to it was an automobile wrecking yard. One day I was munging around the yard looking at all the Japanese motorcycles and under a big pile was a '74 Norton. And it was just as you see it now. I asked the guy there about it and he said that it had just come in. He said that it had to

clear Motor Vehicles and could be sold after 30 days if no one claimed it. So I went down there every week. The bike had come from the Cal campus and apparently had just been abandoned. I asked how much it would cost and he said eight dollars a day storage fee for 30 days. So at the end of 30 days I showed up with the cash, gave it to him, and we loaded it into the truck.

Sandra (Ken's daughter) and I took it all apart. I took the engine down to John Gallivan. Lee Steinmetz looked at all the parts, and spent a lot of time assisting me. We wound up replacing the rods, pistons, rings, pushrods, and valves. We gave a summary look at the transmission and it was okay. John had given me a bunch of used clutch plates which were usable after cleaning but the plates that were in there were fine. John sent the head out for me and they did a beautiful job. In the meantime I sent away to England for the pistons, rods, and rings. Lee and John had suggested boring the cylinders out; Mike Rettie suggested Stan Peterson, this fantastic machinist in the Berkeley hills. I took the crankshaft to a local place which took 0.020" off the throws and cleaned it out.

RACING!

I was down at T.T. all the time asking about this and that and John, Lee, and Mike were really helpful and patient.

I took the wheels to Kosman and had them make up 18" DID rims with stainless spokes. That was about \$400. I bead blasted the frame, found one little crack and had it heliarc welded and then magnafluxed. Later we used a spray can to paint it. So over a period of months everything was either replaced or repaired. I got new steering head bearings from Bearing Engineering in Emeryville. I found out that bearings are standard wherever you go, the only things I really got from England were the pistons and rods. Bearing Engineering looked at the crankcases bearings (Superblends) and said they were fine.

I kept the standard disc brake with the stock Norton caliper. On Lee's suggestion I fitted a Grimeca master cylinder. Hoses Unlimited made up the front brake line.

T.T. had emphasized that for your first year of racing what you needed was a bike that was simple and easy to take care of, not something drunk with power.

By the time we were finished I'd guess we had put in over \$2,000.

Lou: You had been running a road Norton up to that point. Once you got on the road did you feel a difference between the two bikes?



Thanks to Louis Mendelowitz for unearthing "Stage One" and "Stage Two" service releases.



SERVICE RELEASE

N3/73 (Superseding N.

850 MODEL COMMANDO

"STAGE ONE" HIGH PERFORMANCE MODIFICATIONS

1973 850 MODEL HIGH PERFORMANCE CONVERSION

Conversion to High Performance condition involves the following operations, achieved either by replacement or conversion of the existing components as detailed below.

- | | | |
|-----------------------------------|---|------------------------------------------------------------------------------------|
| Camshaft | — | Replacement of the existing camshaft with 063536 'SS' camshaft. |
| Piston (850cc) | — | Conversion to High Performance/High compression condition. |
| Velocity Stacks (for carburettor) | — | Replacement of existing air filter equipment with the alternative Amal components. |
| Push Rods | — | Modifications to accommodate the alterations to the cylinder head configurations. |

For those wishing to convert the original pistons and cylinder head to the modified condition the following instructions are provided and should be carefully observed. Modifications are also necessary to push rod lengths to compensate for the alteration to rocker geometry resulting from cylinder head gasket face removal.

Modification required to Existing Components

1. PISTON

Conversion of the standard 850 piston 063838 to sports condition involves deepening the valve 'Cut-away' pockets in accordance with the dimensions given in Fig. 1. (See p.11 for Fig. 1)

The cut-aways require re-machining to the amended conditions as shown to allow for the additional 'valve drop' created by the use of the new Camshaft 063536. The head diameter of both the inlet and exhaust valves should be measured—ensure head diameters do not exceed 1.490in. (37.85mm) inlet, and 1.302in. (33.07mm) exhaust. This will avoid any possibility of subsequent 'hook up' when using 063536 Camshaft in the higher engine R.P.M. range.

