Rules as updated in **BLUE**

REGULATIONS AND SPECIFICATIONS FOR THE 2010 NORTHERN REGIONS MOTORSPORT VW CHALLENGE CHAMPIONSHIP, KNOWN IN THE MEDIA AS THE "GOLDWAGEN CHALLENGE"

MSA NORTHERN REGIONS MOTORSPORT CIRCULAR NR ~~16/20~~

VALIDITY OF THESE REGULATIONS

These regulations apply for the calendar year of 2010 and are held under the general competition rules the standing supplementary regulations and these regulations.

1. DEFINITION

"VW Challenge" - A class of racing that complies with the following regulations.

1.1 Aim of the Championship

To declare an overall Northern Regions Motorsport "VW Challenge" Champion and a Northern Regions Champion in each class.

1.2 Controllers of the Championship

The Controllers of the 2010 "VW Challenge" Championship will be the MSA Northern Regions Motorsport Committee and the "VW Challenge" branch of the Sports Car Club of South Africa.

1.3 Practice/Testing

No 'away race' circuit may be used or hired for practice/testing from midnight on the Saturday one week prior to a scheduled championship race meeting at the particular circuit, until the start of official practice as detailed in the SR's for the event in question.
('away race' is deemed to be Phakisa, Lichtenburg, East London, Scribante & Killarney.
During official practice i.e. the Fri morning from the first practice session a driver may under no circumstances practice in a session not designated for his/her class. The penalty of a driver not adhering to these practice rules will be that the driver will start from the back of their class on the starting grid, for both races.

1.4 Spare or T cars

No spare or T cars are allowed. The car used by the driver in his/her first official practice at a race meeting is the car nominated by the driver.

1.5 Grid

Grid positions for heat one will be determined by the fastest time posted during the official qualifying session. Similarly the starting positions for heat two will be determined by the second fastest time posted during official qualifying. Non qualifiers will start at the back of their class on the grid. Should there be more than one non qualifier, their grid positions will

be determined at the discretion of the timekeeper.
Classes will be separated on the starting grid by two rows for all races, or as decided by the Clerk of the Course.

1.6 Championship Scoring

As per GCR 232, points will be awarded on 10-8-6-5-4-3-2-1 basis. In order for any competitor to score full points there must be at least eight starters per class. Should a class not have eight starters points will be awarded on a sliding scale, dropping the highest points scoring positions. Minimum number of starters per class is 3 in order to score points.

(a) Pole position in each class will score 1 point per class per heat.
(b) Fastest race lap of each heat will score 1 point per class.
(c) To be classified as a starter a competitor must participate in the official qualifying session listed in the regulations for the event, or in one of the two heats.
(d) Class points may not be transferred from one class to another. The champion will be the competitor with the highest number of points scored overall at the end of the racing season, irrespective of class. In the case of ties, the competitor with most wins or second place's etc. will be declared the champion.
(e) Drivers may not race in 2 classes on the same race day
(f) An additional 5 Points will be awarded to each competitor who participates in any official session at an away race, including practice sessions as determined by the club.
(g) For 2010 all 9 race meetings on the MSA Calendar will count towards the competitor's championship points.

1.7 Domicile

The Championship is open to all holders of a valid MSA competition license, domiciled in the areas under the jurisdiction of the MSA Northern Regions and Free State/Northern Cape Regional Motorsport Committees. Any competitor not domiciled in the areas under the jurisdiction of the MSA Northern Regions and Free State/Northern Cape Regional Motorsport Committees choosing to compete in the VW Challenge will compete as if they are domiciled under the above jurisdiction.

1.8 Championship Race Dates

The race dates counting towards the championship will be as published and/or as amended by Motorsport South Africa.

1.9 Classes

There will be five classes namely.

1.9.1 **Class A:** VW 8v, 2E (Note: '2E' refers to 'long-block' 2.0L 2E variants) 1984cc modified engines with hydraulic heads. All Class A cars must use standard petrol freely available to the South African public from dispensing pumps at commercial filling stations within the proximity of the race meeting.

1.9.2 **Class B:** VW 8v, 1830cc engine with limited modifications with hydraulic heads. All Class B cars must use standard petrol freely available to the South African public from dispensing pumps at commercial filling stations within the proximity of the race meeting.

1.9.3 **Class C:** VW 8v, 1640cc standard engines with hydraulic heads. All Class C cars must use standard petrol freely available to the South African public from dispensing pumps at commercial filling stations within the proximity of the race meeting. In 2010 any driver actively participating in a National track series, or a higher graded track series, may not participate in Class C. If a National or higher graded driver wishes to participate in Class C he/she has to approach the Committee in writing to get permission to participate.

1.9.4 **Class P**: VW 8v, 1984cc Polo Cup cars from 1997 till 2002 i.e. Polo Classic or VW 8v, 1984cc Polo Cup Cars from 2003 i.e. Polo Hatchback. 20v allowed as per 2009 national Polo Cup rules for 2010 only. Only invitation national Polo Cup drivers may participate with 20v vehicles. Current (2009) VW Challenge drivers may not participate in 20v vehicles. After 2010 the national spec 20v's will not be allowed and must be converted to 8v. In 2010 the 20v's performance will be controlled with an ECU rev limiter. The 20v rev limiter must be controlled to ensure fair competition amongst all Class P engine variants i.e. the 20v and 8v must both be equally competitive. In 2010 the 2E engine could be allowed as per Class X rules, if accepted by Class P.

1.9.5 **Class X:** VW 8v, 2E (Note: '2E' refers to 'long-block' 2.0L 2E variants) 1984cc engines with limited modifications with 2E hydraulic heads. Mk1 Golf/Jetta/Fox not allowed in Class X.

Competitors must use standard petrol freely available to the South African public from dispensing pumps at commercial filling stations within the proximity of the race meeting.

For 2010 only, ex-Polo Cup 8V cars may use the 2.0L short-block as per 2009 Class P rules and may use 98 racing fuel. Gearbox must be fitted with 3.94 Diff as per Class X. Note: No new build Polo Cup spec cars will be allowed to participate in Class X. Only ex-Polo Cup cars that participated during 2009 in Class P will be accepted. During the 2010 racing season, if a 2009 Class P spec vehicle damages the motor, the motor must be replaced with a 2E Class X spec motor, inlet manifold and exhaust system. For 2011 the short-block/2009 spec Polo's will not be permitted.

The Class X rules will be re-clarified in 2010 where re-clarification is found to be necessary to close any loopholes that may exist.

In the event of a technical strip the results and information of the strip will be made available by the TC to all Class X drivers.

In 2010 any driver actively participating in a National track series, or a higher graded track series, may not participate in Class X. If a National or higher graded driver wishes to participate in Class X he/she has to approach the Committee in writing to get permission to participate.

2 Drivers code of conduct – GCR 154

2.1 Drivers will abide by MSA regulations at all times. No driver shall drive or conduct himself in a manner that brings the sport and/or club into disrepute. Drivers remain subject to disciplinary actions imposed by MSA and/or the VW Challenge Committee. The driver will be granted the opportunity to defend their case to the committee.

2.2 Yellow/Red Card will be issued at the discretion of the CoC. The committee can suggest a Yellow/Red Card to the CoC, who could enforce a three race meeting Yellow(observation) or a Red (a race points loss, and/or a race ban).

If yellow card competitors cause an incident during the following 3 race meetings, the CoC, at his/her discretion, will issue a RED card and an immediate one race meeting ban.

If a competitor returns after one race meeting ban, then the remainder of the period for the yellow card is still applicable.

Yellow cards are to be displayed on front and rear window next to competitor's number and next to the competitor's name on the side windows.

Dangerous or unsafe driving is not acceptable.

3. ELIGIBILITY OF CARS

3.1 Only right-hand drive, VW passenger vehicles, as sold officially at VW Dealers in SA, will be

permitted.

3.2 Cars must be registered with the Volkswagen Challenge Technical Committee, and be rendered for inspection to determine its eligibility.

3.3 Cars not meeting the safety and aesthetic standards judged by the Volkswagen Challenge Committee will not be allowed to race.

3.4 The VW Challenge Committee reserves the right to have racing cars inspected at random.

4. SPONSORS DECALS / COMPETITION NUMBER EXPOSURE

4.1 Refer to GCRs 246 and 249.

4.2 Series sponsors decals will at all times be displayed and take preference over individual / personal sponsors. Decals may not be tampered with or altered in any way. Day or series sponsors decals will be displayed where so decided and indicated by the VW Challenge Committee. The applicable areas are the bonnet, the top and bottom of the windscreen, the top and bottom of the back window, the front and back number plate, the number backings on both front doors and rear passenger windows. The VW Challenge Committee reserves the right to revise the abovementioned and/or add additional areas for the series sponsors of the VW Challenge. Numbers must be displayed on the windscreen. The letters, designating the class must be the size as Committee approved. Only series sponsors stickers & branding is allowed on the front windscreen, plus the competitor's class and number. Any driver not running the correct sticker in the correct position, will at the discretion of the CoC, be fined, penalized or excluded from the race.

5. ENGINES GENERAL

5.1 Data logging and telemetary:

Class A & P: Data logging of car and driver performance is permitted. In order to control cost only dash-type data loggers or GPS-type data loggers are permitted. Any combination of the following specified parameters may be logged during unofficial practice, official practice, qualifying and during races:

Engine: oil pressure, oil and water temperature. Fuel pressure and temperature. Exhaust gas temperature and single lambda reading. Battery voltage. RPM. Transmission: Gearbox and differential temperature. Chassis: vehicle speed through GPS input. Vehicle speed through input from single rpm sensor mounted on the drive shaft. Lateral, longitudinal and vertical G-forces. Steering input. Throttle position. Front and rear brake line pressures. Ambient temperature, barometric pressure. Lap times. Telemetry i.e. any communication, whether this be data and/or voice between the car/driver and the pit whilst driving on the track is not allowed.

Class B, C & X: On board data collection systems are limited to lap times, engine revolutions, water temperature and oil temperature. All other ancillary functions must be disabled and are not allowed. Telemetry is not allowed.

5.2 Oil coolers are free.

5.3 Spark plugs are free.

5.4 May run Wasted Spark Coil Pack. Individual coils per cylinder are not permitted. Wasted spark Coil Pack is not permitted in Class C & X. The pickup for the fuel injection for Class C & X must be in the standard distributer ('hall' sender unit).

5.5 Gaskets are free.

5.6 The breather system must discharge into a catch tank of 1 litre minimum capacity, and must be empty at the start of practice and each heat. The water tank/holder used to store water for the windscreen washers may not be used as the catch tank.

5.7 Sumps may be altered but remain wet sumps. Engine and gearbox sump plugs and oil filters must be wire locked. The inspection plate ("green plate") on the side of the gearbox must be wire locked.
5.8 The position of the radiator may not be changed, but larger radiators may be fitted.
5.9 Alternators must be operative at all times, but bigger pulleys are allowed.
5.10 Engine mounting position must remain standard, but the material is free. New Polo's must use original or VW Motorsport type engine mountings. For new models (Golf4/5 and Beetle) 2 out of 3 engine mountings must remain original. (Engine mounting on the driver side/engine side can be manufactured).
5.11 Service items such as filters, gaskets, lubricants, air, fuel and oil filters, bolts, fasteners and bearings may be sourced from any recognised aftermarket supplier of standard replacement parts.
5.12 Ducts may be added to increase airflow through radiator but must be fitted without protruding from the grill or any other part of the exterior of the car.

