# Vehicle Standard (Australian Design Rule 23/01 – Passenger Car Tyres) 2006

I, JAMES ERIC LLOYD, Minister for Local Government, Territories and Roads, determine this vehicle standard under subsection 7 (1) of the *Motor Vehicle Standards Act 1989*.

Dated 29 May 2006

[SIGNED]

James Eric Lloyd

Minister for Local Government, Territories and Roads

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## A. LEGISLATIVE PROVISIONS

A.1. NAME OF STANDARD

A.1.1. This Standard is the Vehicle Standard (Australian Design Rule 23/01 – Passenger Car Tyres) 2006.

A.1.2. This Standard may also be cited as Australian Design Rule 23/01 — Passenger Car Tyres.

A.2. COMMENCEMENT

A.2.1. This Standard commences on the day after it is registered.

A.3. REPEAL

A.3.1. This Standard repeals each vehicle standard with the name Australian Design Rule 23/01 — Passenger Car Tyres that is:

(a) made under section 7 of the Motor Vehicle Standards Act 1989; and

(b) in force at the commencement of this Standard.

A.3.2. This Standard also repeals each instrument made under section 7 of the Motor Vehicle Standards Act 1989 that creates a vehicle standard with the name Australian Design Rule 23/01 — Passenger Car Tyres, if there are no other vehicle standards created by that instrument, or amendments to vehicle standards made by that instrument, that are still in force at the commencement of this Standard.

## B. FUNCTION

The function of this vehicle standard is to specify requirements of strength, construction and standard pressure/load relationships for passenger car tyres of particular size designations.

## C. APPLICABILITY AND IMPLEMENTATION

C.1. Applicability Summary

C.1.1. This national standard applies to tyres fitted to vehicles as set out in the table below, however the following vehicles are exempt from this national standard:

C.1.1.2. MB, MC, MD or NA when fitted with light truck or truck tyres; and

C.1.1.3. LEP , LEG, TA or TB when fitted with tyres other than new passenger car tyres.

Vehicles certified to the requirements of any of the Acceptable Prior Rules as shown below in the Applicability Table for a particular category are to be deemed to comply with this national standard.

C.1.1.4. ADR 23/00 cannot be used for V, W, Y or Z-rated tyres. In addition, in general to use ADR 23/00, the tyres must have been tested on a ‘Measuring Rim’ in one of the ‘Nominated Standards’.

C.2. Applicability Table

| Vehicle Category | ADR Category Code | UNECE Category Code | Manufactured on or After | Acceptable Prior Rules |
|---|---|---|---|---|
| Moped 2 wheels | LA | L1 | Not applicable | |
| Moped 3 wheels | LB | L2 | Not applicable | |
| Motor cycle | LC | L3 | Not applicable | |
| Motor cycle and sidecar | LD | L4 | Not applicable | |
| Motor tricycle | LE | L5 | | |
| | LEM | | Not applicable | |
| | LEP | | 1 July 1992 | Nil |
| | LEG | | 1 July 1992 | Nil |
| Passenger car | MA | M1 | 1 Jan 1990 | /00 * |
| Forward-control passenger vehicle | MB | M1 | 1 Jan 1990 | /00 * |
| Off-road passenger vehicle | MC | M1 | 1 Jan 1990 | /00 * |
| Light omnibus | MD | M2 | | |
| up to 3.5 tonnes *'GVM'* and up to 12 seats | MD1 | | 1 Jan 1990 | /00 * |
| up to 3.5 tonnes *'GVM'* and more than 12 seats | MD2 | | Not applicable | |
| over 3.5 tonnes and up to 4.5 tonnes *'GVM'* | MD3 | | Not applicable | |
| over 4.5 tonnes and up to 5 tonnes *'GVM'* | MD4 | | Not applicable | |
| Heavy omnibus | ME | M3 | Not applicable | |
| Light goods vehicle | NA | N1 | 1 July 1990 | Nil |
| Medium goods vehicle | NB | N2 | Not applicable | |
| Heavy goods vehicle | NC | N3 | Not applicable | |
| Very light trailer | TA | O1 | 1 July 1990 | Nil |
| Light trailer | TB | O2 | 1 July 1990 | NIl |
| Medium trailer | TC | O3 | Not applicable | |
| Heavy trailer | TD | O4 | Not applicable | |

* Refer to clause C.1.1.4

## 23.1. DEFINITIONS

Refer to Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005.

