SAFETY PRECAUTIONS CONCERNING MOUNTING, DEMOUNTING AND OPERATION

WARNING

Tire and rim servicing can be dangerous, and should be performed only by trained personnel using proper tools and procedures. Failure to comply with these procedures may result in faulty positioning of the tire and/or rim, and cause the assembly to burst with explosive force, sufficient to cause serious physical injury or death.

DEMOUNTING

1. BEFORE DEMOUNTING

- Always exhaust all air from a single tire and from both tires of a dual assembly prior to removing any wheel components such as nuts and rim clamps.
- A broken rim part under pressure can blow apart and cause serious injury or death.
- Make sure to remove valve core to exhaust all air from the tire. Remove both cores from a dual assembly. (When you remove the wheel lugs, if the tire is still under pressure, the assembly may fly apart.)
- Check the valve stem by running a piece of wire through the stem to make sure it is not plugged. (Foreign material may clog the valve stem during deflation or ice may form as the air leaves the tire, clogging the valve stem.)

2. DURING DEMOUNTING

- Demounting tools apply pressure to rim flanges to unseat tire beads, and keep your fingers clear. Always stand to one side and hold the tool with one hand when you apply hydraulic pressure. (If the tool slips off, it can fly with enough force to cause serious injury or death.)
- Do not use tools in the vicinity of the flange butt weld.

3. AFTER DEMOUNTING

- Clean rims and repaint to stop detrimental effects of corrosion and facilitate checking and tire mounting. Be very careful to clean all dirt and rust from the lock ring and gutter. This is important to secure the lock ring in its proper position. A filter on the air inflation equipment to remove the moisture from the air line helps prevent corrosion. The filter should be checked periodically to see that it is working properly. (Parts must be clean for a proper fit - particularly the gutter section which holds the lock ring in its proper position.)

MOUNTING

1. BEFORE MOUNTING

- Check rim components for cracks. Replace all cracked, badly worn, damaged and severely rusted component with new parts of the same size and type. When a components is in doubt, replace it. (Parts that are cracked, damaged or excessively corroded are weakened. Bent or repaired parts may not engage properly.)
- Do not, under any circumstance, attempt to rework, weld, heat or braze any rim component that is cracked, broken or damaged. Replace with a new part that is not cracked, broken or damaged and which is of the same size and type. (Heating may weaken a part to extent that it is unable to withstand forces of inflation or operation.)
- Check type of rim and make sure all parts of such rim are being assembled properly. Follow instruction manual of rim or ask your distributor if you have any doubts.(Mismatched parts may appear to fit, but when the tire is inflated they may fly apart with explosive force.)
- Mixing parts of one type rim with those of another is potentially dangerous. Always check rim with manufacturer for approval.
- Remove rust, dirt and other foreign matter from the rim surface, particularly on the bead seats and O-ring slot.
- Clean the inside of the tire.
- Make sure tube and flap are correct and not damaged for tube type tires.
- Always prepare a new O-ring for tubeless tires.
- Do not reinflate a tire that has been run flat or has been run at 80% or less of its recommended operating pressure, or when there is obvious or suspected damage to the tire or wheel components. (Components may have been damaged or dislocated during the time the tire was run flat or seriously under-inflated.)

2. DURING MOUNTING AND INFLATION

- Do not try to seat rings or other components by hammering while tire is inflated or partially inflated.
- Double check to make sure all components are properly seated prior to inflation.
- Do not inflate tire before all components are properly in place. Place in safety cage or use a restraining device and inflate to approximately 0.35 kg/ cm^2 (5 psi), recheck components for proper assembly. Observe that O-ring does not roll out of its groove. If assembly is not performed properly, deflate and correct. Never hammer or an inflated on partially inflated tire/rim assembly. If assembly is correct at approximately 0.35 kg/cm^2 (5 psi), continue to inflate fully to seat the tire beads.
- Never sit or stand in front of a tire and rim assembly that is being inflated. Always use a clip-on chuck with a sufficient length of hose to permit the person inflating the tire to stand clear of the potential trajectory of the wheel components, and use an in-line valve with gauge or a pressure regulator preset to a desired value when inflating a tire. When a tire is in a restraining device, do not lean any part of your body or equipment on or against the restraining device. (If parts are improperly installed they may fly apart with explosive force.)
- Never attempt to weld on an inflated tire/rim assembly or on a rim assembly with a deflated tire. (Heat from welding will cause a sudden, drastic increase in pressure, resulting in an explosion with the force of a bomb. Deflated tires can catch fire inside the air chamber.)

3. AFTER INFLATION

- Make sure no air leakage can be suspected, especially in tubeless tires.

OPERATION

- Do not use under-inflated tires.
- Do not bleed or reduce air pressure to compensate for the increase in pressure resulting from operation.
- Do not use under-size rims. Use recommended rim for the tire.
- Do not overload or over-inflate tire/rim assemblies. Check for adequate rim strength if special operating conditions are required. (Excessive overload can cause damage to the tire and rim assembly.)
- Never run a vehicle on one tire of a dual assembly. (The carrying capacity of the single tire and rim is dangerously exceeded, and operating a vehicle in this manner can result in damage to the rim and tire or cause a tire fire.)
- Never use a tube in a tubeless tire/rim assembly where the rim is suspected of air leakage. (Loss of air pressure through fatigue cracks or other fractures in a tubeless rim warns you of a potential rim failure. This safety feature is lost when tubes are used with leaking rims. Continued use may cause the rim to burst with explosive force.)
- Always inspect rims and wheels for damage during tire checks. (Early detection of potential rim failure may prevent serous injury.)
- Never add or remove an attachment or otherwise modify a rim (Especially by heating, welding or brazing) unless the tire has been removed and approval has been received from the rim manufacturer. (Modification or heating of a rim or one of its parts may weaken it so that it cannot withstand forces created by inflation or operation.)
- Never mount bias tire and radial tire on the same axle. Follow vehicle manufacturer's recommendation.
- Never use tire under unintended service conditions for the tire. Please consult YOKOHAMA if vehicle operation requires specialized tire fitment.

Specifications subject to change without notice.

08, 2017
CE226
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OFF-THE-ROAD TIRES HANDBOOK

GET YOUR JOB DONE ANYWHERE IN THE WORLD

Yokohama City, 1917 marked the birth
of YOKOHAMA RUBBER Co., Ltd.
With the aim to develop high-performance
rubber domestically, YOKOHAMA RUBBER
set a course to support Japan's modernization
and contribute to the country's position
in the global market.

With the spirit that spearheaded a revolution,
YOKOHAMA developed innovative products
and technologies that the world embraced.
One cog in a global machine that continues
to bring the world new and innovative products.

And the future holds a tapestry of innovations,
spun with technology and history
that is exclusively YOKOHAMA.

PIONEERING YOKOHAMA

YOKOHAMA

TIMELINE

1910s
- Yokohama Rubber Established (1917)


Hiranuma Plant


Hama Town

1920s
- Japan's first corded tire developed in Hama Town
- The Hiranuma Plant destroyed in the Great Kanto Earthquake

1930s
- The first tire was produced at the Yokohama plant


Yokohama Plant

1940s
- Yokohama plant is destroyed by the allied forces

1950s
- Construction of Hiratsuka plant begins
- Bus and truck tire development (Hama King)
- Develop Japan's first nylon corded tire
- Nylon corded airplane tires produced domestically


Hiratsuka Plant

1960s
- Truck and Bus High-Speed tire debut (High-speed Y98)
- Developed the Y-490 drag-racing slicks
- Developed Japan's first privately produced jet airplane tires

1970s
- Launched sales of G.T. SPECIAL SEALEX, offering automatic puncture-sealing—a first for Japan
- Began sales of Japan's first truck and bus steel snow radial
- Rally cars with G.T. SPECIAL tires won the Safari Rally Championship and the Southern Cross Rally—winning the latter five years in a row
- Launched sales of ADVAN HF for passenger cars
- Launched worldwide development of truck tires (40.00-57 60PR/200t Dump Truck Tire)


SEALEX


ADVAN HF


ASPEC


GRANDPRIX

1980s
- Launched the ASPEC GRANDPRIX
- Launched the ADVAN HF Type-D, half slick half unsymmetrical patterned tire
- Became the exclusive supplier of official tires for the 1st Macao F3 Grand Prix
- Approved for use with the Porsche 911
- Launch of the Truck/Bus STEM series radial, with performance based on the "load-state general performance theory"

1990s
- Launched a new tread without straight grip on the ADVAN NEOVA AD05/AD06
- Launched the GEOLANDAR A/T for recreational vehicles
- Launched the first of the fuel-efficient DNA series domestically


GEOLANDAR

2000s
- Places in 24 Hours of Le Mans GT Class
- Team TAISON wins the 24 Hours of Le Mans Prototype Class with ADVAN Tires
- Established ADVAN worldwide as YOKOHAMA's global flagship brand
- Launched the truck/bus air-pressure monitoring system HiTES
- Launched the fuel-efficient, low-maintenance ZEN series

HiTES

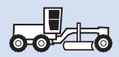
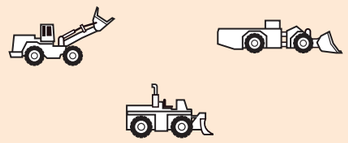
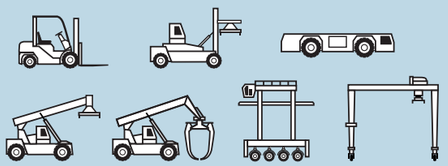
2010s
- Launched the first of the BluEarth series, a people-friendly and eco-friendly, fuel-efficient passenger-car tire
- Introduced the development of the aerodynamic points, "Dimple Side Design"
- Placed in the Pike's Peak International Hill Climb
- Announced the AERO-Y, YOKOHAMA's technology in an electric concept vehicle
- The Outside Fin is introduced at Tokyo Motor Show as a study in aerodynamics
- Launches the new SPIRALOOP belt technology in North America, offering a flat single tire for trucks that reduces rolling resistance


Pike's Peak Entry

Table of Contents

■TRA Classification of OFF-THE-ROAD TIRES

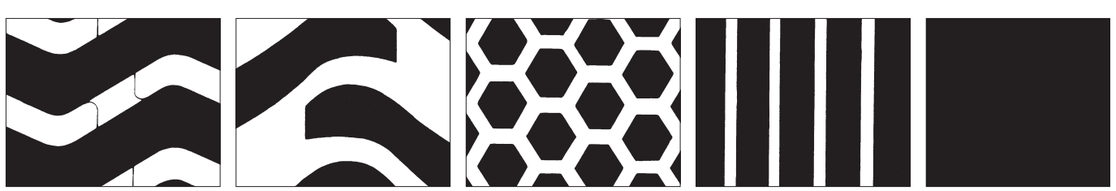
YOKOHAMA OFF-THE-ROAD TIRES are classified as follows by the Tire and Rim Association (TRA).

Application	TRA Code	Tread Type	Vehicles
Earthmover	E-2 E-3 E-4 E-7	Traction Regular Rock Regular Rock Deep Flotation	
Grader	G-2 G-3	Traction Regular Rock Regular	
Loader & Dozer	L-2 L-3 L-4 L-5 L-4S L-5S	Traction Regular Rock Regular Rock Deep Rock Extra Deep Smooth Deep Smooth Extra Deep	
Compactor	C-1 C-2	Smooth Grooved	
Mobile Crane	-	-	
Industrial	IND-3 IND-4 IND-5	Traction Regular Deep Extra Deep	

Caution: Never replace a tire mounted on a vehicle with any tire designed for a different type of vehicle.
For example, you should never place an earthmover tire on a loader.

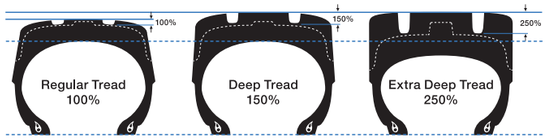
■Tread Pattern

The tread pattern is designed to produce varying degrees of traction, cut resistance, flotation, wear and heat resistance. Selection of the proper OFF-THE-ROAD TIRES depends on the job and the conditions.
For example, different tread patterns are used to produce maximum traction or flotation on sand, mud and rock. There are five basic tread patterns: rock, traction, block, rib and smooth.



■Tread Thickness

According to the Tire and Rim Association (TRA), there are three general classifications for tread thickness for OFF-THE-ROAD TIRES : regular, deep and extra deep. Deep and extra deep are 1.5 and 2.5 times thicker than regular, respectively. The thicker treads have greater cut and wear resistance.

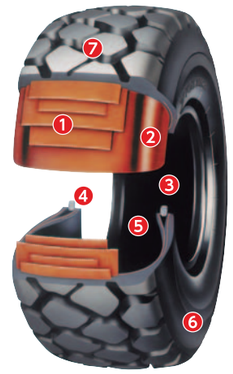


Regular Tread 100%	Deep Tread 150%	Extra Deep Tread 250%
E-2/E-3 G-2/G-3 L-2/L-3 IND-3	E-4 L-4/L-4S IND-4	L-5/L-5S IND-5

Although thicker treads give greater wear and cut resistance, they also generate and retain more heat. Accordingly, work conditions for thick tread tires should be thoroughly evaluated to prevent heat separation and other heat related damage. Deep and extra deep tread tires have almost the same overall diameter which is larger than regular tread tires. When replacing regular tread tires with deep or extra deep tread tires, the larger overall diameters of the thicker tread tires should be taken into consideration.

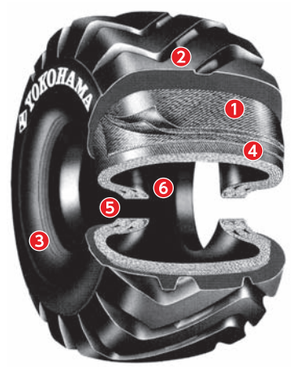
■Construction of OFF-THE-ROAD TIRES

Structural Diagram of OFF-THE-ROAD RADIAL TIRES



① Belt
② Carcass
③ Inner Liner
④ Bead Wire
⑤ Chafer
⑥ Sidewall
⑦ Tread

Structural Diagram of OFF-THE-ROAD BIAS TIRES

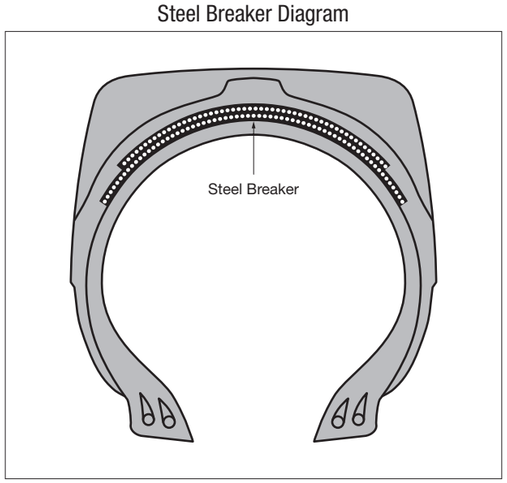


① Breaker
② Tread
③ Sidewall
④ Carcass
⑤ Bead
⑥ Inner

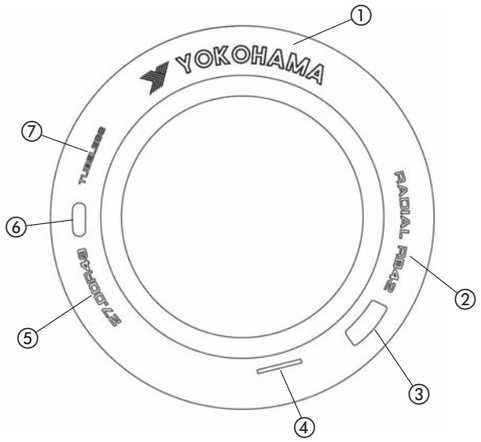
Steel Breakers(Bias Tires)

The steel breaker tire has steel cord breakers that give it very high cut resistance. It is specially useful where sharp rock is a problem, and is applicable to loader, dozer, dump truck and occasionally earthmover type tires. The adhesiveness between the steel cord and rubber is, however, more susceptible to heat damage than that of nylon cord and rubber. Accordingly, steel breaker tires should not be subjected to conditions where heat generation is great. Because of the difficulty involved in retreading steel breaker tires, they should not be used for jobs where more easily retreaded tires can be used.

Steel Breaker Diagram



■Tire Marking(Radial)



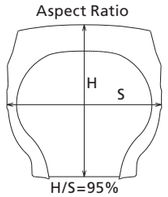
① Brand Name
② Tread Pattern Name
③ Tire Specification Code
④ Serial Number
⑤ Tire Size
⑥ Star Mark / Load Index & Speed Symbol
⑦ Tubeless or Tube Type

■Size Identification and Aspect Ratio

Narrow Base Tires

27.00 R 49 ☆☆ (Radial)

- Star Mark
- Rim Diameter (inches)
- Radial Construction
- Section Width (inches)



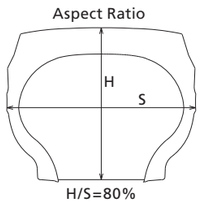
27.00-49 48PR (Bias)

- Ply Rating
- Rim Diameter (inches)
- Section Width (inches)

Wide Base Tires

29.5 R 25 ☆☆ (Radial)

- Star Mark
- Rim Diameter (inches)
- Radial Construction
- Section Width (inches)



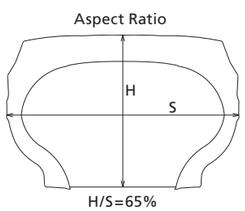
29.5-25 34PR (Bias)

- Ply Rating
- Rim Diameter (inches)
- Section Width (inches)

Super Wide Base Tires

750/65 R 25 ☆ (Radial)

- Star Mark
- Rim Diameter (inches)
- Radial Construction
- Aspect Ratio (65%)
- Section Width (mm)



45/65-45 58PR (Bias)

- Ply Rating
- Rim Diameter (inches)
- Aspect Ratio (65%)
- Section Width (inches)

Other Tires

445/95 R 25 174 F (Radial)

- Speed Symbol
- Load Index
- Rim Diameter (inches)
- Radial Construction
- Aspect Ratio (95%)
- Section Width (mm)

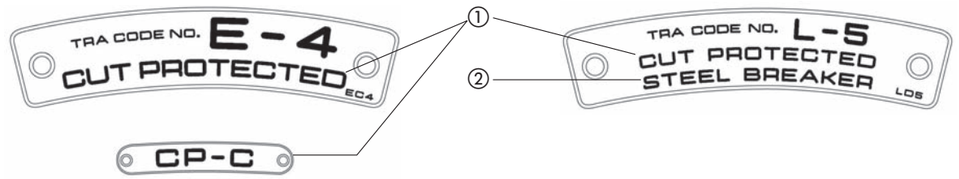
42×17-20 10PR (Bias)

- Ply Rating
- Rim Diameter (inches)
- Section Width (inches)
- Overall Diameter (inches)

Widths of narrow and wide base tires of the same diameter are shown below:

Narrow Base Tires	Wide Base Tires
13.00	15.5
14.00	17.5
16.00	20.5
18.00	23.5
21.00	26.5
24.00	29.5
27.00	33.5
30.00	37.5

■Tire Specification Code



① Tire Specification Code

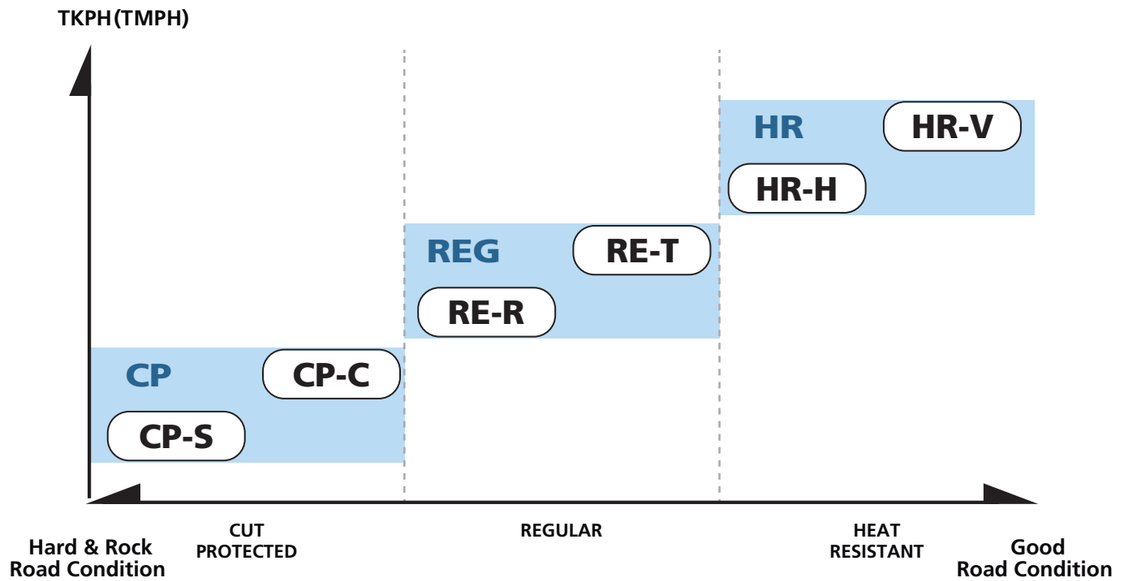
Code Type I	Specification
CUT PROTECTED	Cut Resistance Type
REGULAR	Regular (Standard) Type
HEAT RESISTANT	Heat Resistance Type

Code Type II	Specification
CP-S	Special Cut Resistance Type
CP-C	Cut Resistance Type
RE-R	Regular (Standard) Type
RE-T	Regular (Standard) Type With Heat Resistant
HR-H	Heat Resistance Type
HR-V	Special Heat Resistance Type

② Special Code

Code	Specification
FOR SDC RIM	Semi-Drop Center Rim Use Only
STEEL BREAKER	Steel Breaker For Bias Tires
WIDE STEEL BREAKER	Wide Steel Breaker For Bias Tires

Positioning Map of Tire Specification Code

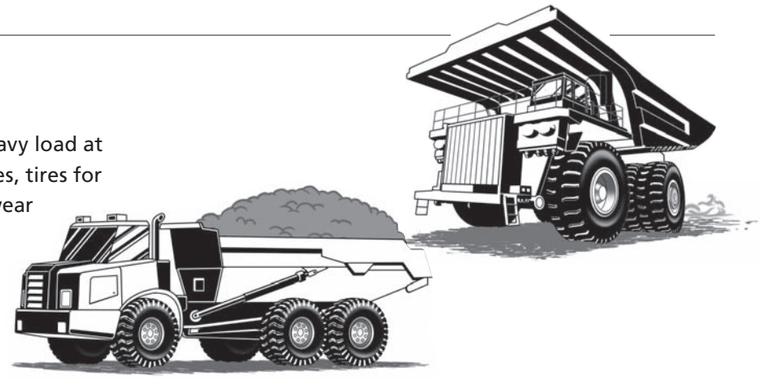


■Tires by Type of Vehicle

YOKOHAMA OFF-THE-ROAD TIRES are also classified by type of vehicle and application suitable for usage.

Dump Trucks
(TRA Codes E-2, E-3, E-4 and E-7)

Since dump trucks must travel under heavy load at high speeds over relatively long distances, tires for dump trucks must have high heat and wear resistance. High resistance to cuts is sometimes also necessary.

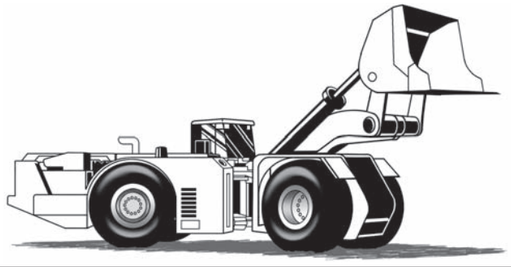


Scrapers
(TRA Codes E-2, E-3, E-4 and E-7)

Scraper tires, of which the wide base type is most common, should have the same properties as those for dump trucks. Superior flotation and traction are also occasionally required.