(cont. p. 8b)



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Following modifications to both the pistons and the cylinder head, it is advisable to check the actual available 'valve drop' by placing modelling clay (Plasticine) into the valve clearance 'cut-aways' and rotating the crankshaft at least two complete revolutions. Measure the thickness of the modelling clay. A minimum clearance of 0.030in/0.040in (0.75mm/1.00mm) must be allowed when the inlet valve is closest to the piston at 3°/5° A.T.D.C.

2. CYLINDER HEAD

Modifications required to convert the standard 850 cylinder head 063830 to High Performance condition.

The diagram (Fig. 2) details the modifications that increase the compression ratio to 10:1, and to convert both inlet and exhaust ports to the shape to provide optimum power with flexibility.

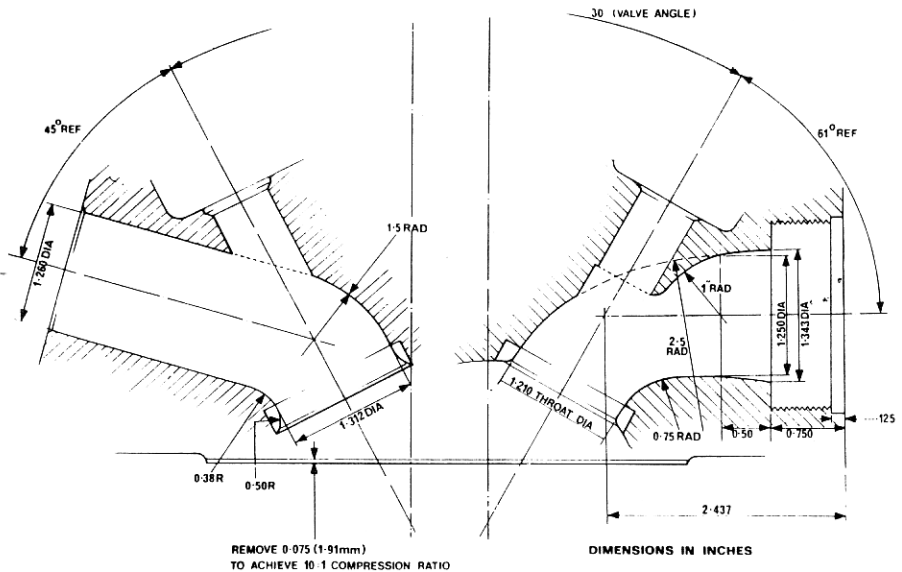


FIG. 2. CYLINDER HEAD MODIFICATION

A high degree of polish in the inlet and exhaust ports is not essential. Consistent shape and port sectional area is far more important for gas flow than highly polished sidewalls.

Removal of excess material in the Inlet and Exhaust port areas should be undertaken using a rotary file, or similar equipment. Particular care must be taken not to damage valve seat inserts and valve seatings when blending the ports from within the combustion sphere area.

(cont. p. 8c)



The removal of material from the cylinder head gasket face should be entrusted to specialists in this field, who have the equipment designed to maintain correct depth of cut with absolute flatness and truth during this operation.

3. PUSH RODS

In order to maintain correct rocker geometry following removal of material from the cylinder head gasket face both end caps are removed from each of the four push rods, and 0.037in (0.95mm) of metal removed from each end of the push rod prior to replacement of the end caps. Do not remove all the metal from one end only of the push rod as this may result in the end caps not re-seating properly, and partially resting onto the taper run-out of the push-rod itself (see Fig. 3).

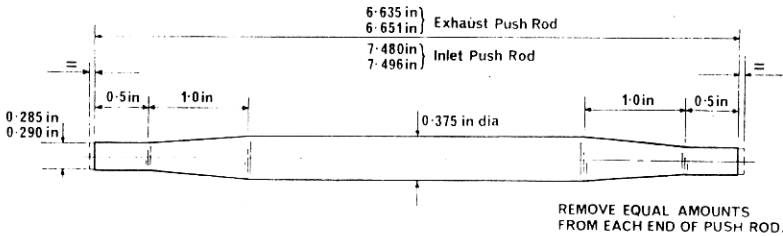


FIG. 3. PUSH ROD MODIFICATION

4. IGNITION TIMING

Contact Breaker	30° B.T.C. Max. Advance @ 3000 r.p.m.
Electronic Ignition	31° B.T.C. Max. Advance @ 5000 r.p.m.
Inlet	0.008in. (0.2mm)
Valve Clearance	'SS' Camshaft Part No. 063536
Exhaust	0.010in. (0.25mm)

5. CARBURETTORS

Standard 32mm carburettors as supplied with the machine give optimum performance utilising Amal Bell Mouth Velocity Stack.