## 23.2. REQUIREMENTS

23.2.1. Size and Construction

23.2.1.1. The tyre manufacturer must specify the *'Nominated Standard'* with which the tyre design complies in respect to *'Maximum Load Rating'*, inflated dimensions, design or *'Measuring Rim'* and approved alternative *'Rim'* fitments.

23.2.1.2. *The 'Administrator'* may accept a tyre, 'Rim' or tyre and *'Rim'* combination not incorporated in a *'Nominated Standard'* listed below:

23.2.1.2.1. the Tyre and Rim Standards Manual of the Tyre and Rim Association of Australia, 1995 Edition;

23.2.1.2.2. the 1995 (US) Tire and Rim Association Inc. Year Book;

23.2.1.2.3. the Japan Automobile Tire Manufacturers Association Year Book, 1995 Edition;

23.2.1.2.4. the Japanese Industrial Standards (JIS-D4202) dated 1982 "Dimensions of Tires", and (JIS-D4218) dated 1981 "Contours of Rims"; or

23.2.1.2.5. the European Tyre and Rim Technical Organisation (E.T.R.T.O.) Data Book dated 1995.

23.2.2. Performance Requirements

23.2.2.1. General

Each new tyre must conform to each of the following:

23.2.2.1.1. It must meet the requirements specified in clause 23.2.2.2 for its size designation, type, *'Maximum Load Rating'*, *'Speed Category'* or *'Service Description'*.

23.2.2.1.2. It must incorporate at least 4 *'Treadwear Indicators'* approximately equally spaced, each of which provides for a visual indication when the *'Tread'* in the vicinity of the indicator has a *'Groove'* depth of 1.60 + 0.40, - 0.25 mm.

23.2.2.2. Test requirements

23.2.2.2.1. Test sample selection

Three new tyres having identical characteristics when described according to requirements of clause 23.2.3 must comprise a test sample:

23.2.2.2.1.1. one tyre must be used for physical dimensions, resistance to *'Bead'* unseating, and strength, in sequence;

23.2.2.2.1.2. a second tyre must be used for tyre endurance; and

23.2.2.2.1.3. a third tyre for high speed performance.

23.2.2.2.2. In the tests, pressures must be established within 10 kPa or one psi (as appropriate) of the values specified for each test.

23.2.2.2.3. Physical dimensions requirements

Each tyre must conform to each of the following when measured in accordance with clause 23.3.1:

23.2.2.2.3.1. its actual *'Section Width'*, *'Overall Tyre Width'* and *'Tyre Outer Diameter'* dimensions must be within the maxima and minima specified in the *'Nominated Standard'* for a new tyre of that size designation and type.

23.2.2.2.3.2. where the *'Nominated Standard'* specifies a minimum *'Size Factor'*, the tyre's *'Size Factor'* must be at least as large as the specified minimum *'Size Factor'* for its size designation and type.

23.2.2.2.4. Resistance to *'Bead'* unseating requirements (for tubeless tyres only). When tested in accordance with clause 23.3.2 the applied force required to unseat the tyre *'Bead'* at the point of contact must not be less than:

23.2.2.2.4.1. 6,670 N for tyres with a '*Specified Design Section Width'* of less than 6.3 inches, or 160 mm;

23.2.2.2.4.2. 8,890 N for tyres with a '*Specified Design Section Width'* of 6.3 inches or 160 mm or more but less than 8 inches or 205 mm; or

23.2.2.2.4.3. 11,120 N for tyres with a '*Specified Design Section Width'* of 8 inches or 205 mm or more.