Front-End Loaders
(TRA Codes L-2, L-3, L-4, L-5, L-4S and L-5S)

Since front-end loaders operate on rough ground, cut and wear resistance are vital and the tires must provide stability for the loader body. Flotation and traction properties may also be necessary, depending on the working conditions. In certain cases, such as the wet and rough conditions of underground mines, the L-4S and L-5S with smooth treads are used because of their high wear and cut resistant properties.

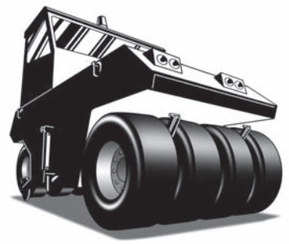


Dozers
(TRA Codes L-2, L-3, L-4 and L-5)

Since a dozer is used not only for dozing and leveling, but sometimes for pushing a motor scraper, tires with better traction than loader tires are necessary. Other requirements vary widely depending on job conditions.

Motor Graders
(TRA Codes G-1, G-2 and G-3)

The motor grader, which is used for road leveling, clearing and snow removal, needs tires that provide high traction and directional stability. Other characteristics depend on job requirements.

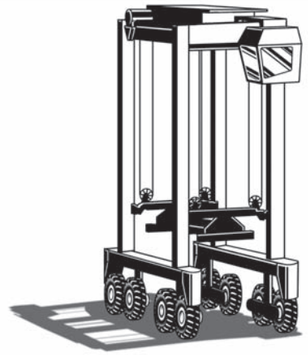


Compactors
(TRA Code C-1)

Tire rollers use wide tread tires that uniformly distribute weight because of their primary use in compacting road surfaces.

Straddle Carriers
(TRA Code IND-3)

Straddle carriers are special vehicles that are mainly used at seaport areas to carry ocean-going freight containers. These tires require extra heavy-duty performance, and wear and heat resistance, because straddle carriers operate continuously and turn frequently.

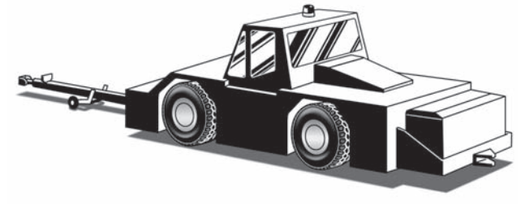


Rubber Tired Gantry Crane(RTG)
(TRA Codes IND-3 and IND-4)

Rubber tired gantry cranes are special cranes mainly used to load and unload containers at seaport areas. These tires require abrasion resistance and durability.

Towing Tractors
(TRA Code IND-3)

Towing tractors are used to move large aircraft. Thus, these tires mainly require extra traction.



Load Index

The Load Index is a international numerical code associated with the maximum load a tire can carry at the speed indicated by its Speed Symbol under service specified conditions.

LI	kg	LI	kg	LI	kg	LI	kg	LI	kg	LI	kg
0	45	50	190	100	800	150	3350	200	14000	250	60000
1	46.2	51	195	101	825	151	3450	201	14500	251	61500
2	47.5	52	200	102	850	152	3550	202	15000	252	63000
3	48.7	53	206	103	875	153	3650	203	15500	253	65000
4	50	54	212	104	900	154	3750	204	16000	254	67000
5	51.5	55	218	105	925	155	3875	205	16500	255	69000
6	53	56	224	106	950	156	4000	206	17000	256	71000
7	54.5	57	230	107	975	157	4125	207	17500	257	73000
8	56	58	236	108	1000	158	4250	208	18000	258	75000
9	58	59	243	109	1030	159	4375	209	18500	259	77500
10	60	60	250	110	1060	160	4500	210	19000	260	80000
11	61.5	61	257	111	1090	161	4625	211	19500	261	82500
12	63	62	265	112	1120	162	4750	212	20000	262	85000
13	65	63	272	113	1150	163	4875	213	20600	263	87500
14	67	64	280	114	1180	164	5000	214	21200	264	90000
15	69	65	290	115	1215	165	5150	215	21800	265	92500
16	71	66	300	116	1250	166	5300	216	22400	266	95000
17	73	67	307	117	1285	167	5450	217	23000	267	97500
18	75	68	315	118	1320	168	5600	218	23600	268	100000
19	77.5	69	325	119	1360	169	5800	219	24300	269	103000
20	80	70	335	120	1400	170	6000	220	25000	270	106000
21	82.5	71	345	121	1450	171	6150	221	25750	271	109000
22	85	72	355	122	1500	172	6300	222	26500	272	112000
23	87.5	73	365	123	1550	173	6500	223	27250	273	115000
24	90	74	375	124	1600	174	6700	224	28000	274	118000
25	92.5	75	387	125	1650	175	6900	225	29000	275	121500
26	95	76	400	126	1700	176	7100	226	30000	276	125000
27	97	77	412	127	1750	177	7300	227	30750	277	128500
28	100	78	425	128	1800	178	7500	228	31500	278	132000
29	103	79	437	129	1850	179	7750	229	32500	279	136000
30	106	80	450	130	1900	180	8000	230	33500		
31	109	81	462	131	1950	181	8250	231	34500		
32	112	82	475	132	2000	182	8500	232	35500		
33	115	83	487	133	2060	183	8750	233	36500		
34	118	84	500	134	2120	184	9000	234	37500		
35	121	85	515	135	2180	185	9250	235	38750		
36	125	86	530	136	2240	186	9500	236	40000		
37	128	87	545	137	2300	187	9750	237	41250		
38	132	88	560	138	2360	188	10000	238	42500		
39	136	89	580	139	2430	189	10300	239	43750		
40	140	90	600	140	2500	190	10600	240	45000		
41	145	91	615	141	2575	191	10900	241	46250		
42	150	92	630	142	2650	192	11200	242	47500		
43	155	93	650	143	2725	193	11500	243	48750		
44	160	94	670	144	2800	194	11800	244	50000		
45	165	95	690	145	2900	195	12150	245	51500		
46	170	96	710	146	3000	196	12500	246	53000		
47	175	97	730	147	3075	197	12850	247	54500		
48	180	98	750	148	3150	198	13200	248	56000		
49	185	99	775	149	3250	199	13600	249	58000		

Speed Symbol

The Speed Symbol indicates the speed at which the tire can carry a load corresponding to its Load Index under service specified conditions.

Speed Symbol	Speed (km/h)
A1	5
A2	10
A3	15
A4	20
A5	25
A6	30
A7	35
A8	40

Speed Symbol	Speed (km/h)
B	50
C	60
D	65
E	70
F	80
G	90

Conversion Table: Star Mark to Ply Rating

Loader			Earthmover			Grader		
Tire Size	Star Mark*	Ply Rating	Tire Size	Star Mark*	Ply Rating	Tire Size	Star Mark*	Ply Rating
17.5R25	☆	UP TO 16 PR	17.5R25	☆☆	UP TO 22 PR	14.00R24	☆	UP TO 16 PR
20.5R25	☆	UP TO 20 PR	20.5R25	☆☆	UP TO 28 PR	17.5R25	☆	UP TO 20 PR
23.5R25	☆	UP TO 24 PR	23.5R25	☆☆	UP TO 32 PR	20.5R25	☆	UP TO 20 PR
26.5R25	☆	UP TO 26 PR	26.5R25	☆☆	UP TO 36 PR			
29.5R25	☆	UP TO 28 PR	29.5R25	☆☆	UP TO 40 PR			
			14.00R25	☆☆☆	UP TO 32 PR			
			16.00R25	☆☆	UP TO 32 PR			
18.00R25	☆☆	UP TO 36 PR	18.00R33	☆☆	UP TO 36 PR			
			24.00R35	☆☆	UP TO 48 PR			
			27.00R49	☆☆	UP TO 56 PR			
			33.00R51	☆☆	UP TO 66 PR			

*Star Mark: The load capacity of a tire is indicated by the Star Mark in case of radial tire.

■Radial : Application

Earthmover

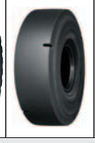
Tire Size	Star Mark	TRA Code / Pattern									
		E-3	E-3	E-3	E-4	E-4	E-4	E-4	E-4	E-4	E-4
		RT31	RB31	RL31	RT41	RL45	RB41	RB42	RB42A	RL42	RL47
											** No image available
		Type									
		T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L
14.00R25NHS	☆☆☆						●				
16.00R25	☆☆						●				
18.00R33	☆☆							●		●	
24.00R35	☆☆							●	●	●	
27.00R49	☆☆							●			
33.00R51	☆☆							** ●			** ●
17.5R25	☆☆		●	●							
20.5R25	☆☆	* ●	●	●							
23.5R25	☆☆	●	●	* ●	●						
750/65R25	☆☆	●									
26.5R25	☆☆	* ●	●		●	●					
29.5R25	☆☆		●		●	●					

* : L-3+,Tread Depth 125% level
** : Not available yet and YOKOHAMA will inform when available.

NHS : Not for highway service
T/L : Tubeless Type

■Radial : Application

Loader & Dozer

Tire Size	Star Mark	TRA Code / Pattern									
		L-3	L-3	L-3	L-4	L-4	L-5	L-5	L-5S	L-2	
		RT31	RB31	RL31	RT41	RL45	RL51	RL52	R69	** MYX S01	
											
		Type									
		T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L	T/L
18.00R25	☆☆								●		
17.5R25	☆		●	●						●	
20.5R25	☆	* ●	●	●							●
23.5R25	☆	●	●	* ●	●		●				
750/65R25	☆	●									
26.5R25	☆	* ●	●		●	●		●			
29.5R25	☆		●		●	●					

* : L-3+,Tread Depth 125% level
** : The tread design for both 17.5R25 and 20.5R25 are slightly different.

T/L : Tubeless Type

■Radial : Application

Grader

Tire Size	Star Mark	TRA Code / Pattern		
		G-2	G-2	
		RT21	* MYX S01	
				
		Type		
		T/L	T/L	
14.00R24TG	☆	●		
17.5R25	☆		●	
20.5R25	☆			●

* : The tread design for both 17.5R25 and 20.5R25 are slightly different.

Mobile Crane

Tire Size	Star Mark LI/SS	Pattern				
		RB01		RB03		RS01
						
		Type				
		T/T	T/L	T/T	T/L	T/L
14.00R24NHS	☆☆☆	●		●		
385/95R25	170E		●		●	●
385/95R25	170F		●		●	
445/95R25	174F		●			
505/95R25	183E		●			

Industrial

Tire Size	Star Mark LI/SS	TRA Code / Pattern	
		IND-4	IND-4
		RL43	RR41
			
		Type	
		T/T	T/L
14.00R24NHS	☆☆☆	●	
16.00R25	☆☆☆		●

TG : Tractor-Grade tire. Not for highway service.
NHS : Not for highway service
T/T : Tube Type
T/L : Tubeless Type

YOKOHAMA OFF-THE-ROAD TIRES 2

■Radial : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Star Mark	Type T/T	Type T/L	TRA Code or Application	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
14.00R24TG	RT21	☆	-	○	G-2	1346	53.0	356	14.0	621	24.4	433	17.0	24.6	31	-	-	-	-	8.00TG
14.00R25NHS	RB41	☆☆☆	-	○	E-4	1405	55.3	393	15.5	652	25.7	431	17.0	38.0	48	119	82	REG	-	10.00-1.5
16.00R25	RB41	☆☆	-	○	E-4	1532	60.3	450	17.7	706	27.8	500	19.7	45.1	57	160	110	REG	-	11.25-2.0
																124	85	CP		
18.00R25	R69	☆☆	-	○	L-5S	1673	65.9	500	19.7	760	29.9	571	22.5	85.0	107	-	-	CPUG	-	13.00-2.5
18.00R33	RB42	☆☆	-	○	E-4	1870	73.6	507	20.0	857	33.7	569	22.4	55.3	70	168	115	CP	-	13.00-2.5
	RL42					1860	73.2	507	20.0	854	33.6	569	22.4	50.0	63					
24.00R35	RB42	☆☆	-	○	E-4	2173	85.4	656	25.8	978	38.5	745	29.3	63.5	80	253	173	CP-S	-	17.00-3.5
																277	190	CP		
																304	208	REG		
																422	289	HR		
	RB42A					2180	85.8	666	26.2	980	38.6	748	29.4			253	173	CP-S		
																277	190	CP		
																304	208	REG		
	RL42					2163	85.2	647	25.5	978	38.5	749	29.5	58.7	74	277	190	CP		
																422	289	HR		
27.00R49	RB42	☆☆	-	○	E-4	2683	105.6	735	28.9	1220	48.0	830	32.7	73.7	93	350	240	CP-S	-	19.50-4.0
																430	295	CP		
																535	367	REG		
																615	422	HR		
*1 33.00R51	RB42	☆☆	-	○	E-4	3061	120.5	920	36.2	1380	54.3	1021	40.2	91.0	115	480	329	CP-S	-	24.00-5.0
																600	411	CP		
																680	466	REG		
	RL47					3055	120.3	920	36.2	1375	54.1	1045	41.1	88.0	111	470	322	CP-S		
																590	404	CP		
																670	459	REG		

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures															
14.00R24TG	RT21	Grader	kPa	200	225	250	275	300	325	350	**375**								
			psi	*29*	*33*	*36*	*40*	*44*	*47*	*51*	***54***								
		40	kg	2240	2430	2650	2800	3000	3250	3350	**3650☆1**								
		25	*lbs*	*4940*	*5360*	*5840*	*6150*	*6600*	*7150*	*7400*	***8050☆1***								
14.00R25NHS	RB41	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	700	725	750	775	**800**	
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	*102*	*105*	*109*	*112*	***115***	
		50	kg	4000	4125	4375	4500	4625	4750	5000	5150	5300	5450	5600	5710	5830	5940	**6050☆3**	
		30	*lbs*	*8800*	*9100*	*9650*	*9900*	*10200*	*10500*	*11000*	*11400*	*11700*	*12000*	*12300*	*12500*	*12800*	*13100*	***13400☆3***	
16.00R25	RB41	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	**700**					
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	***102***					
		50	kg	5150	5450	5600	5800	6000	6300	6500	6700	6900	7100	**7300☆2**					
		30	*lbs*	*11400*	*12000*	*12300*	*12800*	*13200*	*13900*	*14300*	*14800*	*15200*	*15700*	***16100☆2***					
18.00R25	R69	Loader & Dozer	kPa	525	550	575	600	625	650	675	700	725	750	775	800	**825**			
			psi	*76*	*80*	*83*	*87*	*91*	*94*	*98*	*102*	*105*	*109*	*112*	*116*	***120***			
		10	kg	11200	11800	12150	12500	12850	13200	13600	14000	14500	15000	15000	15500	**16000☆2**			
		5	*lbs*	*24700*	*26000*	*26800*	*27600*	*28300*	*29100*	*30000*	*30900*	*32000*	*33100*	*33100*	*34200*	***35300☆2***			
18.00R33	RB42 RL42	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	**700**					
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	***102***					
		50	kg	7750	8000	8500	8750	9000	9250	9750	10000	10300	10600	**10900☆2**					
		30	*lbs*	*17100*	*17600*	*18700*	*19300*	*19800*	*20400*	*21500*	*22000*	*22700*	*23400*	***24000☆2***					
24.00R35	RB42 RB42A RL42	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	**700**					
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	***102***					
		50	kg	13200	13600	14000	14500	15500	16000	16500	17000	17500	18000	**18500☆2**					
		30	*lbs*	*29100*	*30000*	*30900*	*32000*	*34200*	*35300*	*36400*	*37500*	*38600*	*39700*	***40800☆2***					
27.00R49	RB42	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	**700**					
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	***102***					
		50	kg	19500	20000	20600	21800	22400	23000	23600	25000	25750	26500	**27250☆2**					
		30	*lbs*	*43000*	*44100*	*45400*	*48100*	*49400*	*50700*	*52000*	*55100*	*56800*	*58400*	***60000☆2***					
*1 33.00R51	RB42 RL47	Earthmover	kPa	450	475	500	525	550	575	600	625	650	675	**700**					
			psi	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	***102***					
		50	kg	27250	29000	30000	30750	32500	33500	34500	35500	36500	37500	**38750☆2**					
		30	*lbs*	*60000*	*64000*	*66000*	*68000*	*71500*	*74000*	*76000*	*78500*	*80500*	*82500*	***85500☆2***					

*1 Not available yet and YOKOHAMA will inform when available.

TG : Tractor-Grade tire. Not for highway service.
NHS : Not for highway service
• Type T/T : Tube Type T/L : Tubeless Type
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CPUG : Cut Protected for Underground

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Radial : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Star Mark	Type T/T	Type T/L	TRA Code or Application	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
17.5R25	RB31	☆☆	-	○	E-3	1348	53.1	442	17.4	623	24.5	486	19.1	31.0	39	131	90	CP	-	14.00-1.5
		☆			L-3	1348	53.1	442	17.4	607	23.9	500	19.7	31.0	39	-	-			
	RL31	☆☆			E-3	1342	52.8	445	17.5	622	24.5	486	19.1	31.9	40	124	85			
		☆			L-3	1342	52.8	445	17.5	617	24.3	489	19.3	31.9	40					
	MYX S01	☆			G-2	1334	52.5	445	17.5	610	24.0	495	19.5	27.2	34	-	-	-		
					L-2	1334	52.5	445	17.5	600	23.6	510	20.1	27.2	34					
20.5R25	RT31	☆☆	-	○	*1 E-3	1490	58.7	535	21.1	676	26.6	586	23.1	40.7	51	139	95	CP	-	17.00-2.0
		☆			*1 L-3	1490	58.7	535	21.1	658	25.9	610	24.0	40.7	51	-	-			
	RB31	☆☆			E-3	1476	58.1	530	20.9	676	26.6	586	23.1	33.8	43	153	105			
		☆			L-3	1476	58.1	530	20.9	658	25.9	610	24.0	33.8	43	-	-			
	RL31	☆☆			E-3	1496	58.9	536	21.1	686	27.0	571	22.5	35.1	44	135	93			
		☆			L-3	1496	58.9	536	21.1	673	26.5	595	23.4	35.1	44					
	MYX S01	☆			G-2	1494	58.8	534	21.0	675	26.6	590	23.2	30.1	38	-	-	-		
					L-2	1494	58.8	534	21.0	655	25.8	610	24.0	30.1	38					
23.5R25	RT31	☆☆	-	○	E-3	1600	63.0	612	24.1	720	28.3	672	26.5	35.8	45	175	120	CP	-	19.50-2.5
		☆			L-3	1600	63.0	612	24.1	703	27.7	694	27.3	35.8	45	-	-			
	RB31	☆☆			E-3	1600	63.0	612	24.1	720	28.3	672	26.5	35.9	45	168	115			
		☆			L-3	1600	63.0	612	24.1	703	27.7	694	27.3	35.9	45	-	-			
	RL31	☆☆			*1 E-3	1601	63.0	626	24.6	720	28.3	665	26.2	40.7	51	146	100			
		☆			*1 L-3	1601	63.0	626	24.6	703	27.7	682	26.9	40.7	51	-	-			
	RT41	☆☆			E-4	1614	63.5	606	23.9	728	28.7	674	26.5	54.0	68	139	95			
																123	84	CPUG		
		☆			L-4	1614	63.5	606	23.9	708	27.9	691	27.2	54.0	68	-	-	CP		
	RL51	☆			L-5	1658	65.3	621	24.4	740	29.1	694	27.3	78.3	99	-	-			
750/65R25	RT31	☆☆	-	○	E-3	1620	63.8	743	29.3	730	28.7	817	32.2	43.7	55	225	154	CP	-	24.00-3.0
		☆			L-3	1620	63.8	743	29.3	707	27.8	835	32.9	43.7	55	-	-			

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures											
17.5R25	RB31 RL31	Earthmover	kPa	275	300	325	350	375	400	425	450	475	500	**525**	
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***	
		50	kg	3350	3550	3750	4000	4125	4375	4625	4750	5000	5150	**5450☆2**	
		30	*lbs*	*7400*	*7850*	*8250*	*8800*	*9100*	*9650*	*10200*	*10500*	*11000*	*11400*	***12000☆2***	
		Loader & Dozer	kPa						400	425	450	475	**500**		
			psi						*58*	*62*	*65*	*69*	***73***		
		10	kg						6000	6150	6500	6700	**7100☆1**		
		5	*lbs*						*13200*	*13600*	*14300*	*14800*	***15700☆1***		
	MYX S01	Grader	kPa	125	150	175	200	225	250	275	**300**				
			psi	*18*	*22*	*25*	*29*	*33*	*36*	*40*	***44***				
		40	kg	1850	2120	2360	2650	2900	3075	3350	**3650☆1**				
		25	*lbs*	*4080*	*4680*	*5200*	*5840*	*6400*	*6800*	*7400*	***8050☆1***				
		Loasder & Dozer	kPa	400	425	450	475	**500**							
			psi	*58*	*62*	*65*	*69*	***73***							
		10	kg	6000	6150	6500	6700	**7100☆1**							
		5	*lbs*	*13200*	*13600*	*14300*	*14800*	***15700☆1***							
20.5R25	RT31 RB31 RL31	Earthmover	kPa	275	300	325	350	375	400	425	450	475	500	**525**	
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***	
		50	kg	4375	4750	5000	5300	5600	5800	6150	6500	6700	6900	**7300☆2**	
		30	*lbs*	*9650*	*10500*	*11000*	*11700*	*12300*	*12800*	*13600*	*14300*	*14800*	*15200*	***16100☆2***	
		Loader & Dozer	kPa						400	425	450	475	**500**		
			psi						*58*	*62*	*65*	*69*	***73***		
		10	kg						8000	8250	8750	9000	**9500☆1**		
		5	*lbs*						*17600*	*18200*	*19300*	*19800*	***20900☆1***		
	MYX S01	Grader	kPa	125	150	175	200	225	250	275	**300**				
			psi	*18*	*22*	*25*	*29*	*33*	*36*	*40*	***44***				
		40	kg	2430	2800	3150	3450	3875	4125	4375	**4625☆1**				
		25	*lbs*	*5360*	*6150*	*6950*	*7600*	*8550*	*9100*	*9650*	***10200☆1***				
		Loasder & Dozer	kPa	400	425	450	475	**500**							
			psi	*58*	*62*	*65*	*69*	***73***							
		10	kg	8000	8250	8750	9000	**9500☆1**							
		5	*lbs*	*17600*	*18200*	*19300*	*19800*	***20900☆1***							
23.5R25	RT31 RB31 RL31 RT41	Earthmover	kPa	275	300	325	350	375	400	425	450	475	500	**525**	
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***	
		50	kg	5600	6000	6500	6700	7100	7500	7750	8250	8500	9000	**9250☆2**	
		30	*lbs*	*12300*	*13200*	*14300*	*14800*	*15700*	*16500*	*17100*	*18200*	*18700*	*19800*	***20400☆2***	
		Loader & Dozer	kPa						400	425	450	475	**500**		
			psi						*58*	*62*	*65*	*69*	***73***		
		10	kg						10300	10600	11200	11500	**12150☆1**		
		5	*lbs*						*22700*	*23400*	*24700*	*25400*	***26800☆1***		
750/65R25	RT31	Earthmover	kPa	275	300	325	350	375	400	425	450	**475**			
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***			
		50	kg	6900	7300	7750	8250	8750	9250	9750	10300	**10600☆2**			
		30	*lbs*	*15200*	*16100*	*17100*	*18200*	*19300*	*20400*	*21500*	*22700*	***23400☆2***			
		Loader & Dozer	kPa						400	425	450	**475**			
			psi						*58*	*62*	*65*	***69***			
		10	kg						13200	13600	14500	**15000☆1**			
		5	*lbs*						*29100*	*30000*	*32000*	***33100☆1***			

*1 E-3+, L-3+, Tread Depth 125% level

- Type T/T : Tube Type T/L : Tubeless Type
- Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
  CPUG : Cut Protected for Underground

- PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Radial : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Star Mark	Type T/T	Type T/L	TRA Code or Application	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
26.5R25	RT31	☆☆	-	○	*1 E-3	1731	68.1	668	26.3	778	30.6	748	29.4	45.6	57	182	125	CP	-	22.00-3.0
		☆			*1 L-3	1731	68.1	668	26.3	760	29.9	765	30.1	45.6	57	-	-			
	RB31	☆☆			E-3	1732	68.2	675	26.6	785	30.9	744	29.3	38.8	49	182	125			
		☆			L-3	1732	68.2	675	26.6	763	30.0	760	29.9	38.8	49	-	-			
	RT41	☆☆			E-4	1732	68.2	675	26.6	781	30.7	740	29.1	60.1	76	160	110			
																143	98	CPUG		
		☆			L-4	1732	68.2	675	26.6	757	29.8	761	30.0	60.1	76	-	-			
	RL45	☆☆			E-4	1760	69.3	675	26.6	796	31.3	744	29.3	60.1	76	160	110	CP		
		☆			L-4	1760	69.3	675	26.6	776	30.6	769	30.3	60.1	76	-	-			
	RL52	☆			L-5	1784	70.2	697	27.4	800	31.5	737	29.0	96.0	121	-	-			
29.5R25	RB31	☆☆	-	○	E-3	1850	72.8	760	29.9	831	32.7	842	33.1	48.0	60	270	185	CP	-	25.00-3.5
		☆			L-3	1850	72.8	760	29.9	806	31.7	866	34.1	48.0	60	-	-			
	RT41	☆☆			E-4	1865	73.4	760	29.9	846	33.3	833	32.8	65.0	82	204	140			
																182	125	CPUG		
		☆			L-4	1865	73.4	760	29.9	833	32.8	855	33.7	65.0	82	-	-	CP		
	RL45	☆☆			E-4	1901	74.8	770	30.3	860	33.9	850	33.5	65.0	82	204	140	CP		
		☆			L-4	1901	74.8	770	30.3	840	33.1	873	34.4	65.0	82	-	-	CP		

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures												
26.5R25	RT31 RB31 RT41 RL45	Earthmover	kPa	275	300	325	350	375	400	425	450	475	500	**525**		
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***		
		50	kg	7100	7500	8000	8500	9000	9500	9750	10300	10600	11200	**11500☆2**		
		30	*lbs*	*15700*	*16500*	*17600*	*18700*	*19800*	*20900*	*21500*	*22700*	*23400*	*24700*	***25400☆2***		
	RT31 RB31 RT41 RL45 RL52	Loader & Dozer	kPa						400	425	450	475	**500**			
			psi						*58*	*62*	*65*	*69*	***73***			
		10	kg						12850	13200	14000	14500	**15000☆1**			
		5	*lbs*						*28300*	*29100*	*30900*	*32000*	***33100☆1***			
29.5R25	RB31 RT41	Earthmover	kPa	275	300	325	350	375	400	425	450	475	500	**525**		
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***		
		50	kg	8500	9250	9750	10300	10900	11500	11800	12500	12850	13600	**14000☆2**		
		30	*lbs*	*18700*	*20400*	*21500*	*22700*	*24000*	*25400*	*26000*	*27600*	*28300*	*30000*	***30900☆2***		
		Loader & Dozer	kPa						400	425	450	475	**500**			
			psi						*58*	*62*	*65*	*69*	***73***			
		10	kg						15500	16000	17000	17500	**18000☆1**			
		5	*lbs*						*34200*	*35300*	*37500*	*38600*	***39700☆1***			

*1 E-3+, L-3+, Tread Depth 125% level

Application : Mobile Crane

Tire Size	Pattern	Star Mark LI/SS	Type T/T	Type T/L	TRA Code or Application	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
14.00R24NHS	RB01	☆☆☆	○	-	Mobile Crane	1353	53.3	384	15.1	625	24.6	424	16.7	22.5	28	-	-	-	14.00R24/25	10.00W
	RB03					1352	53.2	382	15.0	628	24.7	418	16.5	23.8	30					
385/95R25	RB01	170E	-	○	Mobile Crane	1353	53.3	384	15.1	629	24.8	420	16.5	22.5	28	-	-	-	-	10.00-1.5
		170F																		
	RB03	170E				1352	53.2	377	14.8	633	24.9	414	16.3	23.8	30					
		170F																		
	RS01	170E				1350	53.1	350	13.8	628	24.7	417	16.4	24.0	30					
445/95R25	RB01	174F	-	○	Mobile Crane	1485	58.5	445	17.5	690	27.2	487	19.2	23.3	29	-	-	-	-	11.25-2.0
505/95R25	RB01	183E	-	○	Mobile Crane	1605	63.2	515	20.3	739	29.1	566	22.3	25.2	32	-	-	-	-	13.00-2.5

Tire Size	Pattern	Star Mark LI/SS	kPa psi	Tire Load Limits at Various Speeds												
14.00R24NHS	RB01 RB03	☆☆☆	900 130	km/h	0	Creep	5	10	40	**45**	50					
				mph	*Stationary*	*Creep*	*3*	*5*	*25*	***28***	*30*					
				kg	16300	13200	11700	10100	6800	**6500☆3**	6200					
				lbs	*35900*	*29100*	*25800*	*22300*	*15000*	***14300☆3***	*13700*					
385/95R25	RB01 RB03 RS01	170E	900 130	km/h	0	Creep	5	10	30	40	50	60	**70**	80	90	100
				mph	*Stationary*	*Creep*	*3*	*5*	*20*	*25*	*30*	*35*	***43***	*50*	*55*	*62*
				kg	18200	14800	13100	11300	7800	7400	7100	6700	**6000(170E)**	4900	4200	3600
				lbs	*40100*	*32600*	*28900*	*24900*	*17200*	*16300*	*15700*	*14800*	***13200(170E)***	*10800*	*9300*	*7900*
	RB01 RB03	170F		km/h	0	Creep	5	10	30	40	50	60	70	**80**	90	100
				mph	*Stationary*	*Creep*	*3*	*5*	*20*	*25*	*30*	*35*	*43*	***50***	*55*	*62*
				kg	15000	---	12600	10800	7500	6900	6700	6600	6300	**6000(170F)**	5600	5100
				lbs	*33100*	---	*27800*	*23800*	*16500*	*15200*	*14800*	*14600*	*13900*	***13200(170F)***	*12300*	*11200*
445/95R25	RB01	174F	900 130	km/h	0	Creep	5	10	30	40	50	60	70	**80**	90	100
				mph	*Stationary*	*Creep*	*3*	*5*	*20*	*25*	*30*	*35*	*43*	***50***	*55*	*62*
				kg	16800	---	14100	12100	8400	7700	7500	7400	7000	**6700(174F)**	6300	5700
				lbs	*37000*	---	*31100*	*26700*	*18500*	*17000*	*16500*	*16300*	*15400*	***14800(174F)***	*13900*	*12600*
505/95R25	RB01	183E	800 116	km/h	0	Creep	5	10	30	40	50	60	**70**	80	90	100
				mph	*Stationary*	*Creep*	*3*	*5*	*20*	*25*	*30*	*35*	***43***	*50*	*55*	*62*
				kg	26500	21500	19100	16500	11400	10900	10300	9800	**8750(183E)**	7200	6100	5300
				lbs	*58400*	*47400*	*42100*	*36400*	*25100*	*24000*	*22700*	*21600*	***19300(183E)***	*15900*	*13400*	*11700*

TRA Code : IND

Tire Size	Pattern	Star Mark LI/SS	Type *4 T/T	Type *4 T/L	TRA Code or Application	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
14.00R24NHS	RL43	☆☆☆	○	-	IND-4	1379	54.3	375 (365)	14.8 (14.4)	610	24.0	431 (421)	17.0 (16.6)	48.0	61	-	-	-	14.00R24	10.00W (9.00V)
16.00R25	RR41	☆☆☆	-	○	IND-4	1499	59.0	423	16.7	656	25.8	497	19.6	52.4	66	-	-	-	-	11.25-2.0

Tire Size	Pattern	Star Mark LI/SS		kPa psi	Tire Load Limits at Various Speeds								
14.00R24NHS	RL43	☆☆☆	Load Wheel	1000 145	km/h	0	Creep	5	10	15	20	25	
					mph	*Stationary*	*Creep*	*3*	*5*	*10*	*12*	*15*	
					kg	18000	16000	14500	13500	13000	12700	12500	
					lbs	*39700*	*35300*	*32000*	*29800*	*28700*	*28000*	*27600*	
			Steer Wheel	1000 145	km/h	0	Creep	5	10	15	20	25	
					mph	*Stationary*	*Creep*	*3*	*5*	*10*	*12*	*15*	
					kg	14400	12800	11600	10800	10400	10200	10000	
					lbs	*31700*	*28200*	*25600*	*23800*	*22900*	*22500*	*22000*	
16.00R25	RR41	☆☆☆		1000 145	km/h	0	Creep	5	10	15	20	25	
					mph	*Stationary*	*Creep*	*3*	*5*	*10*	*12*	*15*	
					kg	22300	19800	18000	16700	16100	15700	15500	
					lbs	*49200*	*43700*	*39700*	*36800*	*35500*	*34600*	*34200*	

NHS : Not for highway service
• Type T/T : Tube Type T/L : Tubeless Type
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CPUG : Cut Protected for Underground

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Appendix(Radial)

Haulage Service (OFF-THE-ROAD for Dump Trucks & Scrapers)

50 KPH (30 MPH) Maximum Speed　Distance: Up to 4 km (2.5 miles) one way

Wide Base Radial Ply Tires
Conventional Radial Ply Tires

NOTES 1. Bold face figures denote maximum load for symbols shown.
2. For 65 km/h (40 mph) maximum speed, the loads must be reduced 12% with no change in inflation pressure.
3. When haul length exceeds 4 km one way, consult your YOKOHAMA service representative.

Slow Speed Service (OFF-THE-ROAD for Loaders & Dozers)

10 KPH (5 MPH) Maximum speed　Distance: Up to 76 m (250 feet) one way

Wide Base Radial Ply Tires

NOTES 1. Bold face figures denote maximum load for symbols shown.
2. On front tires for front end loaders, it is permissible to increase inflation pressure up to 100 kPa (15 psi) above that shown in the table with no increase in load.
3. For tire load limits at various speeds:

Max. Speed	% Load Change From 5 MPH Table
Stationary	+60%
Creep	+30%
4 km/h (2 1/2 mph)	+15%
10 km/h (5 mph)	No Change
15 km/h (10 mph)	-13%
25 km/h (15 mph)	-20%

4. Creep
This is movement of equipment at very slow speed (not over 60 m (200 feet) in 30 minutes). During creep motion, loads on the tires are very high and consideration must be given to the type of surface over which the equipment is traveling.

Tractor & Grader Service (OFF-THE-ROAD)

40 KPH (25 MPH) Maximum speed　Distance: Unlimited

Conventional Radial Ply Tires

NOTES 1. Bold face figures denote maximum load for symbols shown.
2. For maintenance work on established highways, inflation pressures may be increased 50% if desired with no increase in loads.
3. For slope and ditching service, inflation pressures should be increased 15 psi (100 kPa) with no increase in load rating. For extreme conditions, consult tire and rim manufacturers for additional recommended operating requirements.
4. For tire load limits at various speeds with no increase in inflation pressure:

Max. Speed	% Change To Loads In Table
40 km/h (25 mph)	No Change
50 km/h (30 mph)	-9%
60 km/h (35 mph)	-18%
65 km/h (40 mph)	-27%

Highway Service (OFF-THE-ROAD for Mobile / Wheeled Cranes)

Size Conversion Table

Metric	Inch
385/95R24, 25	14.00R24, 25
445/95R25	16.00R25
505/95R25	18.00R25

NOTES: Bold face figures denote maximum load for symbols shown.

Industrial Service (OFF-THE-ROAD for Smooth Floors & Runways Use)

NOTES 1. Industrial Vehicle
Consists of usage on vehicles such as counterbalanced lift trucks, container handlers, straddle carriers, aircraft tow tractors, log stackers and rough terrain trucks.
2. Smooth Floors and Runways
These are defined as paved or protected operating surfaces which are free of undulations, obstructions or discontinuities.
3. Creep
This is movement of equipment at very slow speed (not over 60 m (200 feet) in 30 minutes). During creep motion, loads on the tires are very high and consideration must be given to the type of surface over which the equipment is traveling.

Check maximum air pressure requirements of rims and wheels to ensure ability to accommodate correct air pressure of tire.

■Bias : Application

Earthmover

Tire Size	TRA Code / Pattern							
	E-3		E-3	E-4		E-4	E-4	E-4
	Y67		Y565	Y523		Y523U	Y567	Y67E
								
	Ply Rating & Type							
	T/T	T/L	T/L	T/T	T/L	T/L	T/L	T/L
10.00-20NHS	14◂,24◂							
11.00-20NHS	14							
12.00-20NHS	16,18◂,24S,28S							
14.00-20NHS	32							
12.00-24NHS	16,20							
14.00-24NHS	20,24,28							
16.00-24NHS		24						
14.00-25NHS	20,24S	20,24						
16.00-25	24◂,28	24◂,28◂,32			24,28			
18.00-25	32	32,40			32,40			
21.00-25		24						
18.00-33		28,32,36			32,36,40◂	32		
21.00-35					36◂,40			
24.00-35					36,42◂,48			
24.00-49					42,48			
27.00-49		48			42,48◂			
30.00-51					46,52			
33.00-51					50S,58		50◂,58	
36.00-51			58,66		50,58,66			
40.00-57					68,76		68	
20.5-25		28						
23.5-25		32						
26.5-25		26						
29.5-25		28,34						
26.5-29		26						
29.5-29		28,34◂						34S
33.25-29		26,32◂						
29.5-35		34						
33.25-35		32,38						
37.25-35		30,36◂						
37.5-39		44,52◂						

◂: Both nylon breaker construction and steel breaker construction available
S: Steel breaker construction only

NHS : Not for highway service
T/T : Tube Type T/L : Tubeless Type

■Bias : Application

Loader & Dozer

Tire Size	TRA Code / Pattern									
	L-2		L-2		L-3		L-3		L-3	
	Y103		Y548		Y67		Y526K		Y575	
										
	Ply Rating & Type									
	T/T	T/L	T/T	T/L	T/T	T/L	T/T	T/L	T/T	T/L
12.5/70-16		6		6						
10-16.5NHS	4	4,6								
13.5-20	14									
42×17-20	10									
17.5/65-20		10		10						
16.9-24	10,12	10,12	10	10,12	10◂	10◂				
18.4-24	10	10◂		10						
10.00-20NHS	8,10,14									
12.00-24NHS					16,20					
13.00-24TG						16S				
13.00-24NHS					18					
14.00-24TG	12	12			12,16	12◂,16				
14.00-24NHS					24					
16.00-24TG	16									
15.5-25	12	12			12	12				
17.5-25	12,16	12,16	12,16	12,16	12◂,16	12◂,16			12	12◂,16
20.5-25		12,16	12,16	12,16,20	12,16,20	12,16,20	16,20	16◂,20	12,16,20	12◂,16◂,20
23.5-25		12,16			12,16,24	16◂,20,24	16S,20	16◂,20◂	16◂,20	16◂,20◂,24
26.5-25					20,24	16,20,24,26,28			20,24S	16,20◂,24,28
29.5-25						22,28				22◂,28◂,34S
29.5-29						28				

◂: Both nylon breaker construction and steel breaker construction available
S: Steel breaker construction only

TG : Tractor-Grade tire. Not for highway service. T/T : Tube Type T/L : Tubeless Type
NHS : Not for highway service

■Bias : Application

Loader & Dozer

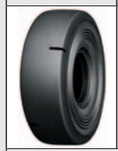
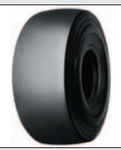
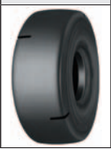
Tire Size	TRA Code / Pattern					
	L-4	L-4	L-5	L-5	L-5	L-5
	Y67E	Y545	Y524	**Y524	**Y524Z	Y525
						
	Ply Rating & Type					
	T/L	T/L	T/L	T/L	T/L	T/T
12.00-24NHS						20
17.5-25	12					
20.5-25				12,16,20		
23.5-25		16◂,20◂,24	16,20,24			
26.5-25		20,24,26,32		20,24,26,28,32◂		
29.5-25		22,28		22,28◂		
29.5-29	28		28,34[S]			
35/65-33		24[S],30[S],36[S],42[S]		24[S],30[S],36[S],42[S],48[S]	24[S],36[S],42[S]	
40/65-39				36[S],56[S]		
45/65-45		58[S]		38[S],46[S],50[S],58[S]	38[S],46[S],50[S],58[S]	

** Y524 with side protector
◂: Both nylon breaker construction and steel breaker construction available
[S]: Steel breaker construction only

NHS : Not for highway service
T/T : Tube Type T/L : Tubeless Type

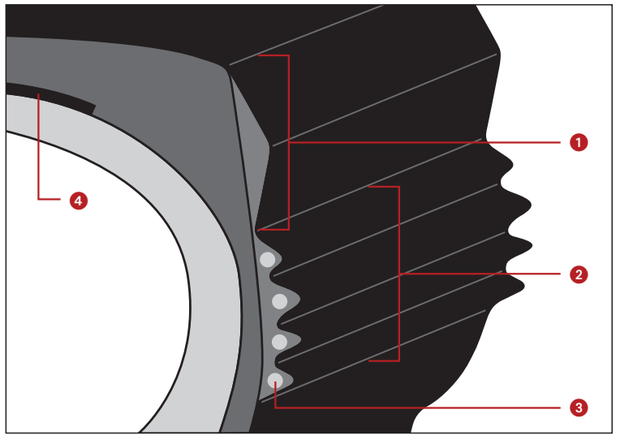
■Bias : Application

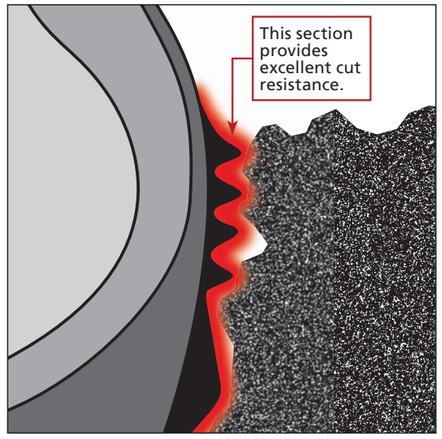
Loader & Dozer

Tire Size	TRA Code / Pattern					
	L-4S	L-5S		L-5S	L-5S	
	Y69U	Y69		Y69K	Y69U	
						
	Ply Rating & Type					
	T/T	T/T	T/L	T/L	T/T	T/L
12.00-24NHS	16[S]	16,20			16[S]	
14.00-24NHS		20,24				
18.00-25		28	24,28,32	28◂,32		24[S],28[S],32[S]
17.5-25		20	16,20,24,28			20[S],28[S]
20.5-25			16,28			
23.5-25		28	20			
26.5-25			28,32,36	26,32,36		28[S],32[S]
29.5-29				34,40◂		

◂: Both nylon breaker construction and steel breaker construction available
[S]: Steel breaker construction only

Special Construction of Y69U





1. Buttress Shoulder Profile
2. Special Reinforcement (Wavy Side +ZSC)
3. ZSC or Cable Wires
4. Steel Breaker Construction

NHS : Not for highway service
T/T : Tube Type T/L : Tubeless Type

■Bias : Application

Grader

Tire Size	TRA Code / Pattern			
	G-2		G-3	
	Y103		Y67	
				
	Ply Rating & Type			
	T/T	T/L	T/T	T/L
11.00-20TG	10,12			
12.00-24TG	12			
13.00-24TG	8,10,12	8,10,12	12	12
14.00-24TG	10,12,14,16,20	10,12,16	12[S],16	16
16.00-24TG	12		12,16	16
18.00-25				16
17.5-25		12		

[S]: Steel breaker construction only

Compactor

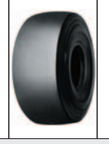
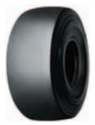
Tire Size	TRA Code / Pattern
	C-1
	Y69
	
	Ply Rating & Type
	T/T
7.50-16NHS	6
9.00-20NHS	10
11.00-20NHS	14
14/70-20NHS	12
15.0-20NHS	16

TG : Tractor-Grade tire. Not for highway service.
NHS : Not for highway service
T/T : Tube Type T/L : Tubeless Type

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Application

Industrial

Tire Size	TRA Code / Pattern													
	IND-3	IND-3		IND-3	IND-3		IND-3		IND-3	IND-4	IND-4	IND-4		IND-4
	Y92	Y67		Y69	Y69PS		Y505		Y573	Y523	Y523U	Y69		Y505
														
	Ply Rating & Type													
	T/T	T/T	T/L	T/T	T/T	T/L	T/T	T/L	T/L	T/L	T/L	T/T	T/L	T/L
11.00-20NHS		16◂,18												
12.00-20NHS		22												
12.00-24NHS		20,28		18			20					20		
13.00-24NHS		18,20												
14.00-24NHS	24,28	20,24,28	28				28	28				30		
14.00-25NHS		24	24◂											
16.00-25		28	28,32,36		28,32	28,32				36				
18.00-25		32,36	32,36,40							32,36,40			36,40	40
21.00-25			36,40										40	
24.00-29			42											
18.00-33										36,40◂	40		40	
21.00-35			40										42	
24.00-35			42,48							42				
27.00-49										42				
33.00-51										58				
36.00-51										58,72				
40.00-57										68[S],76				
17.5-25									36					
29.5-25			34											
29.5-29			40											
33.25-29			38											
33.25-35			44											
37.5-39			60											

◂: Both nylon breaker construction and steel breaker construction available.
[S]: Steel breaker construction only.

NHS : Not for highway service
T/T : Tube Type T/L : Tubeless Type

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
12.5/70-16	Y103	6	-	-	-	○	L-2	860	33.9	316	12.4	389	15.3	329	13.0	21.7	27	-	-	-	-	10LB
	Y548							855	33.7	321	12.6	388	15.3	337	13.3	21.8	27					
*10-16.5NHS	Y103	4	-	○	-	○	L-2	772	30.4	275	10.8	350	13.8	286	11.3	18.8	24	-	-	-	10-16.5	8.25
		6	-	-	-	○															-	
*13.5-20	Y103	14	-	○	-	-	L-2	1075	42.3	344	13.5	483	19.0	368	14.5	23.4	29	-	-	-	13.5-20	11.00TG
42×17-20	Y103	10	-	○	-	-	L-2	1078	42.4	416	16.4	482	19.0	432	17.0	22.6	28	-	-	-	42×17-20	14.00TG
17.5/65-20	Y103	10	-	-	-	○	L-2	1097	43.2	442	17.4	489	19.3	459	18.1	24.7	31	-	-	-	-	W14L
	Y548							1100	43.3	442	17.4	491	19.3	467	18.4	24.8	31					
*16.9-24	Y103	10	-	○	-	○	L-2	1292	50.9	450	17.7	582	22.9	480	18.9	28.5	36	-	-	-	16.9-24	W15L
		12																				
	Y548	10	-	○	-	○	L-2	1300	51.2	448	17.6	596	23.5	476	18.7	34.1	43				-	
		12	-	-	-	○																
	Y67	10	○	○	○	○	L-3	1295	51.0	442	17.4	588	23.1	472	18.6	28.4	36				16.9-24	
*18.4-24	Y103	10	-	○	○	○	L-2	1372	54.0	477	18.8	612	24.1	518	20.4	30.8	39	-	-	-	18.4-24	W16L
	Y548		-	-	-	○		1380	54.3	485	19.1	628	24.7	515	20.3	34.3	43				-	

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures																		
12.5/70-16	Y103 Y548	Loader & Dozer	PR					(6)														
			kPa	120	140	160	180	**200**														
			psi	*17*	*20*	*23*	*26*	***29***														
		10	kg	1050	1145	1240	1330	**1410**														
		5	*lbs*	*2310*	*2520*	*2730*	*2930*	***3110***														
*10-16.5NHS	Y103	Loader & Dozer	PR	(4)			(6)															
			kPa	**210**	240	280	**310**															
			psi	***30***	*35*	*40*	***45***															
		10	kg	**1250**	1370	1480	**1590**															
		5	*lbs*	***2760***	*3020*	*3260*	***3500***															
*13.5-20	Y103	Loader & Dozer	PR																			(14)
			kPa	180	200	220	240	260	280	300	325	350	375	400	425	450	475	**500**				
			psi	*26*	*29*	*32*	*35*	*38*	*41*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	***73***				
		10	kg	2300	2445	2585	2720	2850	2980	3100	3250	3395	3535	3670	3800	3930	4055	**4180**				
		5	*lbs*	*5070*	*5390*	*5700*	*6000*	*6280*	*6570*	*6830*	*7160*	*7480*	*7790*	*8090*	*8380*	*8660*	*8940*	***9220***				
42×17-20	Y103	Loader & Dozer	PR							(10)												
			kPa	180	200	220	240	260	280	**300**												
			psi	*26*	*29*	*32*	*35*	*38*	*41*	***44***												
		10	kg	2740	2915	3080	3240	3395	3545	**3690**												
		5	*lbs*	*6040*	*6430*	*6790*	*7140*	*7480*	*7820*	***8130***												
17.5/65-20	Y103 Y548	Loader & Dozer	PR							(10)												
			kPa	120	140	160	180	200	220	**240**												
			psi	*17*	*20*	*23*	*26*	*29*	*32*	***35***												
		10	kg	2130	2330	2520	2700	2875	3040	**3195**												
		5	*lbs*	*4700*	*5140*	*5560*	*5950*	*6340*	*6700*	***7040***												
*16.9-24	Y103 Y548 Y67	Loader & Dozer	PR							(10)		(12)										
			kPa	120	140	160	180	200	220	**240**	260	**280**										
			psi	*17*	*20*	*23*	*26*	*29*	*32*	***35***	*38*	***41***										
		10	kg	2300	2520	2725	2920	3105	3280	**3455**	3620	**3780**										
		5	*lbs*	*5070*	*5560*	*6010*	*6440*	*6850*	*7230*	***7620***	*7980*	***8330***										
*18.4-24	Y103 Y548	Loader & Dozer	PR						(10)													
			kPa	120	140	160	180	200	**220**													
			psi	*17*	*20*	*23*	*26*	*29*	***32***													
		10	kg	2765	3025	3270	3505	3725	**3940**													
		5	*lbs*	*6100*	*6670*	*7210*	*7730*	*8210*	***8690***													

* On front tires for front-end loaders.