6. EXHAUST SYSTEMS

6.1 Exhaust systems are free. Must comply with GCR 245 and must exit at the rear of the car in the original position and direction. The exhaust outlet pipe may not be recessed towards the inside of the bodywork of the vehicle i.e. recessed further than the bottom part of the bodywork or bumper/spoiler where the exhaust protrudes. The exhaust must also not protrude beyond the perimeter of the vehicle. The exhaust must follow the original route of the standard OE exhaust system in Class C & X.
6.2 Class X to use the standard 2E OE exhaust manifold only. Other than machining and matching the exhaust manifold to the cylinder head up to 10mm into the exhaust manifold (NB. The exhaust manifold only, not the cylinder head) as well as machining the exhaust manifold up to 10mm into the exit of the exhaust manifold, the exhaust manifold may not be flowed or modified in any way. The downpipe from the exhaust manifold to the knuckle must be the Class X spec downpipe as supplied by TNT with an OD that may not be larger than 45mm at any point. The rest of the exhaust must follow the original route of the standard exhaust system and must exit at the rear of the car in the original position and may not be larger at any point than 57mm OD (except for the silencer). For 2010, ex-Polo Cup 2009 8V spec cars participating in Class X must use the exhaust system as per the 2009 Class P rules.

7. CYLINDER BLOCKS

7.1 Only VW mass-produced blocks available through commercial outlets are permitted. No aluminium blocks may be used.
7.2 Oil Cooler is free.
7.3 Valve Timing: The rotary position of the camshaft to the crankshaft may be changed by using the adjustable vernier pulley.
7.4 Sleeving of engine blocks. Engine blocks which may have been damaged may be re-sleeved to return it to the original specifications.
7.5 Class X: Maximum piston deck height protrusion is 1.000mm and Minimum is 0.800mm. The deck height will be measured at the highest point of the piston protrusion. The piston will be centered to eliminate any piston protrusion variance caused by the piston tilting over to either side due to a variance in cylinder bore or piston wear.
7.6 Class P: The only permissible engines are the 8v 1984cc capacity unit as supplied by VW Motorsport under identification code VWMSPC. 20v as per national 2009 Polo Cup rules.

2E as per Class X rules if accepted by Class P.
Ignition timing: Static ignition timing may be set by means of adjusting the distributor position.

8. INDUCTION SYSTEMS

Additional air pipes may be used to supply the engine air intake with cool air.

8.1 Class A:

VW 8v, 1984cc. Citi Golf Life and/or 2E manifold & throttle body. Manifold may be gas flowed and cut. 300° H cam maximum. Throttle body may be re-worked, but butterfly and spindle must remain standard in profile with a maximum diameter of 56mm with the exception of an 8mm hole to aid idling. Air filters and connecting pipes are free. Throttle body may be modified to take separate throttle position sensors.

8.2 Class B:

VW 8v, 1830cc. Citi Golf Life manifold, throttle body and injectors. Other than matching the ports to the cylinder head up to 80mm, the inlet manifold may not be flowed. Throttle body must remain standard with the exception of an 8mm hole to aid idling. Standard Polo or Citi Life air filter housing and connecting pipe must be used (upper and lower cones in the box may be removed). Filters are free. Throttle body may be modified to take separate throttle position sensors.

8.3 Class C:

VW 8v, 1640cc. Citi Golf manifold, throttle body and injectors. Inlet manifold may not be flowed. Throttle body must remain standard with the exception of an 8mm hole to aid idling. Standard Polo or Citi Life air filter housing and connecting pipe must be used (upper and lower cones in the box may be removed). Filters are free. Throttle body must remain standard, but may be modified to take separate throttle position sensors.

8.4 Class X:

VW 8v, 1984cc. Intake Manifold: 2E OE manifold or Citi Golf Life Intake manifold with map sensor on top of the intake manifold allowed only.
Throttle body: 2E or Citi Golf Life. Injectors: Part number: 037906031AA only. Other than matching the inlet manifold ports to the cylinder head up to 10mm into the inlet manifold, the Inlet manifold may not be flowed or modified in any way. (NB. The exhaust manifold only, not the cylinder head). Throttle body must remain standard with the exception of an 8mm hole to aid idling. Standard Polo or Citi Life air filter housing and connecting pipe must be used (upper and lower cones in the box may be removed, but the box must remain standard in all other aspects. Additional holes may not be cut into the box). A pipe leading cold air to the air filter housing may be used. Filters are free. For 2010, ex-Polo Cup spec 8V cars participating in Class X will use the intake system as per the 2009 Class P rules.

8.5 Class P: Please refer to Class P rules for the specifications.

9. PISTONS AND RINGS

9.1 For 1600 and 1800cc, only single squish pad pistons may be used, 1mm maximum

oversize is allowed. Minimum piston weight with rings and gudgeon pin is 375 grams for 1600 and 425 grams for 1800.

9.2 For 2000cc only single squish pad pistons may be used, oversize is not allowed. Minimum piston weight with rings and gudgeon pin is 370 grams.

9.3 Pistons may not be modified in any way except to remove metal below the lowest point of the gudgen pin position for balancing purposes. In Class A and X all four pistons may be modified in this manner. In class B&C at least one piston must remain unmodified.

9.4 Class P: Please refer to Class P rules for the specifications.

10. CONNECTING RODS

10.1 VW or replacement parts are to be used.

10.2 1600 & 1800cc: Conrods may be lightened and balanced. Minimum weight 550 grams includes bolts and nuts, excludes bearing shells.

10.3 2000cc: Conrods may be lightened and balanced. Minimum weight: 580 grams includes bolts and nuts, excludes bearing shells.

10.4 Class P: Please refer to Class P rules for the specifications.

11. CRANKSHAFT

11.1 Only 2000cc crankshafts for 2000cc motors, 1800cc crankshafts for 1800cc motors and 1600cc crankshafts for 1600cc motors

11.2 Stroking is not permitted.

11.3 May be balanced and reground.

11.4 Lightening is allowed by drilling and grinding.
Min weight for 1600 & 1800cc: 11.5 kg no tolerance.
Min weight for 2000cc: 13.5 kg no tolerance.
Knife edging of webs is not allowed. Side edging thickness of Web must remain standard (casting marks must remain visible).
Class X: For balancing purposes, only the crankshaft webs may be drilled and no other machining, polishing or grinding is permitted.

11.5 Class P: Please refer to 2009 8v Class P rules for the specifications. Refer to 20v as per 2009 national Polo Cup rules. 2E as per Class X rules, if allowed by Class P.

12. FLYWHEEL AND CLUTCH

12.1 Class A, B, C & X:
Clutches are free
May be lightened and balanced
Min weight: Flywheel & pressure plate, excluding pressure plate to flywheel bolts: 5.8Kg

12.2 Class P:
Please refer to 2009 8v Class P rules for the specifications. 20v as per 2009 national Polo Cup rules. 2E as per Class X rules, if allowed.

13. CYLINDER HEADS AND COMPRESSION RATIO

Only Technical Committee approved commercially available VW casting. No tolerance

13.1 Class A:

13.1.1 8v hydraulic Head – max 40 mm intake and max 34 mm exhaust valves allowed. Zero tolerance
13.1.2 Minimum valve stem diameter is 7mm.
13.1.3 May be gas flowed.
13.1.4 Only standard or genuine specification hydraulic followers may be used as per Annexure 11 in Polo rules
13.1.5 Valve springs and retainers free, dual valve springs can be fitted and modifications to take double valve springs.
13.1.6 Valves may be shortened or lengthened.

13.2 Class B:
13.2.1 8v hydraulic head – max 40 mm intake and 34 mm exhaust valves allowed.
13.2.2 Minimum valve stem diameter is 7mm.
13.2.3 No gas flowing allowed.
13.2.4 Only standard or genuine specification hydraulic followers may be used.
13.2.5 Standard valves, single valve springs and retainers.
13.2.6 Three angle seats are allowed.
13.2.7 Valves may be shortened or lengthened.

13.3 Class C:
13.2.1 8v hydraulic head – max 40 mm intake and 34 mm exhaust valves allowed.
13.2.2 Minimum valve stem diameter is 7mm.
13.2.3 No gas flowing allowed.
13.2.4 Only standard or genuine specification hydraulic followers may be used.
13.2.5 Standard valves, single valve springs and retainers.
13.2.6 Back of valve may not be modified.
13.2.7 Three angle valve seats are allowed.
13.2.8 Valves may be shortened or lengthened.

13.4 Class X:
13.2.1 2E OE 8v hydraulic head only – max 40 mm intake and 34 mm exhaust valves allowed.
13.2.2 Standard 2E OE valves and valve springs and retainers only.
Single valve spring and retainer must be fitted with 7mm valve stem as per OE.
Double valve spring and retainers must be fitted with 8mm valve stem as per OE.
13.2.3 No gas flowing allowed. No material may be removed or added to the combustion chambers and ports.
13.2.4 Only standard or genuine specification hydraulic followers may be used.
13.2.5 Back of valve may not be modified.
13.2.6 Valves may be shortened or lengthened.
13.2.7 3 angled valve seat only.
13.2.8 Maximum inlet seat throat diameter to be no greater than 34.8mm and no less than 34mm measured at the parallel section of insert.
13.2.9 Maximum exhaust valve seat throat diameter to be no greater than 29mm and no less than 28mm measured at the parallel section of insert.
13.2.10 The throat directly under the valve seat may not be altered in any way.
13.2.11 No second cuts or swirling permitted.
13.2.12 Minimum intake valve seat width to be no less than 2mm
13.2.13 Minimum exhaust valve seat width to be no less than 2.5mm
13.2.14 Minimum combustion cc is 27.5cc.
13.2.15 The Cylinder head, if damaged, may be reworked to return it to its original state.

No polishing or reworking of the ports is allowed.

13.5 Class P:
Please refer to class P rules

14. CAMSHAFTS

14.1 Class A: Maximum 300 degree hydraulic duration. Vernier cam gears allowed.
14.2 Class B: Maximum 288-degree hydraulic duration. Vernier cam gears allowed.
14.3 Class C: Maximum 254 degree hydraulic duration with 10.2mm lift, as per standard Citi Life Fuel Injected model. The standard 1.6 A, B, D and H cams are permitted. The original hydraulic G cam, with identical specification, is also permitted. No aftermarket grinding or any other modification of the cam is permitted. Vernier cam gears are allowed.
14.4 Class X: Only 288-degree hydraulic duration with max 11.7mm lift. Vernier cam gears allowed. All components in the operating train of the valve gear must be of standard production quality, dimensions and tolerances, especially in regard to their operating geometry.
Base circle diameter: Inlet = 34 mm; Exhaust = 34mm
Nose to base circle: Inlet = 45.7mm; Exhaust= 45.7mm

14.5 Class P: Please refer to class P rules

15. COMPRESSION RATIO

15.1 Class A: 11.500:1 maximum. No tolerance
15.2 Class B&C: 10.500:1 maximum. No tolerance.
15.2 Class X: 10.500:1 maximum. No tolerance. Participating 8v Class P cars in Class X must conform to 2009 8v Class P rules in all regards.
15.3 Class P: Please refer to class P rules. Mapping of fuel injection will be optimal for a 11.1:1 compression ratio, although 11.47 is allowed. 20v as per 2009 national Polo Cup rules. 2E as per Class X rules, if allowed.

16 GEARBOXES AND DIFFS

Class A: Only genuine VW 5 or 6 speed manual shift gearboxes may be used, as available on local models. No automatic gearshift gearboxes in any form allowed.
Class B, C & X: Only genuine VW 5 or 6 speed (if used as standard model specification) manual shift gearboxes may be used, as available on local models. No automatic gearshift gearboxes in any form allowed.

