



## CAN-AM M.X. SCHOOL

### FOREWORD TO M.X. SCHOOL:

Motocross is tremendous fun. Perhaps the most natural progression for almost any boy to make is from riding about the countryside on a bicycle to riding about the countryside on a motor bicycle! The sheer pleasure of covering broken ground on two wheels and occasionally one and from time to time none, does not have to be experienced to be believed, the very sight of it thrills the heart of even "big" boys. It is possible to pass through the sheer fun stage to the vastly more serious but none-the-less satisfying arena of professional motocross. Both area's are demanding and even gruelling. Both area's require a certain amount of preparation, the more professional the approach the more meticulous must that preparation be. The purpose of this Can-Am course is to offer the basic principles of preparation so that more satisfaction may be drawn from your efforts to motocross. We cannot turn you into a fully qualified motocross driver in 6 hours, but we can lay a foundation on which with burgeoning experience you will be able to build your own success.

We have devised some simple rules which should be adhered to so that you and those around you will get the most out of the course we have to offer.

- (1) Fooling about will not be tolerated.
- (2) Crash hats will be worn whenever machines are ridden.
- (3) There will be no pit racing.
- (4) No one will ride until directly instructed to do so.

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Recommended reading:

- Ake Jonson's TECHNIQUE OF MOTOCROSS  
Gary Bailey's HOW TO WIN MOTOCROSS  
Jeff Smith's THE ART OF MOTOCROSS  
Jeff Smith's MOTOCROSS

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CLOTHING AND EQUIPMENT:

Clothing:

- (1) Crash hat-peaks-goggles-face mask-sweat.
- (2) Shirts-jerseys-chest protectors.
- (3) Gloves-blisters-hand handler.
- (4) Body belt-other protection.
- (5) Leathers-knee protection-making them fit.
- (6) Boots-soles-making them fit-socks.
- (7) Wet weather wear-Belstaff suit.
- (8) Nylon overalls.
- (9) Warm jacket and hat.

Equipment:

- (1) Necessary tools and stand.
- (2) Spares.
- (3) Gas containers, funnels, etc.
- (4) Food/drink/washing equipment/toilet paper
- (5) Chairs/umbrella.



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RIDING TECHNIQUES:

- (1) Trials riding practice.
- (2) Practice on motocross circuit.
- (3) Walking circuit.
- (4) Race the circuit not the person in front.
- (5) The longer the race the more thought must go into driving out of the direct line to conserve strength.
- (6) Water and how to treat it.
- (7) Starting-Braking-Hill climbing and descending-jumping-sand-mud-ruts-surface slime-lines.
- (8) Weight transfer.
- (9) Pre-race jitters.

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### PREPARATION OF MACHINE:

There are certain points on an M.X. machine which require checking before each days racing and some before each moto.

#### Before Race Each Day:

- (1) Wash machine-inspect for problems.
- (2) Cylinder and piston particularly the ring; plug.
- (3) Exhaust pipe for cracks and dents.
- (4) Gearbox oil level.
- (5) Timing, silicone grease to electric components.
- (6) Carburetor and gas tank; air filter box and element.
- (7) Suspension-springs-dampers-oil seals-swing arm.
- (8) Chain-condition-adjustment-guard-guide.
- (9) Cables-lubricate check on runs.
- (10) Tires-treads-pressure-rim locks-rims-spokes-brake linings-bearings.
- (11) Steering head bearings.
- (12) Footrests-gear lever-brake lever.
- (13) Torque all fasteners.

This is an ideal preparation plan, one used by myself for years it ensures close to perfection providing there are no obvious defects. If there are, then the extra work necessary in welding or stripping the engine, etc. must be added. You will see that to keep a machine in tip top condition requires a great deal of time and my estimate based on several years of experience is 15 hours to each hour of racing, i.e., a world championship machine requires 30 hours preparation per days racing. The 15 to 1 ratio gives some indication of the difficulties of maintaining practice machines.

#### Before Each Moto:

If no particular problem has become obvious make a quick visual inspection of the machine. Now check:

Preparation of Machines  
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- (1) Spoke tensions and rim shape.
- (2) Chain tension and lubricate.
- (3) Tires for cuts and signs of valve movement.
- (4) Plug.
- (5) Air filter element.
- (6) Quick check of all fasteners.
- (7) Lubricate any points possible; levers cable ends, etc.
- (8) Fill gas and oil containers.

If the event is wet you may decide to twist a rubber band along the grips. The previous race may have persuaded you to increase or decrease tire pressures.