Further detailed information is provided to assist in any subsequent incorporation of Electronic Ignition equipment. Norton Villiers Publication part number 065151 "Boyer Electronic Ignition" is available through normal Norton Service Channels.

Note

The fitting of oversized high tensile centreless ground bolts into sized and reamed crankcase boss and rear engine mounting bolt holes is advised to ensure maintenance of maximum rigidity of assembly.



On completion, it emphasized that the engine should be run only on a minimum of 100 Octane grade fuel. Also due to the increased efficiency and immediate response of the modified engine unit, great care must be taken not to over-rev the engine in the intermediate gears.

850 MODEL COMMANDO

"STAGE TWO" ROAD RACING CONVERSION

The following table indicates the components that will require replacement or modification to achieve this stage of tune.

TECHNICAL DATA

Camshaft	—	'4S' Racing Camshaft. Part number 064858 (fitted to standard Camshaft Pinion timing marks)
Cylinder Head	—	Modified to provide 10·5:1 compression ration, and full flow porting.
Piston	—	Modify crown to provide increased 'valve drop'.
Push Rod	—	Shortened to maintain correct rocker geometry.
Carburettor, Manifold and Velocity Stacks	—	Replacement of existing carburettor and air filter equipment.
Valve Clearances	—	Inlet 0·016in. (0·4mm)
	—	Exhaust 0·016in. (0·4mm)
Ignition Timing	—	Contact Breaker 30° BTC @ 3000 RPM Fully advanced.
	—	Electronic Ignition 31° BTC. @ 5000 RPM Fully advanced.

Modification required to Existing Components

1. PISTON

Conversion of the standard 850 piston 063838 to sports condition involves deepening the valve 'cut-away' pockets in accordance with the dimensions given in Fig. 1. (See p.11 for Fig. 1)

The 'cut-aways require re-machining to the amended conditions as shown to allow for the additional 'valve drop' created by the use of the new Camshaft 064858. The head diameters of both the inlet and exhaust valves should be measured—ensure head diameters do not exceed 1·490 in. (37·85mm) inlet, and 1·302in. (33·07mm) exhaust. This will avoid any possibility of subsequent 'hook up' when using the new Camshaft in the higher engine R.P.M. range.

2. CYLINDER HEAD

Modifications required to convert the standard 850 cylinder head 063830 to "Stage Two" Road Racing condition.

The diagram (Fig. 2) details the modifications that increase the compression ratio to 10·5:1 and to convert both inlet and exhaust ports to the shape to provide optimum power with flexibility.

Removal of excess material in the Inlet and Exhaust port areas should be undertaken using a rotary file, or similar equipment. Particular care must be taken not to damage valve seat inserts and valve seatings when blending the ports from within the combustion sphere area.

(cont. p. 9)



A high degree of polish in the inlet and exhaust ports is not essential. Consistent shape and port cross sectional area is far more important for gas flow than highly polished sidewalls.