16.1 Class A:
3.94 or 4.25 diff ratio allowed. No limited slip differentials. Short shift gear linkage allowed. Ratios may be mixed, but must be VW replacement parts. Linkage bushings may be changed for a harder material.

16.2 Class B, C & X:
Only 3.94 diff ratio allowed. No limited slip differentials. Short shift gear linkage allowed. Ratios may be mixed, but must be VW replacement parts. Linkage bushings may be changed for a harder material.
Class C gearboxes must use the same gearbox ratios for the entire 2010 racing season. The gearbox ratios must be supplied to the TC at the beginning of the 2010 racing

season.

16.3 Class P:

8v's will use the standard close ratio 5 speed gearbox. 20v's will use the 6 speed gearbox. Please refer to the technical specifications in the Class P 8v & 20v rules.

17. SUSPENSION

17.1 General

(a) Top shock turrets must remain in standard position.
(b) Standard steering rack and standard mounting positions only, power steering may be disconnected.
(c) Bush material is free however must be dimensionally identical to standard items.
(d) Pick-up points on body / chassis may not be changed or moved.
(e) Steering knuckles must be standard, tie rods may be modified by adding rose joint and/or spacers in order to correct bump steer. Ackerman angle may be altered.
(f) Golf II, III, IV and Polo may use a rose joint in replacement of the rear control arm only in the standard position.
(g) Shocks / uprights may be slotted to achieve camber settings only.
(h) Ball joints and their mountings may not be slotted. For camber purposes the new Polo may be fitted with ball joint adaptor plates allowing a maximum additional extension per side of 25mm. These adaptor plates may not be used to alter the lower control arm angle in any way. The maximum track width must still be adhered to.
(i) Top and bottom stress bars are allowed in all classes.
(j) Steering rack mounting on MK1 Golf/Jetta/Fox must be reinforced.
(k) Drive shafts may be modified to prevent C.V. joint failure.
(l) Mk1 Golf/Jetta/Fox knuckle maybe machined to accommodate 40 mm hub and bearing for safety reason only (all classes).
(m) Mk1/2/3 Golf/Jetta/Fox may use new Polo/Golf 4 rear stub axle with pressed wheel-bearing, for safety reasons, with modifications to allow the fitment of the currently used brake calipers. Must remain 4 stud type specification (all classes).
(n) Unless where specifically indicated these specifications do not apply to class P

17.2 Class A:

Camber/Caster plates are allowed - maximum caster offset of 40 mm.
Anti-roll bars and material are free.
Coilover type shocks allowed.
Rear axle may be stiffened by fitting fixed stiffeners.
Shocks makes allowed for class A:
Bilsteins, Koni, Gabriel, Monroe, Sachs, Wietec, Armstrong, Spax, Leaders, Sax. Traxion.
External gas canisters permitted.

17.3 Class B:

Adjustable camber plates allowed.
Anti-roll bar diameters are free, but must fit into standard mounting positions.
Coilover type shocks allowed.
Rear axle may be stiffened by fitting fixed stiffeners along the straight edge of the axle only.
Rear axle control arms may be strengthened by welding in a gusset plate of maximum 5mm thickness.
Shocks makes allowed for class A, B:
Bilsteins, Koni, Gabriel, Monroe, Sachs, Wietec, Armstrong, Spax, Leaders, Sax. Traxion.

External gas canisters not permitted.

17.4 Class C:

Adjustable camber plates not allowed.
Only original spec anti-roll bars may be used and must fit into standard mounting positions.
Springs must fit into the original standard OE seating position.
Only one spring per shock may be used.
Shocks makes allowed for class C:
Only GT Shocks as supplied by Ian Glass, or identical dimension shocks supplied by Steve Hurley (at the same commercially available price), which are strictly non gas assisted are allowed. (Specialised shocks such as Bilsteins not allowed.
Rear axle may be stiffened by fitting fixed stiffeners along the straight edge of the axle only.
Rear axle control arms may be strengthened by welding in a gusset plate of maximum 5mm thickness.

17.5 Class X:

Camber / Caster plates are allowed - maximum caster offset of 40 mm.
Anti-roll bar diameters are free, but must fit standard mounting positions.
Only one spring per shock may be used.
Rear axle may be stiffened by fitting fixed stiffeners along the straight edge of the axle only.
Rear axle control arms may be strengthened by welding in a gusset plate of maximum 5mm thickness.
Shocks makes allowed for class X:
Only GT coil-over type Shocks or Class C spec shocks as supplied by Ian Glass, which are locally manufactured, using locally manufactured parts are allowed. Only non gas assisted allowed. The rear shocks are the non-threaded height adjustable type i.e. the shocks are ride height adjustable using spacers. The shocks are sealed and may not be tampered with. The front coil-over shocks are the non-threaded height adjustable type i.e. the shocks are height adjustable using spacers. The shocks are sealed and may not be tampered with. (Specialised shocks such as Bilsteins not allowed).
Any Class X competitor's Shock absorber information/specifications will be available to Class X competitors through GT Shocks. In 2010 for only the first 3 races of the season, competitors who use the 2E motor configuration in Class X, may use the Class A/B specification shock absorbers. 8v Class P competitors who race in Class X will use the 2009 Class P shock absorbers/suspension specification or may convert to the Class X shock/suspension specification.

17.6 Class P:

As per the Class P rules for the Polo Classic cars, with the following latitudes:
The front anti-roll bar may be disconnected.
Front control arms – Polo Classic: A rear uniball bush will be fitted (Part no 6Ks 407 181).
Spring rates and damping are free.
Refer to the Class P rules.
McPherson strut units as specified in the Class P rules must be used without modification except for the slotting to facilitate additional camber adjustment.
Front castor plates – A special front castor plate as per class P rules will be used.
The rear shock absorber top mountings remain standard and may not be altered. The rear

camber and toe-in may be adjusted by means of utilising 4-point shims.
Ride heights are free.

18. BRAKES

18.1 Class A:

Any standard VW brakes, or aftermarket disks and brake pads up to a maximum of 288 mm diameter allowed with single piston floating calliper, booster may be removed, but standard VW master cylinder must be retained. Discs may be slotted and/or cross-drilled. Rear brakes can be drums or discs. Friction material is free. Adjustable brake balances are allowed in car within reach of driver.

18.2 Class B & C:

Standard Mk1 1800 GTi calliper with aftermarket disks and brake pads, discs or as per standard model, up to a maximum of 256mm diameter. Discs may be slotted and/or cross-drilled.
Rear brakes can be drums or discs. Friction material is free. Booster may be removed, but standard VW master cylinder must be retained.
Standard adjustable brake compensating load valve is allowed.
Adjustable brake balances are allowed in car within reach of driver.

18.3 Class X

Maximum 288mm diameter disks allowed with single piston floating caliper. Only ATE part number: 122.0101 for 4-stud cars. Alfa DR6396 for 5-stud Polo, Beetle & Golf 4. DR6534 for Golf 5 and other Polo models.
Booster may be removed, but standard VW master cylinder must be retained.
Discs may be slotted and/or cross-drilled. Rear brakes can be drums or discs.
Friction material: Only locally manufactured disk pads allowed (e.g. Ferrodo Platinuim, Ferrodo DS, ATS disk pads). Adjustable brake balances are allowed in car within reach of driver.

18.4 Class P:

Both brake discs and callipers (Spitze) will remain as supplied with the vehicle as built by VW Motorsport, up to a maximum of 288mm diameter as per Polo rules Appendix 1.
Friction material is free. 20v's as per 2009 national Polo Cup rules.

19. BODYWORK AND GENERAL

(a) Any VW right hand drive passenger vehicle body shell type, as sold officially at VW dealers in South Africa may be used, except Class X, where the Mk1 Golf/Jetta/Fox may not be used. Class P: Refer to Class P rules.
(b) No built out panels are allowed, but fender lips may be rolled or fenders flared to accommodate larger tyres specified.
(c) Front valance may be cut to achieve better airflow to radiators only.
(d) Outside shell appearance for all classes must appear original as per Volkswagen SA.
(e) Body parts e.g. doors, boot, bonnets must remain as original specification. Insides may be altered, but maintaining the integral structural strength of the component.
(f) Mass produced and technically approved spoilers are allowed
(g) Splitters, aerofoils or Aerodynamic devices designed to improve downforce are not allowed. Taping up or filling gaps in bonnets, doors etc. to aid aerodynamics are not allowed.

(h) Headlights must remain and be operable. The inner lights may be removed, but must be covered (with solid covers or wire mesh) as approved by the Association Technical Committee. Polo may remove spotlight from within the headlight unit as approved by the Association Technical Committee.

(i) Racing seat and steering wheel must be securely fitted. Driver seat and steering wheel are free.

(j) Full roll cages in compliance with GCR 239 are compulsory. Roll cage may protrude through the firewall and be connected to the front shock turrets. Roll cages must have at least six mounting points with at least one diagonal brace and a driver's door bar. A hole must be drilled in the main hoop to enable the scrutineers to check the pipe wall thickness.

The roll cage should include a 'sissy' bar that runs horizontally behind the driver's seat to stop the driver's seat from moving backwards in the case of an accident.

(k) Heater boxes, interior trim and all passenger seats may be removed except for dashboard, which shall remain standard apart from localised cutting for roll cages.

(l) Any form of instrument cluster may be used. Additional instruments may be fitted to measure engine performance.

(m) Cut-off switches must be fully operational from inside and outside the car and shall be clearly marked.

(n) Bonnet clips and safety nets must be fitted (as per MSA Handbook).

(o) With the exception of windscreens all other glass may be substituted with Perspex, Lexan type material with minimum thickness of 3 mm. They must be fitted in to the body with standard rubbers and pop rivets which may not be visible. (all classes).

(p) The battery must be positioned in the original position.

(q) Fuel radiators/coolers or cooling of fuel in any way is not permitted.

(r) Transponders will be mounted on the roll cage between the rear side window and the roll cage behind the B-Pillar or on the rear side window itself.

(s) Any form of electronic driver aid (not referring to data logging) actively and/or passively assisting the driver with inter alia, but not limited to the control of brakes and/or engine performance and/or handling/control of the vehicle whilst on the track, is not permitted. This implies that all driver aids or variants inter alia, but not limited to, commonly referred systems such as "ABS" and/or traction-control and/or launch-control and/or stability control is strictly forbidden.

20. WHEELS AND TYRES

(a) No chrome plated or split rims are allowed. Rim size 15 inch, 7J max.

(b) Tyres for all classes are DUNLOP DZ03G H1 compound 195/-55-R15, or as approved by the Association Technical Committee.

(c) In Class A & P 2 new tyres will be allowed every race meeting. In all other classes 2 new tyres will be allowed every second race meeting, or as stipulated by the VW Challenge committee. Should a competitor miss a '2 new tyres allowed race', they can in writing, request from their Class Rep or TC that they use 2 new tyres at the next race meeting. The committee will also exercise the option that 2 tyres can be replaced if the previous or following race is at an abrasive track. Only the new tyres may be unmarked tyres which will then be marked - The old tyres must be previously marked tyres i.e. used officially/marked at a previous race meeting. The only time four new i.e. unmarked tyres may be used is at the first race of a new race season or as agreed upon by the committee. At any given race meeting, four tyres will be positively identified by the technical committee or scrutineer prior to the start of qualifying and these tyres must be used for the remainder of the race meeting. It is the responsibility

of the competitor to ensure that the tyre markings remain on the tyre, as the use of unmarked tyres during the meeting, inclusive of qualifying, can result in the exclusion of the competitor concerned. The VW Challenge Committee has the authority to appoint an official tyre marker at a race meeting. Competitors, who do not park at the designated parking areas, are themselves responsible to ensure their tyres are marked by the official tyre marker before official timed practice.

