

TIGHTENING TORQUES SPECIFICATION

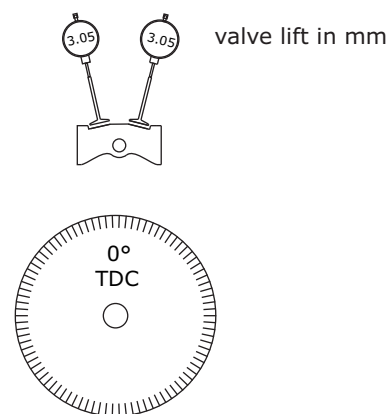
screw	
M4	3 Nm
M5 on alloy	6 Nm
M5 on magnesium	4 Nm
M6 on alloy	10 Nm
M6 on magnesium	8 Nm
M6 12.9	12 Nm
M8	20 Nm
M10	50 Nm
nut	
M6	6 Nm
M10	25 Nm
M12	55 Nm

TUNING**cam timing**

All our cams work well with both valves equally open at TDC.

In this condition the distance between valves and valves piston pocket will be automatically correct.

Minimum valve to piston clearance: IN 1.2 mm, EX 2.5 mm

**Sequence for check the valve timing:**

valve clearance: IN 0.10, EX 0.15 mm

timing chain clearance: 2° on over lap or 5 mm between timing chain and timing chain tensioner.

- 1) On compression point put the intake clock on zero;
- 2) From BDC turn forward to the TDC, intake valves start to open;
- 3) at TDC, disk on zero, read the intake valve lift;
- 4) with piston exactly at TDC, put the exhaust clock on zero;
- 5) complete the lap to the BDC and read the exhaust valve lift.

Example with P4 camshaft:

All four valves equally open at TDC must be approx
IN 3.05 = EX 3.05 mm

If you like to change the characteristic of the engine you can move the cam timing from IN = EX to the following condition:

IN 3.25 EX 2.85 mm

or

IN 2.95 EX 3.10 mm

Note: from one engine to the other valve timing can change 2% on lift.

Remember: when you play with valve timing great care must be taken to make sure that the valves have adequate piston clearance.

Compression

small slick tracks	from 10.5/1 to 13.5/1
rider weight <60 kg	not over 14/1
rider weight from 60 to 75 kg	from 13/1 to 15/1
rider weight >75 kg	over 15/1
big deep tracks	from 15/1 to 17.5/1

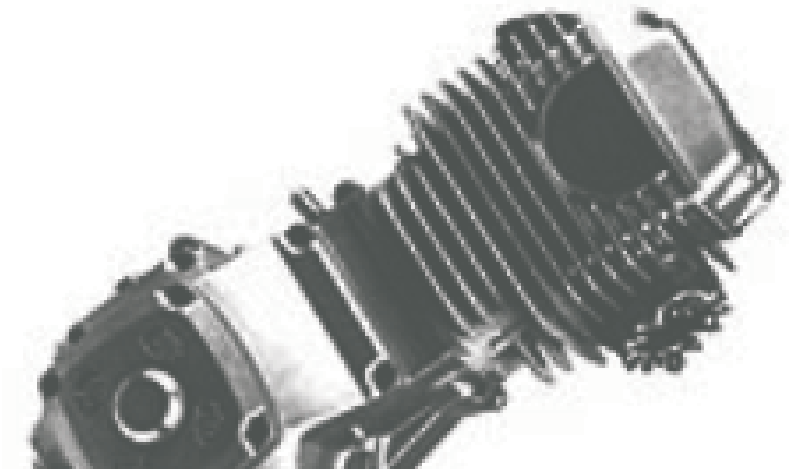
ignition timing

28° - 34°	compression around 13/1
24° - 30°	15/1
20° - 26°	17/1
< 25°	for slick tracks
> 25°	for deep tracks

squish

> 1.5 mm for soft engine

0.9 - 1.3 mm for strong powerfull engine



Owner's service manual for Speedway and Long Track GM engines



GM SRL

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IMPORTANT NOTICE

This engine is designed strictly for competition use only. GM factory declare that all spares and engines are not covered by any warranty. GM factory can recognize the manufactured defect after control only.

WARNING

Over revs on gate line can destroy the engine.

SAFETY INFORMATION

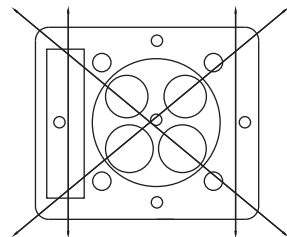
GM factory assumes no liability for accident or collision damage from use of our products.