23.2.2.2.5. Tyre strength requirements

Each tyre must meet the requirements for minimum breaking energy specified in Table 3 when tested in accordance with clause 23.3.3.

23.2.2.2.6. Tyre endurance requirements

After completion of the laboratory test wheel endurance test specified in clause 23.3.4 no tyre is to have *'Tread Separation'*, '*Ply Separation'*, *'Cord Separation'*, *'Belt Separation'* or *'Bead Separation'*, '*Chunking'*, or broken cords.

23.2.2.3. High speed test requirements

After completion of the high speed test specified in clause 23.3.5 no tyre is to have *'Tread Separation'*, '*Ply Separation'*, *'Cord Separation'*, *'Belt Separation'* or *'Bead Separation'*, '*Chunking'* or broken cords.

23.2.3. Labelling Requirements. Each tyre must be conspicuously labelled on both *'Sidewalls'* in the case of symmetrical tyres and at least on the outer *'Sidewall'* in the case of '*Asymmetrical Tyres'* with each of the following permanently moulded in letters and figures at least 3.8 mm high and depth at least 0.25 mm if below the background surface or 0.4 mm if above the background surface:

23.2.3.1. tyre size designation, which includes the '*Speed Category'* symbol as determined from Table 4 either within the size designation or adjacent to the size designation as part of the '*Service Description'*, and '*Tyre Carcass Construction Symbol'* for '*Radial Ply Tyres'* or '*Bias-belted Tyres'* and optionally, in the case of '*Diagonal Ply Tyres'*;

23.2.3.2. the '*Maximum Load Rating'* for the tyre expressed in kilograms followed by the word "kilograms" (or "KILOGRAMS") or the abbreviation "kg" (or "KG") or the '*Maximum Load Rating'* for the tyre expressed in pounds followed by the word "pounds" (or "POUNDS") or the abbreviation "lbs" (or "LBS") or the 'Load Index' symbol (from Table 2) adjacent to the size designation as part of the '*Service Description'*. Tyres must be labelled unambiguously in respect to '*Maximum Load Rating'* or *'Load Index'*;

23.2.3.2.1. For tyres with a '*Speed Category*' "V", "W", "Y" or "Z", the '*Maximum Load Rating*' labelled on the tyre '*Sidewall(s)*' must be the maximum load which applies at speeds up to the following:

| | | |
|---|---|---|
| Speed Category "V" | - | 210 km/h |
| Speed Category "W" and "Z" | - | 240 km/h |
| Speed Category "Y" | - | 270 km/h |

23.2.3.3. identification of manufacturer by:

23.2.3.3.1. Name; or

23.2.3.3.2. Brand name and an '*Approved'* code mark;

23.2.3.4. the word "TUBELESS" if applicable;

23.2.3.5. the word "RADIAL" if applicable;

23.2.3.6. the words "BIAS-BELTED" if applicable;

23.2.3.7. a date code consisting of 3 digits, the first 2 nominating the week of the year and the third digit the year of manufacture on at least one *'Sidewall'* of the tyre; and

23.2.3.8. in the case of '*Asymmetrical Tyres'*, a clear indication which side of the tyre is to face outwards when fitted to the vehicle.

## 23.3. TEST PROCEDURES

23.3.1. Physical Dimensions Test

23.3.1.1. Determine tyres physical dimensions under uniform ambient conditions as follows.

23.3.1.1.1. Mount the tyre on a '*Test Rim'* and inflate it to the pressure specified for measurement in the '*Nominated Standard'*.

23.3.1.1.2. If no pressure is specified for measurement, mount the tyre on a '*Test Rim'* and inflate it to the pressure designated for its '*Maximum Load Rating'* in the '*Nominated Standard'* reduced by 60 kPa (or 8 psi as appropriate).

23.3.1.2. Condition it at ambient room temperature for at least 24 hours.

23.3.1.3. Readjust pressure to that specified in clauses 23.3.1.1.1 or 23.3.1.1.2 as appropriate.

23.3.1.4. Caliper the '*Section Width'* and '*Overall Tyre Width'* at 6 points approximately equally spaced around the tyre circumference.