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
10.00-20NHS	Y67	14	○	○	-	-	E-3	1060	41.7	280	11.0	498	19.6	295	11.6	20.4	26	-	-	-	10.00-20	7.50V
		24																				
	Y103	8	-	○	-	-	L-2	1082	42.6	292	11.5	492	19.4	313	12.3	21.2	27					
		10																				
		14																				
11.00-20TG	Y103	10	-	○	-	-	G-2	1092	43.0	304	12.0	500	19.7	322	12.7	21.9	28	-	-	-	11.00-20	8.00V
		12																				
11.00-20NHS	Y67	14	-	○	-	-	E-3	1100	43.3	295	11.6	510	20.1	310	12.2	24.9	31					
12.00-20NHS	Y67	16	-	○	-	-	E-3	1135	44.7	325	12.8	533	21.0	340	13.4	25.5	32	-	-	-	12.00-20	8.50V
		18	○	○	-	-																
		24	○	-	-	-																
		28	○	-	-	-		1144	45.0	322	12.7	516	20.3	347	13.7	25.5	32					

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures																		
10.00-20NHS	Y67	Earthmover	PR													(14)	(24)					
			kPa	260	280	300	325	350	375	400	425	450	475	**500**	**850**							
			psi	*38*	*41*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	***73***	***123***							
		50	kg	1685	1760	1830	1920	2005	2085	2170	2245	2320	2395	**2470**	**3370**							
		30	*lbs*	*3710*	*3880*	*4030*	*4230*	*4420*	*4600*	*4780*	*4950*	*5110*	*5280*	***5450***	***7430***							
	Y103	Loader & Dozer	PR		(8)				(10)								(14)					
			kPa	350	**375**	400	425	450	**475**	500	525	550	575	600	625	**650**						
			psi	*51*	***54***	*58*	*62*	*65*	***69***	*73*	*76*	*80*	*83*	*87*	*91*	***94***						
		10	kg	2970	**3090**	3210	3325	3440	**3550**	3650	3750	3875	4000	4000	4125	**4250**						
		5	*lbs*	*6550*	***6800***	*7100*	*7350*	*7600*	***7850***	*8050*	*8250*	*8550*	*8800*	*8800*	*9100*	***9350***						
11.00-20TG	Y103	Grader	PR											(10)		(12)						
			kPa	140	160	180	200	220	240	260	280	300	**325**	350	**375**							
			psi	*20*	*23*	*26*	*29*	*32*	*35*	*38*	*41*	*44*	***47***	*51*	***54***							
		40	kg	1175	1275	1365	1450	1535	1615	1690	1765	1840	**1925**	2010	**2095**							
		25	*lbs*	*2590*	*2810*	*3010*	*3200*	*3380*	*3560*	*3730*	*3890*	*4060*	***4240***	*4430*	***4620***							
11.00-20NHS	Y67	Earthmover	PR										(14)									
			kPa	260	280	300	325	350	375	400	425	450	**475**									
			psi	*38*	*41*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***									
		50	kg	1830	1910	1990	2085	2180	2270	2355	2440	2525	**2605**									
		30	*lbs*	*4030*	*4210*	*4390*	*4600*	*4810*	*5000*	*5190*	*5380*	*5570*	***5740***									
12.00-20NHS	Y67	Earthmover	PR		(16)		(18)								(24)							(28)
			kPa	425	**450**	475	**500**	525	550	575	600	625	650	**675**	700	725	750	**775**				
			psi	*62*	***65***	*69*	***73***	*76*	*80*	*83*	*87*	*91*	*94*	***98***	*102*	*105*	*109*	***112***				
		50	kg	2800	**2900**	3000	**3075**	3150	3250	3350	3450	3550	3650	**3750**	3750	3875	4000	**4000**				
		30	*lbs*	*6150*	***6400***	*6600*	***6800***	*6950*	*7150*	*7400*	*7600*	*7850*	*8050*	***8250***	*8250*	*8550*	*8800*	***8800***				

TG : Tractor-Grade tire. Not for highway service.
NHS : Not for highway service

- Type — T/T : Tube Type; T/L : Tubeless Type; SB : Steel breaker construction
- Specification Code — CP : Cut Protected; CP-S : Cut Protected-S; CP-C : Cut Protected-C; REG : Regular; RE-R : Regular-R; RE-T : Regular-T; HR : Heat Resistant; HR-H : Heat Resistant-H; HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
14.00-20NHS	Y67	32	-	○	-	-	E-3	1250	49.2	386	15.2	583	23.0	401	15.8	27.5	35	-	-	-	14.00-20	10.00WI
12.00-24TG	Y103	12	-	○	-	-	G-2	1223	48.1	312	12.3	561	22.1	342	13.5	26.8	34					8.00TG
12.00-24NHS	Y67	16	-	○	-	-	E-3	1230	48.4	305	12.0	575	22.6	330	13.0	26.4	33	-	-	-	11.00/12.00-24	
		20																				8.50V
		16					L-3					559	22.0	340	13.4	26.4	33					
		20																				
	Y525	20					L-5	1280	50.4	330	13.0	596	23.5	360	14.2	58.2	74					
	Y69	16					L-5S	1280	50.4	333	13.1	604	23.8	356	14.0	54.8	69					
		20																				
	Y69U	16	○	-	-	-	L-4S	1254	49.4	328	12.9	590	23.2	348	13.7	43.3	55					
		16					L-5S	1275	50.2	332	13.1	602	23.7	351	13.8	55.6	70					
13.00-24TG	Y103	8	-	○	-	○	G-2	1280	50.4	345	13.6	576	22.7	383	15.1	27.0	34	-	-	-	13.00-24/25	8.00TG
		10																				
		12																				
	Y67	12	-	○	-	○	G-3	1280	50.4	334	13.1	586	23.1	358	14.1	27.9	35					
		16	-	-	○	-	L-3	1288	50.7	366	14.4	582	22.9	401	15.8	27.9	35				-	
13.00-24NHS		18	-	○	-	-										27.9	35				13.00-24/25	
14.00-24TG	Y103	10	-	○	-	○	G-2	1341	52.8	375	14.8	604	23.8	409	16.1	28.5	36	-	-	-	14.00-24/25	8.00TG
		12	-	○	-	○																
		14	-	○	-	-																
		16	-	○	-	○																
		20	-	○	-	-																
		12	-	○	-	○	L-2	1339	52.7	375	14.8	595	23.4	442	17.4	28.5	36					10.00VA
	Y67	12	○	-	-	-	G-3	1351	53.2	373	14.7	624	24.6	388	15.3	27.7	35					8.00TG
		16	-	○	-	○																
		12	-	○	○	○	L-3	1343	52.9	375	14.8	604	23.8	416	16.4	27.7	35					10.00VA
		16	-	○	-	○																
14.00-24NHS	Y67	20	-	○	-	-	E-3	1345	53.0	380	15.0	624	24.6	408	16.1	27.7	35	95	65	CP		10.00W
		24																				
		28																				
		24					L-3	1344	52.9	383	15.1	604	23.8	416	16.4	27.7	35					10.00VA
	Y69	20	-	○	-	-	L-5S	1365	53.7	380	15.0	654	25.7	393	15.5	63.1	79	-	-	-		10.00W
		24																				
16.00-24TG	Y103	12	-	○	-	-	G-2	1465	57.7	445	17.5	646	25.4	494	19.4	34.2	43	-	-	-	-	10.00VA
		16					L-2														16.00-24/25	
	Y67	12	-	○	-	-	G-3															
		16	-	○	-	○		1475	58.1	445	17.5	686	27.0	467	18.4	34.3	43					
16.00-24NHS	Y67	24	-	-	-	○	E-3											139	95	REG	-	11.25-2.0

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures															
14.00-20NHS	Y67	Earthmover	PR											(32)					
			kPa	500	525	550	575	600	625	650	675	700	725	**750**					
			psi	*73*	*76*	*80*	*83*	*87*	*91*	*94*	*98*	*102*	*105*	***109***					
		50	kg	4250	4375	4500	4625	4750	4875	5000	5150	5150	5300	**5450**					
		30	*lbs*	*9350*	*9650*	*9900*	*10200*	*10450*	*10750*	*11000*	*11350*	*11350*	*11700*	***12000***					
12.00-24TG	Y103	Grader	PR								(12)								
			kPa	125	150	175	200	225	250	275	**300**								
			psi	*18*	*22*	*25*	*29*	*33*	*36*	*40*	***44***								
		40	kg	1450	1600	1750	1900	2000	2120	2240	**2360**								
		25	*lbs*	*3200*	*3520*	*3860*	*4180*	*4400*	*4680*	*4940*	***5200***								
12.00-24NHS	Y67	Earthmover	PR								(16)				(20)				
			kPa	275	300	325	350	375	400	425	**450**	475	500	525	**550**				
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	***65***	*69*	*73*	*76*	***80***				
		50	kg	2500	2575	2725	2800	3000	3075	3150	**3250**	3350	3450	3550	**3650**				
		30	*lbs*	*5520*	*5680*	*6000*	*6150*	*6600*	*6800*	*6950*	***7150***	*7400*	*7600*	*7850*	***8050***				
	Y67 Y525 Y69 Y69U	Loader & Dozer	PR									(16)							(20)
			kPa	475	500	525	550	575	600	625	650	**675**	700	725	750	775	800	**825**	
			psi	*69*	*73*	*76*	*80*	*83*	*87*	*91*	*94*	***98***	*102*	*105*	*109*	*112*	*116*	***120***	
		10	kg	5000	5150	5300	5450	5600	5600	5800	6000	**6150**	6150	6300	6500	6700	6700	**6900**	
		5	*lbs*	*11000*	*11400*	*11700*	*12000*	*12300*	*12300*	*12800*	*13200*	***13600***	*13600*	*13900*	*14300*	*14800*	*14800*	***15200***	
13.00-24TG	Y103 Y67	Grader	PR			(8)		(10)			(12)								
			kPa	125	150	**175**	200	**225**	250	275	**300**								
			psi	*18*	*22*	***25***	*29*	***33***	*36*	*40*	***44***								
		40	kg	1700	1900	**2060**	2240	**2360**	2500	2650	**2725**								
		25	*lbs*	*3740*	*4180*	***4540***	*4940*	***5200***	*5520*	*5840*	***6000***								
13.00-24NHS	Y67	Loader & Dozer	PR				(12)						(16)			(18)			
			kPa	375	400	425	**450**	475	500	525	550	575	**600**	625	650	**675**			
			psi	*54*	*58*	*62*	***65***	*69*	*73*	*76*	*80*	*83*	***87***	*91*	*94*	***98***			
		10	kg	5000	5225	5415	**5600**	5800	5975	6150	6180	6340	**6500**	6655	6810	**6965**			
		5	*lbs*	*11020*	*11520*	*11940*	***12350***	*12790*	*13170*	*13560*	*13620*	*13980*	***14330***	*14670*	*15010*	***15350***			
14.00-24TG	Y103 Y67	Grader	PR	(10)	(12)		(14)		(16)				(20)						
			kPa	**225**	**250**	275	**300**	325	**350**	375	400	425	**450**						
			psi	***33***	***36***	*40*	***44***	*47*	***51***	*54*	*58*	*62*	***65***						
		40	kg	**2800**	**3075**	3250	**3450**	3550	**3650**	3800	3950	4090	**4230**						
		25	*lbs*	***6150***	***6800***	*7150*	***7600***	*7850*	***8050***	*8400*	*8700*	*9000*	***9350***						
14.00-24NHS	Y103 Y67 Y69	Loader & Dozer	PR	(12)	(16)					(20)						(24)			
			kPa	**425**	**575**	600	625	650	675	**700**	725	750	775	800	825	**850**			
			psi	***62***	***83***	*87*	*91*	*94*	*98*	***102***	*105*	*109*	*112*	*116*	*120*	***123***			
		10	kg	**6285**	**7500**	7750	8000	8250	8250	**8500**	8750	8750	9000	9250	9250	**9500**			
		5	*lbs*	***13900***	***16500***	*17100*	*17600*	*18200*	*18200*	***18700***	*19300*	*19300*	*19900*	*20400*	*20400*	***20900***			
	Y67	Earthmover	PR				(20)				(24)				(28)				
			kPa	400	425	450	**475**	500	525	550	**575**	600	625	**650**					
			psi	*58*	*62*	*65*	***69***	*73*	*76*	*80*	***83***	*87*	*91*	***94***					
		50	kg	4250	4375	4500	**4625**	4750	4875	5000	**5150**	5300	5450	**5600**					
		30	lbs	*9350*	*9650*	*9900*	***10200***	*10500*	*10700*	*11000*	***11400***	*11700*	*12000*	***12300***					
16.00-24TG	Y103 Y67	Grader	PR					(12)			(16)								
			kPa	125	150	175	200	**225**	250	275	**300**								
			psi	*18*	*22*	*25*	*29*	***33***	*36*	*40*	***44***								
		40	kg	2650	3000	3250	3450	**3650**	4000	4250	**4500**								
		25	*lbs*	*5840*	*6600*	*7150*	*7600*	***8050***	*8800*	*9350*	***9900***								
	Y103	Loader & Dozer	PR											(16)					
			kPa	200	220	240	260	280	300	325	350	375	400	**425**					
			psi	*29*	*32*	*35*	*38*	*41*	*44*	*47*	*51*	*54*	*58*	***62***					
		10	kg	5345	5650	5945	6230	6505	6775	7100	7365	7670	7965	**8250**					
		5	*lbs*	*11780*	*12460*	*13110*	*13730*	*14340*	*14940*	*15650*	*16240*	*16910*	*17560*	***18190***					
16.00-24NHS	Y67	Earthmover	PR									(24)							
			kPa	275	300	325	350	375	400	425	450	**475**							
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***							
		50	kg	4375	4625	4875	5000	5300	5450	5600	5800	**6000**							
		30	*lbs*	*9650*	*10200*	*10700*	*11000*	*11700*	*12000*	*12300*	*12800*	***13200***							

TG : Tractor-Grade tire. Not for highway service.
NHS : Not for highway service

- Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction HR : Heat Resistant
- Specification Code CP : Cut Protected REG : Regular HR-H : Heat Resistant-H
  CP-S : Cut Protected-S RE-R : Regular-R HR-V : Heat Resistant-V
  CP-C : Cut Protected-C RE-T : Regular-T

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
14.00-25NHS	Y67	20	-	○	-	○	E-3	1345	53.0	380	15.0	624	24.6	408	16.1	27.7	35	95	65	CP	14.00-24/25	10.00-1.5
		24	○	-	-	-												67	46	CP		
			○	-	-	○												109	75	REG		
16.00-25	Y67	24	○	○	○	○	E-3	1475	58.1	445	17.5	686	27.0	467	18.4	34.3	43	124	85	CP	16.00-24/25	11.25-2.0
		28	-	○	○	○												139	95	REG		
		32	-	-	-	○																
	Y523	24	-	-	-	○	E-4	1540	60.6	443	17.4	724	28.5	467	18.4	59.3	75	102	70	CP	-	
		28																				
18.00-25	Y67	32	-	○	-	○	E-3	1599	63.0	520	20.5	734	28.9	540	21.3	38.5	49	160	110	CP	18.00-25	13.00-2.5
		40	-	-	-	○															-	
		16	-	-	-	○	G-3											-	-	-		
	Y523	32	-	-	-	○	E-4	1652	65.0	517	20.4	772	30.4	541	21.3	61.3	77	139	95	CP		
		40																				
	Y69	24	-	-	-	○	L-5S	1651	65.0	533	21.0	751	29.6	571	22.5	83.4	104				18.00-25	
		28	-	○	-	○																
		32	-	-	-	○																
	Y69K	28	-	-	○	○	L-5S	1700	66.9	520	20.5	785	30.9	555	21.9	84.1	106	-	-	-		
		32	-	-	-	○															-	
	Y69U	24																				
		28	-	-	○	-	L-5S	1670	65.7	536	21.1	780	30.7	571	22.5	84.1	106					
		32																				
21.00-25	Y67	24	-	-	-	○	E-3	1722	67.8	595	23.4	777	30.6	624	24.6	40.6	51	212	145	REG	-	15.00-3.0
18.00-33	Y67	28																				
		32	-	-	-	○	E-3	1800	70.9	520	20.5	840	33.1	554	21.8	41.1	52	190	130	CP-C		
		36																				
	Y523	32																				
		36	-	-	-	○	E-4	1850	72.8	518	20.4	869	34.2	542	21.3	56.2	71	153	105	CP-C	-	13.00-2.5
		40	-	-	○	○																
	Y523U	32	-	-	-	○	E-4	1861	73.3	519	20.4	874	34.4	545	21.5	67.0	84	146	100	CP-C		
21.00-35	Y523	36	-	-	○	○	E-4	2045	80.5	590	23.2	951	37.4	623	24.5	63.2	80	190	130	CP-C	-	15.00-3.0
																		219	150	RE-R		
		40	-	-	-	○												190	130	CP-C		
																		219	150	RE-R		
24.00-35	Y523	36	-	-	-	○	E-4	2175	85.6	687	27.0	990	39.0	710	28.0	64.6	81	226	155	CP-C	-	17.00-3.5
			-	-	-	○												263	180	RE-T		
		42	-	-	-	○												175	120	CP-S		
			-	-	○	○												226	155	CP-C		
			-	-	-	○												263	180	RE-R		
			-	-	-	○												321	220	HR-H		
		48	-	-	-	○												226	155	CP-C		
24.00-49	Y523	42	-	-	-	○	E-4	2529	99.6	655	25.8	1184	46.6	697	27.4	64.6	81	277	190	CP-C	-	17.00-3.5
		48																423	290	HR-V		

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures															
14.00-25NHS	Y67	Earthmover	PR								(20)				(24)				
			kPa	300	325	350	375	400	425	450	**475**	500	525	550	**575**				
			psi	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***	*73*	*76*	*80*	***83***				
		50	kg	3550	3750	3875	4000	4250	4375	4500	**4625**	4750	4875	5000	**5150**				
		30	*lbs*	*7850*	*8250*	*8550*	*8800*	*9350*	*9650*	*9900*	***10200***	*10500*	*10700*	*11000*	***11400***				
16.00-25	Y67 Y523	Earthmover	PR								(24)				(28)				(32)
			kPa	300	325	350	375	400	425	450	**475**	500	525	550	**575**	600	625	**650**	
			psi	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***	*73*	*76*	*80*	***83***	*87*	*91*	***94***	
		50	kg	4625	4875	5000	5300	5450	5600	5800	**6000**	6300	6500	6500	**6700**	6900	7100	**7300**	
		30	*lbs*	*10200*	*10700*	*11000*	*11700*	*12000*	*12300*	*12800*	***13200***	*13900*	*14300*	*14300*	***14800***	*15200*	*15700*	***16100***	
18.00-25	Y67 Y523	Earthmover	PR											(32)					(40)
			kPa	350	375	400	425	450	475	500	525	550	**575**	600	625	650	675	**700**	
			psi	*51*	*54*	*58*	*62*	*65*	*69*	*73*	*76*	*80*	***83***	*87*	*91*	*94*	*98*	***102***	
		50	kg	6500	6900	7100	7300	7500	7750	8000	8250	8500	**8750**	9000	9250	9500	9500	**9750**	
		30	*lbs*	*14300*	*15200*	*15700*	*16100*	*16500*	*17100*	*17600*	*18200*	*18700*	***19300***	*19800*	*20400*	*20900*	*20900*	***21500***	
	Y67	Grader	PR						(16)										
			kPa	125	150	175	200	225	**250**										
			psi	*18*	*22*	*25*	*29*	*33*	***36***										
		40	kg	3250	3650	4000	4125	4625	**5000**										
		25	*lbs*	*7150*	*8050*	*8800*	*9100*	*10200*	***11000***										
	Y67 Y69 Y69K Y69U	Loader & Dozer	PR	(16)				(24)				(28)				(32)			
			kPa	**375**	475	500	525	**550**	575	600	625	**650**	675	700	725	**750**			
			psi	***54***	*69*	*73*	*76*	***80***	*83*	*87*	*91*	***94***	*98*	*102*	*105*	***109***			
		10	kg	**10000**	11500	11800	12150	**12500**	12850	13200	13600	**13600**	14000	14500	14500	**15000**			
		5	*lbs*	***22000***	*25400*	*26000*	*26800*	***27600***	*28300*	*29100*	*30000*	***30000***	*30900*	*32000*	*32000*	***33100***			
21.00-25	Y67	Earthmover	PR					(24)											
			kPa	275	300	325	350	**375**											
			psi	*40*	*44*	*47*	*51*	***54***											
		50	kg	7300	7750	8000	8500	**8750**											
		30	*lbs*	*16100*	*17100*	*17600*	*18700*	***19300***											
18.00-33	Y67 Y523 Y523U	Earthmover	PR			(28)			(32)		(36)				(40)				
			kPa	450	475	**500**	525	550	**575**	600	**625**	650	675		**700**				
			psi	*65*	*69*	***73***	*76*	*80*	***83***	*87*	***91***	*94*	*98*		***102***				
		50	kg	8750	9000	**9250**	9750	10000	**10300**	10500	**10700**	10900	11200		**11500**				
		30	*lbs*	*19300*	*19800*	***20400***	*21500*	*22000*	***22700***	*23100*	***23600***	*24000*	*24700*		***25400***				
21.00-35	Y523	Earthmover	PR								(36)				(40)				
			kPa	375	400	425	450	475	500	525	**550**	575	600		**625**				
			psi	*54*	*58*	*62*	*65*	*69*	*73*	*76*	***80***	*83*	*87*		***91***				
		50	kg	10300	10900	11200	11500	11800	12150	12500	**12850**	13200	13600		**14000**				
		30	*lbs*	*22700*	*24000*	*24700*	*25400*	*26000*	*26800*	*27600*	***28300***	*29100*	*30000*		***30900***				
24.00-35	Y523	Earthmover	PR				(36)				(42)				(48)				
			kPa	400	425	450	**475**	500	525	550	**575**	600	625		**650**				
			psi	*58*	*62*	*65*	***69***	*73*	*76*	*80*	***83***	*87*	*91*		***94***				
		50	kg	14000	14500	15000	**15500**	15500	16000	16500	**17000**	17500	18000		**18500**				
		30	*lbs*	*30900*	*32000*	*33100*	***34200***	*34200*	*35300*	*36400*	***37500***	*38600*	*39700*		***40800***				
24.00-49	Y523	Earthmover	PR								(42)				(48)				
			kPa	400	425	450	475	500	525	550	**575**	600	625		**650**				
			psi	*58*	*62*	*65*	*69*	*73*	*76*	*80*	***83***	*87*	*91*		***94***				
		50	kg	16500	17000	18000	18500	19000	19500	20000	**20600**	21200	21800		**21800**				
		30	*lbs*	*36400*	*37500*	*39700*	*40800*	*41900*	*43000*	*44100*	***45400***	*46700*	*48100*		***48100***				