## CAN-AM CLINIC

Suggestions for improving the performance of the standard  
1973 and 1974 MX machines.

### WORK ON FRAME AS FOLLOWS:

- (A) Cut 1 1/2" slot in steering head, i.e., 4 1/2" long use  
3 x 1 1/2" hole saw cuts then square up edges.
- (B) Drill holes in side plates.
- (C) Remove rear fender bracket and mount mudguard to loop or  
drill bracket.
- (D) Cut out footrest cross tube and weld on right hand footrest. *weld ridges on pegs Leave Left Side*
- (E) Install exhaust mounting boss.
- (F) Cut off right hand no. plate mount.
- (G) Dimple and drill and tap holes on L.H. and R.H. sides  
of the frame for side covers.
- (H) Weld on rear brake cable stop.
- (I) Weld on modification to accessory bracket.
- (J) Slot the mudguard mount hole.
- (K) Acquire a 250 swinging arm and cut off the stand bracket.

### CYCLE PARTS:

- (A) Magnesium front hub-backing plates-brake shoes-low profile  
alloy rims-butted spokes to drive flange are available.
- (B) Large dia holes in sprocket 2 1/2".
- (C) Front spindle to be drilled right through.
- (D) Yokes to be drilled and V'd - Helicoil Clamp bolts.
- (E) Remove top of stem and nut.
- (F) Fit alloy bearing spacers front and rear hubs.
- (G) Shorten all bolts as necessary and substitute with alloy  
and titanium where possible.
- (H) Change front fork seals for late 1974 type. Drill out  
caps cut off mudguard boss's turn down legs mill clamps.
- (I) Fabricate an alloy chain adjuster. T6 7075 MTL
- (J) Only use chain guard on muddy days.

### ENGINE:

- (1) (A) Modify head. *-Shave 3/4 inch Side-Back only, and top of Head*
- (B) Modify barrel.
- (C) Shorten all studs.
- (D) Slip joint exhaust flange.
- (E) Increase compression ratio.
- (F) Cut out unnecessary coils.
- (G) Fit tube between two circlips on shifter shaft.
- (H) 3/8 stud for front of engine.
- (I) Strengthen front mount.
- (J) Fit alloy washers behind drilled chain guard.
- (K) The electrics cover can be cut at rear.



- OR (2) (A) Remove oil pump *CAN-AM oil*  
(B) Block off holes preferably weld them up.  
(C) Cut off housing.  
(D) Split crankcase pull bearings off crank shaft on timing side. Turn off outside of oil collector to form distance piece or shim. Use plastic metal to fill in between the top two radial fins on the crankcase flywheel side. Drill down to between the main bearing and the crankcase seal. This should be a 1/8 drill. The top or transfer end should be chamfered with a larger drill. All these precautions are to ensure that the seal lip is adequately lubricated and of course the bearing and big end.

NOTES: Don't get over .006 clearance.

*CM-10 K&N Filter*

- (1) Carry only so much oil and gas or petrol mixture as is necessary for each race.
- (2) Dry 2nd cover over the foam air filter or a Kand N Filter element.
- (3) For wet weather racing use a piece of oil impregnated sponge down the front of the tank.
- (4) Use Koni dampers with the damper setting on very soft and 100 to 110 lb. springs or 90's depending on rider weight.
- (5) Use the '74 plastic air box with screw top and plastic pan.
- (6) All sprocket bolts need to be shortened by 3/16th of an inch. Only 3 need be used on the 125. - *FAR-OUT*
- (7) All security bolt areas should have spots or tits welded on to the rim.

*S+W 5 1/2  
travel down  
12/1/76*

## CAN-AM CLINIC

Suggestions for modification of an MX or a T'NT for international trails and enduros.

### FRAME:

- (A) Fit a center stand.
- (B) Stand stop bracket.
- (C) Cut off prop stand bracket.
- (D) Weld on magneto and oil pump protectors.
- (E) Fit crankcase shield.
- (F) Reposition front exhaust pipe mount.