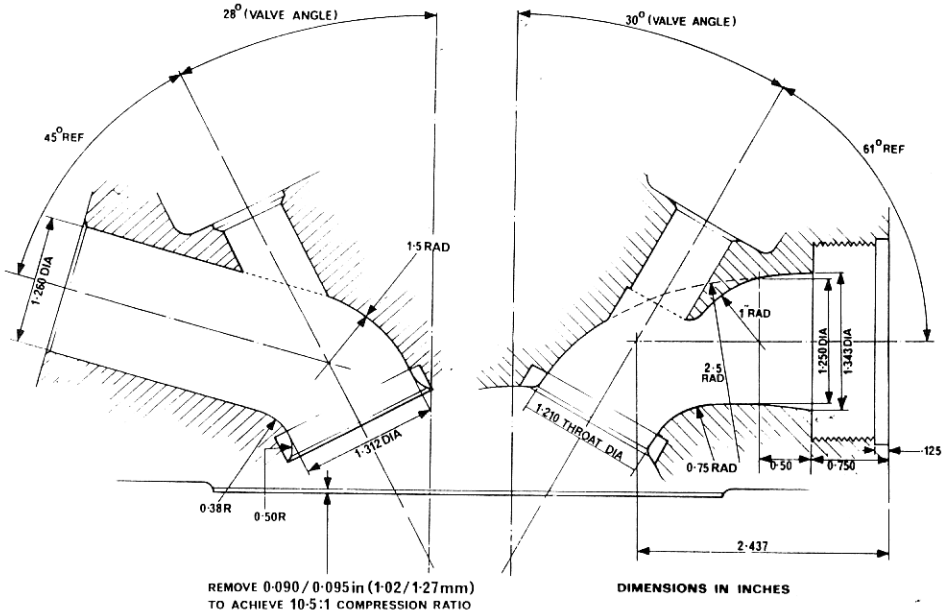


FIG. 2. CYLINDER HEAD MODIFICATION

Compression Ratio Adjustment

The removal of material from the cylinder head gasket face should be entrusted only to specialists in this field, who have the equipment designed to maintain correct depth of cut with absolute flatness and truth during this operation.

0.090/0.095in.(2.29mm/2.41mm) should be removed to achieve a compression ration of 10.5:1 (note: push rod lengths should be amended as described in Section 3 to maintain rocker geometry).

Following modifications to both the pistons and the cylinder head, it is advisable to check the actual available 'valve drop' by placing modelling clay (Plasticine) into the valve clearance 'cut-aways' and rotating the crankshaft at least two complete revolutions. Measure the thickness of the modelling clay. A minimum clearance of 0.040in./0.050in. (1.02mm/1.27mm) must be allowed when the inlet valve is closest to the piston at 3°/5° A.T.D.C.

When using the 4S Camshaft for racing it is advisable to ensure the valve springs are in first class condition and if possible to use S & W or other specialist racing valve springs. To avoid the possibility of 'valve float', increase the loading of the exhaust valve springs by fitting two heat insulation washers, NM 23392, per valve instead of one. However it is essential to check that a coil binding condition does not occur at full valve lift.

If in any doubt whatsoever, the total operation should be undertaken only by specialist machinists engaged in this type of work.



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3. PUSH RODS

In order to maintain correct rocker geometry following removal of material from the cylinder head gasket face both end caps are removed from each of the four push rods, and equal amounts of metal removed from each end of the push rods prior to replacement of the end caps. Do not remove all the metal from one end only of the push rod as this may result in the end caps not re-seating properly, and only partially resting onto the taper run-out of the push rod itself (see Fig. 3).

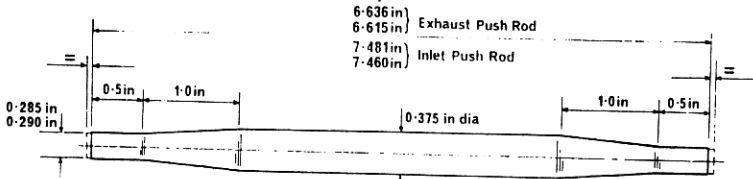


FIG. 3. PUSH ROD MODIFICATION REMOVE EQUAL AMOUNTS FROM EACH END OF PUSH ROD.

4. CARBURETTORS

Replace the standard 32mm Amal concentric carburetors with Amal Concentric 1036 36mm choke carburetors. If 36mm carburetors are not available 34mm carburetors may be bored out to the correct size after removal of the brass spray tube. The 36mm carburetors should be fitted with racing velocity stacks available from Amal. (Racing "Air Tubes").

The total length from the open end of the velocity stack to the gasket face on the cylinder head should be 9.5" (240mm.) However some difficulty may be experienced with the carburetor bodies fouling the sub frame bracing plate on the Commando frame. If this is the case, shorten the manifolds just sufficient so that the carburetor bodies clear the frame by 3/8" (9.5mm). Fabricate manifolds so that the carburetors can be remotely rubber mounted from the engine.

As running conditions and engine specifications vary so widely in competition engines a definite ruling cannot be given regarding carburation settings, however the following settings should be a fairly accurate starting point.