NHS : Not for highway service

- Type — T/T : Tube Type; T/L : Tubeless Type; SB : Steel breaker construction
- Specification Code — CP : Cut Protected; REG : Regular; HR : Heat Resistant; CP-S : Cut Protected-S; RE-R : Regular-R; HR-H : Heat Resistant-H; CP-C : Cut Protected-C; RE-T : Regular-T; HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
27.00-49	Y67	48	-	-	-	○	E-3	2645	104.1	750	29.5	1220	48.0	800	31.5	50.3	63	642	440	HR-V	-	19.50-4.0
	Y523	42	-	-	-	○	E-3											336	230	CP-C		
			-	-	-	○												387	265	RE-R		
		48	-	-	○	○	E-4	2679	105.5	748	29.4	1245	49.0	791	31.1	71.3	90	263	180	CP-S		
			-	-	○	○												336	230	CP-C		
			-	-	○	○												387	265	RE-R		
			-	-	○	○												452	310	HR-H		
			-	-	○	○												496	340	HR-V		
30.00-51	Y523	46	-	-	-	○	E-4	2876	113.2	848	33.4	1339	52.7	896	35.3	84.1	106	306	210	CP-S	-	22.00-4.5
																		387	265	CP-C		
																		496	340	RE-T		
		52																387	265	CP-C		
																		591	405	HR-V		
33.00-51	Y523	50	-	-	○	-	E-4	3039	119.6	927	36.5	1404	55.3	985	38.8	82.7	104	350	240	CP-S	-	24.00-5.0
		58	-	-	-	○												430	295	CP-C		
			-	-	-	○												511	350	RE-R		
			-	-	-	○												642	440	HR-V		
	Y567	50	-	-	○	○												420	288	CP-S		
			-	-	○	○												613	420	RE-R		
		58	-	-	-	○												516	354	CP-C		
			-	-	-	○												613	420	RE-R		
			-	-	-	○												664	455	RE-T		
			-	-	-	○												770	528	HR-V		
36.00-51	Y565	58	-	-	-	○	E-3	3200	126.0	1045	41.1	1460	57.5	1100	43.3	51.8	65	730	500	RE-T	-	26.00-5.0
		66																730	500	RE-T		
																		875	600	HR-V		
	Y523	50																				
		58					E-4	3198	125.9	1040	40.9	1476	58.1	1090	42.9	92.2	116	481	330	CP-C		
		66																627	430	RE-T		
40.00-57	Y523	68	-	-	-	○	E-4	3551	139.8	1127	44.4	1624	63.9	1200	47.2	92.8	117	657	450	RE-T	-	29.00-6.0
																		788	540	HR-V		
		76																598	410	RE-R		
																		657	450	RE-T		
																		788	540	HR-V		
	Y567	68						3544	139.5	1127	44.4	1621	63.8	1200	47.2	92.8	117	613	420	CP-C		
																		717	491	RE-R		
																		945	648	HR-V		

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures													
27.00-49	Y67 Y523		PR										(42)			(48)	
		Earthmover	kPa	275	300	325	350	375	400	425	450	475	**500**	525	550	**575**	
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	***73***	*76*	*80*	***83***	
		50	kg	16500	17000	18000	19000	19500	20600	21200	21800	22400	**23000**	23600	24300	**25000**	
		30	*lbs*	*36400*	*37500*	*39700*	*41900*	*43000*	*45400*	*46700*	*48100*	*49400*	***50700***	*52000*	*53600*	***55100***	
30.00-51	Y523		PR										(46)		(52)		
		Earthmover	kPa	275	300	325	350	375	400	425	450	475	**500**	525	**550**		
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	***73***	*76*	***80***		
		50	kg	20000	21200	22400	23000	24300	25000	25750	27250	28000	**29000**	29000	**30000**		
		30	*lbs*	*44100*	*46700*	*49400*	*50700*	*53600*	*55100*	*56800*	*60000*	*61500*	***64000***	*64000*	***66000***		
33.00-51	Y523 Y567		PR										(50)			(58)	
		Earthmover	kPa	275	300	325	350	375	400	425	450	475	**500**	525	550	**575**	
			psi	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	***73***	*76*	*80*	***83***	
		50	kg	23600	24300	25750	27250	28000	29000	30000	31500	32500	**33500**	34500	35500	**35500**	
		30	*lbs*	*52000*	*53600*	*56800*	*60000*	*61500*	*64000*	*66000*	*69500*	*71500*	***74000***	*76000*	*78500*	***78500***	
36.00-51	Y565 Y523		PR					(50)			(58)			(66)			
		Earthmover	kPa	350	375	400	425	**450**	475	500	**525**	550	575	**600**			
			psi	*51*	*54*	*58*	*62*	***65***	*69*	*73*	***76***	*80*	*83*	***87***			
		50	kg	32500	34500	35500	36500	**37500**	38750	40000	**41250**	42500	43750	**45000**			
		30	*lbs*	*71500*	*76000*	*78500*	*80500*	***82500***	*85500*	*88000*	***91000***	*93500*	*96500*	***99000***			
40.00-57	Y523 Y567		PR									(68)			(76)		
		Earthmover	kPa	350	375	400	425	450	475	500	525	**550**	575	600	**625**		
			psi	*51*	*54*	*58*	*62*	*65*	*69*	*73*	*76*	***80***	*83*	*87*	***91***		
		50	kg	41250	43750	45000	46250	48750	50000	51500	53000	**54500**	56000	58000	**58000**		
		30	*lbs*	*91000*	*96500*	*99000*	*102000*	*107500*	*110000*	*113500*	*117000*	***120000***	*123500*	*128000*	***128000***		

- Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
- Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
  CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
  CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
*15.5-25	Y103	12	-	○	-	○	L-2	1286	50.6	390	15.4	575	22.6	433	17.0	25.5	32	-	-	-	15.5-25	12.00-1.3
	Y67		-	○	-	○	L-3	1290	50.8	402	15.8	589	23.2	433	17.0	28.0	35					
*17.5-25	Y103	12	-	-	-	○	G-2	1364	53.7	435	17.1	620	24.4	460	18.1	27.0	34	-	-	-	-	14.00-1.5
		12	-	○	-	○	L-2					599	23.6	477	18.8	27.0	34				17.5-25	
		16	-	○	-	○																
	Y548	12	-	○	-	○	L-2	1369	53.9	454	17.9	610	24.0	486	19.1	33.2	42					
		16																				
	Y67	12	○	○	○	○	L-3	1356	53.4	443	17.4	600	23.6	483	19.0	30.3	38					
		16	-	○	-	○																
	Y575	12	-	○	○	○	L-3	1340	52.8	435	17.1	595	23.4	473	18.6	30.2	38					
		16	-	-	-	○															-	
	Y67E	12	-	-	-	○	L-4	1390	54.7	443	17.4	637	25.1	474	18.7	45.0	57					
	Y69	16	-	-	-	○	L-5S	1390	54.7	430	16.9	649	25.6	454	17.9	69.0	87				17.5-25	
		20	-	○	-	○																
		24	-	-	-	○																
		28	-	-	-	○															-	
	Y69U	20	-	-	○	-	L-5S	1400	55.1	452	17.8	658	25.9	473	18.6	69.0	87					
		28	-	-	○	-																
*20.5-25	Y103	12	-	-	-	○	L-2	1480	58.3	540	21.3	647	25.5	583	23.0	31.5	40	-	-	-	-	17.00-2.0
		16																				
	Y548	12	-	○	-	○	L-2	1509	59.4	551	21.7	670	26.4	590	23.2	33.8	43				20.5-25	
		16																				
		20		-																	-	
	Y67	28	-	-	-	○	E-3	1490	58.7	522	20.6	690	27.2	540	21.3	33.4	42	109	75	HR	-	
		12	-	○	-	○	L-3	1498	59.0	528	20.8	651	25.6	578	22.8	33.4	42					
		16	-	○	-	○																
		20	-	○	-	○																
	Y526K	16	-	○	○	○	L-3	1486	58.5	542	21.3	677	26.7	577	22.7	34.9	44				20.5-25	
		20	-	○	-	○																
	Y575	12	-	○	○	○	L-3	1495	58.9	532	20.9	663	26.1	574	22.6	32.7	41	-	-	-		
		16	-	○	○	○																
		20	-	○	-	○																
	Y524	12					L-5	1558	61.3	539	21.2	721	28.4	575	22.6	80.3	101				-	
		16	-	-	-	○																
		20																				
	Y69	16	-	-	-	○	L-5S	1545	60.8	540	21.3	714	28.1	564	22.2	81.0	102					
		28																				
*23.5-25	Y103	12	-	-	-	○	L-2	1614	63.5	597	23.5	686	27.0	680	26.8	36.0	45	-	-	-	-	19.50-2.5
		16																				
		32	-	-	-	○	E-3	1601	63.0	580	22.8	745	29.3	616	24.3	42.4	53	146	100	HR		
	Y67	12	-	○	-	-	L-3	1605	63.2	596	23.5	709	27.9	636	25.0	42.4	53					
		16	-	○	○	○																
		20	-	-	-	○															23.5-25	
		24	-	○	-	○																
	Y526K	16	○	-	○	○	L-3	1601	63.0	626	24.6	711	28.0	662	26.1	40.5	51					
		20	-	○	○	○																
	Y575	16	○	○	○	○	L-3	1605	63.2	605	23.8	708	27.9	645	25.4	42.2	53					
		20	-	○	○	○																
		24	-	-	-	○																
	Y545	16	-	-	○	○	L-4	1680	66.1	630	24.8	760	29.9	660	26.0	56.0	71	-	-	-	-	
		20	-	-	○	○																
		24	-	-	-	○																
	Y524	16					L-5	1666	65.6	620	24.4	764	30.1	662	26.1	88.0	111					
		20	-	-	-	○																
		24																				
	Y69	20	-	-	-	○	L-5S	1645	64.8	600	23.6	749	29.5	635	25.0	93.2	117					
		28	-	○	-	-															23.5-25	

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures														
15.5-25	Y103 Y67	Loader & Dozer	PR								(12)							
			kPa	225	250	275	300	325	350	375	**400**							
			psi	*33*	*36*	*40*	*44*	*47*	*51*	*54*	***58***							
		10	kg	4000	4250	4500	4750	4875	5150	5300	**5600**							
		5	*lbs*	*8800*	*9350*	*9900*	*10500*	*10700*	*11400*	*11700*	***12300***							
17.5-25	Y103	Grader	PR				(12)											
			kPa	125	150	175	**200**											
			psi	*18*	*22*	*25*	***29***											
		40	kg	2120	2360	2575	**2900**											
		25	*lbs*	*4680*	*5200*	*5680*	***6400***											
	Y103 Y548 Y67 Y575 Y67E Y69 Y69U	Loader & Dozer	PR	**(12)**					**(16)**					(20)	(24)	(28)		
			kPa	**350**	375	400	425	450	**475**	500	525	550	**575**	**700**	**825**			
			psi	***51***	*54*	*58*	*62*	*65*	***69***	*73*	*76*	*80*	***83***	***102***	***120***			
		10	kg	**6150**	6300	6700	6900	7100	**7300**	7500	7750	8000	**8250**	**9250**	**10000**			
		5	*lbs*	***13600***	*13900*	*14800*	*15200*	*15700*	***16100***	*16500*	*17100*	*17600*	***18200***	***20400***	***22000***			
20.5-25	Y67	Earthmover	PR															**(28)**
			kPa	175	200	225	250	275	300	325	350	375	400	425	450	**475**		
			psi	*25*	*29*	*33*	*36*	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***		
		50	kg	4125	4500	4875	5150	5450	5800	6000	6300	6500	6700	7100	7300	**7500**		
		30	*lbs*	*9100*	*9900*	*10750*	*11400*	*12000*	*12800*	*13200*	*13900*	*14300*	*14800*	*15700*	*16100*	***16500***		
	Y103 Y548 Y67 Y526K Y575 Y524 Y69	Loader & Dozer	PR	**(12)**				**(16)**				**(20)**		**(28)**				
			kPa	**250**	275	300	325	**350**	375	400	425	**450**	525	**625**				
			psi	***36***	*40*	*44*	*47*	***51***	*54*	*58*	*62*	***65***	*76*	***91***				
		10	kg	**6700**	7100	7500	7750	**8250**	8500	8750	9250	**9500**	10300	**11500**				
		5	*lbs*	***14800***	*15700*	*16500*	*17100*	***18200***	*18700*	*19300*	*20400*	***20900***	*22700*	***25400***				
23.5-25	Y67	Earthmover	PR													**(32)**		
			kPa	175	200	225	250	275	300	325	350	375	400	425	450	**475**		
			psi	*25*	*29*	*33*	*36*	*40*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	***69***		
		50	kg	5300	5800	6150	6500	6900	7300	7750	8000	8250	8750	9000	9250	**9500**		
		30	*lbs*	*11700*	*12800*	*13550*	*14300*	*15200*	*16100*	*17100*	*17600*	*18200*	*19300*	*19800*	*20400*	***20900***		
	Y103 Y67 Y526K Y575 Y545 Y524 Y69	Loader & Dozer	PR	**(12)**			**(16)**			**(20)**		**(24)**	**(28)**					
			kPa	**225**	250	275	**300**	325	350	**375**	425	**475**	**550**					
			psi	***33***	*36*	*40*	***44***	*47*	*51*	***54***	*62*	***69***	***80***					
		10	kg	**8000**	8500	9000	**9500**	10000	10600	**10900**	11800	**12500**	**13600**					
		5	*lbs*	***17600***	*18700*	*19800*	***20900***	*22000*	*23400*	***24000***	*26000*	***27600***	***30000***					

* For slope and ditching service, inflation pressure should be increased 15 psi with no increase load rating.

• Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height	
26.5-25	Y67	26	-	-	-	○	E-3	1730	68.1	700	27.6	778	30.6	732	28.8	44.9	57	153	105	REG	-	22.00-3.0	
		16	-	-	-	○	L-3	1745	68.7	694	27.3	765	30.1	738	29.1	44.9	57				26.5-25		
		20	-	○	-	○																	
		24	-	○	-	○															-		
		26	-	-	-	○																	
		28	-	-	-	○															26.5-25		
	Y575	16	-	-	-	○	L-3	1740	68.5	690	27.2	770	30.3	733	28.9	42.8	54						
		20	-	○	○	○																	
		24	○	-	-	○																	
		28	-	-	-	○																	
	Y545	20	-	-	-	○	L-4	1786	70.3	704	27.7	800	31.5	764	30.1	68.4	86						
		24																					
		26																					
		32																					
	Y524	20	-	-	-	○	L-5	1808	71.2	696	27.4	820	32.3	722	28.4	97.1	122						
		24	-	-	-	○																	
		26	-	-	-	○																	
		28	-	-	-	○																	
		32	-	-	○	○																	
	Y69	28	-	-	-	○	L-5S	1798	70.8	690	27.2	798	31.4	731	28.8	86.2	109						
		32																					
		36																					
	Y69K	26	-	-	-	○	L-5S	1790	70.5	695	27.4	825	32.5	723	28.5	90.6	114						
		32																					
		36																					
	Y69U	28	-	-	○	-	L-5S	1803	71.0	717	28.2	837	33.0	739	29.1	90.8	114						
		32																					
29.5-25	Y67	28	-	-	-	○	E-3	1876	73.9	776	30.6	822	32.4	826	32.5	49.6	62	160	110	REG	-	25.00-3.5	
		34																175	120	HR			
		22					L-3					803	31.6	835	32.9	49.6	62						
		28																					
	Y575	22	-	-	○	○	L-3	1855	73.0	765	30.1	813	32.0	830	32.7	49.1	62						
		28	-	-	○	○																	
		34	-	-	○	-																	
	Y545	22	-	-	-	○	L-4	1900	74.8	785	30.9	847	33.3	842	33.1	73.1	92						
		28																					
	Y524	22	-	-	-	○	L-5	1908	75.1	774	30.5	868	34.2	825	32.5	110.9	140						
		28	-	-	○	○																	
26.5-29	Y67	26	-	-	-	○	E-3	1834	72.2	691	27.2	829	32.6	723	28.5	40.8	51	182	125	REG	-	22.00-3.0	
29.5-29	Y67	28	-	-	-	○	E-3	1947	76.7	768	30.2	876	34.5	806	31.7	49.6	62	197	135	REG	-	25.00-3.5	
		34	-	-	○	○												168	115	CP			
		28	-	-	-	○	L-3					849	33.4	840	33.1			-	-	-			
	Y67E	34	-	-	○	-	E-4	2024	79.7	772	30.4	914	36.0	825	32.5	78.3	99	*-	*-	CP			
		28	-	-	-	○	L-4																
	Y524	28	-	-	-	○	L-5	2040	80.3	771	30.4	914	36.0	831	32.7	106.3	134						
		34	-	-	○	-																	
	Y69K	34	-	-	-	○	L-5S	2019	79.5	782	30.8	938	36.9	820	32.3	107.7	136						
		40	-	-	○	○																	
33.25-29	Y67	26	-	-	-	○	E-3	2075	81.7	836	32.9	924	36.4	873	34.4	45.8	58	212	145	CP	-	27.00-3.5	
		32	-	-	○	○																	

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures													
26.5-25	Y67	Earthmover	PR							(26)							
			kPa	175	200	225	250	275	300	**325**							
			psi	*25*	*29*	*33*	*36*	*40*	*44*	***47***							
		50	kg	6700	7300	7750	8250	8750	9250	**9500**							
		30	*lbs*	*14750*	*16100*	*17100*	*18200*	*19300*	*20400*	***20900***							
	Y67 Y575 Y545 Y524 Y69 Y69K Y69U	Loader & Dozer	PR	**(16)**		**(20)**	**(24)**	**(26)**	**(28)**	**(32)**	**(36)**						
			kPa	**275**	300	**350**	**400**	**450**	**475**	**550**	**625**						
			psi	***40***	*44*	***51***	***58***	***65***	***69***	***80***	***91***						
		10	kg	**11500**	12150	**13200**	**14000**	**15000**	**15500**	**17000**	**18500**						
		5	*lbs*	***25350***	*26800*	***29100***	***30900***	***33100***	***34200***	***37500***	***40800***						
29.5-25	Y67	Earthmover	PR							**(28)**			**(34)**				
			kPa	175	200	225	250	275	300	**325**	350	375	**400**				
			psi	*25*	*29*	*33*	*36*	*40*	*44*	***47***	*51*	*54*	***58***				
		50	kg	8000	8750	9250	10000	10600	10900	**11500**	12150	12500	**13200**				
		30	*lbs*	*17600*	*19300*	*20400*	*22000*	*23400*	*24000*	***25400***	*26800*	*27600*	***29100***				
	Y67 Y575 Y545 Y524	Loader & Dozer	PR				**(22)**				**(28)**					**(34)**	
			kPa	250	275	300	**325**	350	375	400	**425**	450	475	500	**525**		
			psi	*36*	*40*	*44*	***47***	*51*	*54*	*58*	***62***	*65*	*69*	*73*	***76***		
		10	kg	12850	13600	14500	**15000**	16000	16500	17000	**17500**	18500	19000	19500	**20000**		
		5	*lbs*	*28300*	*30000*	*32000*	***33100***	*35300*	*36400*	*37500*	***38600***	*40800*	*41900*	*43000*	***44100***		
26.5-29	Y67	Earthmover	PR							**(26)**							
			kPa	175	200	225	250	275	300	**325**							
			psi	*25*	*29*	*33*	*36*	*40*	*44*	***47***							
		50	kg	7100	7750	8250	8750	9250	9750	**10300**							
		30	*lbs*	*15700*	*17100*	*18200*	*19300*	*20400*	*21500*	***22700***							
29.5-29	Y67 Y67E	Earthmover	PR							**(28)**			**(34)**				
			kPa	175	200	225	250	275	300	**325**	350	375	**400**				
			psi	*25*	*29*	*33*	*36*	*40*	*44*	***47***	*51*	*54*	***58***				
		50	kg	8500	9250	10000	10600	11200	11800	**12150**	12850	13200	**14000**				
		30	*lbs*	*18700*	*20400*	*22000*	*23400*	*24700*	*26000*	***26800***	*28300*	*29100*	***30900***				
	Y67 Y67E Y524 Y69K	Loader & Dozer	PR		**(22)**				**(28)**					**(34)**	**(40)**		
			kPa	300	**325**	350	375	400	**425**	450	475	500	**525**	**625**			
			psi	*44*	***47***	*51*	*54*	*58*	***62***	*65*	*69*	*73*	***76***	***91***			
		10	kg	15500	**16000**	17000	17500	18000	**19000**	19500	20000	20600	**21200**	**23600**			
		5	*lbs*	*34200*	***35300***	*37500*	*38600*	*39700*	***41900***	*43000*	*44100*	*45400*	***46700***	***52000***			
33.25-29	Y67	Earthmover	PR					**(26)**		**(32)**							
			kPa	175	200	225	250	**275**	300	**325**							
			psi	*25*	*29*	*33*	*36*	***40***	*44*	***47***							
		50	kg	10300	11200	12150	12850	**13600**	14000	**15000**							
		30	*lbs*	*22700*	*24700*	*26800*	*28300*	***30000***	*30900*	***33100***							

* Not fixed yet and YOKOHAMA will inform when available

• Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : E,L,G

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Overall Diameter inch	Overall Width mm	Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	TKPH	TMPH	Spec	Tube Size	Rim Size Flange Height
29.5-35	Y67	34	-	-	-	○	E-3	2120	83.5	776	30.6	965	38.0	819	32.2	39.5	50	248	170	REG	-	25.00-3.5
33.25-35	Y67	32	-	-	-	○	E-3	2248	88.5	853	33.6	1003	39.5	898	35.4	47.1	59	226	155	CP	-	27.00-3.5
		38																263	180	REG		
37.25-35	Y67	30	-	-	-	○	E-3	2390	94.1	960	37.8	1060	41.7	1010	39.8	50.6	64	277	190	CP	-	31.00-4.0
		36	-	-	○	○												277 328	190 225	CP REG		
37.5-39	Y67	44	-	-	-	○	E-3	2556	100.6	949	37.4	1137	44.8	1015	40.0	53.8	68	321	220	CP	-	32.00-4.5
		52	-	-	○	○												321 385	220 264	CP REG		
35/65-33	Y545	24 30 36 42	-	-	○	-	L-4	2083	82.0	902	35.5	952	37.5	925	36.4	62.8	79	-	-	-	-	28.00-3.5
	Y524	24 30 36 42 48					L-5	2075	81.7	900	35.4	952	37.5	933	36.7	96.2	121					
	Y524Z	24 36 42					L-5	2065	81.3	906	35.7	956	37.6	935	36.8	96.2	121					
40/65-39	Y524	36 56	-	-	○	-	L-5	2404	94.6	1025	40.4	1169	46.0	1067	42.0	105.7	133	-	-	-	-	32.00-4.0
45/65-45	Y545	58	-	-	○	-	L-4	2730	107.5	1150	45.3	1240	48.8	1205	47.4	70.3	89	-	-	-	-	36.00-4.5
	Y524	38 46 50 58					L-5	2740	107.9	1180	46.5	1260	49.6	1230	48.4	115.0	145					
	Y524Z	38 46 50 58					L-5															

