VIPAL®
TYRE REPAIRS

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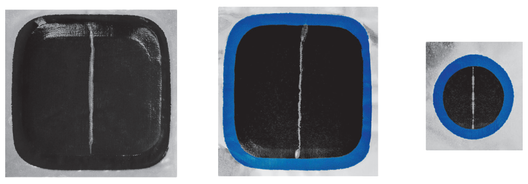
TYRE REPAIR APPLICATION CHART

Commercial Vehicles and Passenger Cars

RAC - Passenger Cars

Radial Tyres	Dimensions	Speed Index	C x R (mm)	ØO (mm)	ØB (mm)	RAC
	145	S - T	10 X 15	6	10	10
	155		15 X 30	-	12	12
	165		20 X 35	8	20	14
	175	U - H	6 X 6	3	6	10
	185		10 X 10	6	10	14
	195	≥V	3 X 3	3	6	10
	205		-	-	8	15

VF AND VFP - Commercial Vehicles and Passenger Cars

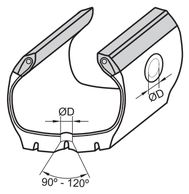


Radial and Bias Ply Tyres	Damages	VF/VFP	
	mm		
	3	-	3
	6	-	6
	8	-	8

• VF/VFP application on passenger vehicles: speed index T on damage up to 8mm, H-V up to 6mm and ≥ V up to 3mm.

VD AND VDL - Commercial Vehicles and Passenger Cars

Bias Ply Tyres

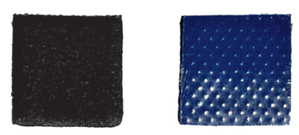


Ply Capacity	THROUGH THE TYRE PENETRATION D (max.) 5mm	10mm	15mm	25mm	30mm	35mm	50mm	70mm	75mm	100mm	125mm
_4	1	2	3	3	4	4	5	-	-	-	-
6_8	1	2	3	4	4	4	5	-	-	-	-
10_12	2	3	4	5	5	5	6	7	7	8	-
14_16	3	3	4	6	6	6	7	7	7	8	10
18_20	4	4	5	6	7	7	8	9	9	9	10
22_24	4	4	5	6	7	7	8	9	9	10	10
DAMAGES THAT DO NOT GO THROUGH THE TYRE*											
10_12	1	2	2	3	3	3	4	4	4	5	-
14_16	2	2	3	3	4	4	4	5	5	5	6
18_20	3	3	4	4	5	5	5	5	6	6	7
22_24	3	4	4	5	5	5	6	6	6	7	8

ØD - Diameter of damage measured on the 2nd external tyre ply.

*Damages that do not go through the tyre in bias ply tyres of trucks and buses require the application of repair when the damage exceeds 30mm, reaching 3 or more casing plies.

REMOPAT - Passenger Cars



Radial and Bias Ply Tyres	Ø DAMAGES (mm)		
	3	-	Remopat 36mm

Remopat is designed for repairing damages in the tread area, of a 3mm maximum, in radial and bias ply passenger car tyres retreaded via the bead to bead process.

RAC AND RA - Commercial Vehicles

RAC AND RA - COMMERCIAL VEHICLES LI max. 121

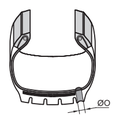
Radial Tyres

Dimensions

6.00 - 7.50 | 7R - 8.5R | 165 - 265

C x R (mm)	RA
10 x 75	33
15 x 30	31
20 x 60	33
20 x 90	35
30 x 60	35

C x R (mm)	RAC
8 x 8	14
10 x 80	40
15 x 30	20
15 x 60	22
20 x 50	22
25 x 60	40

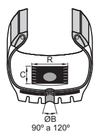


ØO (mm)	RA
10	31
12	33
15	35

ØO (mm)	RAC
5	14
8	20
10	22
15	40

ØB (mm)	RA
10	29
12	31
15	25B
20	33
25	35

ØB (mm)	RAC
6	12
12	15
14	14
15	20
25	40



C x R (mm)	RA
10 x 10	29
12 x 12	31
15 x 15	25B
20 x 30	33
25 x 40	35

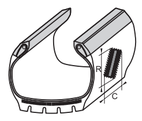
C x R (mm)	RAC
6 x 6	12
12 x 15	15
12 x 20	14
15 x 20	20
15 x 25	22
25 x 40	40

RAC AND RA - COMMERCIAL VEHICLES LI min. 122 - LI max. 158

Radial Tyres

Dimensions

8.25 - 14.75 | 9R - 13R | 205 - 285 | 295 - 385



C x R (mm)	RA
10 x 140	37
12 x 30	31
12 x 75	33
15 x 130	37
15 x 150	39
20 x 135	41
20 x 90	35
25 x 120	37
25 x 140	43
30 x 100	39
35 x 80	37
40 x 85	39
40 x 90	41
45 x 90	43

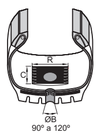
C x R (mm)	RAC
4 x 80	24
6 x 10	20
8 x 60	24
10 x 30	22
10 x 70	26
10 x 110	42
12 x 60	26
20 x 60	40
20 x 135	44
25 x 80	42
25 x 140	46
40 x 80	44
45 x 90	46