(d) At the discretion of the technical consultant/scrutineer damaged or defective tyres may be replaced during a race meeting.

(e) Pressure controlling "pop-off" valves may not be used.

21. FUEL

21.1 Refer to GCR 240 and the mentioned fuel limitations per individual class. Only Class P cars and cars racing in Class X complying fully as per 2009 Class P rules, may use GCR 240 98 unleaded racing fuel complying with MSA specifications.

21.2 Fuel pressure Regulators: Free

21.3 The VW Challenge Committee and/or Technical Committee and/or VW Challenge scrutineer has the authority to nominate participants to use a control fuel as and when supplied. The Participant will be responsible for the payment of the fuel provided.

22. MANAGEMENT SYSTEMS

Only original spec injectors may be used part no: 037906031AA, except in Class A

22.1 Class A: The original spec Injectors may be flowed in Class A only.
The Golf 4 Turbo type Injectors, part no: 06A906031 or 06A906031BA may be used as an alternative in Class A, but must remain standard.
Only original MP9, Dastech Unichip, Dictator, Perfect Power, Mr. Turbo, Gotech (i.e. SA manufactured systems that commercially cost less than R5500 are permitted. Plastic injector rails are allowed.

22.2 Class B: Only original MP9, Dastech Unichip, Dictator, Perfect Power, Mr. Turbo, Gotech (i.e. SA manufactured systems that commercially cost less than R5500 are permitted Plastic injector rails are allowed.

22.3 Class C: Only original MP9, Dastech Unichip, Dictator, Perfect Power, Mr. Turbo, Gotech (i.e. SA manufactured systems that commercially cost less than R5500 are permitted Plastic injector rails are allowed.

22.4 Class X: Only original MP9 is allowed.
Engine Control unit. All units are sealed and may not be remapped in any form. Piggy-back systems are strictly forbidden. Knock-sensor must be connected and fully operational. Mapped memory chips may be obtained from the Class representative. All ECU's may be collected from individual competitors and redistributed to others at any time during a race meeting, at the discretion of the technical consultant in consultation with the clerk of the course.
For cars running in Class X according to Class P rules, these cars will run strictly as per 2009 Class P rules.
Polo steel and plastic injector rails may be used.
In 2010 for only the first 3 races of the season, competitors who use the 2E

motor configuration in Class X, may use the Dictator engine management system or MP9 with piggy-back. From the fourth race meeting of the season and onwards, the competitors will use MP9 and control ECU only, or the control management system as specified and decided by the committee.

22.5 Class P: Engine Control unit. All units are sealed and may not be remapped in any form. Piggy-back systems are strictly forbidden. Mapped memory chips may be obtained from Class representative. Rev limiters are set at 7000 RPM. All ECU's may be collected from individual competitors and redistributed to others at any time during a race meeting, at the discretion of the technical consultant in consultation with the clerk of the course.

23. SPECIFICATION SHEET

23.1 Engine specifications and general measurements are available from the Technical Committee. All specifications are subject to 0.5 % tolerance except where no tolerance is allowed.

23.2 Ground Clearance:

Class A, X: 110mm minimum for Golf4 & Beetle
120mm for new Polo
130mm minimum for all other model cars

Class B, C: 135mm minimum

*The measurements above are taken with the driver in the car from the centre of the bolt on the front inner lower control arm (standard mounting point) to the ground.

Class P: Ride Heights are free.

23.3 Spoiler minimum height of 50mm.

23.4 Front Track Width

(a) Classes B, C & X:

The widest part of the two opposing wheel rims. No Tolerance:
MK1: 1670mm; (Not applicable to Class X)
MK2 & old Polo: 1700mm.
All other cars: 1740mm.
Specifications for new model cars will be accommodated as they are built e.g. Golf 5.
This measurement will be taken at the bottom of the wheel (closest to the ground) from the outer edge of the wheel (Rim) bead face.
Class A & X: Track width: As above and may also be widened by a further 10mm.

(b) Class P:

As per 2009 8v Class P rules and 2009 national Polo Cup rules.

24. CAR MASS (Including Driver)

The vehicle mass is as car is raced. At no time of the event may a car weigh less than stipulated. No tolerance.
Minimum weight may be changed by the association committee from time to time during the season.

24.1 Class A:

Minimum weight: 1050 Kg min

24.2 Class B:
Minimum weight: 1000 Kg min

24.3 Class C:
Minimum weight: 920 Kg

24.4 Class X:
Minimum weight: 1025kg

24.5 Class P:
Minimum weight: 1025kg for 8v as per 2009 Class P rules
1125kg for 20v as per 2009 national Polo Cup rules

*Where the scales being used to weigh race cars at a circuit have been assessed as required by the regulations, they shall be deemed correct, at the discretion of the Technical Committee (or its nominated representative/s).

24.6 LOCATION OF BALLAST IS FREE for Classes A, B, C, X and 8v Class P vehicles. 20v as per 2009 national Polo Cup rules)
Vehicles may not be lightened by the removal of exterior bodywork. Ballast weight may not be bolted to the floor or wheel well only. The ballast weights will be bolted in to strengthening bars or plates that run across the floor that are welded or affixed to the rollcage or car's integral structure. The weights in the wheel well can be secured as mentioned above or using a bar that is affixed to the rollcage bar running above the wheel well. The bolts used to secure the weights must be minimum 20mm diameter using at least 5mm thick washers that are at least 100mm in diameter. Attachments must be approved by the VW Challenge Association Technical Committee or MSA Scrutineers.

25. GENERAL

25.1 Only modifications and allowances detailed herein are permitted. What is not specifically mentioned is expressly forbidden. All components not referred to or specifically mentioned in these Regulations will remain in completely standard specification. Ignorance of the Regulations will not be accepted as an excuse. If there is any uncertainty as to the legality of the modification it is the responsibility of the competitor to seek clarification in writing from the VW Challenge technical committee. This must be done before the vehicle in question is entered in a race.

25.2 All novice drivers must have completed drivers' instruction prior to the first race. The committee's decision is final as to whether or not the driver is permitted to race. Any novice will race three consecutive race meetings with a red streamer affixed to the top of the rear window.

25.3 Soft towing straps must be fitted to the front and rear of all cars if the standard tow hooks protrudes beyond the bumper.

26. ADDITIONS AND AMENDMENTS

Any provision unforeseen in drawing up these regulations and specifications, or any additions or

amendments to be made thereto, shall be the subject of an appendix to this circular to be issued by MSA which will have the same authority and effect as if it were part of these regulations and specifications.

27. DECLARATION OF CHAMPION

The MSA Northern Regions Motorsport Committee will, at its sole discretion, declare the winner of the championship. It is entitled to withhold such declaration from the competitor.

Appendix 1

2009 Class "P", VW Challenge Rules.
For the POLO CLASSIC (Sedan) body type and the POLO PQ24 (Hatchback) body type.

Note: The specifcations below shall apply equally to both types of vehicles mentioned above, unless where specified by the term Sedan where the POLO CLASSIC will be referred to or Hatchback where the POLO PQ24 series will be referred to**.**

Chassis and coach work

1. Vehicle dimensions

1.1 Wheel base (nominal): Sedan 2450 mm Hatchback 2460 mm
1.2 Overall length (nominal): Sedan 4095 mm Hatchback 3897 mm
1.3 Track Width : 1700 mm (changed to 1740 mm)
The widest part of the two opposing wheel rims = 1700mm. This measurement will be taken at the bottom of the wheel (closest to the ground) from the outer edge of the wheel rim. Car unladen.
1.4 Ride heights are free.

2. Wheels.

2.1 Material of wheel rim: Aluminium Alloy
2.2 Material of wheel centre: Aluminium Alloy
2.3 Maximum rim width: 7J
2.4 Rim diameter: 15

3. Tyres

3.1 Standard tyre size and profiles: DUNLOP DZ03G H1 compound 195-55-R15
3.2 No pressure controlling through "pop-off" valves may be used.

4. Steering gear

4.1 Type: Rack and Pinion
4.2 Power assisted: Free

5. Brake system

5.1 Number of master cylinders: 1 (one)
5.2 Servo assisted: Yes
5.3 Type of servo unit(s): Sedan Bendix 6K2 612 100 F OR Bendix 6K2 612 100
Hatchback Bendix 6Q2 612 105K
5.4 Brake pressure regulator fitted: Yes
5.5 Braided steel hosing may be used.

6. Brake assemblies – disc and calliper type

6.1 Disc material – Front = Steel; Rear = Steel
6.2 Calliper material – Front = Steel; Rear = Steel
6.3 Ventilated disc – Front = Yes; Rear = No
6.4 O/D of disc: Sedan: Front = 288 mm maximum; Rear = 225 mm

Hatchback: Front = 288 mm maximum; Rear = 232 mm

6.5 No of wheel cylinders per wheel: Front = 1 (one) ; Rear = 1 (one)

6.6 No of pads per wheel: Front = 2 (two) ; Rear = 2 (two)

7. Suspension

7.1 **Front Suspension**

7.1.1 Type: McPherson strut

7.1.2 Description of control arms and locating members: Wishbone – Standard (VW) Polo as applicable.

7.1.3 Description of springing medium: Coil spring, rate free

7.1.4 Front stabiliser rod diameter: 20.22mm (may be disconnected)

7.1.5 Castor plate See Annexure F

7.2. Rear Suspension

7.2.1 Type: Beam axle

7.2.2 Description of springing medium: Coil spring, rate free

7.2.3 Front stabiliser rod diameter: Not fitted

8. Shock absorbers

8.1 Sedan: Only the Bilstein units supplied by Afrishox may be used. See Annexure B for a technical drawing of the shock absorbers.

Hatchback: KW shock absorbers as supplied by VW Racing OR in order to reduce costs SIMILAR dual tube hydraulic units from Bilstein, Koni, Gabriel, Monroe, Sachs, Wietec, Armstrong, Spax, Leaders, Sax. Traxion may be substituted. No mono tube gas shock absorbers or external gas cannisters will be allowed.

8.2 Spring rate and damping free.

Engine – 4-stroke Piston Type (Applicable to both vehicle types)

9. Identification and description

9.1 Manufacturer: VW Motorsport/Voldi Works Team (Pty) Ltd/VW Racing

9.2 Identification code: VWMSPC

9.3 Total engine capacity: 1984 cc

9.4 No of cylinders: 4 (four)

9.5 Bore diameter (maximuml): 82.555mm

9.6 Stroke (nominal): 92.8mm

9.7 Swept volume per cylinder (nominal): 496.074 cm^3

9.8 Volume allowance: ± 3 cm^3

9.9 Finish: Machined

9.10 Thickness of head gasket compressed (minimum)*: 1.6mm ±0.10 Part no #050 103 383 A

9.11 Compression ratio (maximum)*: 11.47:1 ± 0.1 Note: 11.0:1 is the suggested compression ration to be used with 98 RON fuel as per GCR 240.

9.12 Type of valve operation: SOHC

9.13 Deck height of piston above block: 0.8mm maximum , 0.5 mm suggested.

* See Annexure C

10. Cylinder block (1HS 103 019 cast no 1HS 103 021 F)

10.1 Material of block: Cast iron

10.2 Material of working face of bores: Cast iron

10.3 Cylinders: BORED IN BLOCK

10.4 Number of main bearings: 5 (five)

10.5 Material of main bearing caps: Cast iron

10.6 Re-sleeving of block : Yes
10.7 Only blocks supplied by VW Motorsport/Voldi Works Team (Pty) Ltd/VW Racing are allowed.