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures													
29.5-35	Y67	Earthmover	PR										(34)				
			kPa	175	200	225	250	275	300	325	350	375	**400**				
			psi	*25*	*29*	*33*	*36*	*40*	*44*	*47*	*51*	*54*	***58***				
		50	kg	9250	10000	10900	11500	12150	12850	13600	14000	14500	**15000**				
		30	*lbs*	*20400*	*22050*	*24050*	*25400*	*26800*	*28300*	*30000*	*30900*	*32000*	***33100***				
33.25-35	Y67	Earthmover	PR							(32)			(38)				
			kPa	175	200	225	250	275	300	**325**	350	375	**400**				
			psi	*25*	*29*	*33*	*36*	*40*	*44*	***47***	*51*	*54*	***58***				
		50	kg	11200	12150	12850	14000	14500	15500	**16000**	17000	17500	**18000**				
		30	*lbs*	*24700*	*26800*	*28300*	*30900*	*32000*	*34200*	***35300***	*37500*	*38600*	***39700***				
37.25-35	Y67	Earthmover	PR					(30)		(36)							
			kPa	175	200	225	250	**275**	300	**325**							
			psi	*25*	*29*	*33*	*36*	***40***	*44*	***47***							
		50	kg	13600	14500	15500	16500	**17500**	18500	**19500**							
		30	*lbs*	*30000*	*32000*	*34200*	*36400*	***38600***	*40800*	***43000***							
37.5-39	Y67	Earthmover	PR									(44)			(52)		
			kPa	200	225	250	275	300	325	350	375	**400**	425	450	**475**		
			psi	*29*	*33*	*36*	*40*	*44*	*47*	*51*	*54*	***58***	*62*	*65*	***69***		
		50	kg	16000	17500	18500	19500	20600	21200	22400	23000	**24300**	25000	25750	**26500**		
		30	*lbs*	*35300*	*38600*	*40800*	*43000*	*45400*	*46700*	*49400*	*50700*	***53600***	*55100*	*56800*	***58400***		
35/65-33	Y545 Y524 Y524Z	Loader & Dozer	PR	**(24)**				**(30)**			**(36)**	**(42)**	**(48)**				
			kPa	**350**	375	400	425	**450**	475	500	**525**	**625**	**725**				
			psi	***51***	*54*	*58*	*62*	***65***	*69*	*73*	***76***	***91***	***105***				
		10	kg	**19000**	19500	20000	21200	**21800**	22400	23000	**23600**	**26500**	**28000**				
		5	*lbs*	***41900***	*43000*	*44100*	*46700*	***48100***	*49400*	*50700*	***52000***	***58400***	***61700***				
40/65-39	Y524	Loader & Dozer	PR					**(30)**				**(36)**			**(56)**		
			kPa	275	300	325	350	**375**	400	425	450	**475**	550	625	**725**		
			psi	*40*	*44*	*47*	*51*	***54***	*58*	*62*	*65*	***69***	*80*	*91*	***105***		
		10	kg	22400	23600	25000	25750	**27250**	27250	29000	30000	**30750**	33500	35500	**38750**		
		5	*lbs*	*49400*	*52000*	*55100*	*56800*	***60000***	*60000*	*64000*	*66000*	***68000***	*74000*	*78500*	***85500***		
45/65-45	Y545 Y524 Y524Z	Loader & Dozer	PR				**(38)**				**(46)**		**(50)**	**(58)**			
			kPa	350	375	400	**425**	450	475	500	**525**	550	**575**	**675**			
			psi	*51*	*54*	*58*	***62***	*65*	*69*	*73*	***76***	*80*	***83***	***98***			
		10	kg	34500	35500	37500	**38750**	40000	41250	42500	**43750**	45000	**46250**	**50000**			
		5	*lbs*	*76000*	*78500*	*82500*	***85500***	*88000*	*91000*	*93500*	***96500***	*99000*	***102000***	***110000***			

• Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : C

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	Tube Size	Rim Size Flange Height
7.50-16NHS	Y69	6	-	○	-	-	C-1	815	32.1	221	8.7	387	15.2	235	9.3	-	-	7.50-16	6.00GS
9.00-20NHS	Y69	10	-	○	-	-	C-1	1019	40.1	264	10.4	473	18.6	289	11.4	-	-	9.00-20	7.00T
11.00-20NHS	Y69	14	-	○	-	-	C-1	1103	43.4	320	12.6	487	19.2	344	13.5	-	-	11.00-20	8.00V
14/70-20NHS	Y69	12	-	○	-	-	C-1	965	38.0	369	14.5	459	18.1	374	14.7	-	-	14/70-20	11.00TG
15.0-20NHS	Y69	16	-	○	-	-	C-1	960	37.8	350	13.8	458	18.0	355	14.0	-	-	15.0-20	9.00V

Tire Size	Pattern	Application Max Speed km/h mph		Tire Load Limits at Various Cold Inflation Pressures															
7.50-16NHS	Y69		PR								(6)								
		Compactor	kPa	240	260	280	300	325	350	375	**400**								
			psi	*35*	*38*	*41*	*44*	*47*	*51*	*54*	***58***								
		10	kg	1405	1470	1535	1600	1675	1750	1820	**1890**								
		5	*lbs*	*3100*	*3240*	*3380*	*3530*	*3690*	*3860*	*4010*	***4170***								
9.00-20NHS	Y69		PR														(10)		
		Compactor	kPa	240	260	280	300	325	350	375	400	425	450	475	500	**525**			
			psi	*35*	*38*	*41*	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	***76***			
		10	kg	2295	2405	2515	2615	2740	2865	2980	3095	3210	3315	3425	3530	**3630**			
		5	*lbs*	*5060*	*5300*	*5540*	*5760*	*6040*	*6320*	*6570*	*6820*	*7080*	*7310*	*7550*	*7780*	***8000***			
11.00-20NHS	Y69		PR																(14)
		Compactor	kPa	300	325	350	375	400	425	450	475	500	525	550	575	600	625	**650**	
			psi	*44*	*47*	*51*	*54*	*58*	*62*	*65*	*69*	*73*	*76*	*80*	*83*	*87*	*91*	***94***	
		10	kg	3215	3370	3520	3665	3805	3945	4080	4210	4335	4465	4585	4705	4825	4940	**5055**	
		5	*lbs*	*7090*	*7430*	*7760*	*8080*	*8390*	*8700*	*8990*	*9280*	*9560*	*9840*	*10110*	*10370*	*10640*	*10890*	***11140***	
14/70-20NHS	Y69		PR										(12)						
		Compactor	kPa	240	260	280	300	325	350	375	400	425	**450**						
			psi	*35*	*38*	*41*	*44*	*47*	*51*	*54*	*58*	*62*	***65***						
		10	kg	2775	2905	3035	3160	3310	3460	3600	3740	3875	**4005**						
		5	*lbs*	*6120*	*6400*	*6690*	*6970*	*7300*	*7630*	*7940*	*8250*	*8540*	***8830***						
15.0-20NHS	Y69		PR							(16)									
		Compactor	kPa	400	450	500	550	600	650	**700**									
			psi	*58*	*65*	*73*	*80*	*87*	*94*	***102***									
		10	kg	3325	3565	3790	4010	4215	4420	**4615**									
		5	lbs	*7330*	*7860*	*8360*	*8840*	*9290*	*9740*	***10170***									

TRA Code : IND

(kg)

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	Tube Size	Rim Size Flange Height
11.00-20NHS	Y67	16	○	○	-	-	IND-3	1091	43.0	293	11.5	489	19.3	342	13.5	24.9	31	11.00-20	8.00V
		18	-	○	-	-													
12.00-20NHS	Y67	22	-	○	-	-	IND-3	1143	45.0	322	12.7	516	20.3	347	13.7	25.5	32	12.00-20	8.50V
12.00-24NHS	Y67	20	-	○	-	-	IND-3	1240	48.8	318	12.5	558	22.0	350	13.8	26.4	33	11.00/12.00-24	8.50V
		28																	
	Y505	20					IND-3	1240	48.8	318	12.5	570	22.4	348	13.7	28.2	36		
	Y69	18					IND-3	1238	48.7	332	13.1	574	22.6	386	15.2	26.3	33		
		20					IND-4	1292	50.9	342	13.5	570	22.4	379	14.9	29.7	37		
13.00-24NHS	Y67	18	-	○	-	-	IND-3	1290	50.8	352	13.9	606	23.9	370	14.6	27.9	35	13.00-24	9.00V
		20																	
14.00-24NHS	Y92	24	-	○	-	-	IND-3	1356	53.4	377	14.8	632	24.9	400	15.7	33.5	42	14.00-24/25	10.00W
		28																	
	Y67	20	-	○	-	-	IND-3	1357	53.4	388	15.3	612	24.1	420	16.5	27.7	35		
		24	-	○	-	-													
		28	-	○	-	○													T/T:10.00W T/L:10.00VA
	Y505	28	-	○	-	○	IND-3	1367	53.8	394	15.5	619	24.4	424	16.7	33.8	43		
	Y69	30	-	○	-	-	IND-4	1365	53.7	385	15.2	653	25.7	407	16.0	49.7	58		10.00W
14.00-25NHS	Y67	24	-	○	○	○	IND-3	1350	53.1	370	14.6	627	24.7	428	16.9	27.7	35		10.00-1.5

Tire Size	Pattern	Industrial PR	for Smooth Floors & Runways Use I.P.(kPa)	0 km/h (0 mph)	Creep	4 km/h (2.5 mph)	10 km/h (5 mph)	15 km/h (10 mph)	20 km/h (12 mph)	25 km/h (15 mph)
11.00-20NHS	Y67	16	870	8800	7800	7050	6600	6350	6200	6100
		18	960	9250	8250	7450	6950	6700	6550	6450
12.00-20NHS	Y67	18	900	10450	9300	8400	7850	7550	7350	7250
		20	990	11050	9850	8900	8300	8000	7800	7700
		22	Consult your YOKOHAMA service representative							
12.00-24NHS	Y67 Y505 Y69	18	900	11700	10400	9450	8800	8450	8250	8150
		20	990	12400	11050	10000	9300	8950	8750	8650
		28	Consult your YOKOHAMA service representative							
13.00-24NHS			See Characteristics below ✻							
14.00-24/25NHS	Y92 Y67 Y505 Y69	20	840	15300	13600	12350	11500	11050	10800	10650
		24	1000	17100	15200	13800	12850	12350	12050	11900
		28	1000	18000	16000	14500	13500	13000	12700	12500
		30	Consult your YOKOHAMA service representative							

✻ for Smooth Floors & Runways Use

(kg)

Tire Size	Pattern	Industrial PR	I.P.(kPa)	Maximum Load at Various Maximum Speeds: Fork Lift Truck Load Wheels 40 km/h	Fork Lift Truck Steering Wheels 25 km/h	30 km/h	35 km/h	40 km/h	Industrial Vehicles 10 km/h	25 km/h	40 km/h	50 km/h
13.00-24NHS	Y67	18	750	9020	7215	6885	6630	6435	8775	7020	6045	5460
		20	825	9540	7630	7180	7010	6805	9280	7425	6390	5775

NHS : Not for highway service

- Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
- Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
  CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
  CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

YOKOHAMA OFF-THE-ROAD TIRES 2

■Bias : Technical Data

TRA Code : IND

(kg)

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	Tube Size	Rim Size Flange Height		Tire Size	Pattern	Industrial PR	for Smooth Floors & Runways Use I.P.(kPa)	0 km/h (0 mph)	Creep	4 km/h (2.5 mph)	10 km/h (5 mph)	15 km/h (10 mph)	20 km/h (12 mph)	25 km/h (15 mph)
16.00-25	Y67	28	-	○	-	○	IND-3	1490	58.7	448	17.6	668	26.3	488	19.2	34.3	43	16.00-24/25	11.25-2.0		16.00-25	Y67 Y69PS Y523	28	900	20700	18400	16700	15550	14950	14600	14400
		32	-	-	-	○												-					32	1000	22500	20000	18100	16900	16300	15900	15600
		36	-	-	-	○																									
	Y69PS	28	-	○	-	○	IND-3	1470	57.9	417	16.4	658	25.9	457	18.0	43.8	55	16.00-24/25													
		32																													
	Y523	36	-	-	-	○	IND-4	1540	60.6	443	17.4	724	28.5	467	18.4	59.3	75	-					36	1000	24500	21800	19700	18400	17700	17300	17000
18.00-25	Y67	32	-	○	-	○	IND-3	1620	63.8	514	20.2	722	28.4	551	21.7	38.5	49	18.00-25	13.00-2.5		18.00-25	Y67 Y523 Y69 Y505	32	900	27000	24000	21750	20250	19500	19050	18750
		36	-	○	-	○																									
		40	-	-	-	○																									
	Y523	32	-	-	-	○	IND-4	1652	65.0	517	20.4	772	30.4	541	21.3	61.3	77	-					36	1000	28800	25600	23200	21600	20800	20300	20000
		36																													
		40																													
	Y69	36	-	-	-	○	IND-4	1650	65.0	530	20.9	748	29.4	557	21.9	58.7	74						40	1000	30600	27200	24700	23000	222100	21600	21300
		40																													
	Y505	40	-	-	-	○	IND-4	1670	65.7	522	20.6	741	29.2	564	22.2	64.0	81															
21.00-25	Y67	36	-	-	-	○	IND-3	1730	68.1	590	23.2	772	30.4	639	25.2	40.6	51	-	15.00-3.0		21.00-25	Y67 Y69	36	870	34200	30400	27550	25650	24700	24150	23750
		40																					40	990	37100	32950	29850	27800	26800	26150	25750
	Y69	40					IND-4	1779	70.0	601	23.7	798	31.4	640	25.2	56.2	71															
24.00-29	Y67	42	-	-	-	○	IND-3	1970	77.6	643	25.3	830	32.7	738	29.1	43.7	55	-	17.00-3.5		24.00-29	Y67	42	900	47700	42400	38450	35800	34450	33650	33150
18.00-33	Y523	36	-	-	-	○	IND-4	1850	72.8	518	20.4	869	34.2	542	21.3	56.2	71	-	13.00-2.5		18.00-33	Y523 Y523U Y69	36	1000	33300	29600	26850	25000	24050	23500	23150
		40	-	-	○	○																									
	Y523U	40	-	-	-	○		1861	73.3	519	20.4	874	34.4	545	21.5	67.0	84						40	1000	35500	31500	28600	26600	25600	25000	24600
	Y69	40	-	-	-	○		1868	73.5	514	20.2	843	33.2	565	22.2	58.7	74														
21.00-35	Y67	40	-	-	-	○	IND-3	2004	78.9	580	22.8	935	36.8	622	24.5	42.0	53	-	15.00-3.0		21.00-35	Y67 Y69	40	990	43750	38900	35250	32800	31600	30850	30400
	Y69	42					IND-4	2050	80.7	612	24.1	927	36.5	662	26.1	64.1	81						42	Consult your YOKOHAMA service representative							
24.00-35	Y67	42	-	-	-	○	IND-3	2140	84.3	672	26.5	952	37.5	726	28.6	48.3	61	-	17.00-3.5		24.00-35	Y67 Y523	42	900	52200	46400	42050	39150	37700	36850	36250
		48																					48	1000	55350	49200	44600	41500	40000	39050	38450
	Y523	42					IND-4	2170	85.4	673	26.5	960	37.8	743	29.3	64.6	81															
27.00-49	Y523	42	-	-	-	○	IND-4	2671	105.2	757	29.8	1170	46.1	862	33.9	71.3	90	-	19.50-4.0		27.00-49	Y523	42	810	72000	64000	58000	54000	52000	50800	50000
33.00-51	Y523	58	-	-	-	○	IND-4	3056	120.3	934	36.8	1414	55.7	983	38.7	82.7	104	-	24.00-5.0		33.00-51	Y523	58	900	110700	98400	89200	83050	79950	78100	76900
36.00-51	Y523	58	-	-	-	○	IND-4	3198	125.9	1040	40.9	1379	54.3	1150	45.3	92.2	116	-	26.00-5.0		36.00-51	Y523	58	810	127800	113600	102950	95850	92300	90150	88750
		72																					72	1000	144000	128000	116000	108000	104000	101600	100000
40.00-57	Y523	68	-	-	○	-	IND-4	3584	141.1	1143	45.0	1567	61.7	1271	50.0	92.8	117	-	29.00-6.0		40.00-57	Y523	68	870	166500	148000	134150	124900	120250	117500	115650
		76	-	-	-	○																	76	960	180000	160000	145000	135000	130000	127000	125000

(kg)

Tire Size	Pattern	Ply Rating	Type T/T SB	Type T/T –	Type T/L SB	Type T/L –	TRA Code	Inflated Dimensions Overall Diameter mm	Inflated Dimensions Overall Diameter inch	Inflated Dimensions Overall Width mm	Inflated Dimensions Overall Width inch	Static Loaded Radius mm	Static Loaded Radius inch	Static Loaded Width mm	Static Loaded Width inch	Groove Depth mm	Groove Depth 1/32	Tube Size	Rim Size Flange Height		Tire Size	Pattern	Industrial PR	for Smooth Floors & Runways Use I.P.(kPa)	0 km/h (0 mph)	Creep	4 km/h (2.5 mph)	10 km/h (5 mph)	15 km/h (10 mph)	20 km/h (12 mph)	25 km/h (15 mph)
17.5-25	Y573	36	-	-	-	○	IND-3	1362	53.6	442	17.4	613	24.1	456	18.0	14.0	18	-	14.00-1.5		17.5-25	Y573	36	1000	18550	16500	14950	13900	13400	13100	12900
29.5-25	Y67	34	-	-	-	○	IND-3	1863	73.3	765	30.1	*-	*-	*-	*-	49.6	62	-	25.00-3.5		29.5-25	Y67	34	630	36000	32000	29000	27000	26000	25400	25000
29.5-29	Y67	40	-	-	-	○	IND-3	1970	77.6	780	30.7	860	33.9	820	32.3	49.6	62	-	25.00-3.5		29.5-29	Y67	40	750	42500	37800	34200	31900	30700	30000	29500
33.25-29	Y67	38	-	-	-	○	IND-3	2078	81.8	840	33.1	895	35.2	900	35.4	45.8	58	-	27.00-3.5		33.25-29	Y67	38	Consult your YOKOHAMA service representative							
33.25-35	Y67	44	-	-	-	○	IND-3	2278	89.7	854	33.6	990	39.0	923	36.3	47.1	59	-	27.00-3.5		33.25-35	Y67	44	720	55350	49200	44600	41500	40000	39050	38450
37.5-39	Y67	60	-	-	-	○	IND-3	2536	99.8	960	37.8	*-	*-	*-	*-	53.8	68	-	32.00-4.5		37.5-39	Y67	60	900	81000	72000	65300	60800	58500	57200	56300

* Not fixed yet and YOKOHAMA will inform when available.

• Type T/T : Tube Type T/L : Tubeless Type SB : Steel breaker construction
• Specification Code CP : Cut Protected REG : Regular HR : Heat Resistant
CP-S : Cut Protected-S RE-R : Regular-R HR-H : Heat Resistant-H
CP-C : Cut Protected-C RE-T : Regular-T HR-V : Heat Resistant-V

• PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

■Appendix(Bias)

Haulage Service (OFF-THE-ROAD for Dump Trucks & Scrapers)

50 KPH (30 MPH) Maximum Speed　Distance: Up to 4 km (2.5 miles) one way

Narrow Base Bias Ply Tires

NOTES 1. Figures in parentheses denote ply rating for which bold face loads and inflations are maximum.
2. For 65 km/h (40 mph) maximum speed, the loads must be reduced 15% with no change in inflation pressure.
3. When haul length exceeds 4 km one way, consult your YOKOHAMA service representative.

Wide Base Bias Ply Tires

NOTES 1. Figure in parentheses denote ply rating for which bold face loads and inflations are maximum.
2. For 65 km/h (40 mph) maximum speed, the loads must be reduced 17% with no change in inflation pressure.
3. When haul length exceeds 4 km one way, consult your YOKOHAMA service representative.

Slow Speed Service (OFF-THE-ROAD for Loaders & Dozers)

10 KPH (5 MPH) Maximum Speed　Distance: Up to 76 meters (250 feet) one way

Narrow Base Bias Ply Tires
65 Series Bias Ply Tires
Wide Base Bias Ply Tires

NOTES 1. Figures in parentheses denote ply rating for which bold face loads and inflations are maximum.
2. On front tires for front end loaders, it is permissible to increase inflation pressure up to 15 psi that shown in the table with no increase in load.
3. For tire load limits at various speeds:

Max. Speed	% Load Change From 5 MPH Table
Stationary	+60%
Creep	+30%
4 km/h (2 1/2 mph)	+15%
10 km/h (5 mph)	No Change
15 km/h (10 mph)	-13%
25 km/h (15 mph)	-20%

ETC Bias Ply Tires(10-16.5, 13.5-20, 16.9-24, 18.4-24)

NOTES 1. Figures in parentheses denote ply rating for which load and inflation pressure are maximum.
2. Consult your YOKOHAMA service representative for data concerning front end loaders or shovels used in load and carry service.
3. It is permissible to increase inflation pressure up to 15 psi that shown in table with no increase of load.
4. For tire load limits at various speeds:

Max. Speed	% Load Change From 5 MPH Table
Stationary	+60%
Creep	+30%
4 km/h (2 1/2 mph)	+15%
10 km/h (5 mph)	No Change
15 km/h (10 mph)	-13%
25 km/h (15 mph)	-20%

Tractor and Grader Service (OFF-THE-ROAD for Motor Graders)

40 KPH (25 MPH) Maximum Speed　Distance: Unlimited

Narrow Base Bias Ply Tires
Wide Base Bias Ply Tires

NOTES 1. Figures in parentheses denote ply rating for which loads and inflation pressure are maximum.
2. For maintenance work on established highways, inflation pressure may be increased 50% if desired with no increase in load.
3. For tire load limits at various speeds with no increase in inflation pressure:

Max. Speed	% Load Change From Table
40 km/h (25 mph)	No Change
50 km/h (30 mph)	-9%
60 km/h (35 mph)	-18%
65 km/h (40 mph)	-27%

Compactor Vehicle Service (OFF-THE-ROAD for Tire Rollers)

10 KPH (5 MPH) Maximum Speed

Industrial Service (OFF-THE-ROAD for Smooth Floors & Runways Use)

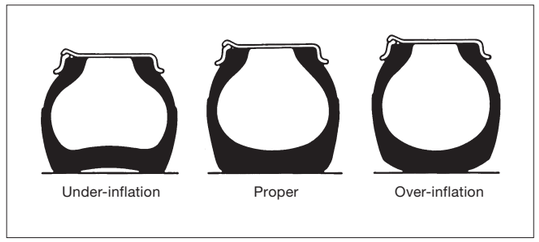
NOTES 1. Industrial Vehicle
Consists of usage on vehicles such as counterbalanced lift trucks, container handlers, straddle carriers, aircraft tow tractors, log stackers and rough terrain trucks.
2. Smooth Floors and Runways
These are defined as paved or protected operating surfaces which are free of undulations, obstructions or discontinuities.
3. Creep
This is movement of equipment at very slow speed (not over 60 m (200feet) in 30 minutes). During creep motion, loads on the tires are very high and consideration must be given to the type of surface over which the equipment is traveling.

Check maximum air pressure requirements of rims and wheels to ensure ability to accommodate correct air pressure of tire.
For steer wheel loads on lift trucks, multiply the load by 0.8.

OFF-THE-ROAD TIRES are very expensive, therefore it is very important to use them under proper conditions. It cannot be overemphasized to have a good maintenance program for obtaining the best tire performance.

Inflation Pressure

Proper inflation pressure is essential to get the best performance from tires. Optimum traction, flotation, and load endurance can only be obtained if the proper inflation pressure is maintained. Both over-inflation and under-inflation shorten tire life and can result in tire failures. Proper inflation pressure depends on the vehicle, ground conditions, load, speed, and other factors.



Under-inflation

- Excessive heat generation from increased deflection may cause separation.
- Excessive tire deflection causes cords to fatigue.
- Rapid wear due to excessive tread movement against road surface.
- Sidewalls are more susceptible to cutting and rupture.
- Radial cracks can form in the upper sidewall.
- Cracks in the inner liner can occur.