- 280 Main jets
 - 106 Needle jets
 - 3 1/2 Throttle valves
 - Needles in centre position
- Gradual taper from 36mm at carburettor end
down to 32mm at cyl head end

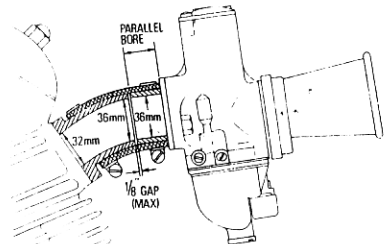


FIG. 4. CARBURETTOR MOUNTING

No. 1 manifold should measure 36mm bore at the carburetor end and then taper gradually and smoothly down to No. 2 manifold, 32mm bore at the other end. The gap between the two manifolds should not exceed 1/8" (32mm) to prevent the rubber fretting or bowing into the ports.

On completion, it is emphasized that the engine should be run only on a minimum of 100 Octane grade fuel. Also due to the increased efficiency and immediate response of the modified engine unit, great care must be taken not to over-rev the engine in the intermediate gears. If the machine is to be ridden using standard gearing, great care should be taken not to exceed 7000 r.p.m. in top gear.

5. EXHAUST SYSTEM

Muffler/Silencer equipment—use the standard exhaust pipes supplied with the machine in conjunction with Roadster mufflers, part number 061978.

Megaphone equipment—use the suggested exhaust system based on the dimensions given Fig. 5 below. Fabricate from 1 1/2 in. (38 mm) internal diameter pipe, with reverse cone megaphones to the dimensions as shown. (20 SWG. MS.).



(cont. from p. 10)

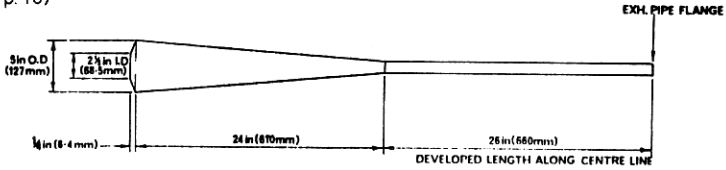
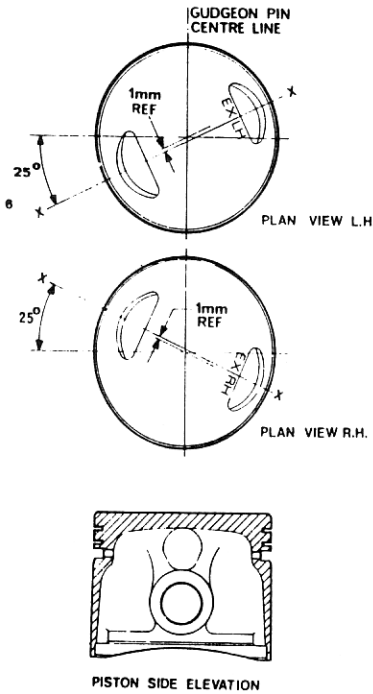


Fig. 5. EXHAUST SYSTEM

6. NOTE

The fitting of oversized high tensile centreless ground bolts into sized and reamed crankcase boss and rear engine mounting bolt holes is advised to ensure maintenance of maximum rigidity of assembly.



Modification of inlet and exhaust valve 'cut -- away' pockets to accommodate use of 063536 '55' camshaft (Note standard 850 Model Piston becomes 'handed' after modification).

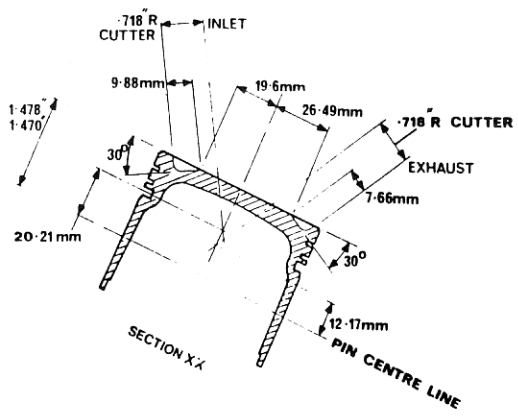


FIG. 1. PISTON CROWN MODIFICATION





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Whitney (cont.)