11. Crankshaft (Part no 053 105 101 C / new 053 105 101 H)

11.1 Material of crankshaft: Alloy steel
11.2 Finish: as Forged/Machined
11.3 Main journal diameter: 54 mm Nominal (-0.022 to -0.042)
11.4 Crank pin diameter: 47.8mm (-0.022 to -0.042)
11.5 Vibration damper fitted: Free
11.6 Mass of crank shaft (bare): 13.6kg (new part).

In order to return crankshafts to a serviceable condition, cutting of the big ends and main bearing journals is permitted, down to a maximum undersize of 40 thou as specified by the manufacturer. All grinding of journals must be concentric to the original journal diameter. The stroke of the homologated VW crank must remain within the original manufacturer's tolerances. The minimum mass of any authorised crankshaft (bare) shall be 13.6kg (This is the minimum after any balancing). For balancing purposes, only the crankshaft webs may be drilled and no other machining, polishing or grinding is permitted.

11.7 Mass of the crankshaft flywheel complete with ring gear : 3.950 kg (±50g)

12 Connecting rods (part 1HS 105 401)

12.1 Material: Steel alloy
12.2 Finish: as Forged/machined
12.3 Length between centres (nominal): 144mm - may be machined to reduce the deck height of the pistons.
12.4 Type of bearing attachment: Locating Tag
12.5 Type of gudgeon pin fitting: Slide fit in bush
12.6 Minimum mass of conrod complete with bearing cap, bolts, nuts but less big end bearings: 0.660kg (removal of material for balancing purposes is only allowed on the conrod cap.)

13. Piston and rings

13 A. Part no: FPA 107 103 - assembly

13.1 Piston top shape: Dished (with squish pad)
13.2 Volume of piston protrusion into combustion space. See annexure C
13.3 Volume of depression in piston crown (if applicable). cm^3. See annexure C.
13.4 Height from gudgeon pin centre to the highest point of piston crown: 30.4mm
13.5 Overall length of piston 59.34mm
13.6 Piston mass (bare): 314g
13.7 Piston material: Aluminium alloy
13.8 Location of gudgeon pin: circlips
13.8 Gudgeon pin diameter (nominal): 20 mm
13.9 Gudgeon pin length (nominal): 57mm
13.10 Ring widths: Top = 1.5mm; 2 = 1.5mm; 3 = 2.00mm

OR

13 B. Piston Part no 22S 107 065 F; Ring Part no 053 198 151 B KOL

13.1 Piston top shape: Dished (without squish pad)
13.2 Volume of depression in piston crown (if applicable) .cm^3. See annexure C
13.3 Height from gudgeon pin centre to the highest point of piston crown: 29.25 mm
13.4 Overall length of piston 58.00mm ±0.20mm
13.5 Piston mass (bare): 300 +-2g
13.6 Piston material: Aluminium alloy

13.7 Location of gudgeon pin: circlips
13.8 Gudgeon pin diameter (nominal): 20 mm
13.9 Gudgeon pin length (nominal): 57 mm, weight 0.10kg ±0.01
13.10 Ring widths: Top (1) : 1.5mm; (2) 1.5mm; (3) 2.0mm

Note: Competitors may use either of 13A or 13B but not a mix of these.

14. Cylinder head (Part no: 1 HS 103 373 A/B/C)

(Also identified by RED dot, and A stamped by no 1 plughole.)

14.1 Cylinder head will be controlled by volumes of the combustion chamber, inlet port and exhaust port. No modifications to the cylinder head will be permitted whatsoever.
14.2 Material: Aluminium alloy
14.3 Number of ports: Inlet = 4 (four); Exhaust = 4 (four)
14.4 Inlet port dimensions (head): See Annexure A
14.5 Exhaust port dimensions (head): See Annexure A
14.6 Inlet port finish: As cast.
14.7 Exhaust port finish: As cast
14.8 Valve seats – Type and material
Inlet = Steel; Exhaust = Steel
14.9 Valve guide length: Inlet = 27.5mm; Exhaust = 31.0mm.
14.10 Valve seat free.
14.11 The Cylinder head if damaged may be reworked to return it to its original state. No polishing or reworking of the ports are allowed.

15. Valve gear

15.1 No of valves per cylinder: 2 (two)
15.2 No of camshafts: 1 (one)
15.3 Type of camshaft drive: Toothed belt

16. Valves (part no's: Inlet 078 109 601 B; Exhaust: 048 109 611 B) See Annexure A.

16.1 Valve location inlet: in head; Exhaust: In head
16.2 Valve material inlet: Steel alloy; Exhaust: Steel alloy
16.3 Valve head shape inlet: Dished; Exhaust: Flat
16.4 Valve head diameter inlet: 39.5mm ±0.15mm; Exhaust: 32.9mm ±0.15mm
16.5 Valve stem diameter: Inlet 7 (seven) mm; Exhaust: 7 (seven) mm
16.6 Valve length overall inlet: 91.85mm; Exhaust: 91.15mm

17. Valve springs (Part no: 078 109 623 C)

17.1 No of springs per valve : 1 (one)
17.2 Type of retention: Cap and cotters
17.3 Outlet diameter: 29.42mm ±0.2
17.4 Inner diameter: 21.00mm ±0.2
17.5 No of windings: 6.94 ±0.1
17.6 Free length: 45.8mm

18. Valve Timing (nominal, as adjustment is allowed)

To be specified in degrees of crankshaft rotation. Relative timing as implied below shall remain unaltered. (Recommended setting = 2.9mm lift at TDC)

18.1 Inlet valve opens at 34 degrees. BTDC with 0mm clearance
18.2 Inlet valve closes at 74 degrees. ABDC with 0mm clearance
18.3 Exhaust valve opens at 74 degrees. BBDC with 0mm clearance

18.4 Exhaust valve closes at 34 degrees. ATDC with 0mm clearance

19. Valve lift

Total valve lift: Inlet = 11.7mm; Exhaust = 11.7mm (hydraulic followers)

21. Cam followers / valve lifters

Manufacturer Ina **OR** as supplied by VW part no 050 109 309 J
Note: The parts may not be mixed in any form.
Type : Hydraulic

22. Camshafts

22.1 Material single: Chilled cast iron.
22.2 Location: in cylinder head

23. Cam dimensions

(All components in the operating train of the valve gear must be of standard production quality, dimensions and tolerances, especially in regard to their operating geometry.)

23.1 288-degree hydraulic duration. Vernier cam gears allowed.Dimension "A" (base circle diameter) *. Inlet = 34 mm; Exhaust = 34mm
23.2 Dimension "B" Nose to base circle)*. Inlet = 45.7mm; Exhaust= 45.7mm

*Please refer to Annexure A

24. Inlet manifold (Part no 1HS 133 223)

(No modification to the inlet manifold is permitted.)

24.1 Material: Aluminium alloy
24.2 Dimension Sketch of ports. See Annexure A
24.3 Dimension sketch of ports / openings – throttle body. See Annexure A
24.4 Internal finish: As cast / fettled

25. Exhaust manifold

25.1 Material: Sedan: Cast Iron (part no 1 HS 253 033 B) Hatchback: Steel pipe as per 2003 VW Polo Cup rules, Appendix 13.
25.2 Dimension sketch of ports – Engine Side. See Annexure A. These dimensions taken ±5mm into port. Localised variations at the mating face are permitted - to a maximum of 0.5mm.
25.3 Dimension Sketch of outlet openings: See Annexure A
25.4 Description of internal finish: As cast or extruded
25.5 Flange bolts from the end of the cast manifold / header mounting flange back are free

Cooling system

26. Radiator

26.1 Type: Brazed aluminium and plastic, cross flow **OR** radiator fan housing assembly with dual electric fan motors.

27. Cooling fan: Cooling fans are free

28. Capacity

28.1 Total capacity of cooling system: Max 7 litres

Fuel system

29. Fuel tank

29.1 Capacity: 45 litres (with another ±7 litres available if expansion volume is filled)
29.2 Location: under boot floor.
29.3 Diameter of inlet pipe from fuel filler orifice: 55 mm nominal.

30. Fuel pump

30.1 Type: Rolling element
30.2 Location: in tank

31. Fuel filter

31.1 Type: Full-flow, disposable
31.2 Location: on top of the fuel tank.

Induction system

32. Air Cleaner

32.1 Make/Type: Free. VW Polo Standard part or equivalent recommended. No inlet air ducting allowed except standard ducting as referred to in 32.3 below.
32.2 Filter medium: Paper or synthetic material.
32.3 The rubber connection to the headlamp surround and the headlamp surround behind the right hand headlight grille is not compulsory.

33. Fuel injection

33.1 Make: Bosch
33.2 Type: MP 9.0
33.3 Location of injectors and part no. : Inlet manifold, P/N: 037 906 031 AA
33.4 Injector pump type: Rolling Element (see under Fuel pump)
33.5 Type of fuel metering: Electronic, mapped
33.6 Plenum chamber material: part of inlet manifold
33.7 Plenum chamber dimension sketch: See “Inlet manifold”
33.8 Diameter of butterfly: 56mm (nominal)
33.9 Schematic layout of fuel injection system: See Annexure D
33.10 Fuel pressure regulator free. 3.0 Bar pressure recommended.

34. Lubrication system

34.1 Type: Wet sump, with windage tray
34.2 Oil filter type: Paper element, full-flow
34.3 Oil pump type: gear
34.4 Location of oil pump: in sump
34.5 Oil cooler type: Free (Note this is optional and does not have to be fitted).
34.6 Location of oil cooler: Free