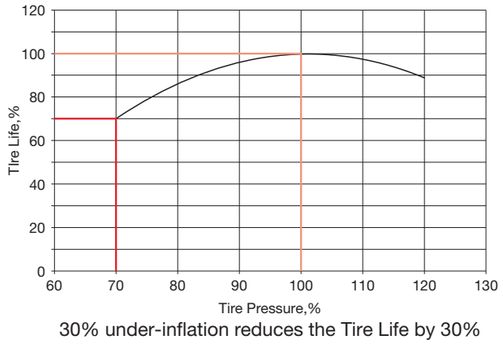
Over-inflation

- Increased ground contact pressure at centerline results in rapid wear there.
- Reduced protection of cords against shocks may lead to impact breaks.
- Excessive pressure is exerted on the beads, increasing the potential for bead burst.
- Riding comfort deteriorates leading to driver fatigue.
- Tire slippage due to reduced traction causes wear issues.
- Tendency for the tire to be cut is increased.

Caution:

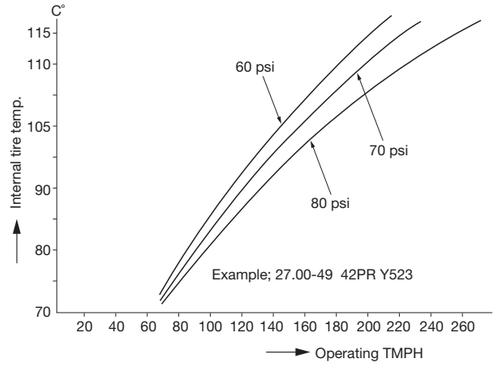
- In the course of operation, the air pressure rises in correlation to air pressure.
  The amount of increase varies depending on operation.
  This is extremely important in continuous operations.
  If heat generated results in an air pressure rise of 25% in bias tires, the cold inflation pressure should be checked.
  If heat generated results in an air pressure rise of 20% in radial tires, the cold inflation pressure should be checked.
  If cold inflation pressure is accurate, travel speed and/or load must be reduced.
  Otherwise, overheating may cause separations.
  Tires should not be bled to compensate for the increase in pressure.
- Valves should always be capped. This keeps mud and dust out of the valve core and protects the air seal.

Pressure and Tire Life
(General Relationship)



30% under-inflation reduces the Tire Life by 30%

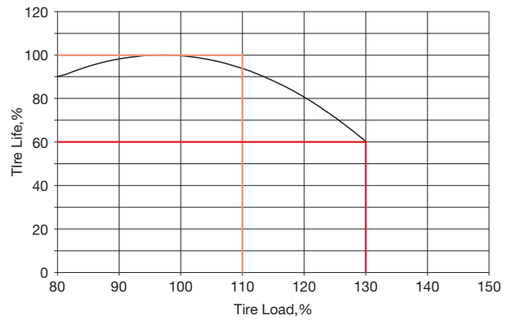
Inflation Pressure and Tire Temperature



Load

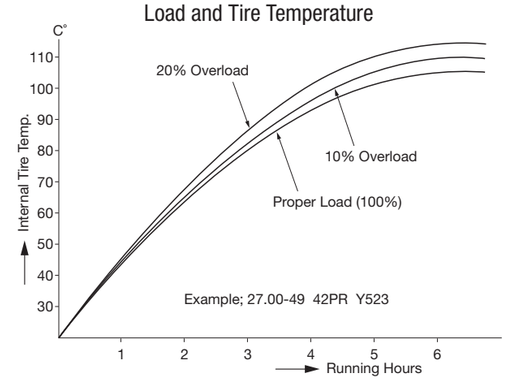
Overloading shortens tire life and increases the chance of early tire failure. For the best tire performance, the maximum recommended load should not be exceeded. If the load exceeds the specified capacity of the tire, a tire with a higher ply rating should be used.

Load and Tire Life



30% overload reduces the Tire Life by 40%

Load and Tire Temperature



Results of Overloading

- Excessive heat generation causes separation.
- Excessive tire deflection causes broken cords.
- Rapid wear due to excessive tread movement against road surface.
- Bead failure due to excessive bead movement.
- Risk of bursting due to increased cord tension.

Speed

Excessive traveling speeds produce abnormally high internal temperatures in tires. A vehicle has two speed limitations: the actual maximum speed that the vehicle can attain and the average operating speed that the vehicle can sustain. The average sustainable operating speed is limited by the tires' Ton-Kilometer-Per-Hour (TKPH) rating (refer to page 62).

Speed and Load Relation (according to TRA)

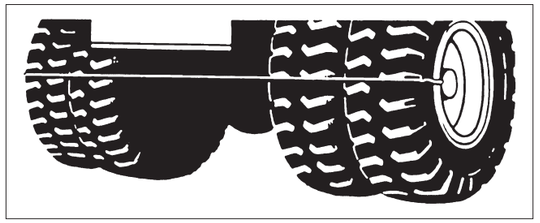
The load capacity of a tire is influenced by the maximum speed of the vehicle as follows:

Vehicle	Maximum Speed	Variation In Load Capacity	
		Bias Tire	Radial Tire
Loaders and Dozers	Stationary	160%	160%
	Creep	130%	130%
	2 1/2 mph (4 km/h)	115%	115%
	5 mph (10 km/h)	100%	100%
	10 mph (15 km/h)	87%	87%
	15 mph (25 km/h)	80%	80%

Vehicle	Maximum Speed	Variation In Load Capacity	
		Bias Tire	Radial Tire
Dump Trucks and Scrapers	30 mph (50 km/h)	100%	100%
	40 mph (65 km/h)	Narrow Base 85%	Narrow Base 88%
		Wide Base 83%	Wide Base 88%

■Proper Matching of Dual-Tires

It is essential that dual-tires have the same overall diameter. Otherwise, the one with the larger diameter will carry most of the load and will be prone to damage and wear. If the difference in outer diameters is extremely large, the smaller tire slips and scrapes along the ground, causing the center of the tread to wear quickly. Naturally, the larger tire will be prone to excessive heat generation from overloading.
The allowable difference in dual-tire pair diameters is shown in the table blow.



In no case should a difference in diameters be corrected by adjusting inflation pressure.

	Bias Tolerance				Radial Tolerance			
	Diameter		Circumference		Diameter		Circumference	
Size	mm	in	mm	in	mm	in	mm	in
8.25*20NHS	8	0.3	25	1.0	6	0.2	19	0.7
9.00*20NHS	9	0.4	28	1.1	7	0.3	22	0.9
10.00*20NHS	10	0.4	31	1.2	7	0.3	22	0.9
11.00*20NHS	10	0.4	31	1.2	7	0.3	22	0.9
12.00*20NHS	11	0.4	35	1.4	8	0.3	25	1.0
12.00*24/25NHS	11	0.4	35	1.4	8	0.3	25	1.0
13.00*24/25NHS	12	0.5	38	1.5	9	0.4	28	1.1
14.00*20NHS	13	0.5	41	1.6	9	0.4	28	1.1
14.00*24/25NHS	13	0.5	41	1.6	9	0.4	28	1.1
16.00*25	15	0.6	47	1.9	11	0.4	35	1.4
18.00*25	17	0.7	53	2.1	12	0.5	38	1.5
18.00*33	17	0.7	53	2.1	12	0.5	38	1.5
21.00*25	20	0.8	63	2.5	14	0.6	44	1.7
21.00*35	20	0.8	63	2.5	14	0.6	44	1.7
24.00*35	22	0.9	69	2.7	15	0.6	47	1.9
24.00*49	22	0.9	69	2.7	15	0.6	47	1.9
27.00*49	25	1.0	79	3.1	18	0.7	57	2.2
33.00*51	30	1.2	94	3.7	21	0.8	66	2.6
36.00*51	33	1.3	104	4.1	23	0.9	72	2.8
40.00*57	36	1.4	113	4.4	26	1.0	82	3.2

NOTES: NHS is not for highway service.

Caution :

- Radial tires should never be matched with bias tires.
- It is recommended to match tires from the same manufacturer.

Diameter Measuring Methods

- Use a 1-inch x 2-inch wooden stud.
- Use a rubber cord across the dual tires.
- Use a steel tape to measure the circumference of each tire.

■Road Surface Maintenance

The maintenance of road surfaces is one of the most important factors in determining the life of a tire. Bumps, check holes, rocks and so on cut and wear tires. Even bursting can result. Of particular importance is the maintenance of loading and dumping areas because the chances of damage at these places are great. Road and ground conditions there have a large effect on the productivity of the vehicles.

Good Condition

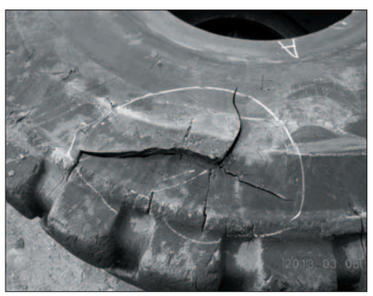
Poor Condition

■Tire Problems and Major Causes

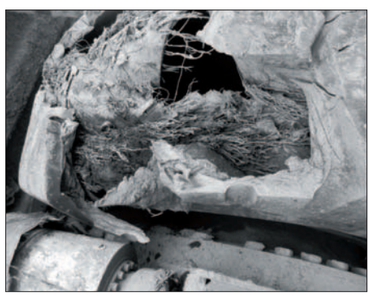
Any aberrations causing tire problems should be promptly repaired. The following is a list of tire problems and causes:

Tire Problems	Overload	High Speed Travel	Slippage	Over Inflation	Under Inflation	Excess Braking	Poor Road Condition	Poor Vehicle Maintenance	Poor Rim
1. Tread cuts and snags	○	○	○	○	○		○		
2. Uneven, rapid tread wear	○	○	○	○	○	○	○	○	
3. Cracked and broken tread	○		○	○		○	○	○	
4. Sidewall cuts and snags	○				○		○		
5. Tread separation	○	○		○	○			○	
6. Ply separation	○	○		○	○			○	
7. Bead failure	○		○	○	○	○		○	○
8. Inner liner failure	○	○			○				○
9. Impact breaks	○	○		○			○		

Tread Separation



Sidewall Cut



Heat Separation

■Instructions for Operations

Even if tires and roads are properly maintained, tire life can be seriously shortened by improper use. The following are musts for maximum efficiency.

General:

- Avoid abrupt starts and stops.
- Do not operate on road shoulders.
- Reduce speed on turns.
- Do not turn wheels while stationary.
- Do not spin tires.
- Maintain proper inflation pressure.
- Remove any objects, such as rocks which get stuck in the tread or between dual tires.
- Check tires, rims and valves regularly for any abnormalities.
- Repair any damaged tires immediately.
- Avoid rocks at loading and dumping areas.
- Avoid running over oil or grease spills.

Loader Operating:

- Keep loading areas clear of rocks and other obstacles.
- Avoid spilling load around the tires.
- Avoid over-loading.
- Load to the center of the dump truck's decks.

Motor Scraper Operating:

- Prevent tires from slipping when loading.
- Avoid cornering when the pusher is in operation.

Operating under Ambient Temperatures below -40˚C:

- Consult THE YOKOHAMA RUBBER CO., LTD.

■Tire Appearance Check-up

In order to prevent tire troubles, it is helpful to make routine visual check-ups of the tire, rim, valve, inflation pressure, etc. Make inspections for the following and carry out any procedure recommended.

Tire Tread:

- Remove foreign matter from the tread. Repair any damage reaching the carcass.
- If separation exists, remove tire and examine if repair is necessary.
- If damage reached carcass, remove tire and repair.
- If cuts or chips reach carcass, repair.
- Cracks in tread groove may be source of air leakage; check inflation pressure.
- Uneven wear may be caused by improper inflation pressure. Rotate tires if necessary.
- Damage from contact with vehicle should be avoided. Alter body parts if possible. Repair any tire damage if necessary.
- Oil or grease on tire should be washed off.

Shoulder and Sidewall:

- Repair any cuts reaching the carcass.
- Identify cause of cracks e.g. from under-inflation, overloading, ozone or cut growth and repair if necessary.
- Wash off oil or grease spots.

Valve:

- Replace valve or valve parts if leakage exists from valve core, deflection of stem or extension.
- Ensure valve cap is in position.

Dual Tires:

- Remove any foreign object stuck between duals.
- Repair stone ejector if bent or out of position.

Inflation Pressure:

- Adjust if not proper.
- Detect location and repair if leakage exists.

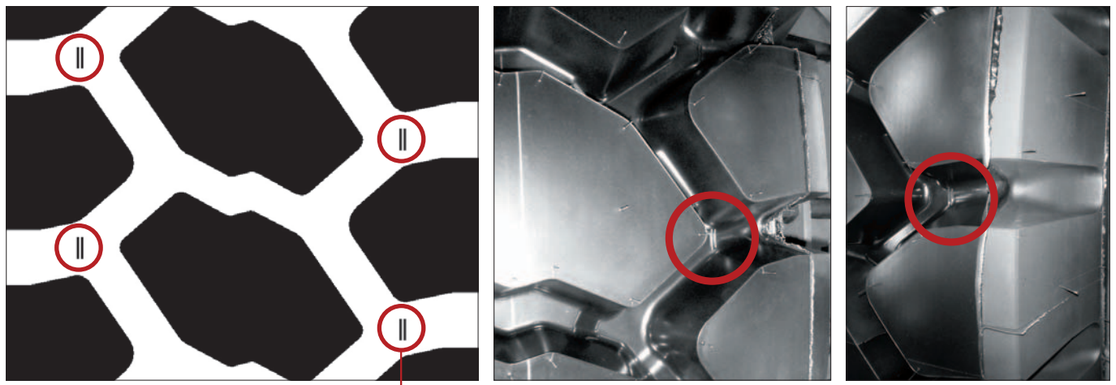
Rim:

- Replace if deformation or cracks exist.

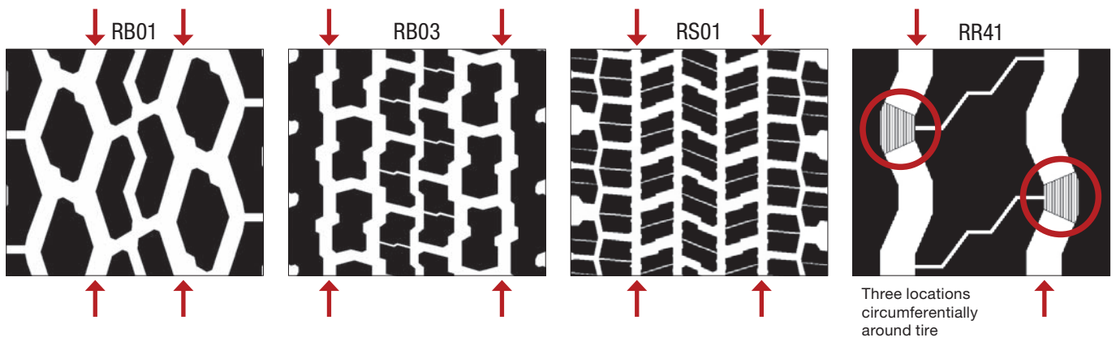
■Measuring Tread Wear

Tread wear can be determined by comparing the remaining groove depth with that of a new tire. There are special marks indicating where the groove depth should be measured for most YOKOHAMA OFF-THE-ROAD TIRES. For rock or traction patterns, the indicators are located one-fourth of the tread width from the shoulders. Rib pattern tires don't have indicators. The tread depth of rib pattern tires should be measured at the locations specified below.
The average of the figures obtained by measuring the groove depths for both the inside and outside of the tire should be used. A depth gauge is used to measure the depth of the grooves as shown:

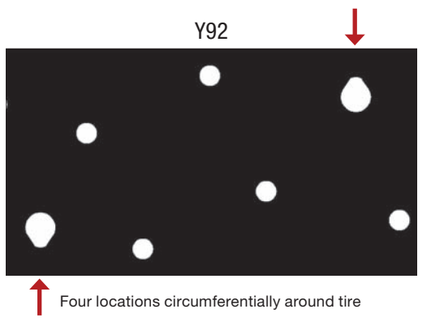
① Normal
Example of tread wear indicators for typical OFF-THE-ROAD TIRES.



② Rib Pattern Tires

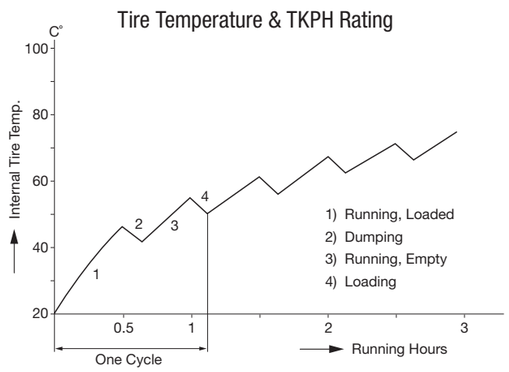


③ Tires with unique tread wear indicator locations



Ton-Kilometer-Per-Hour (Ton-Mile-Per-Hour)

Rating materials and adhesives used in tires are especially vulnerable to damage from high temperatures which limit the amount and type of usage for tires. This is especially true for OFF-THE-ROAD TIRES for dump trucks and scrapers where high internal temperatures are not uncommon, because rapid dissipation of heat is hindered by the thick tire construction. Various conditions also influence the limits of use for OFF-THE-ROAD TIRES. TKPH is the measure of usage that normally indicates the limits of use under average working conditions.



Operating TKPH

Operating TKPH is computed to compare actual use with the tire's TKPH rating. The operating TKPH is calculated in the following manner by observation and measurement of actual operation.

Operating TKPH = (average tire load in metric tons) × (average speed in kilometers per hour)

Where,
Average tire load = 1/2 [(load on tire when vehicle is empty) + (load on tire when vehicle is laden)]
Average speed = (round trip distance) × (number of trips per shift) ÷ (total hours of operation per shift*)
* Exclude for calculation between shifts

For actual computation and reference this data should be collected:

- Vehicle empty:
  Load on front axle ÷ number of tires = ___tons/tire
  Load on rear axle ÷ number of tires = ___tons/tire
- Vehicle loaded:
  Load on front axle ÷ number of tires = ___tons/tire
  Load on rear axle ÷ number of tires = ___tons/tire
- Payload = ___tons
- Round trip distance = ___kilometers
- Number of trips per day = ___times
- Number of shifts per day hours of each shift
  Number of shifts ___times
  Hours per shift ___hours
  (including inspection ___hours, lunch ___hours and rest___hours.)
- Actual maximum speed in operation ___kilometers/hour
- Ambient temperature High ___°C/Average___°C

Use of TKPH Rating

With the formula described above, the operating TKPH required for a particular job can be computed and OFF-THE-ROAD TIRES which satisfy the requirement can be selected. Operating TKPH should always be less than the tire's TKPH rating. The real factor limiting tire usage is heat. TKPH measurements and ratings are only tools used to construct guidelines so that tires do not overheat. As previously started, these guidelines are constructed assuming average operating conditions. Under some conditions it is possible for more heat to be generated than would normally be expected at a given operating TKPH level. This should be kept in mind when operating TKPH approaches the tire's TKPH rating to prevent heat damage.

TMPH (Ton-Mile-Per-Hour)

Care should be taken when converting from TKPH, since TMPH uses the short ton (2,000 lbs) and mileage (1 km = 0.621 miles) and TKPH uses the metric ton (2,204.6 lbs or 1.1023 short tons). To convert TKPH to TMPH, divide TKPH by 1.459 (TMPH = TKPH ÷ 1.459).

Adjusting TKPH for Ambient Temperature

Materials, reinforcements and adhesives used in tires are vulnerable to damage from high temperatures which limit the amount and type of usage for tire. This is especially true for OFF-THE-ROAD TIRES for dump trucks and scrapers where high internal temperatures are common, because heat dissipation is hindered by the thick tire constructions. Various conditions also influence the limits of use for OFF-THE-ROAD TIRES. The “Operating TKPH” is the measure of work required from an OFF-THE-ROAD TIRE under specific conditions. The Operating TKPH should not exceed the tire's rated TKPH.

Operating TKPH is adjusted in the following manner by observation and measurement of actual operation.

Adjusted Operating TKPH = Kt × Kg × Operating TKPH
Kt : adjustment coefficient for temperature
Kg : adjustment coefficient for grade

Kt : adjustment coefficient for temperature
The TKPH tire ratings are based on an ambient temperature of 38°C (100°F). The Operating TKPH must be adjusted to compensate for a reduced or increased rate of heat dissipation to the ambient air.

For Bias Tires with maximum yearly temperature exceeding 38°C (100°F):

$$Kt = \frac{77}{77 + (38 - Tc)}$$

Kt = adjustment coefficient for temperature
Tc = maximum yearly temperature in centigrade
Tc = (5 ÷ 9) × (Tf – 32)
Tf = maximum yearly temperature in fahrenheit

For Bias Tires with maximum yearly temperature less than 38°C (100°F):

$$Kt = \frac{77}{77 + \frac{1}{2} \times (38 - Tc)}$$

For Radial Tires with maximum yearly temperature exceeding 38°C (100°F):

$$Kt = \frac{55}{55 + (38 - Tc)}$$

For Radial Tires with maximum yearly temperature less than 38°C (100°F):

$$Kt = \frac{55}{55 + \frac{1}{2} \times (38 - Tc)}$$

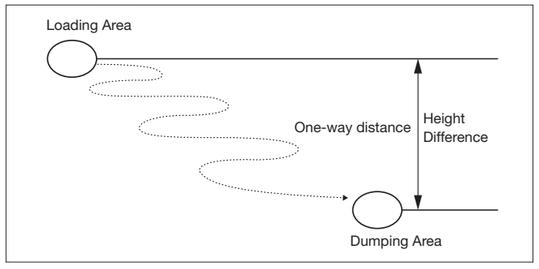
Kg : adjustment coefficient for grade
The grade of a haul road transfers load from one axel to the other of a typical haul truck. Use the chart on the following slide to determine Kg in the case of downhill loaded drive.
Mines should be designed so that the maximum grade does not exceed 10%.

Adjustment Coefficient for Grade

Grade	Front Kg	Rear Kg
-1%	1.01	1.00
-2%	1.02	0.99
-3%	1.02	0.98
-4%	1.03	0.98
-5%	1.04	0.97
-6%	1.05	0.97
-7%	1.06	0.96
-8%	1.06	0.96
-9%	1.07	0.95
-10%	1.08	0.95

–1%: Downhill 1%

How to get grade ?



Grade = Height Difference* ÷ One-way distance
* Dumping Area Altitude – Loading Area Altitude

How to get the Height difference?

1. Hearing from customer
2. V-Box study
   - Consult THE YOKOHAMA RUBBER CO.,LTD.

TKPH of Steel Breaker Tires

A TKPH rating is not given for steel breaker tires. However, the TKPH capability can be estimated by multiplying the TKPH rating of a comparable tire of standard construction by 0.7.

■Load-and-Carry Operation of Front-End Loaders

In loading and grading with loaders and dozers tire heat does not pose a large problem because the average operating speed is very low compared with dump trucks and scrapers. However, for load-and-carry operations the average operating speed is higher and tire temperature may become an important factor. This is especially important for the L-5 tire which has a very thick tread. In this case, operation must be limited by the TKPH rating. If the use of L-5 tires is too limiting, L-4 tires are an alternative.

Load & Carry Guidelines for Bias Tires

TRA Code	Air Pressure for Front Tires	Maximum One Way Distance	Average Work day Speed		
			~29″	~33″	~45″
L-3	Standard A.P. +100kPa (+15psi)	610m (2000ft.)	11km/h (7 mph)	–	–
L-4		244m (800ft.)	9km/h (6 mph)	7km/h (4 mph)	5km/h (3 mph)
* L-5		76m (250ft.)	7km/h (4 mph)	5km/h (3 mph)	3km/h (2 mph)

* When tires designed for dig and load vehicles are used in load-and-carry operations, the haul distance must be limited to 76 meters one way and maximum speed to 10kph (5 mph).

