



INDO GERMAN INDUSTRIES

Manufacturer & Exporter
of Diesel Engine Spares

Since 1977

402, One Dwarka
Tagore Road, GPO
Box 219, Rajkot 360002
Gujarat, INDIA

91+281+2475902

igi@indogermanind.com

www.indogermanind.com

ISO 9001:2015

HARDNESS CONVERSION CHART

Rockwell						Rockwell Superficial				Brinell		Vickers	Shore
HRA	HRB	HRC	HRD	HRE	HRF	15-N	30-N	45-N	30-T	3000 kg	500 kg		
86.5	---	70	78.5	---	---	94	86	77.6	---	---	---	1076	101
86	---	69	77.7	---	---	93.5	85	76.5	---	---	---	1044	99
85.6	---	68	76.9	---	---	93.2	84.4	75.4	---	---	---	940	97
85	---	67	76.1	---	---	92.9	83.6	74.2	---	739	---	900	95
84.5	---	66	75.4	---	---	92.5	82.8	73.2	---	722	---	865	92
83.9	---	65	74.5	---	---	92.2	81.9	72	---	705	---	832	91
83.4	---	64	73.8	---	---	91.8	81.1	71	---	688	---	800	88
82.8	---	63	73	---	---	91.4	80.1	69.9	---	705	---	772	87
82.3	---	62	72.2	---	---	91.1	79.3	68.8	---	688	---	746	85
81.8	---	61	71.5	---	---	90.7	78.4	67.7	---	670	---	720	83
81.2	---	60	70.7	---	---	90.2	77.5	66.6	---	654	---	697	81
80.7	---	59	69.9	---	---	89.8	76.6	65.5	---	634	---	674	80
80.1	---	58	69.2	---	---	89.3	75.7	64.3	---	615	---	653	78
79.6	---	57	68.5	---	---	88.9	74.8	63.2	---	595	---	633	76
79	---	56	67.7	---	---	88.3	73.9	62	---	577	---	613	75
78.5	120	55	66.9	---	---	87.9	73	60.9	---	560	---	595	74
78	120	54	66.1	---	---	87.4	72	59.8	---	543	---	577	72
77.4	119	53	65.4	---	---	86.9	71.2	58.6	---	525	---	560	71
76.8	119	52	64.6	---	---	86.4	70.2	57.4	---	500	---	544	69
76.3	118	51	63.8	---	---	85.9	69.4	56.1	---	487	---	528	68
75.9	117	50	63.1	---	---	85.5	68.5	55	---	475	---	513	67
75.2	117	49	62.1	---	---	85	67.6	53.8	---	464	---	498	66
74.7	116	48	61.4	---	---	84.5	66.7	52.5	---	451	---	484	64
74.1	116	47	60.8	---	---	83.9	65.8	51.4	---	442	---	471	63
73.6	115	46	60	---	---	83.5	64.8	50.3	---	432	---	458	62
73.1	115	45	59.2	---	---	83	64	49	---	421	---	446	60
72.5	114	44	58.5	---	---	82.5	63.1	47.8	---	409	---	434	58
72	113	43	57.7	---	---	82	62.2	46.7	---	400	---	423	57
71.5	113	42	56.9	---	---	81.5	61.3	45.5	---	390	---	412	56
70.9	112	41	56.2	---	---	80.9	60.4	44.3	---	381	---	402	55
70.4	112	40	55.4	---	---	80.4	59.5	43.1	---	371	---	392	54
69.9	111	39	54.6	---	---	79.9	58.6	41.9	---	362	---	382	52
69.4	110	38	53.8	---	---	79.4	57.7	40.8	---	353	---	372	51
68.9	110	37	53.1	---	---	78.8	56.8	39.6	---	344	---	363	50
68.4	109	36	52.3	---	---	78.3	55.9	38.4	---	336	---	354	49
67.9	109	35	51.5	---	---	77.7	55	37.2	---	327	---	345	48