23.3.1.5. Record the average of these measurements as the '*Section Width'* and '*Overall Tyre Width'*, respectively.

23.3.1.6. Determine *'Tyre Outer Diameter'* by measuring the maximum circumference of the tyre and dividing this dimension by .

23.3.2. Resistance to *'Bead'* Unseating Test (for tubeless tyres only)

23.3.2.1. Preparation of tyre '*Test Rim'* assembly

23.3.2.1.1. Wash the tyre, dry it at the *'Beads'*, and mount it without lubrication or adhesive on a clean, painted test *'Rim'*.

23.3.2.1.2. Adjust the pressure to the applicable pressure specified in clause 23.3.1.1.2 at ambient room temperature.

23.3.2.1.3. Mount the tyre and *'Test Rim'* in the fixture shown in Figure 1, and force either of the standard blocks shown in Figure 2 against the tyre *'Sidewall'* as required by the geometry of the fixture, or by any other *'Approved'* test procedure.

23.3.2.2. Test procedure

23.3.2.2.1. Apply the load through the block to the tyre's outer '*Sidewall*' at a distance no less than that specified in Figure 1 or the mid point of the tyre's section height, for the applicable *'test rim'* at a rate of 50±10 mm per minute, with the load arm substantially parallel to the tyre and *'Rim'* assembly at the time of engagement.

23.3.2.2.2. Increase the load until the *'Bead'* unseats or the applicable value specified in clause 23.2.2.2.4 is reached.

23.3.2.2.3. This test must be repeated at least 4 times at locations approximately equally spaced around the tyre circumference.

23.3.3. Tyre Strength (Breaking Energy) Test

23.3.3.1. Preparation of tyre

23.3.3.1.1. Mount the tyre on a '*Test Rim'* and inflate it to the applicable pressure specified in clause 23.3.1.1.2.

23.3.3.1.2. Condition it at test room temperature for at least 3 hours.

23.3.3.1.3. Readjust its pressure to that specified in clause 23.3.1.1.2.

23.3.3.2. Test procedure

23.3.3.2.1. Force a cylindrical steel plunger with a hemispherical end and a diameter of 19±1.6 mm perpendicularly into the *'Tread'* as near to the centreline as possible, avoiding penetration into any *'Tread' 'Groove'*, at the rate of 50 ±10 mm per minute.

23.3.3.2.2. Record the force and penetration at the moment of breaking at each of 5 test points approximately equally spaced around the circumference of the tyre. If the tyre fails to break before the plunger is stopped on reaching the *'Rim'*, and the required minimum breaking energy is not achieved, then the required minimum breaking energy is deemed to have been achieved at that point.

23.3.3.2.3. Compute the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2{,}000}$$

where:

W = Energy, joules
F = Force, newtons
P = Penetration, mm.

23.3.3.2.4. Determine the breaking energy value for the tyre by computing the average of the 5 values obtained in accordance with clause 23.3.3.2.3.

23.3.4. Tyre Endurance Test

23.3.4.1. Preparation of tyre

23.3.4.1.1. Mount a new tyre on a '*Test Rim'* and inflate it to the applicable pressure specified in clause 23.3.1.1.2.

23.3.4.1.2. Condition the tyre assembly at a temperature not less than 35°C for at least 3 hours.

23.3.4.1.3. Readjust tyre pressure to that specified in clause 23.3.1.1.2 immediately before testing.

23.3.4.2. Test procedure

23.3.4.2.1. Mount the tyre and '*Test Rim'* assembly on a test axle and press it against a flat-faced steel test wheel of an outside diameter not greater than 1.71 metres and at least as wide as the '*Section Width*' of the tyre to be tested, or an '*Approved'* equivalent test wheel.

23.3.4.2.2. During the test the ambient temperature at a distance of not less than 150 mm and not more than one metre from the tyre shall be at least 35°C. No provision is to be made for cooling the tyre during the test.

