PBR AUTOMOTIVE PTY LTD A.C.N. 006 530 427	AFTERMARKET ENGINEERING & TECHNICAL SERVICE TECHNICAL SPECIFICATION	**TS464**

TITLE: MINIMUM REQUIREMENTS FOR AFTERMARKET BRAKE/CLUTCH PRODUCTS OTS SUBMISSION

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PURPOSE & SCOPE

This specification gives the minimum mandatory requirements to be complied with by the supplier/manufacturer of an after-market product for PBR. The supplier/manufacturer shall submit three off tool samples, along with the appropriate documents as detailed below for a particular product.

1. WHEEL CYLINDERS

1.1 Drawing

An assembly drawing showing the true representation of the inner parts (i.e. sectional view) with the following critical/functional dimensions shown wherever applicable (all notes must be translated in English) and must be submitted when requested with the samples.

* Bore Size
* Compressed length of pistons
* Mounting hole/stud thread specification, pitch and position
* Spigot dimensions
* Mounting face to bore centre offset
* Position and angle of abutment (ie. shoe tip sliding/resting face in a single acting wheel cylinder)
* Bleed port & inlet port specification (ie. position, angle, port depth, minimum full thread & type of seating)
* Adjuster specifications (ie. number of teeth on adjuster wheel & thread specification on adjuster screw)

1.2 Inspection Report

An initial sample inspection report (ISIR) fully conforming to all the above dimensions must be submitted when requested with the samples.

1.3 Material Certification

Material certification for the body casting and rubber parts must be submitted when requested along with the ISIR.

1.4 Engineering Test Report

A report summarising the test results for the tests specified in TS414 must be submitted when requested along with the off tool sample.

2. MASTER CYLINDERS

2.1 Drawing

An assembly drawing showing the true representation of the inner parts (ie. sectional view) with the following critical/functional dimensions shown wherever applicable (all notes must be translated in English) and must be submitted when requested with the samples.

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S. Ravishankar	14/10/95	S. Ravishankar	14/10/95	J. McMorrow	18/10/95	

* Bore size
* Total stroke
* Fluid displacement of primary and secondary chambers (split ratio)
* Crack pressure if the master cylinder has integral proportioning valve and the graph that shows the front and rear pressure relationship (the drawing must have a section view showing all proportioning valve parts)
* Residual line pressure if master cylinder has residual pressure line valves (the drawing must have a section view showing residual line valve and ports containing the valve)
* Fluid level warning indicator operating height with respect to centre of bore
* Cut off travel of primary and secondary pistons
* Position of primary and secondary compensation holes with respect to mounting flange
* Mounting hole/stud specifications (ie. hole size/thread specification and length of stud, position, pitch and number of holes/studs)
* Thickness of mounting flange
* Mounting face to push rod seat on primary piston
* Outlet port details (ie. position of ports with respect to mounting flange and centre of bore, angle of ports, port depth, thread specification, minimum full thread and type of seating)
* Fluid level warning indicator switch fitting configuration and dimensions on fluid reservoir
* Brake fluid capacity of the reservoir (total capacity, primary and secondary chamber capacity)
* Angle of reservoir with respect to horizontal if designed for inclined installation
* Push rod and clevis dimensions (ie. master cylinder mounting face to clevis pin hole distance, clevis pin hole size and clevis slot width)

2.2 Inspection Report

An initial sample inspection report (ISIR) fully conforming to all the above dimensions must be submitted when requested with the samples.

2.3 Material Certification

Material certification for the body casting and rubber parts must be submitted when requested along with the ISIR.

2.4 Engineering Test Report

A report summarising the test results for the tests specified in TS463 must be submitted when requested along with the off tool sample.

3. DISC BRAKE ROTORS

The disc brake rotor supplied by the supplier/manufacturer must conform to all requirements of TS416.

4. CLUTCH

4.1 Clutch Driven Plate

4.1.1 Drawing

An assembly drawing showing the true representation of the components as an assembly with the following critical/functional dimensions (in English) and must be available when requested with samples.

* Outside diameter of facing
* Inside diameter of facing
* Spline detail (OD/ID/ no. of teeth and profile)
* Swing shape
* Compressed thickness
* Release (max)
* Cushion detail
* Damping medium (springs, rubber of both)

4.1.2 Initial Sample Inspection Reports (ISIR)

ISIR must be submitted when requested with samples detailing above drawing dimensions.

4.1.3 Material Certification

Material certification must be supplied for components when requested.

4.1.4 Engineering Testing

Reports supporting the tests as specified in TS505 to be submitted with OTS when requested.

4.2 Clutch Cover Assembly

4.2.1 Drawing

An assembly drawing showing the true representation of the components as an assembly with the following critical/functional dimensions (in English) and must be available when requested with samples.

* Outside diameter of pressure plate friction surface
* Inside diameter of pressure plate friction surface
* Number/diameter of bolt holes on PCD
* Number/diameter of dowel holes on PCD
* Diaphragm/lever finger height at new engaged position
* Release bearing diameter and stroke
* Pressure plate lift and parallelism

* Clamp load at new and worn position
* Release bearing load at gauge dimension
* Swing shape including flywheel detail

4.2.2 **Initial Sample Inspection Reports (ISIR)**

ISIR must be submitted when requested with samples detailing above drawing dimensions.

4.2.2 **Material Certification**

Material certification must be supplied for components when requested.

4.2.3 **Engineering Testing**

Reports supporting the tests as specified in TS506 to be submitted with OTS when requested.

4.3 Clutch Release Bearing

Clutch release bearings can be catagorised into the following:-

* Flat face bearing only
* Flat face bearing and carrier
* Round face bearing only
* Round face bearing and carrier
* Round face self aligning bearing and carrier

For dimensional comparison, the following infomration is required:-

	P/no	Bore Dia.	Contact Face Dia.	Thick	Outer Dia.	Fork To Brg Face	Fork Width	Overall Height	Pin Type Connect. Width	Mtl.	Appl.
Flat face brg only	✓	✓	✓	✓	✓					✓	✓
Flat face brg & carrier	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round face brg only	✓	✓	✓	✓	✓					✓	✓
Round face brg & carrier	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round face self align. brg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

5. OTHER MISCELLANEOUS PARTS

The off tool sample should be submitted when requested, along with a detailed drawing showing all functional/critical dimensions. An initial sample inspection report conforming fully to the drawing dimensions, along with the material certificate of the material used should also be submitted. Test reports wherever requested should be submitted.