35. Ignition system

35.1 Description: Bosch MP 9.0

36. Distributor (part no: 1HS 905 205)

36.1 Make: Bosch
36.2 Model no: N/A
36.3 Description: Fixed type, hall sensor only

Clutch assembly and Flywheel

37. Clutch driven plate (Part no LUK Special or Sachs Standard)

37.1 Type: single dry plate
37.2 O.D.: 210mm
37.3 No of plates: 1 (one)

38. Pressure plate: Part no (LUK Special or Sachs standard)

38.1 Type: VW type

39. Gearbox

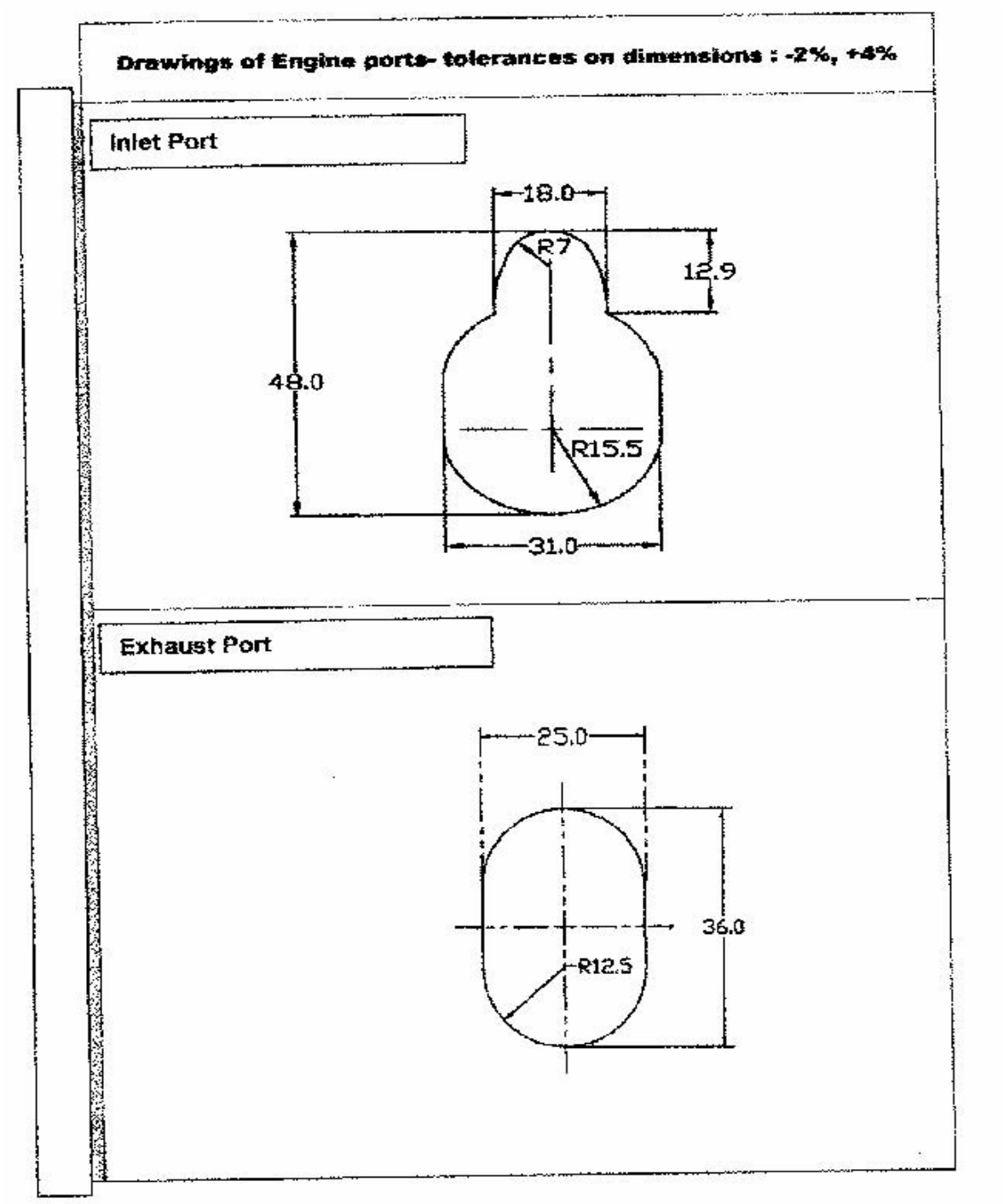
39.1 Make: VW Sedan: Based on DGT, with Short final drive
Hatchback: Based on DUU, with Short final drive
39.2 Manual
39.3 Ratio's: see Annexure E
39.4 The polypropylene ball ended linkage of the gear shift lever mechanism may be replaced with the metal ended linkage (part no 1H071174SP)

40. Final drive front

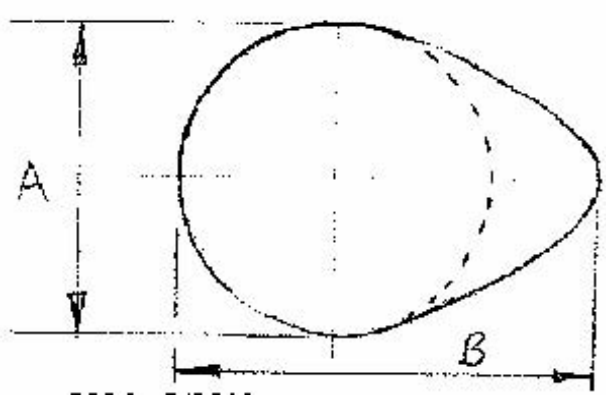
40.1 Make: VW
40.2 Type of diff: conventional, mechanical
40.3 Limited slip: No
40.4 Ratio of diff: 4.25:1
40.5 Diameter of crown wheel: 184mm
40.6 No. of teeth on crown wheel: 68
40.7 No. of teeth on pinion: 16

41. Exhaust system

A VW Motorsport supplied exhaust header shall be used. The exhaust header as supplied originally by VW Motorsport shall be used on the Sedan or Hatchback as appropriate as specified under **25. Exhaust manifold**. The remainder of the system is free, must exit from the back of the car and comply with the noise regulations as stipulated in GCR 245.

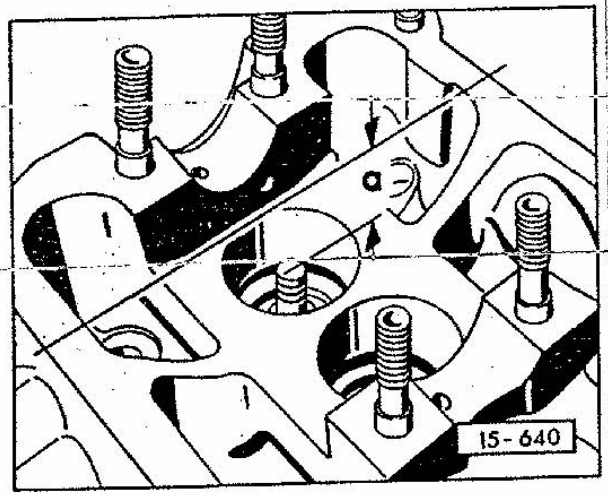


Camshaft Dimensions:



Valve stem Dimensions:

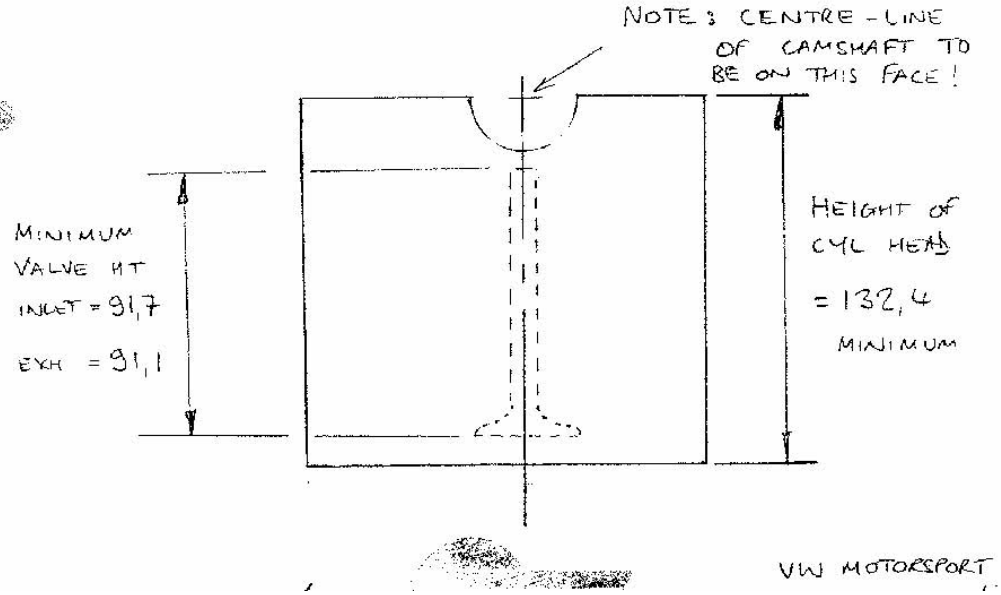
ALL DIMENSIONS IN MM.



DIMENSION 'a' - MINIMUM ALLOWED

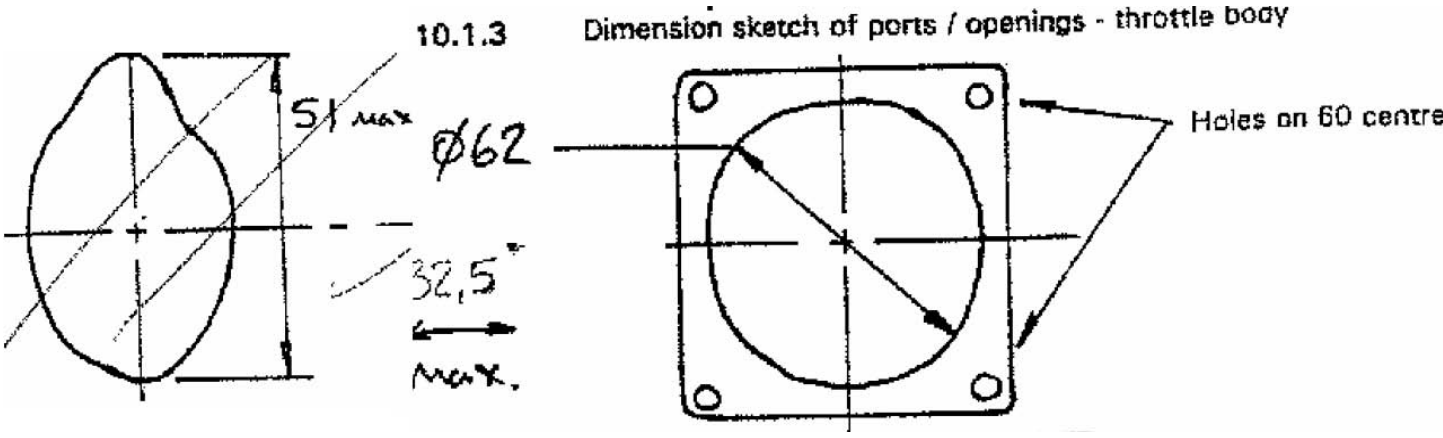
INLET = 33,8

EXHAUST = 34,1

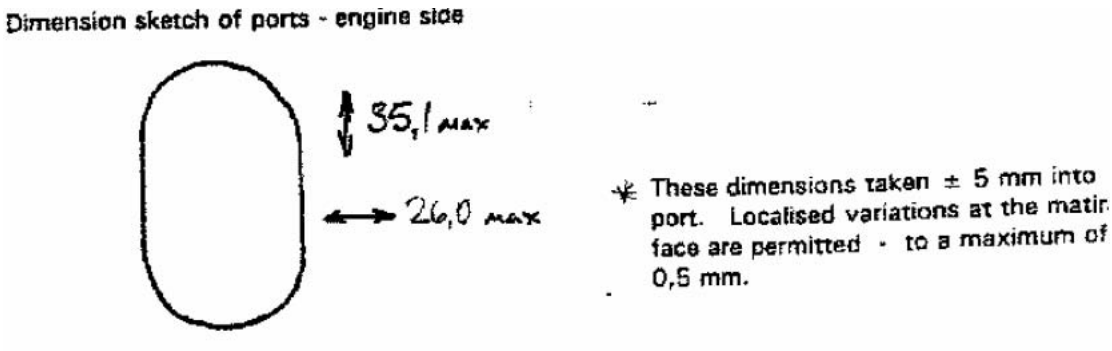


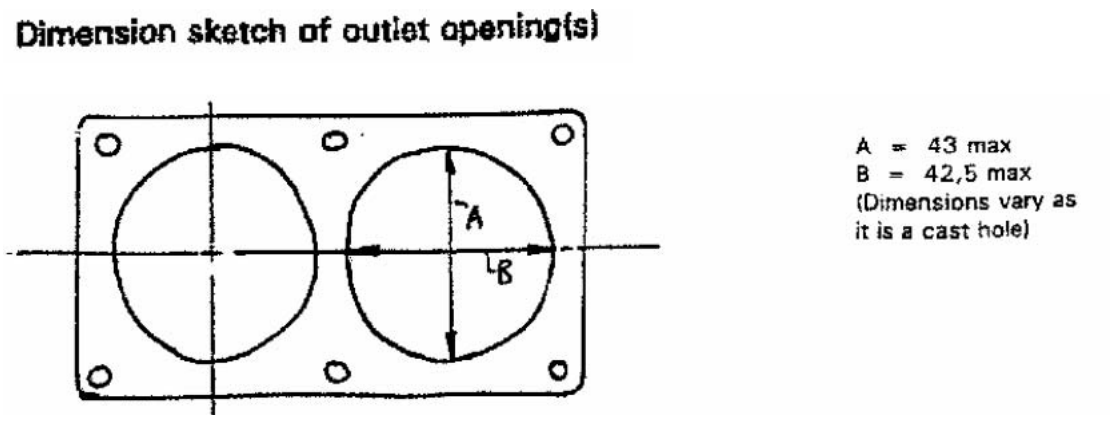
VW MOTORSPORT

Inlet manifold:

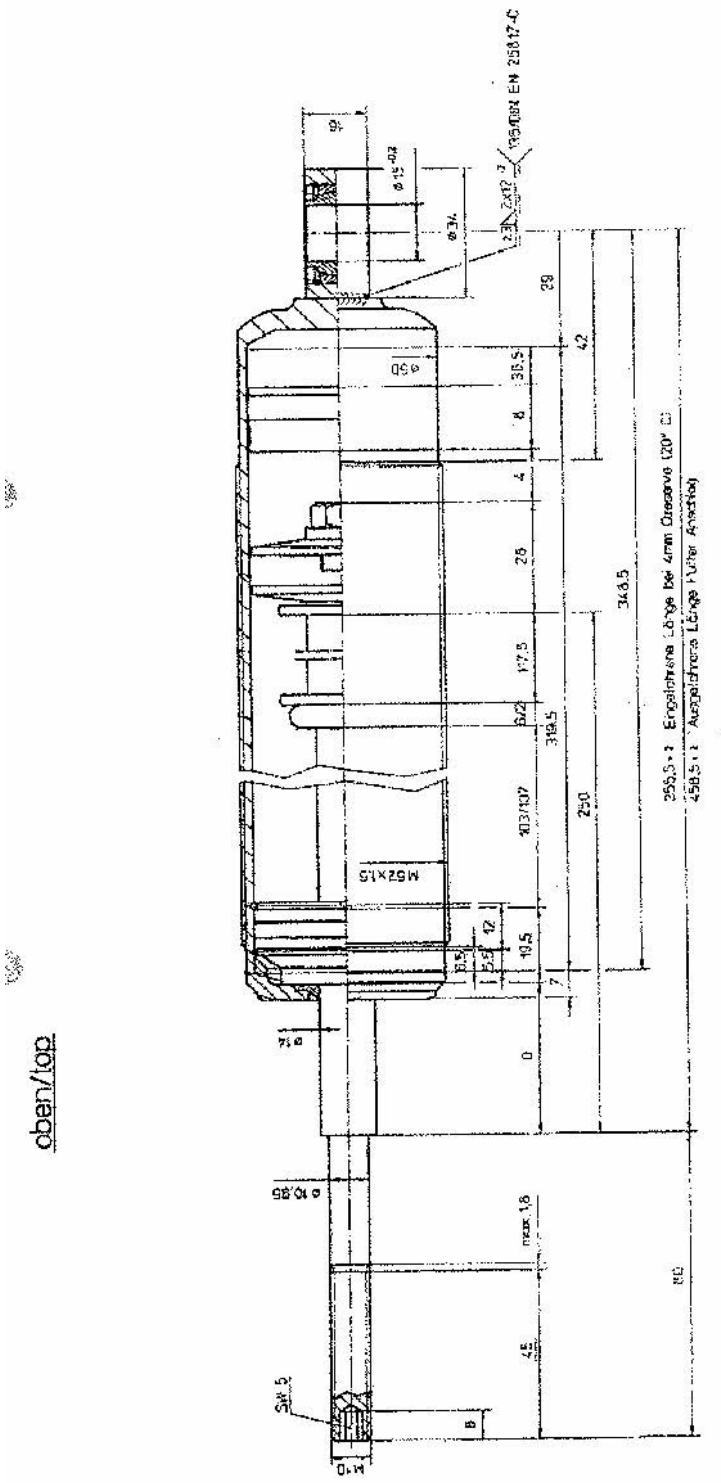


Exhaust manifold:

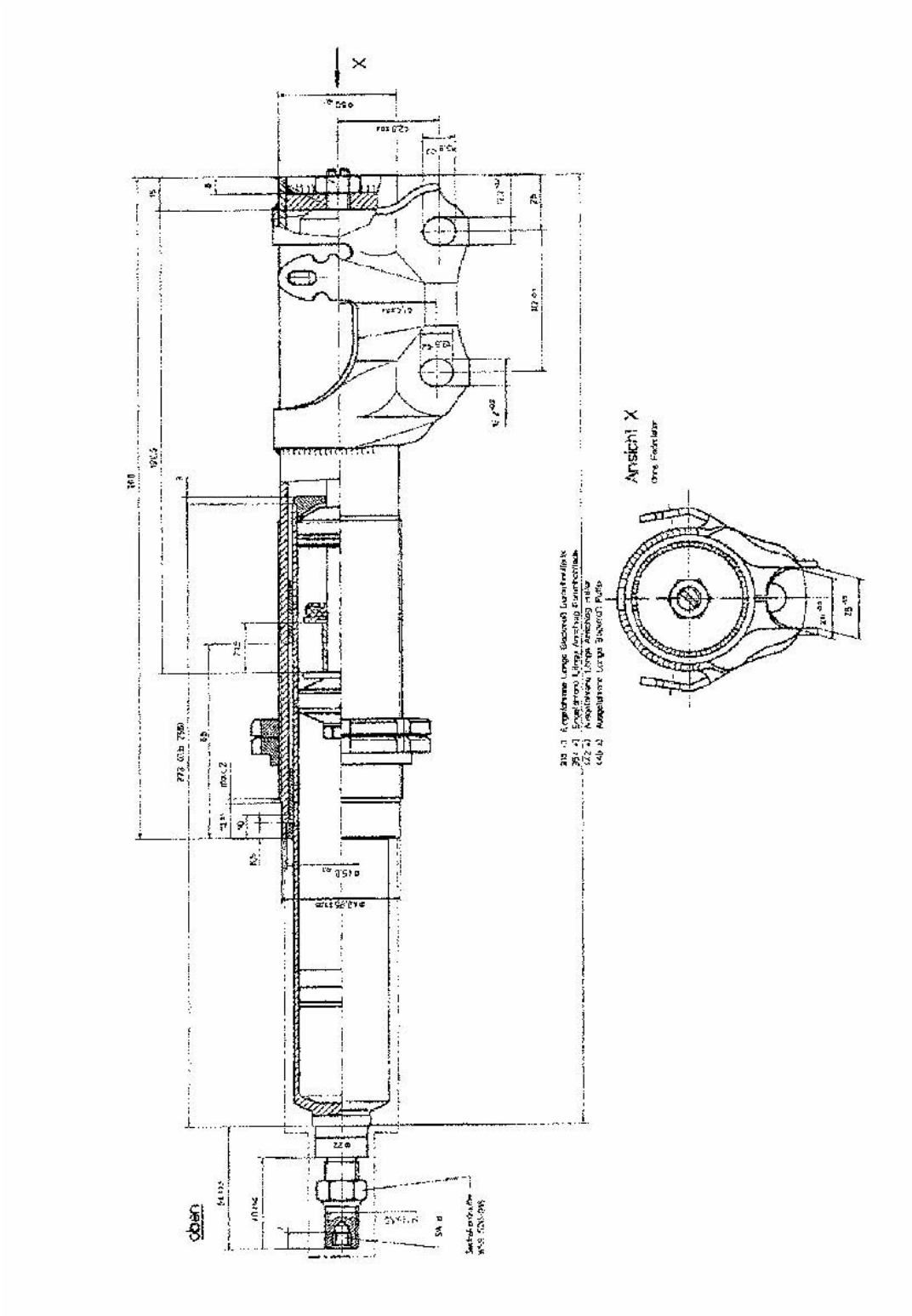




Polo Classic: Rear shock absorber



Polo Classic: Front shock absorber



Compression ratio calculation for the old style block/piston

INPUT DATA DERIVED DATA

BORE, mm	82.5		Swept Volume per cylinder	496.073
STROKE, mm	92.8			
CYLINDER HEAD VOLUME	28.500		(Minimum allowed)	
VOLUME @ 2mm BTDC	22.500		PISTON VOLUME @ TDC	11.809
THEORETICAL STROKE VOLUME OF 2mm STROKE	10.691			
GASKET THICKNESS	1.600		GASKET VOLUME	8.762
GASKET DIAMETER	82.5			

CALCULATION

TDC VOLUME @ TDC HD VOLUME + PISTON VOLUME @ TDC + GASKET VOLUME.

TV = 8.500 + 11.809 + 8.762 = 49.070

COMPRESSION RATIO = TDC VOLUME + SWEPT VOLUME / TDC VOLUME

COMPRESSION RATIO = 49.070 + 496.073 / 49.070 = **11.11:1**

NOTE:
ALLOWABLE VARIATION, CAUSED BY DIFFERING CYLINDER HEAD VOLUMES IS LIMITED TO THE RANGE 11.01 : 1 TO 11.11 : 1

Compression ratio calculation for the NEW style block/piston

INPUT DATA DERIVED DATA

BORE, mm	82.5 ±0.04		Swept Volume per cylinder	
				496.074
STROKE, mm	92.8			
CYLINDER HEAD VOLUME	27.76		(Minimum allowed)	27.4
VOLUME @ 2mm BTDC	21.7		PISTON VOLUME @ TDC Minimum allowed	11.00357 10.7
THEORETICAL STROKE VOLUME OF 2mm STROKE	±10.5			
GASKET THICKNESS	1.600		GASKET VOLUME	8.58
GASKET DIAMETER	82.6			

CALCULATION

TDC VOLUME @ TDC HD VOLUME + PISTON VOLUME @ TDC + GASKET VOLUME.

TV = 27.76 + 11.00375 + 8.58 = 47.34375

COMPRESSION RATIO = TDC VOLUME + SWEPT VOLUME / TDC VOLUME

COMPRESSION RATIO = 47.34375 + 496.074 / 47.34375 = **11.47:1**

NOTE:
ALLOWABLE VARIATION, CAUSED BY DIFFERING CYLINDER HEAD VOLUMES IS LIMITED TO THE RANGE 11.47 : 1 ±0.1

General view of system

2,0l

The system overview applies to the ~~1.4-ltr.~~ engine with Bosch Motronic MP 9.0

Sensors

Intake manifold pressure sender G 71
and intake air temperature sender G 42

Hall sender G 40

~~Lambda probe G 39~~ NOT USED

~~Knock sensor G 61~~ NOT USED

Coolant temperature sender G62

Throttle valve control unit J 338 with:
Throttle valve positioner potentiometer G 68
Throttle valve potentiometer G 69
Idling switch F 60

Additional signals

Engine control unit J220 Bosch Motronic MP 9.0

NOT USED.

Immobilizer control unit J362

Diagnostic connection

USED FOR IGNITION TIMING.