23.3.4.2.3. Conduct the test at not less than 80 km/h test speed with loads and test periods not less than those shown in the following schedule:-

| | **TEST PERIODS** | | |
|---|---|---|---|
| | (1) for 4 hours | (2) for 6 hours | (3) for 24 hours |
| Test Loads as Percentage of '*Maximum Load Rating*' | 85.0 % | 90.0 % | 100 % |

23.3.5. High Speed Test

23.3.5.1. Preparation of tyre

23.3.5.1.1. Mount the tyre on a '*Test Rim'* and inflate it to a pressure equal to the pressure specified in the '*Nominated Standard'* for its '*Maximum Load Rating'* plus an increase no greater than that specified in Table 1 for its '*Speed Category'*.

23.3.5.1.2. Condition the tyre assembly at a temperature not less than 35°C for at least 3 hours.

23.3.5.1.3. Readjust the tyre pressure to that specified in clause 23.3.5.1.1 immediately before testing.

23.3.5.2. Test procedure

23.3.5.2.1. Mount the tyre and '*Test Rim'* assembly on a test axle and press it against a flat-faced, steel test wheel of an outside diameter not greater than 1.71 metres, and at least as wide as the '*Section Width'* of the tyre to be tested (or an '*Approved'* equivalent test wheel) with a load not less than the percentage of the '*Maximum Load Rating*' of the tyre,

'*Speed Category*' "H" and below - 80.0%
'*Speed Category*' "V" - 72.8%
'*Speed Category*' "W", "Y" and "Z" - 68.0%

23.3.5.2.2. During the test the ambient temperature at a distance of not less than 150 mm and not more than one metre from the tyre shall be at least 35°C. No provision is be made for cooling the tyre during the test.

23.3.5.2.3. Operate the equipment to bring the '*Test Wheel Speed'* from zero up to the initial '*Test Wheel Speed'* in a period of at least 10 minutes.

23.3.5.2.4. Except in the case of tyres with a *'Speed Category'* "Z" the initial '*Test Wheel Speed'* is equal to the maximum speed shown in Table 1 as corresponding to the tyres '*Speed Category'* symbol, less 40 km/h.

23.3.5.2.5. The initial '*Test Wheel Speed'* for tyres of '*Speed Category'* "Z" must be at least 200 km/h.

23.3.5.2.6. Operate the equipment with the '*Test Wheel Speed'* not less than the initial '*Test Wheel Speed'* for at least 10 minutes, then at not less than the initial '*Test Wheel Speed'* plus 10 km/h for at least a further 10 minutes, then at not less than the initial '*Test Wheel Speed'* plus 20 km/h for at least a further 10 minutes and finally at not less than the initial '*Test Wheel Speed'* plus 30 km/h for at least a further 20 minutes.

## 23.4. ALTERNATIVE STANDARDS

The technical requirements specified in Annex 7 of ECE R 30/02 (including Supplement 1 to the 02 Series of Amendments) - Tyres are deemed to be equivalent to the technical requirements of clause 23.2.2.2.7 (High Speed Test) of this rule.

**TABLE 1 -**

**MAXIMUM PRESSURE INCREASE - HIGH SPEED TEST**

| ***'SPEED CATEGORY'*** | ***'Rim'* DIAMETER** | ***'MAXIMUM VEHICLE SPEED'* 24/00** | **PRESSURE INCREASE** | |
|---|---|---|---|---|
| | | | **Diagonal and Bias-belted** | **Radial** |
| | | **km/h** | **kPa** | **kPa** |
| (-) or unmarked | **A L L** | 170 (for radial ply only) | refer below | 30 |
| **L** | | 120 | NIL | NIL |
| **M** | **V** | 130 | 10 | NIL |
| **N** | **A** | 140 | 20 | NIL |
| **P** | **L** | 150 | 30 | 10 |
| **Q** | **U** | 160 | 40 | 20 |
| **R** | **E** | 170 | 50 | 30 |
| **S** | **S** | 180 | 60 | 40 |
| **T** | | 190 | 70 | 50 |
| **U** | | 200 | 80 | 60 |
| **H** | | 210 | 90 | 70 |
| **V** | | 240 | 90 | 70 |
| **W** | | 270 | | 90 |
| **Y** | | 300 | | 90 |
| **Z** | | Over 240 | | 90 |
| (-) or unmarked | 10 inch | 120 | NIL | - |
| | 12 inch | 135 | 15 | - |
| | ≥13 inch | 150 | 30 | - |