GENERAL SPECIFICATION

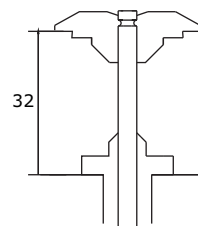
Engine type:	air cooled, 4 stroke, 4 valves, SOHC
Cylinder arrangement:	1 cylinder approx 60° forward lay down
Displacement:	499 cc
Bore x stroke:	85.9 x 86 mm or 90 x 78.5 mm
Weight:	26 kg
Oil capacity:	0.85 L

TECHNICAL SPECIFICATION

cylinder head: warp limit 0.04 mm



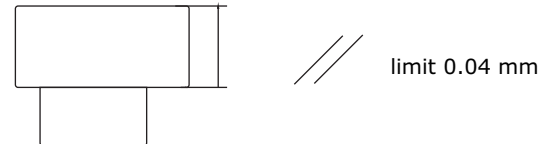
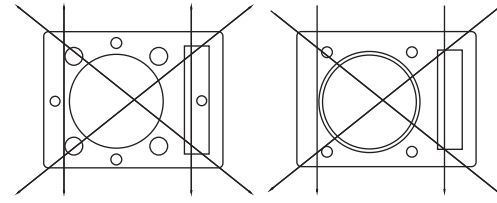
Valve clearance:	IN 0.10 mm, EX 0.15 mm
valve to valve guide clearance:	IN 0.02 - 0.04 mm EX 0.03 - 0.05 mm
valve seat contact width:	IN 0.6 - 1.0 mm EX 0.8 - 1.2 mm
valve spring:	installed length 32 mm Installed force at 32 mm 41 kg



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Cylinder warp limit:

0.04 mm



Bore: 85.90 +0.01, -0.01 mm or 90.00 +0.01, -0.01 mm
taper limit: 0.05 mm
out of round limit: 0.05 mm

Piston

Bore: 85.82 +0.005, -0.005 mm or 89.93 +0.005, -0.005 mm

Piston to cylinder clearance

Standard: 0.07 - 0.08 mm
Limit: 0.06 - 0.10 mm

Piston pin clearance

Axial: 0.30 - 0.70 mm
Radial: 0.01 - 0.03 mm

Piston rings

end gap 1st and 2nd: 0.15 - 0.30 mm
side clearance in piston ring groove: 0.02 - 0.05 mm

timing chain

Clearance: 2° on over lap or 5 mm between timing chain and timing chain tensioner

crankshaft

runout limit: 0.1 mm
side clearance to main bearing housing: 0.5 - 0.8 mm

connecting rod

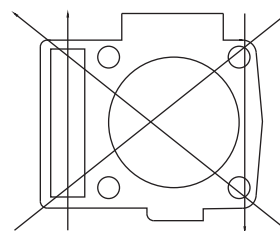
taper limit: 0.004 mm
out of round limit: 0.008 mm
side clearance: 0.40 - 0.60 mm
small end clearance: 0.01 - 0.02 mm
big end clearance: 0.03 - 0.05 mm

big end

taper limit (all length): 0.008 mm
out of round limit: 0.004 mm
pressure beetwen hole on disk and shaft: 0.13 - 0.15 mm

crank case

warp limit: 0.04 mm



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MAINTENANCE SPECIFICATION**ordinary maintenance**

To be done after every meeting:

Engine wash

Before wash the engine block off the exhaust and the intake rubber manifold. Remove all dirt, mud, dust and foreign material before removal and disassembly.

Attention: Excessive hose pressure may cause water seepage and contamination of engine parts.

Remove the ignition cover and dry the ignition; before install the ignition cover lubricate all parts with anti rust spray.

After completing the above, start the engine and allow it to idle for several minutes.

Valve clearance adjusting

The valve clearance should be adjusted when the engine is cool to the touch.

The piston must be at TDC on compression stroke.

IN 0.10 mm
EX 0.15 mm

Remove the rocker cover; check the valve clearance with a feeler gauge between the valve and the pad. If necessary, loose the 8 mm nut and adjust the valve clearance by the M6 x 0.75 screw; retight the nut.

Install the rocker cover.

Oil chainging

oil capacity: 0.85 L

We recommend to use GM oil, our fully synthetic oil developed for speedway racing engine at methanol fuel. Any other hight quality synthetic oil can be used.

During the meeting remember to inspect the oil level in the check tube and make sure 0.85 litre are in the engine.

programmed maintenance

to be done every	heat			
	5	30	60	90
engine oil changing	*			
valve clearance	*			
valve reface		*	*	
valve replace				*
valve seat reface		*	*	*
valve spring replace				*
compression chamber O-ring replace			*	
cylinder head bolt replace				*
timing chain inspect		*	*	*
timing chain tensioner and t. ch. giude replace				*
cylinder inspect		*	*	*
cylinder honing		*	*	
cylinder replace				?
cylinder bolt replace				*
piston inspect		*	*	
piston replace, complete				*
piston pin inspect		*	*	
piston ring replace			*	
connecting rod inspect		*	*	
connecting rod honing		*	*	
connecting rod replace				*
big end replace		*		
big end cages replace			*	
timing and driving shaft replace				?
timing and driving cage shaft replace				*
ignition and coil replace				*
spark plug replace				*

"*" suggested

"?" If necessary (see technical specification)