Ken: We put a dummy license plate on the race bike and ran up to Bear Creek Road. It felt real different. The steering felt very quick. Lee suggested that I put a steering dampener on it. You know, I've learned more from my race Norton about my road Norton than I'd ever have learned from the road Norton alone. It seemed like my road Norton had oversteer. The race Norton seems to track better; it has neutral steering with the 18" wheels. To this day I'm leery of putting my road Norton into a corner real fast but on the race bike it doesn't bother me at all. I just know that it's going to be where I put it. It's a comfortable bike to ride too.

Lou: What tires are you using?

Ken: The rear has a Metzler 99 Comp K and the front is a Metzler 33 and they wear like iron. They really stick, too.

Lou: What have you done to the exhaust system?

Ken: An issue of the NORTON NOTICE had come out with an interview of Rob Tuliue who had built an exhaust system for his race bike. So I called him. He's fun to work with. He's got about ten thousand things going on in his head and he's really smart. He'd say, "Now this is the kind of pipe system you're going to want!" and he'd draw up all these diagrams and curves and numbers. "Shit, I don't know," I'd say. "Let's just go get it." Well, it worked out to be a two into one which went to 1 1/2" into a collector which we built and which I thought was a work of art. It ended in a Supertrap SCCA megaphone and came out looking real nice. At that point the bike hadn't run in a long time so we rolled it out to the front of the house and started it up. Jesus! Flames belched out of the carbs. We jumped back and all the little kids came around. My neighbor leaned out of his window and yelled, "Alright! Norton lives again!" It finally settled down and ran great. Of course with all the houses around it sounded about ten times more powerful than it really is. As it turned out, the exhaust system gave me lots of power in the low end but made the top end a bit weak, at least compared to my road Norton which has the stock exhaust setup. Rob and I would go up to Bear Creek and I learned how to do plug chops and jetting.

So then it just sat there until it was time for the first New Riders School in the spring. Sandra and I safety wired it. I've come to the conclusion that a race Norton has more safety wire per square inch than any bike on the planet.

Lou: Tell us about your experience at the New Riders School.

Ken: This other guy and I were a little slow. Everyone else had these real powerful Japanese bikes and they would just get up and leave us. I thought that if this

was half racing speed I was in the wrong business. The instructor would come up behind us and tell us we were going too slow and it was true-- we were as nervous as wet hens. Well, I got through it and the next day raced an event, the Over 40. The next raceday came along and I entered it. About three days before the event I got a letter from the AFM saying I hadn't passed the school and would have to repeat the course. So I did and this time I stayed with the other riders as best I could. There were two different instructors. One was Steve Wickland and the other was Mike Scully. Steve had ridden Nortons and Triumphs before and he had a feel for how they could handle. He pointed out lines to me that I should be using on the Norton, lines which I use to this day. I felt much more confident. I raced two events the next day and it felt great.

Lou: What's it like racing in the Formula 750?

Ken: They're so fast. And they've got so much experience. All the bikes are more powerful than mine; the Ducatis are fast. I can't keep up with Rob or Lee or Eric [Few can!--Ed].

Lou: What's the plan for the future?

Ken: I just got a MKIII engine from John when he got rid of all of his British stuff. I've got a frame and transmission. I want to build another 750 engine but with a "big valve" head. They use Chevrolet valves. I've got to talk to Mark Weisendanger. He uses that setup with Amals and velocity stacks.

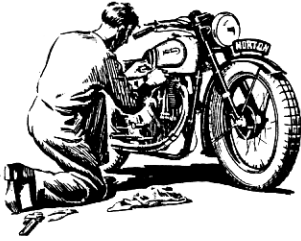
Lou: Your Norton had problems at the last race. What happened?

Ken: The battery went flat. One of the changes I made during the racing season was to get rid of the charging system. That gets rid of some weight. I couldn't feel a whole lot of difference but it seems



that removing a few pounds ought to help. But that battery was two years old, had sat in the bike for a year, and it just finally gave out. I had a new battery too. But it was an interesting learning experience.