## TABLE 2
## LIST OF *'LOAD INDEX'* SYMBOLS versus *'Maximum Load Rating'*

| *'LOAD INDEX'* SYMBOL | *'Max. Load Rating'* (kg) | *'LOAD INDEX'* SYMBOL | *'Max. Load Rating'* (kg) | *'LOAD INDEX'* SYMBOL | *'Max. Load Rating'* (kg) |
|---|---|---|---|---|---|
| 0 | 45 | 41 | 145 | 82 | 475 |
| 1 | 46.2 | 42 | 150 | 83 | 487 |
| 2 | 47.5 | 43 | 155 | 84 | 500 |
| 3 | 48.7 | 44 | 160 | 85 | 515 |
| 4 | 50 | 45 | 165 | 86 | 530 |
| 5 | 51.5 | 46 | 170 | 87 | 545 |
| 6 | 53 | 47 | 175 | 88 | 560 |
| 7 | 54.5 | 48 | 180 | 89 | 580 |
| 8 | 56 | 49 | 185 | 90 | 600 |
| 9 | 58 | 50 | 190 | 91 | 615 |
| 10 | 60 | 51 | 195 | 92 | 630 |
| 11 | 61.5 | 52 | 200 | 93 | 650 |
| 12 | 63 | 53 | 206 | 94 | 670 |
| 13 | 65 | 54 | 212 | 95 | 690 |
| 14 | 67 | 55 | 218 | 96 | 710 |
| 15 | 69 | 56 | 224 | 97 | 730 |
| 16 | 71 | 57 | 230 | 98 | 750 |
| 17 | 73 | 58 | 236 | 99 | 775 |
| 18 | 75 | 59 | 243 | 100 | 800 |
| 19 | 77.5 | 60 | 250 | 101 | 825 |
| 20 | 80 | 61 | 257 | 102 | 850 |
| 21 | 82.5 | 62 | 265 | 103 | 875 |
| 22 | 85 | 63 | 272 | 104 | 900 |
| 23 | 87.5 | 64 | 280 | 105 | 925 |
| 24 | 90 | 65 | 290 | 106 | 950 |
| 25 | 92.5 | 66 | 300 | 107 | 975 |
| 26 | 95 | 67 | 307 | 108 | 1,000 |
| 27 | 97.5 | 68 | 315 | 109 | 1,030 |
| 28 | 100 | 69 | 325 | 110 | 1,060 |
| 29 | 103 | 70 | 335 | 111 | 1,090 |
| 30 | 106 | 71 | 345 | 112 | 1,120 |
| 31 | 109 | 72 | 355 | 113 | 1,150 |
| 32 | 112 | 73 | 365 | 114 | 1,180 |
| 33 | 115 | 74 | 375 | 115 | 1,215 |
| 34 | 118 | 75 | 387 | 116 | 1,250 |
| 35 | 121 | 76 | 400 | 117 | 1,285 |
| 36 | 125 | 77 | 412 | 118 | 1,320 |
| 37 | 128 | 78 | 425 | 119 | 1,360 |
| 38 | 132 | 79 | 437 | 120 | 1,400 |
| 39 | 136 | 80 | 450 | | |
| 40 | 140 | 81 | 462 | | |

**TABLE 3**
**MINIMUM BREAKING ENERGY VALUES (JOULES)**

| | PRESSURES SPECIFIED IN kPa | | PRESSURES SPECIFIED IN psi | | |
|---|---|---|---|---|---|
| Test inflation pressure | 180 | 220 | 24 | 28 | 32 |
| Breaking Energy (joules) | 295 | 585 | 295 | 440 | 585 |