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HRA	HRB	HRC	HRD	HRE	HRF	15-N	30-N	45-N	30-T	3000 kg	500 kg		
67.4	108	34	50.8	---	---	77.2	54.2	36.1	---	319	---	336	47
66.8	108	33	50	---	---	76.6	53.3	34.9	---	311	---	327	46
66.3	107	32	49.2	---	---	76.1	52.1	33.7	---	301	---	318	44
65.8	106	31	48.4	---	---	75.6	51.3	32.5	---	294	---	310	43
65.3	105	30	47.7	---	---	75	50.4	31.3	---	286	---	302	42
64.7	104	29	47	---	---	74.5	49.5	30.1	---	279	---	294	41
64.3	104	28	46.1	---	---	73.9	48.6	28.9	---	271	---	286	41
63.8	103	27	45.2	---	---	73.3	47.7	27.8	---	264	---	279	40
63.3	103	26	44.6	---	---	72.8	46.8	26.7	---	258	---	272	39
62.8	102	25	43.8	---	---	72.2	45.9	25.5	---	253	---	266	38
62.4	101	23	42.1	---	---	71.6	45	24.3	---	247	---	260	37
62	100	23	42.1	---	---	71	44	23.1	82	240	201	254	36
61.5	99	22	41.6	---	---	70.5	43.2	22	81.5	234	195	248	35
61	98	21	40.9	---	---	69.9	42.3	20.7	81	228	189	243	35
60.5	97	20	40.1	---	---	69.4	41.5	19.6	80.5	222	184	238	34
59	96	18	---	---	---	---	---	---	80	216	179	230	33
58	95	16	---	---	---	---	---	---	79	210	175	222	32
57.5	94	15	---	---	---	---	---	---	78.5	205	171	213	31
57	93	13	---	---	---	---	---	---	78	200	167	208	30
56.5	92	12	---	---	---	---	---	---	77.5	195	163	204	29
56	91	10	---	---	---	---	---	---	77	190	160	196	28
55.5	90	9	---	---	---	---	---	---	76	185	157	192	27
55	89	8	---	---	---	---	---	---	75.5	180	154	188	26
54	88	7	---	---	---	---	---	---	75	176	151	184	26
53.5	87	6	---	---	---	---	---	---	74.5	172	148	180	26
53	86	5	---	---	---	---	---	---	74	169	145	176	25
52.5	85	4	---	---	---	---	---	---	73.5	165	142	173	25
52	84	3	---	---	---	---	---	---	73	162	140	170	25
51	83	2	---	---	---	---	---	---	72	159	137	166	24
50.5	82	1	---	---	---	---	---	---	71.5	156	135	163	24
50	81	0	---	---	---	---	---	---	71	153	133	160	24
49.5	80	---	---	---	---	---	---	---	70	150	130	---	---
49	79	---	---	---	---	---	---	---	69.5	147	128	---	---
48.5	78	---	---	---	---	---	---	---	69	144	126	---	---
48	77	---	---	---	---	---	---	---	68	141	124	---	---
47	76	---	---	---	---	---	---	---	67.5	139	122	---	---
46.5	75	---	---	---	99.5	---	---	---	67	137	120	---	---



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HRA	HRB	HRC	HRD	HRE	HRF	15-N	30-N	45-N	30-T	3000 kg	500 kg		
46	74	---	---	---	99	---	---	---	66	135	118	---	---
45.5	73	---	---	---	98.5	---	---	---	65.5	132	116	---	---
45	72	---	---	---	98	---	---	---	65	130	114	---	---
44.5	71	---	---	100	97.5	---	---	---	64.2	127	112	---	---
44	70	---	---	99.5	97	---	---	---	63.5	125	110	---	---
43.5	69	---	---	99	96	---	---	---	62.8	123	109	---	---
43	68	---	---	98	95.5	---	---	---	62	121	107	---	---
42.5	67	---	---	97.5	95	---	---	---	61.4	119	106	---	---
42	66	---	---	97	94.5	---	---	---	60.5	117	104	---	---
41.8	65	---	---	96	94	---	---	---	60.1	116	102	---	---
41.5	64	---	---	95.5	93.5	---	---	---	59.5	114	101	---	---
41	63	---	---	95	93	---	---	---	58.7	112	99	---	---
40.5	62	---	---	94.5	92	---	---	---	58	110	98	---	---
40	61	---	---	93.5	91.5	---	---	---	57.3	108	96	---	---
39.5	60	---	---	93	91	---	---	---	56.5	107	95	---	---
39	59	---	---	92.5	90.5	---	---	---	55.9	106	94	---	---
38.5	58	---	---	92	90	---	---	---	55	104	92	---	---
38	57	---	---	91	89.5	---	---	---	54.6	102	91	---	---
37.8	56	---	---	90.5	89	---	---	---	54	101	90	---	---
37.5	55	---	---	90	88	---	---	---	53.2	99	89	---	---
37	54	---	---	89.5	87.5	---	---	---	52.5	---	87	---	---
36.5	53	---	---	89	87	---	---	---	51.8	---	86	---	---
36	52	---	---	88	86.5	---	---	---	51	---	85	---	---
35.5	51	---	---	87.5	86	---	---	---	50.4	---	84	---	---
35	50	---	---	87	85.5	---	---	---	49.5	---	83	---	---
34.8	49	---	---	86.5	85	---	---	---	49.1	---	82	---	---
34.5	48	---	---	85.5	84.5	---	---	---	48.5	---	81	---	---
34	47	---	---	85	84	---	---	---	47.7	---	80	---	---
33.5	46	---	---	84.5	83	---	---	---	47	---	79	---	---
33	45	---	---	84	82.5	---	---	---	46.2	---	79	---	---
32.5	44	---	---	83.5	82	---	---	---	45.5	---	78	---	---
32	43	---	---	82.5	81.5	---	---	---	44.8	---	77	---	---
31.5	42	---	---	82	81	---	---	---	44	---	76	---	---
31	41	---	---	81.5	80.5	---	---	---	43.4	---	75	---	---
30.8	40	---	---	81	79.5	---	---	---	43	---	74	---	---
30.5	39	---	---	80	79	---	---	---	42.1	---	74	---	---
30	38	---	---	79.5	78.5	---	---	---	41.5	---	73	---	---