SSP 168/7

Actuators

Ignition transformer N 152
with ignition transformer output N 157

Injectors N30-33

Fuel pump relay J 17

NOT USED

Activated charcoal system solenoid valve N 80

Throttle valve control unit J 338 with:
Throttle valve positioner V 60

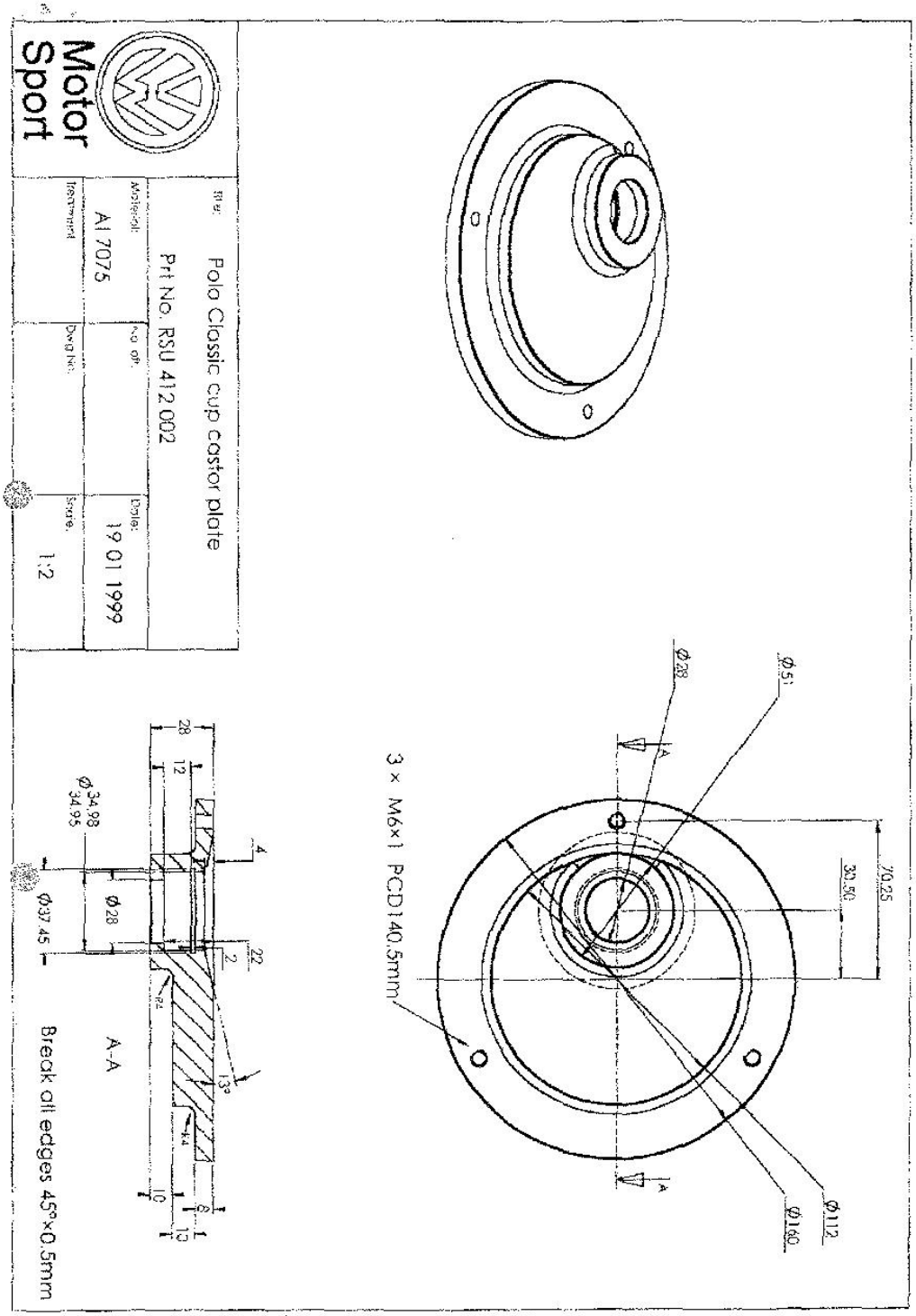
Additional signals

GEAR RATIO CHART

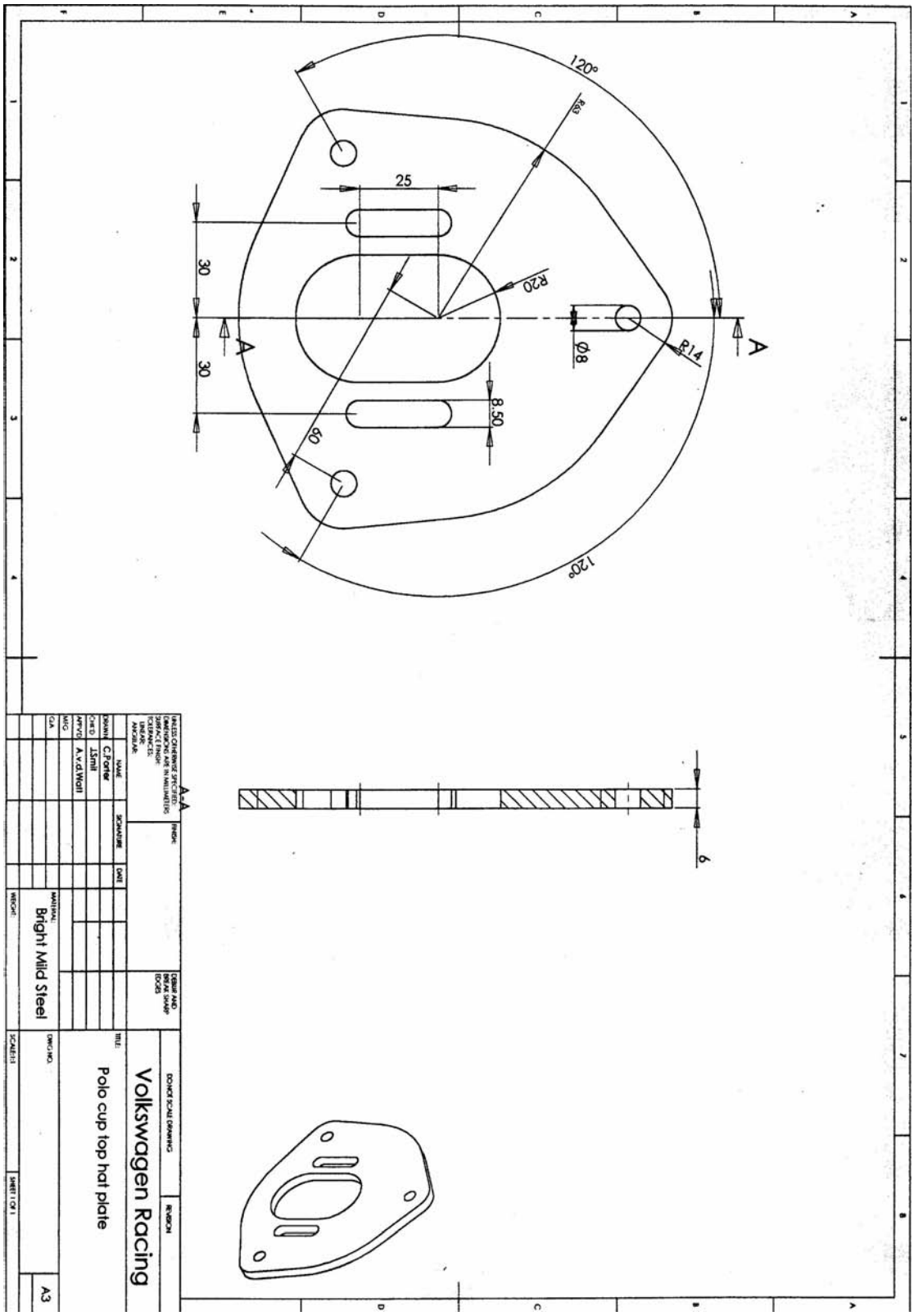
TOOTH COUNT			Numeric ratio	
			Gear	Overall
First gear	38 : 11		3.455	14.682
Second gear	35 : 18		1.944	8.264
Third gear	39 : 27		1.444	6.139
Fourth gear	35 : 31		1.129	4.798
Fifth gear	42 : 47		0.894	3.798
Reverse gear	38 : 12		3.167	13.458
Final drive	68 : 16		4.250	

Optional fifth gear ratio only for East London: 0.85

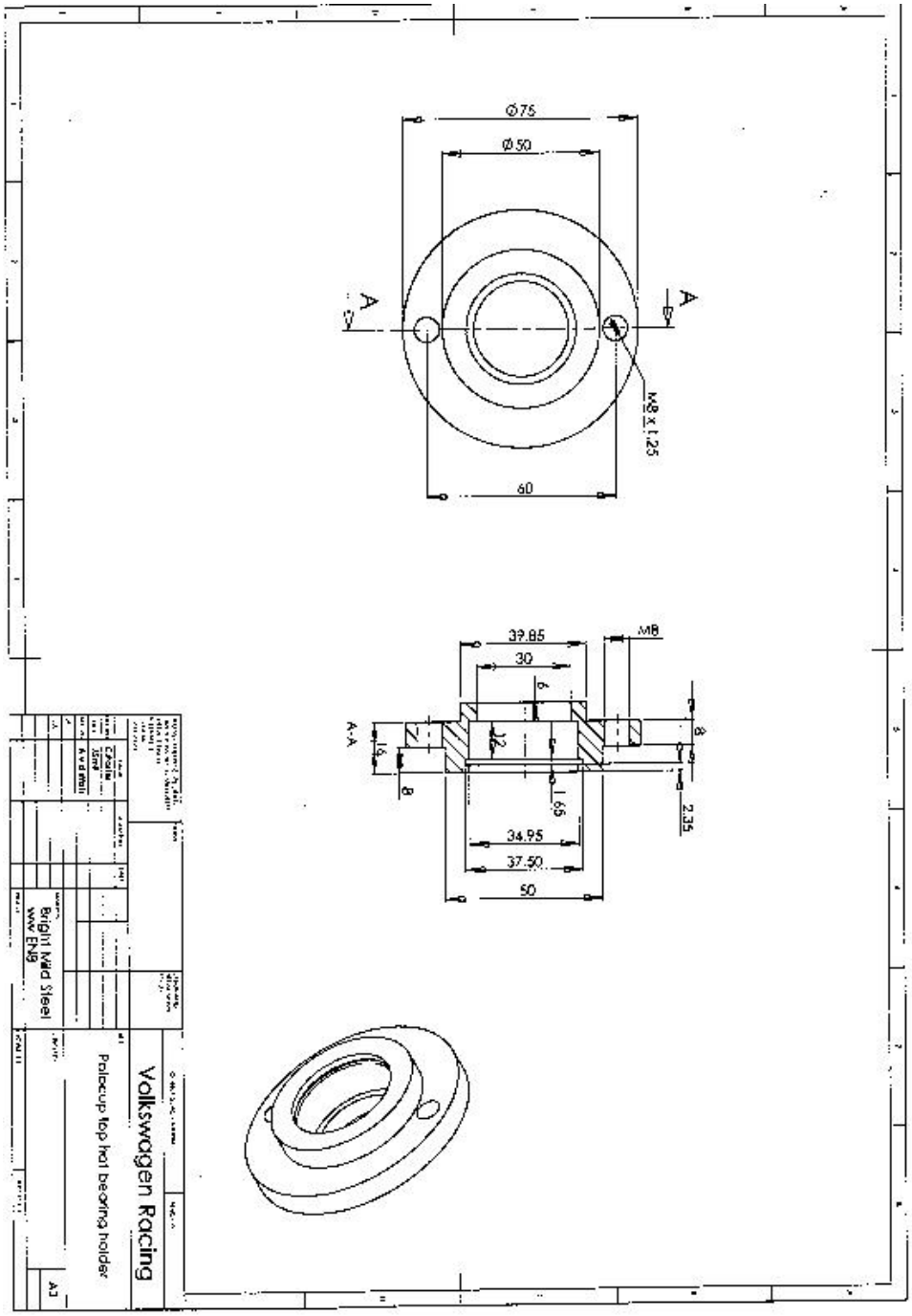
Polo Classic : Castor plate



Polo Hatchback : Castor plate



Polo Hatchback : Bearing holder



Polo Hatchback : Shock absorber washer