For tyres with a test inflation pressure other than as specified above, the required minimum breaking energy value is given by the relevant formulae shown below:

B.E. (Joules) = $7.35 \times (P_1 - 140)$ **where:** $P_1$ = test pressure in kPa

B.E. (Joules) = $36.7 \times (P_2 - 16)$ **where**: $P_2$ = test pressure in psi

For rayon '*Diagonal Ply Tyres'* or rayon '*Bias-Belted Tyres'*, the required breaking energy value is to be reduced by 36.5 per cent.

For tyres with '*Specified Design Section Width'* less than 160 mm (or 6.30 inches) the required breaking energy value is to be reduced (or further reduced) by 25.0 per cent.

**TABLE 4**
**SPEED CATEGORY FOR TYRE**

| '*SPEED CATEGORY*' SYMBOL | L | M | N | P | Q | R | S | T | U | H | V | W | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '*Maximum Vehicle Speed 24/00'* for which tyre is rated (km/h) | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 210 | 240 | 270 | 300 | over 240 |

For tyres marked with a - or in the absence of any of the above symbols, the '*Speed Category*' must be as follows:

| | | km/h |
|---|---|---|
| Diagonal or Bias-Belted | 10 inch '*Rim'* Diameter | 120 |
| | 12 inch '*Rim'* Diameter | 135 |
| | 13 inch '*Rim'* Diameter and over | 150 |
| Radial | All '*Rim'* Diameters | 170 |

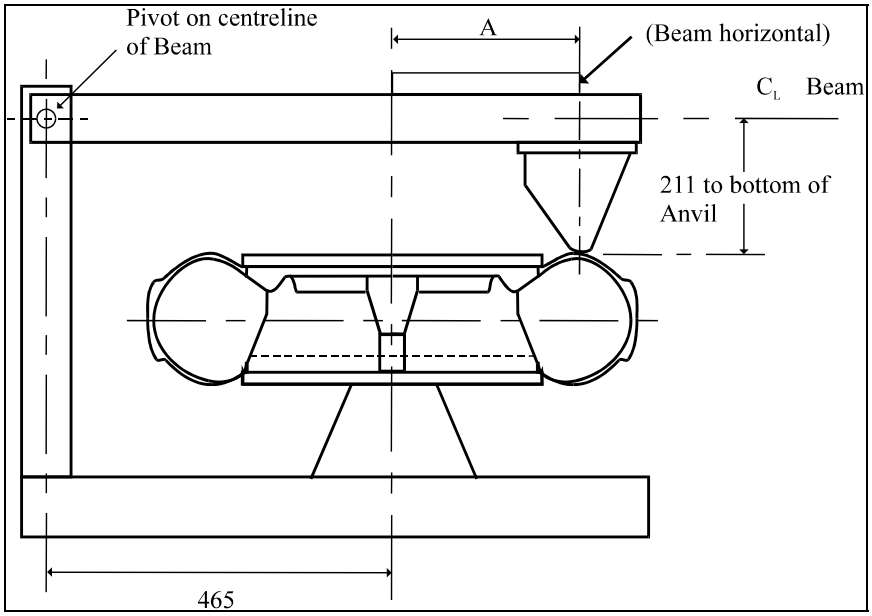


**Figure 1 - '*Bead*' Unseating Fixture**
**Note - Dimensions in mm**

| ***'Test Rim'* Nominal Diameter** | **Dimension A** |
|---|---|
| **inches** | **mm** |
| 19 | 330 |
| 18 | 318 |
| 17 | 305 |
| 16 | 292 |
| 15 | 279 |
| 14 | 267 |
| 13 | 254 |
| 12 | 241 |
| 11 | 229 |
| 10 | 216 |
| | |
| **mm** | **mm** |
| 290 | 229 |
| 315 | 241 |
| 340 | 254 |
| 365 | 267 |
| 390 | 279 |
| 415 | 292 |