### BICYCLE PARTS:

- (A) Large gas tank.
- (B) Horn.
- (C) Mirror.
- (D) Lighting system with stop light.
- (E) Magura grips.
- (F) No. plate bracket
- (G) Low big mudder.
- (H) Bracket for above.
- (I) Fork bottoms new seals and remove damper spring.
- (J) Front spindle insert.
- (K) Exhaust pipe clips.
- (L) Reposition pipe bracket.
- (M) Muffler joint cup.
- (N) Large washers for muffler.
- (O) Brake adjuster and spring stop.
- (P) Fill out back of anchor nut.
- (Q) Tits on rear rim.
- (R) Security bolt nut spacer.
- (S) Butted spokes.
- (T) Inner floating piece (rear brake) and washer.
- (U) Adjuster welded to spindle.
- (V) Slot seat bracket.
- (W) 3 rivets in seat bracket.
- (X) Tool bag.
- (Y) 3/8" bolt for front of engine.
- (Z) Chain oiling system.
- (1) A breather tree.
- (2) No security bolt in front wheel and balance.
- (3) 1/2" off front fork springs if necessary.
- (4) Shorten steering stem.
- (5) Front brake to power lever with stop switch.  
(Magura).

- (6) Drill fork crown for brake cable.
- (7) Fit license plate at rear on rubber.
- (8) Fit speedo.
- (9) Knobby tires.

ENGINE:

- (1) Use 1974 carburetor set up with choke.
- (2) Fit distance piece between 2 circlips on shifter shaft.
- (3) Carefully chamfer ports to minimize ring wear.
- (4) Do not run the engine at 3/4 to 7/8 throttle for extended periods. Tests have shown that this is the range in which the highest cylinder and head temperatures are reached. Hence prolonged running in this range can lead to heat damage and even seizure. It follows that full throttle and below 3/4 is much safer. A system which I use is to accelerate at full throttle then alternate on long road stages between full and half throttle. Running up to full throttle about every half mile. It is surprising how little speed is actually lost. If you can develop a sympathy for your engine you will be well on the way to a successful partnership, for you cannot then help but be sympathetic to the rest of the machine. Remember you drive it to most of the terrible places it gets into so don't take out your frustrations on the machine.
- (5) Use K & N filter number CM-10.

## CAN-AM CLINIC

### WEIGHT REDUCTION ON CAN-AM M.X. M/C'S

Reducing the overall weight of a racing machine and man combination is probably the best and easiest way to improve the performance of that combination providing it does not weaken it. It follows then that the simplest forethought can increase performance. A set of scales is important. They do not have to be totally accurate since often a comparison is all that you will be making. Various items of equipment should be compared to ensure that you are using the lightest boots compatible with safety and helmet, leathers, shirts, etc.

Once you and your equipment are as light as training and research can make them then the machine is next on the list for a slimming regime.

## CAN-AM M.X. SCHOOL

### PHYSICAL TRAINING:

A simple system which I have worked out over the years covers all the important muscle areas brought into use during racing a motorcycle in motocross. It is a complete system and can be multiplied to give extended training. This then is the module:

Requirements: Tracksuit-1 mile run-shower

Time basic: 15-20 minutes

System: 20 press ups, 20 st. 1, 20 st. 2, 60 arm, 60 K.B.  
Run 1 mile, sprint last 100 yards, 20 press ups,  
20 st. 1, 20 st. 2, 60 arm, 60 K.B.  
Shower-Relax.

For anyone riding in races up to 20 minutes in length one module per week day is fine. For anyone riding in races in excess of 20 minutes duration add another module, for international racing 3 modules are necessary. The aim is to recreate each day a similar state in which the driver finishes a race. By gradually increasing the speed of exercises and the load it is possible to push the threshold of exhaustion further and further away. Stamina is slowly improved. However, this can only be achieved if the regime includes adequate sleep, i.e., about 8 hours, a healthy diet, i.e., avoid excess's, no stimulants, i.e., alcohol, drugs, smoking. Annual check with a doctor.

Training on a motorcycle should not exceed 4 hours per week. Since the conditions of a race cannot be recreated the riding can only assist coordination and racing speeds should not be attempted. Keeping machines running soon becomes a major problem.

Apple Cider  
Vinegar  $\frac{1}{2}$  Teaspoon  
to  $\frac{1}{2}$  glass Water.



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Physical Training  
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Preparation of the body always includes preparation of the mind. In fact, the self-discipline of training, which is self-imposed, will begin to build confidence quickly. Confidence will reinforce determination and the two will emulsify into perseverance, the one characteristic which will overcome all obstacles. 50% of all racing indeed of all human endeavor is won and lost in the head. Do everything in your power to prepare for the year ahead both physically and machine wise. Then let quiet confidence fill you, for there is nothing else you can do. Recognize that racing is a game of chance and subject to its vagories. There will be failure but in failure lie the seeds of success.

If there is a watch word it is "THINK".