

Pictures and diagrams are shown for illustration purpose only. NOT vehicle specific.

## Diagnosing Tyre Wear

### ONE SIDE SHOULDER WEAR

If a tyre wears smooth on one side, the side touching the road, the tyre will wear out faster and the vehicle becomes difficult to control.

See Fig. A(i)

The main cause of this wear pattern is camber maladjustment. This can be caused by worn chassis parts (springs, steering, linkage, bushes, ball joints etc.) or previous misalignment. Sometimes shoulder wear on one side can be caused by incorrect toe adjustment (outside wear for toe in (positive), inside wear for toe out (negative.) Alignment and tyre rotation, or replacement, are recommended in this situation.

### FEATHER EDGING

To identify feather edging, slide the hand across the tyre tread and see if you can feel sharp edges in one direction and smoothness in the other. Feather edging will eventually ruin tyres, and will occur if the toe adjustment is incorrect.

Incorrect toe adjustment can develop from faulty chassis parts, incorrect turning radius or mis-alignment. To correct the condition, alignment and tyre rotation, or replacement, is recommended.

See Fig. A (ii)



SHOULDER WEAR (i)

FEATHER EDGING(ii)

Fig. A: Illustration of alignment related abnormal tyre wear

## ABNORMAL WEAR DUE TO LACK OF MAINTENANCE

### TYRE CUPPING

This is usually caused by the shock absorbers wearing out, or the wrong shock absorbers being installed.

Sometimes the problem is due to the springs, wheel balance or wheel alignment. As the springs sag, the shock absorber shaft is lowered, and the combination of ineffective shock absorbers and soft sagging springs make the vehicle susceptible to bouncing.

This affects the tyres, and produces the low spot of the cup. If the condition is allowed to continue it will soon become too late to cure it with parts replacement and tyre rotation. Action should be taken immediately. See Fig. B(iii)

### BALD SPOTS

The usual cause is an unbalanced or faulty tyre, although sometimes failure to rotate tyres can cause the trouble. Inspect the chassis and see if there are defective components.

If the wear pattern is not severe, balance and rotate the tyres. If it is severe, the tyre should be replaced and the alignment checked. See Fig. B(iv)

### CRACKS IN TYRE HEADS

This is caused by poor maintenance. When tyres are continually under and over inflated the stress can result in cracks.

Other causes are too much exposure to hot roads, fast driving, or carrying unduly heavy loads. See Fig. B(v)



CUPPING (iii)

BALD SPOTS (iv)

CRACKING (v)

Fig B: Maintenance related abnormal wear

## INFLATION RELATED

### ABNORMAL WEAR

#### SHOULDER WEAR (BOTH EDGES) - BIAS PLY TYRES

When a tyre is not inflated to the correct pressure, the sidewall and contact area will be forced to fluctuate excessively. Initially, the contact area will buckle and the tyre will run on the edge.

The immediate result is houlder wear (proportionate to amount of under inflation) because the outer treads are receiving all of the road contact. See Fig. C(vii)

Consideration should be given as to whether the tyre should be removed for inspection of inner sidewall for damage resulting from excessive heat build-up. Check tyre and wheel assembly for air leakage. Inspect valve stem for damage and if satisfactory, inflate tyres to correct pressure.



SHOULDER WEAR (vii)

CENTRE WEAR(vi)

Fig. C: Inflation related abnormal wear

#### CENTRE WEAR - BIAS PLY TYRES

If a tyre shows signs of accelerated wear in the centre of the tread, it is most likely due to over inflation. Excessive pressure causes stress to the chassis tyre tread.

This symptom is easily identified because it is uncharacteristic of other abnormal conditions with one possible exception. If tyre(s) is at specified pressure and questioning of driver provides no clues, check rim width. If the tyre is too wide for the rim, centre wear could result. See Fig.C(vi)

If tyre wear is severe, tyre and/or rim replacement is recommended. In cases of minimal wear, a slight reduction of tyre pressure may solve the problem.

#### INFLATION RELATED RAPID WEAR - RADIAL TYRES

Because of the steel belt running under the tread that reinforces the whole tread, radial ply tyres do not show the same symptoms as bias ply tyres.

Underinflation will show up as rapid flat wear.

Over inflation will show up as minor centre wear but as harsh ride will be the major symptom.

#### EFFECT OF INFLATION PRESSURE ON TYRE LIFE