(cont. p. 14)



TECH TIPS

SHOCK REBUILDS

The Girling rear shocks which came as original equipment on the Commando operate by using both a spring and an oil filled cavity to absorb the bumps of the road. The oil filled cavity has a chromed rod that goes in and out, and the oil is kept from leaking out by a seal that is not user-serviceable. Top dust covers, which were standard on 68-70 Commandos, did a lot to help keep moisture and road grit off the chromed rod. These top covers were supposed to double the life of Girling shocks. Right now, stainless top covers are available from Fair Spares for only £5.50 each. They are very easy to install by hand without any special tools provided that you put the shock into its most relaxed position prior to fitting the top cover. Just remove the shock from the machine, compress the spring by hand, remove the two top collets, fit the new top cover, and then compress the spring as you re-fit the two collets.

If your shocks have pitted rods or leaky seals, do not throw them away. There is now a firm in England that will rebuild them for only £36 plus £2.50 for post and packing. That company is:

Russler Racing
Mackadown Lane
Kitts Green
Birmingham B33 0LQ
ENGLAND

Each unit gets a new damper rod and top locating eye as well as upper rod guide seal. Units are primed and enamelled. This is all accomplished by having the original welded seam cut out and replaced with a threaded cap. This is the same method Girling employed in making their competition units.

NOTE: A special thanks to Art who has kept up a steady stream of these tidbits to the NOTICE.

ANSWER TO PUZZLE OF THE MONTH?

Oct. 25

Dear Lou,

In response to the [Oct., 1987] "Puzzle of the Month", I believe that I have had the same experience with high speed wobbles that Pete Serrino describes in his letter. My experience indicates that all of the things he has done will improve the handling of his machine, but the choice of tire sizes is the real problem. Several years ago I set a Commando up with the 120/80 x 18 Dunlop Elite rear and 110/90 x 19 front. High speed handling was rock solid, but low speed turning effort was very high (This made a run up Mt. Hamilton a real workout!). I got much reduced turning effort by fitting a 100/90 x 19 Elite to the front, but found that the same high speed (70 + mph) handling was plagued with wobbles. This is the same tire combination and problem that Pete now has. At about the same time as this was happening, Kevin Cameron, who writes the TDC column in CYCLE magazine, did an article on speed wobbles. One of the problems he cited was a mismatch in tire sizes from front to rear, specifically in terms of the relative size of tire contact patches. Mr. Cameron concluded that a large contact patch at the rear, when combined with a small contact patch at the front, would produce just the problems I had encountered. On this advice, I fitted a 110/90 x 18 Elite to the rear and found that the high speed stability was much improved. It didn't match that rock steady feeling that the two bigger tires provided, but as low speed steering was lower, the machine was better off in the long run. The machine is now capable of sustained high speed cruising (80mph +), with occasional bursts of 100mph + running, giving no trouble whatever. Gene Austin will testify to this, as his K100 had trouble shaking the old Norton loose on our way to Colorado this summer!

Note that this tire is smaller in outside diameter than the 120/80 previously fitted, and also smaller than the 4.10 x 19 originally intended for the bike. The result is that the machine sits slightly lower at the rear, a problem that can be partially compensated for by increasing the pre-load on the rear shock absorbers. I suspect the best answer would be to fit shocks with an eye-to-eye length about 1/2 inch longer than stock to make up for the loss in tire diameter, a step I have not yet tried, but intend to when my current shocks expire. An even

(Cont. p. 14)



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Whitney (cont.)

One other change I made in the middle of the racing season was to the head steady. I had been using a Norvil head steady but my hands were numb after these short sprint races we're doing. I talked to Eric and he was using the stock Norton head steady. So I went back to stock and all the vibration went away. I know how to shim things but shimming the Norvil head steady is a dark mystery to me.

In one race I had adjusted the rear isolastic to factory specs and Eric was looking at it-- he did that often and I kind of appreciated the interest he took in it, Rob too, in fact all the Norton racers are really full of information. And it's funny because before every race you ask them how their bike is running and they say, "Ah, well, jeez I can't seem to get these carburetors straightened out. I'm goin' just kinda kick back." I don't know what that means because as soon as that green flag drops they're gone! Anyway, Eric said, "You've got to shim those isolastics up tighter than that. What seems okay for the road isn't good enough for the track. And he was right.

Another change I made was to the suspension. I was using Fox shocks and apparently I had them too stiff. The bike would hop around on hard cornering so I changed the preloading on the springs and that went away. I haven't done anything to the front suspension; it's all stock and feels fine. The stock Norton caliper pulls the front end down on hard braking but it's okay. I like that softness; it doesn't bounce.