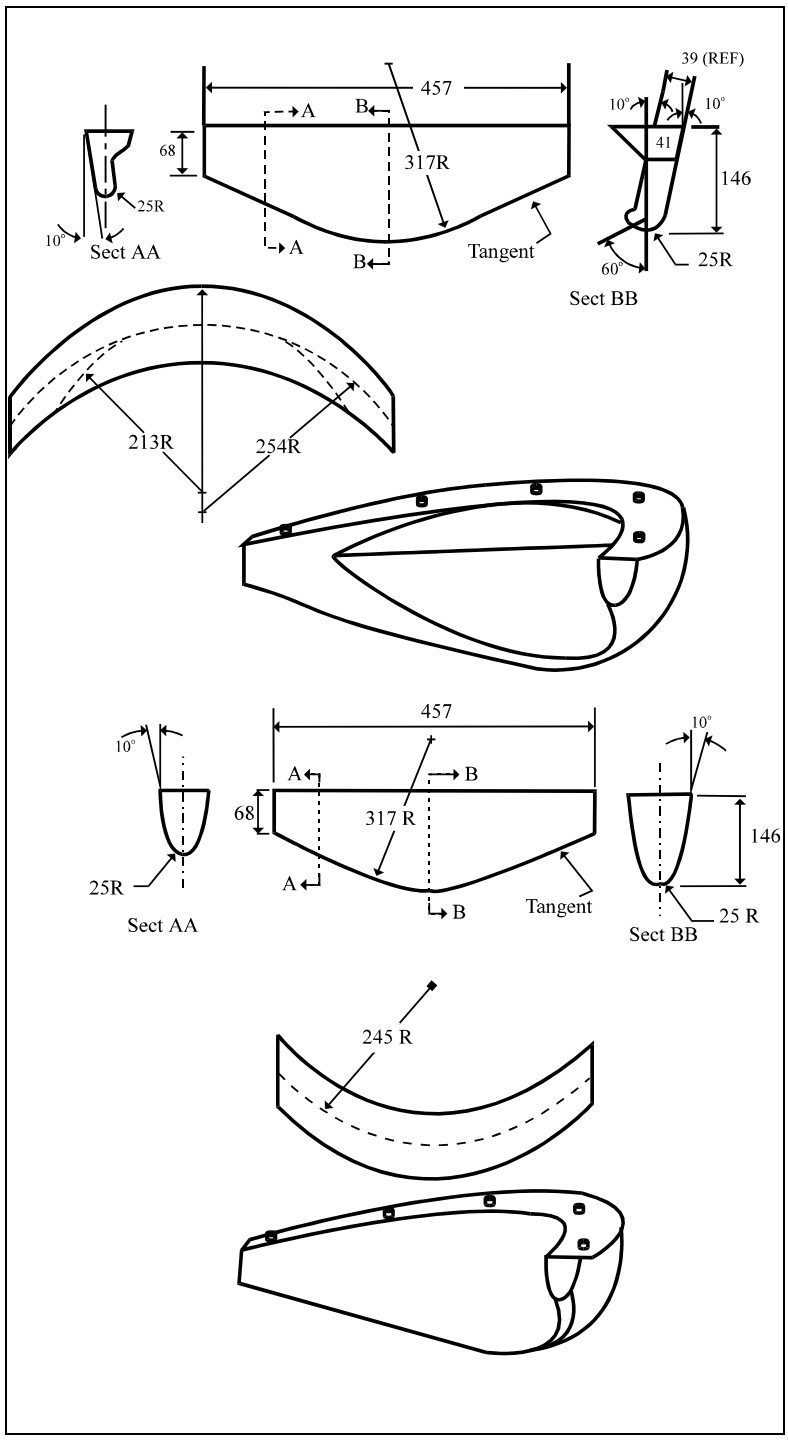


Figure 2 - Diagrams of '*Bead*' Unseating Blocks
(Dimensions in mm)
Material: Aluminium 355
T-6 Condition
Finish - 1.25 micrometre; or
other '*Approved*' material