ØO (mm)	RA
10	31
15	33
20	35
25	37
30	39
35	41
40	43

ØO (mm)	RAC
8	24
10	26
15	40
20	42
25	44
40	46

ØB (mm)	RA
10	29
15	31
18	25B
20	33
25	35B
30	35
34	37
38	39
42	41
42	45B
46	43

ØB (mm)	RAC
4	10
6	12
8	14
10	15
12	20
15	22
20	25
20	40
30	42
40	35
40	44
45	45
45	46



C x R (mm)	RA
10 x 10	29
10 x 15	31
18 x 25	25B
20 x 30	33
25 x 35	35B
30 x 50	35
35 x 70	37
40 x 60	45B
40 x 85	39
40 x 90	41
45 x 90	43

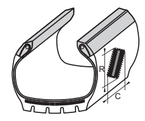
C x R (mm)	RAC
10 x 12	15
10 x 25	22
12 x 20	20
20 x 35	25
20 x 40	40
30 x 50	42
40 x 60	35
40 x 65	45
40 x 70	44
40 x 80	46

RAC AND RA - COMMERCIAL VEHICLES LI min. 159 - LI max. 178

Radial Tyres

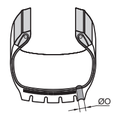
Dimensions

14.00 - 16.00 | 15R - 24R | 375 - 495



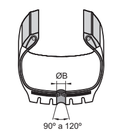
C x R (mm)	RA
10 x 20	31
10 x 50	33
10 x 90	35
10 x 160	39
12 x 110	37
15 x 120	39
15 x 170	43
20 x 60	35
20 x 130	41
25 x 70	37
30 x 80	39
40 x 80	41
45 x 100	43

C x R (mm)	RAC
10 x 100	42
12 x 30	40
20 x 60	42
20 x 130	44
30 x 60	44
30 x 140	46
45 x 100	46



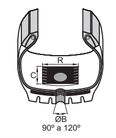
ØO (mm)	RA
8	31
10	33
15	35
20	37
25	39
30	43

ØO (mm)	RAC
10	40
20	42
25	44
30	46



ØB (mm)	RA
12	31
15	33
18	25B
20	35
25	35B
30	39
35	41
40	45B

ØB (mm)	RAC
10	20
15	25
15	40
20	42
30	44
35	35
38	45
40	46



C x R (mm)	RA
12 x 12	31
15 x 25	33
18 x 18	25B
20 x 30	35
25 x 25	35B
25 x 40	37
30 x 50	39
35 x 60	41
40 x 40	45B
40 x 70	43

C x R (mm)	RAC
10 x 15	20
15 x 25	25
15 x 30	40
20 x 30	42
30 x 55	44
35 x 50	35
40 x 70	46

For the same size of damage, there can be indications of different sizes of RAC patches. The RAC paches that have ending "5" are destined for damages centralized in the tread. The others are for damages where the patch´s edge is close to the shoulders. In the RA line, the patches that have ending "B" are indicated for damages in the center of the tread.

DECLARATION FOR REPAIR APPLICATION

In order to guide the application of tyre repairs, Vipal Rubber certifies that all materials for tyre repairing provided by the company follow the characteristics required by the Mercosul NM225/2000 norm, which regulates the tyre retreading process and are effective via INMETRO, the European Union regulations ECE-R 108 (passenger car tyres) and ECE-R 109 (commercial vehicle tyres). This declaration is valid as long as all technical orientations are followed according to Vipal's Repair Handbooks and/or use instructions accompanying products. The permitted repair area must be respected, as well as the maximum damage limit, and the maximum amount of repairs per tyre. Repairs should never be overlapped. When these conditions are respected, Vipal's Radial and Bias Ply repairs support up to twice as much pressure than that established by the tyre manufacturer. See the chart with the specifications of patch amounts per tyre.

Norm Mercosul NM - 225 - OCT/2000

Types of tyre categories		Maximum amount of repairs allowed per tyre
BIAS PLY	Automobiles and light-weight trailers.	2
	Mixed use pick-up trucks and trailers	4
	Trucks, buses, microbuses, and trailers/semitrailers < 9.00-20.	6
	≥ 9.00-20.	6
RADIAL	Automobiles and lightweight trailers. Speed index S and T.	2
	Speed index H and above.	1
	Pick-up trucks or their derivatives and trailers.	6
	Trucks and buses and their derivatives and trailers with sectional height below or equal to 230 mm.	6
	Trucks and buses and their derivatives and trailers with sectional height above 230 mm.	6

ATTENTION!

These application charts are valid globally for Vipal repairs. The magnitude of the damages in the charts is the result of on-field experiences. The applicator must always analyze whether the tyre's physical conditions allow safe repairing. Inspecting the casing is essential for checking for other non-apparent damages. Maximum limits of damages must be respected. Repairs with dimensions over the ones estimated in this chart, which may be allowed by law in some countries, are not taken into consideration here. The responsability over the repair's quality falls into the hands of the applicator, who judges and increases or reduces the values if necessary, always respecting local legislation. The correct methods of application and mounting must always be considered, as well as the tyre's manufacturer instructions of repair.

NOMENCLATURE

C - Circumference - Damage size measured in the direction of tyre rotation.
R - Radial - Damage size measured from bead to bead (Radial).
ØB - Tread - Diameter of through the tyre penetration in the tread.
ØO - Shoulder - Diameter of through the tyre penetration in tyre's shoulder.
Through the tyre penetrations in the tread area of radial tyres in trucks and buses that reach the working belt closer to the casing ply, with measure over 8mm, always require a repair.

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