Lou: You just took a trip to Reno and had some adventures. Tell us about them.

Ken: Before you go on a long trip you should do some basic maintenance like all Norton riders do. And I didn't. I failed to adjust the rear isolastics. I had some play which I thought was okay. It was going to be an easy trip-- no problem. And we got up to Reno for the air races and the bikes did fine, just cruised right along. We went up to Oregon and came down the coast and got to Petaluma and I noticed that there was a vibration in the bike. I thought it was the road. I'd slow down and it would go away. I happened to look down at the primary and there was oil seeping out and I thought, "That's it, I've lost the engine oil seal and the primary is filling up with oil and something terrible is going on down there." So we stopped in Novato at a service station and I grabbed the rear wheel and moved it like two yards one way and two yards the other way. I crawled around underneath and saw that two of the three bolts that hold the rear engine cases and engine together had fallen out and the nut on the third one was off and the bolt was backing its way out too. The engine cradle had cracked and a chunk had fallen out of it! So Bill, who has this Honda VFR 750 looked at it and said,

"Boy is this thing antiquated. Look at that suspension system. And what is that crack doing there? And why is there a piece missing?"

By the time I got home there was oil all over the exhaust pipes, the wheel was flapping all around and David [Ken's son] heard me coming a block away. So I pushed it into the garage. Fortunately it's an easy fix. And once again that's because of all the help I've had from Corey, Lee, John, Mike. But I've got no excuse for not tending to it before I left on my trip. Nortons are just high maintenance machines. Fortunately the jobs are simple to do.

Lou: Why race?

Ken: I like to ride fast and you just can't do it on the street. You're up against the rules of the road, which is appropriate. I have no desire to buy a Japanese bike just to go faster. There's plenty to learn from a Norton. Racing gives me an incredible rush. And it really relaxes me. It teaches me more about myself, mentally, than a lot of things. And I don't want to ever be in the position of having wished I had done it.

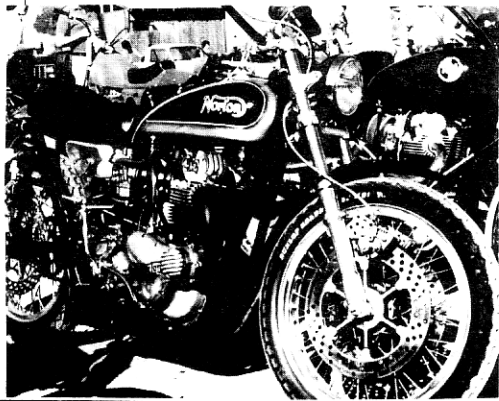
Puzzle Solution (cont.)

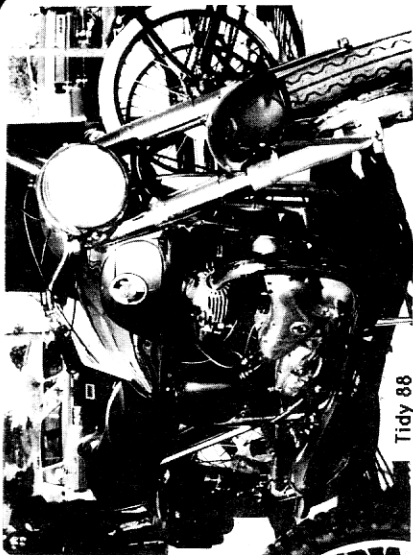
easier solution for those who have yet to fit an 18 inch rear rim would be to mount 100/90 x 19 Elites front and rear, preserving the attitude of the bike, while allowing the use of modern tires.

As with any advice offered from the confines of an easy chair, it will be only as good as the background information on which it is based. I hope Pete has checked other factors that affect handling (shocks, tire pressures, fork tube and wheel alignment, etc.) and found them to be in order before rushing out to buy a new tire or two.

Happy Trails,

Scot Marburger



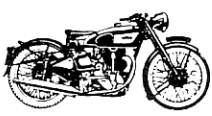


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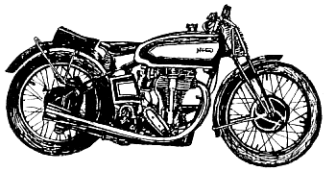
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