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HRA	HRB	HRC	HRD	HRE	HRF	15-N	30-N	45-N	30-T	3000 kg	500 kg		
29.5	37	---	---	79	78	---	---	---	40.7	---	72	---	---
29	36	---	---	78.5	77.5	---	---	---	40	---	71	---	---
28.5	35	---	---	78	77	---	---	---	39.3	---	71	---	---
28	34	---	---	77	76.5	---	---	---	38.5	---	70	---	---
27.8	33	---	---	76.5	75.5	---	---	---	37.9	---	69	---	---
27.5	32	---	---	76	75	---	---	---	37.5	---	68	---	---
27	31	---	---	75.5	74.5	---	---	---	36.6	---	68	---	---
26.5	30	---	---	75	74	---	---	---	36	---	67	---	---
26	29	---	---	74	73.5	---	---	---	35.2	---	66	---	---
25.5	28	---	---	73.5	73	---	---	---	34.5	---	66	---	---
25	27	---	---	73	72.5	---	---	---	33.8	---	65	---	---
24.5	26	---	---	72.5	72	---	---	---	33.1	---	65	---	---
24.2	25	---	---	72	71	---	---	---	32.4	---	64	---	---
24	24	---	---	71	70.5	---	---	---	32	---	64	---	---
23.5	23	---	---	70.5	70	---	---	---	31.1	---	63	---	---
23	22	---	---	70	69.5	---	---	---	30.4	---	63	---	---
22.5	21	---	---	69.5	69	---	---	---	29.7	---	62	---	---
22	20	---	---	68.5	68.5	---	---	---	29	---	62	---	---
21.5	19	---	---	68	68	---	---	---	28.1	---	61	---	---
21.2	18	---	---	67.5	67	---	---	---	27.4	---	61	---	---
21	17	---	---	67	66.5	---	---	---	26.7	---	60	---	---
20.5	16	---	---	66.5	66	---	---	---	26	---	60	---	---
20	15	---	---	65.5	65.5	---	---	---	25.3	---	59	---	---
---	14	---	---	65	65	---	---	---	24.6	---	59	---	---
---	13	---	---	64.5	64.5	---	---	---	23.9	---	58	---	---
---	12	---	---	64	64	---	---	---	23.5	---	58	---	---
---	11	---	---	63.5	63.5	---	---	---	22.6	---	57	---	---
---	10	---	---	62.5	63	---	---	---	21.9	---	57	---	---
---	9	---	---	62	62	---	---	---	21.2	---	56	---	---
---	8	---	---	61.5	61.5	---	---	---	20.5	---	56	---	---
---	7	---	---	61	61	---	---	---	19.8	---	56	---	---
---	6	---	---	60.5	60.5	---	---	---	19.1	---	55	---	---
---	5	---	---	60	60	---	---	---	18.4	---	55	---	---
---	4	---	---	59	59.5	---	---	---	18	---	55	---	---
---	3	---	---	58.5	59	---	---	---	17.1	---	54	---	---
---	2	---	---	58	58	---	---	---	16.4	---	54	---	---
---	1	---	---	57.5	57.5	---	---	---	15.7	---	53	---	---