Speed & Load Recommendations for Load & Carry Operations

Max. Speed	% Load Change From 5MPH Table
10km/h (5 mph)	No Change
15km/h (10 mph)	–13%
25km/h (15 mph)	–20%

■Protecting Tires on Vehicle in Highway Drive-Away

Because of the special extra-heavy construction of OFF-THE-ROAD TIRES, special precautions must be observed to protect these expensive tires when the vehicle is driven on the highway for delivery, or moved by an operator to a new job site. If the precautions are not observed, excessive tire heat may develop and the tire may fail prematurely. Always consult the vehicle or tire manufacturer for specific information before starting out on a trip. Vehicles in transit should be accompanied by responsible personnel in a pilot car to enforce the following precautions and maintain a check on equipment. This is good insurance for a large investment. The following precautions apply to tires on all vehicles in transit, driven or towed. Check the following guidelines and consult YOKOHAMA.

Load and Pressure

- Empty vehicles before starting.
- Instructions for use of drive-away tables:
  1) Determine the load each tire will carry.
  2) Using the table, select the inflation pressure shown for the load determined. This is the pressure required for drive-away service.
  3) Ignore tire ply rating when determining drive-away load and pressure conditions.
- Check inflation pressure before starting out each day and adjust to pressure recommended for highway drive-away by vehicle manufacturer.
- Do not drive or tow vehicles using tires with 'dry ballast' in highway drive-away.
- Do not reduce inflation pressure by bleeding tires during highway drive-away. During highway drive-away pressure build-up in tires is normal.

Maximum Highway Speed

Regular Tread Tires (E-3)

Narrow Base 50 kph (30 mph)
Wide Base 30 kph (20 mph)

- Average operating speed
(Running Distance ÷ (Running Hours + Stop Hours))
should be under the speed obtained by the following equation:

$$\text{Speed} = \frac{\text{Tire TKPH}}{\text{Tire Load (M-Ton)}} \times 0.8$$

0.8 is a safety coefficient.

- Where narrow base and wide base tires are mixed on a vehicle, use the guidelines specified for wide base tires.

Deep Tread (E-4) & Special Compound Tires

- Do not drive vehicles equipped with deep tread (E-4) and special compound tires over the highway unless the proposed trip is reviewed and approved by qualified YOKOHAMA personnel.

Extra Deep Tread Tires

- Do not under any circumstances move extra deep tread tires over the highway.

Operation Mode

YOKOHAMA recommends the following mode of operation:

- Stop for a 30-minute cooling period after each 2 hours of sustained operation.
- A one-hour minimum stop period should be observed after every four hours of operation.

Driving	Stop	Driving	Stop	Driving	Stop	…
2H	0.5H	2H	1.0H	2H	0.5H	

The following is an example for driving a vehicle on the highway for delivery:

1) Vehicle model: YOKO 155 (155 m-ton)
2) Tire size: 36.00-51 66PR E-3
3) Temperature: 10°C~38°C (50°F~100°F)
4) Tire load: Empty before starting, load on front tire 29.5 m-ton (32.5 s-ton)
5) Inflation pressure: 515 kPa (75 psi)
6) Maximum speed: 50 kph (30 mph)
7) Average speed:

YOKOHAMA Pattern Code	TRA Code	Tire Spec	Ton-Mileage		Average Speed	
			TMPH	TKPH	MPH	KPH
Y565	E-3	RE-T	500	730	12.31	19.80
		HR-V	600	875	14.77	23.73

8) Recommended Operation Mode:

2H Driving	0.5H Stop	2H Driving	1H Stop	2H Driving	0.5H Stop	2H Driving	1H Stop	…
Speed (V)		Speed (V)		Speed (V)		Speed (V)		

YOKOHAMA Pattern Code	TRA Code	Tire Spec	*Speed (V)	
			MPH	KPH
Y565	E-3	RE-T	16.92	27.22
		HR-V	20.31	32.63

$$\text{*Speed} = \text{Average Speed} \times \frac{\text{Driving Hours + Stop Hours}}{\text{Driving Hours}}$$

$$= \text{Average Speed} \times (5.5 \div 4)$$

■Protecting Tires on Vehicle in Highway Drive-Away

Load and Inflation Pressure Table for Transit (as recommended by the TRA)

Narrow Base Earthmover Tires in Drive-Away Service Only

50 KPH (30 MPH) Maximum speed

Tire Size Designation	Tire Load Limits at Various Cold Inflation Pressures																
	Radial Ply																
	kPa	240	275	310	345	380	415	450	485	515	550	585	620	655	690	725	760
	psi	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*	*75*	*80*	*85*	*90*	*95*	*100*	*105*	*110*
	Diagonal Ply																
	kPa	170	205	240	275	310	345	380	415	450	485	515	550	585	620	655	690
	psi	*25*	*30*	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*	*75*	*80*	*85*	*90*	*95*	*100*
16.00*25	kg	2440	2710	2970	3220	3450	3650	3880	4080	4260	4470	4630	4810	4990	5170	5350	5490
	lbs	*5380*	*5980*	*6550*	*7100*	*7600*	*8050*	*8550*	*9000*	*9400*	*9850*	*10200*	*10600*	*11000*	*11400*	*11800*	*12100*
18.00*25	kg	3150	3520	3860	4150	4450	4720	4990	5260	5530	5760	5990	6210	6440	6670	6890	7120
	lbs	*6950*	*7750*	*8500*	*9150*	*9800*	*10400*	*11000*	*11600*	*12200*	*12700*	*13200*	*13700*	*14200*	*14700*	*15200*	*15700*
21.00*25	kg	4060	4330	4940	5350	5720	6080	6440	6760	7120	7440	7710	8030	8300	8570	8890	9160
	lbs	*8950*	*9550*	*10900*	*11800*	*12600*	*13400*	*14200*	*14900*	*15700*	*16400*	*17000*	*17700*	*18300*	*18900*	*19600*	*20200*
24.00*25(**)	kg	5260	5850	6400	6890	7390	7890	8350	8750	9160	9570	9980	10390	10750	11110	11480	11790
	lbs	*11600*	*12900*	*14100*	*15200*	*16300*	*17400*	*18400*	*19300*	*20200*	*21100*	*22000*	*22900*	*23700*	*24500*	*25300*	*26000*
24.00*29	kg	5620	6260	6850	7390	7940	8440	8940	9390	9840	10250	10700	11110	11520	11880	12290	12660
	lbs	*12400*	*13800*	*15100*	*16300*	*17500*	*18600*	*19700*	*20700*	*21700*	*22600*	*23600*	*24500*	*25400*	*26200*	*27100*	*27900*
18.00*33	kg	3650	4080	4470	4810	5170	5490	5810	6120	6400	6670	6990	7210	7480	7760	7980	8260
	lbs	*8050*	*9000*	*9850*	*10600*	*11400*	*12100*	*12800*	*13500*	*14100*	*14700*	*15400*	*15900*	*16500*	*17100*	*17600*	*18200*
27.00*33(**)	kg	7350	8210	8980	9710	10390	11070	11700	12290	12880	13470	14020	14560	15060	15600	16100	16600
	lbs	*16200*	*18100*	*19800*	*21400*	*22900*	*24400*	*25800*	*27100*	*28400*	*29700*	*30900*	*32100*	*33200*	*34400*	*35500*	*36600*
30.00*33(**)	kg	9070	10070	11020	11930	12790	13610	14380	15100	15830	16560	17240	17870	18550	19140	19780	20370
	lbs	*20000*	*22200*	*24300*	*26300*	*28200*	*30000*	*31700*	*33300*	*34900*	*36500*	*38000*	*39400*	*40900*	*42200*	*43600*	*44900*
21.00*35	kg	4810	5350	5850	6350	6800	7210	7670	8030	8440	8800	9160	9530	9840	10210	10520	10840
	lbs	*10600*	*11800*	*12900*	*14000*	*15000*	*15900*	*16900*	*17700*	*18600*	*19400*	*20200*	*21000*	*21700*	*22500*	*23200*	*23900*
24.00*35	kg	6170	6850	7530	8120	8710	9250	9800	10300	10800	11250	11700	12160	12610	13060	13470	13880
	lbs	*13600*	*15100*	*16600*	*17900*	*19200*	*20400*	*21600*	*22700*	*23800*	*24800*	*25800*	*26800*	*27800*	*28800*	*29700*	*30600*
24.00*43(**)	kg	6890	7670	8390	9070	9710	10300	10890	11480	12020	12560	13060	13560	14060	14560	15010	15470
	lbs	*15200*	*16900*	*18500*	*20000*	*21400*	*22700*	*24000*	*25300*	*26500*	*27700*	*28800*	*29900*	*31000*	*32100*	*33100*	*34100*
18.00*49(**)	kg	4630	5170	5620	6080	6530	6940	7350	7710	8070	8440	8800	9160	9480	9800	10120	10430
	lbs	*10200*	*11400*	*12400*	*13400*	*14400*	*15300*	*16200*	*17000*	*17800*	*18600*	*19400*	*20200*	*20900*	*21600*	*22300*	*23000*
21.00*49(**)	kg	5850	6490	7120	7710	8260	8750	9250	9750	10210	10660	11110	11520	11930	12340	12750	13150
	lbs	*12900*	*14300*	*15700*	*17000*	*18200*	*19300*	*20400*	*21500*	*22500*	*23500*	*24500*	*25400*	*26300*	*27200*	*28100*	*29000*
24.00*49	kg	7390	8210	9030	9750	10430	11110	11750	12340	12930	13520	14060	14610	15150	15650	16150	16650
	lbs	*16300*	*18100*	*19900*	*21500*	*23000*	*24500*	*25900*	*27200*	*28500*	*29800*	*31000*	*32200*	*33400*	*34500*	*35600*	*36700*
27.00*49	kg	9070	10070	11020	11930	12790	13610	14380	15100	15830	16560	17240	17870	18550	19190	19780	20370
	lbs	*20000*	*22200*	*24300*	*26300*	*28200*	*30000*	*31700*	*33300*	*34900*	*36500*	*38000*	*39400*	*40900*	*42300*	*43600*	*44900*
30.00*51	kg	11200	12470	13650	14740	15830	16830	17780	18730	19600	20500	21320	22140	22950	23720	24490	25220
	lbs	*24700*	*27500*	*30100*	*32500*	*34900*	*37100*	*39200*	*41300*	*43200*	*45200*	*47000*	*48800*	*50600*	*52300*	*54000*	*55600*
33.00*51	kg	12970	14470	15830	17100	18330	19500	20590	21680	22730	23720	24720	25630	26580	27440	28350	29260
	lbs	*28600*	*31900*	*34900*	*37700*	*40400*	*43000*	*45400*	*47800*	*50100*	*52300*	*54500*	*56500*	*58600*	*60500*	*62500*	*64500*
36.00*51	kg	15830	17600	19280	20820	22320	23720	25080	26400	27670	28800	30160	31300	32430	33570	34470	35610
	lbs	*34900*	*38800*	*42500*	*45900*	*49200*	*52300*	*55300*	*58200*	*61000*	*63500*	*66500*	*69000*	*71500*	*74000*	*76000*	*78500*
40.00*57	kg	20190	22500	24590	26580	28580	30390	31980	33790	35380	36970	38330	39920	41280	42640	44230	45360
	lbs	*44500*	*49600*	*54200*	*58600*	*63000*	*67000*	*70500*	*74500*	*78000*	*81500*	*84500*	*88000*	*91000*	*94000*	*97500*	*100000*

* Tire size designation will include"R"(Radial Ply) or "-"(Diagonal or Bias Ply)
**Not available from THE YOKOHAMA RUBBER CO.,LTD.
NOTES: Figures are subjected to change without prior notice.

Wide Base Earthmover Tires in Drive-Away Service Only

50 KPH (30 MPH) Maximum speed

Tire Size Designation	Tire Load Limits at Various Cold Inflation Pressures																
	Radial Ply																
	kPa	240	275	310	345	380	415	450	485	515	550	585	620	655	690	725	760
	psi	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*	*75*	*80*	*85*	*90*	*95*	*100*	*105*	*110*
	Diagonal Ply																
	kPa	170	205	240	275	310	345	380	415	450	485	515	550	585	620	655	690
	psi	*25*	*30*	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*	*75*	*80*	*85*	*90*	*95*	*100*
15.5*25	kg	1700	1890	2060	2230	2390	2540	2690	2840	2970	3080	3220	3360	3470	3580	3700	3810
	lbs	*3740*	*4160*	*4540*	*4920*	*5260*	*5600*	*5920*	*6250*	*6550*	*6800*	*7100*	*7400*	*7650*	*7900*	*8150*	*8400*
17.5*25	kg	2020	2250	2470	2670	2860	3040	3220	3380	3540	3700	3860	3990	4150	4290	4420	4540
	lbs	*4460*	*4960*	*5440*	*5880*	*6300*	*6700*	*7100*	*7450*	*7800*	*8150*	*8500*	*8800*	*9150*	*9450*	*9750*	*10000*
20.5*25	kg	2700	3020	3290	3560	3810	4060	4290	4510	4720	4940	5130	5350	5530	5720	5900	6080
	lbs	*5960*	*6650*	*7250*	*7850*	*8400*	*8950*	*9450*	*9950*	*10400*	*10900*	*11300*	*11800*	*12200*	*12600*	*13000*	*13400*
23.5*25	kg	3450	3830	4200	4540	4850	5170	5490	5760	6030	6310	6580	6800	7080	7300	7530	7760
	lbs	*7600*	*8450*	*9250*	*10000*	*10700*	*11400*	*12100*	*12700*	*13300*	*13900*	*14500*	*15000*	*15600*	*16100*	*16600*	*17100*
26.5*25	kg	4330	4810	5260	5720	6120	6490	6890	7260	7580	7940	8260	8570	8890	9160	9480	9750
	lbs	*9550*	*10600*	*11600*	*12600*	*13500*	*14300*	*15200*	*16000*	*16700*	*17500*	*18200*	*18900*	*19600*	*20200*	*20900*	*21500*
29.5*25	kg	5220	5810	6350	6890	7390	7850	8300	8710	9160	9530	9930	10340	10700	11070	11430	11750
	lbs	*11500*	*12800*	*14000*	*15200*	*16300*	*17300*	*18300*	*19200*	*20200*	*21000*	*21900*	*22800*	*23600*	*24400*	*25200*	*25900*
26.5*29	kg	4630	5170	5620	6080	6530	6940	7350	7710	8120	8480	8800	9160	9480	9800	10120	10430
	lbs	*10200*	*11400*	*12400*	*13400*	*14400*	*15300*	*16200*	*17000*	*17900*	*18700*	*19400*	*20200*	*20900*	*21600*	*22300*	*23000*
29.5*29	kg	5580	6210	6760	7350	7850	8350	8850	9300	9750	10160	10570	10980	11390	11790	12160	12520
	lbs	*12300*	*13700*	*14900*	*16200*	*17300*	*18400*	*19500*	*20500*	*21500*	*22400*	*23300*	*24200*	*25100*	*26000*	*26800*	*27600*
33.25*29	kg	6850	7620	8350	9030	9660	10300	10890	11430	12020	12520	13060	13560	14020	14520	14970	15420
	lbs	*15100*	*16800*	*18400*	*19900*	*21300*	*22700*	*24000*	*25200*	*26500*	*27600*	*28800*	*29900*	*30900*	*32000*	*33000*	*34000*
33.5*33(**)	kg	7480	8350	9120	9840	10570	11250	11880	12470	13110	13650	14240	14790	15330	15830	16330	16830
	lbs	*16500*	*18400*	*20100*	*21700*	*23300*	*24800*	*26200*	*27500*	*28900*	*30100*	*31400*	*32600*	*33800*	*34900*	*36000*	*37100*
37.5*33(**)	kg	8980	10020	10980	11840	12700	13520	14290	15010	15740	16420	17100	17780	18420	19050	19640	20280
	lbs	*19800*	*22100*	*24200*	*26100*	*28000*	*29800*	*31500*	*33100*	*34700*	*36200*	*37700*	*39200*	*40600*	*42000*	*43300*	*44700*
29.5*35	kg	6080	6760	7390	7980	8530	9070	9620	10120	10610	11070	11520	11980	12380	12840	13250	13650
	lbs	*13400*	*14900*	*16300*	*17600*	*18800*	*20000*	*21200*	*22300*	*23400*	*24400*	*25400*	*26400*	*27300*	*28300*	*29200*	*30100*
33.25*35	kg	7440	8260	9070	9800	10480	11160	11790	12430	13020	13560	14150	14700	15200	15740	16240	16740
	lbs	*16400*	*18200*	*20000*	*21600*	*23100*	*24600*	*26000*	*27400*	*28700*	*29900*	*31200*	*32400*	*33500*	*34700*	*35800*	*36900*
37.25*35	kg	8980	9980	10930	11790	12660	13430	14200	14970	15650	16370	17060	17690	18330	18960	19550	20140
	lbs	*19800*	*22000*	*24100*	*26000*	*27900*	*29600*	*31300*	*33000*	*34500*	*36100*	*37600*	*39000*	*40400*	*41800*	*43100*	*44400*
33.5*39(**)	kg	8070	8980	9800	10610	11390	12110	12790	13470	14110	14740	15330	15920	16510	17060	17600	18140
	lbs	*17800*	*19800*	*21600*	*23400*	*25100*	*26700*	*28200*	*29700*	*31100*	*32500*	*33800*	*35100*	*36400*	*37600*	*38800*	*40000*
37.5*39	kg	9660	10750	11750	12700	13610	14520	15330	16150	16920	17650	18370	19100	19780	20460	21090	21730
	lbs	*21300*	*23700*	*25900*	*28000*	*30000*	*32000*	*33800*	*35600*	*37300*	*38900*	*40500*	*42100*	*43600*	*45100*	*46500*	*47900*
37.5*51(**)	kg	10930	12160	13290	14380	15420	16370	17330	18230	19100	19960	20770	21590	22360	23130	23860	24590
	lbs	*24100*	*26800*	*29300*	*31700*	*34000*	*36100*	*38200*	*40200*	*42100*	*44000*	*45800*	*47600*	*49300*	*51000*	*52600*	*54200*

* Tire size designation will include"R"(Radial Ply) or "-"(Diagonal or Bias Ply)
**Not available from THE YOKOHAMA RUBBER CO.,LTD.
NOTES: Figures are subjected to change without prior notice.

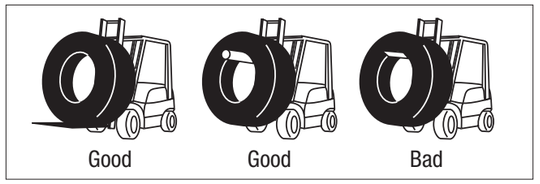
PSI × 0.0703 = kg/cm² POUND × 0.4536 = kg PSI × 6.895 = kPa

■Handling of Tires

Improper handling of tires can lead to damage, especially to the beads. Therefore, it is necessary to prevent excess pressure from being exerted on the beads.

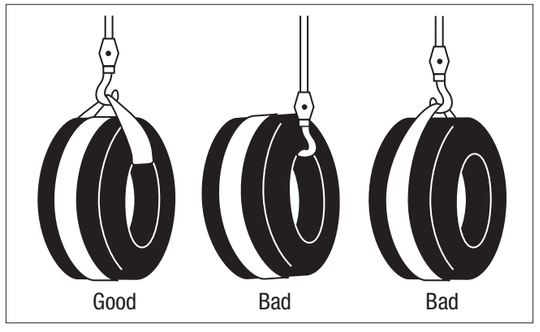
When using a forklift to lift a tire:

- Lay the tire vertically across the fork, or
- Use a round fork at least six-inches in diameter.
- Do not insert a flat type fork within the tire.



When lifting tires by crane:

- Use a wide nylon or rubber sling.
- Do not hook the tire beads.
- Do not use a rope sling.



■Safety Precautions for Demounting

Safety Precautions

> **WARNING**
> Tire and rim servicing can be dangerous, and should be performed only by trained personnel using proper tools and procedures. Failure to comply with these procedures may result in faulty positioning of the tire and/or rim, and cause the assembly to burst with explosive force, sufficient to cause serious physical injury or death.

Demounting

1. Before Demounting

- Always exhaust all air from a single tire and from both tires of a dual assembly prior to removing any wheel components such as nuts and rim clamps.
- A broken rim part under pressure can blow apart and cause serious injury or death.
- Make sure to remove valve core to exhaust all air from the tire. Remove both cores from a dual assembly. (When you remove the wheel lugs, if the tire is still under pressure, the assembly may fly apart.)
- Check the valve stem by running a piece of wire through the stem to make sure it is not plugged. (Foreign material may clog the valve stem during deflation or ice may form as the air leaves the tire, clogging the valve stem.)

2. During Demounting

- Demounting tools apply pressure to rim flanges to unseat tire beads, and keep your fingers clear. Always stand to one side and hold the tool with one hand when you apply hydraulic pressure. (If the tool slips off, it can fly with enough force to cause serious injury or death.)
- Do not use tools in the vicinity of the flange butt weld.

3. After Demounting

- Clean rims and repaint to stop detrimental effects of corrosion and facilitate checking and tire mounting. Be very careful to clean all dirt and rust from the lock ring and gutter. This is important to secure the lock ring in its proper position. A filter on the air inflation equipment to remove the moisture from the air line helps prevent corrosion. The filter should be checked periodically to see that it is working properly. (Parts must be clean for a proper fit - particularly the gutter section which holds the lock ring in its proper position.)

■Safety Precautions for Mounting

Mounting

1. Before Mounting

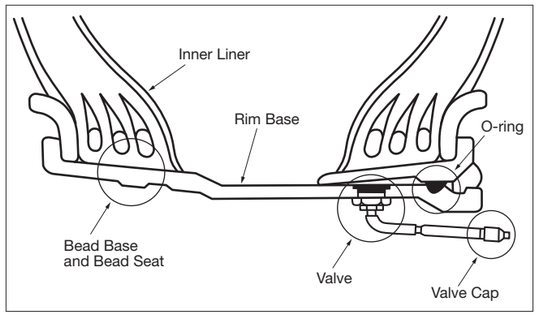
- Check rim components for cracks. Replace all cracked, badly worn, damaged and severely rusted components with new parts of the same size and type. When a component is in doubt, replace it. (Parts that are cracked, damaged or excessively corroded are weakened. Bent or repaired parts may not engage properly.)
- Do not, under any circumstance, attempt to rework, weld, heat or braze any rim component that is cracked, broken or damaged. Replace with a new part that is not cracked, broken or damaged and which is of the same size and type. (Heating may weaken a part to extent that it is unable to withstand forces of inflation or operation.)
- Check type of rim and make sure all parts of such rim are being assembled properly. Follow instruction manual of rim or ask your distributor if you have any doubts.(Mismatched parts may appear to fit, but when the tire is inflated they may fly apart with explosive force.)
- Mixing parts of one type rim with those of another is potentially dangerous. Always check rim with manufacturer for approval.
- Remove rust, dirt and other foreign matter from the rim surface, particularly on the bead seats and O-ring slot.
- Clean the inside of the tire.
- Make sure tube and flap are correct and not damaged for tube type tires.
- Always prepare a new O-ring for tubeless tires.
- Do not reinflate a tire that has been run flat or has been run at 80% or less of its recommended operating pressure, or when there is obvious or suspected damage to the tire or wheel components. (Components may have been damaged or dislocated during the time the tire was run flat or seriously under-inflated.)

2. During Mounting and Inflation

- Do not try to seat rings or other components by hammering while tire is inflated or partially inflated.
- Double check to make sure all components are properly seated prior to inflation.
- Do not inflate tire before all components are properly in place. Place in safety cage or use a restraining device and inflate to approximately 0.35 kg/cm^2 (5 psi), recheck components for proper assembly. Observe that O-ring does not roll out of its groove. If assembly is not performed properly, deflate and correct. Never hammer on an inflated on partially inflated tire/rim assembly. If assembly is correct at approximately 0.35 kg/cm^2 (5 psi), continue to inflate fully to seat the tire beads.
- Never sit or stand in front of a tire and rim assembly that is being inflated. Always use a clip-on chuck with a sufficient length of hose to permit the person inflating the tire to stand clear of the potential trajectory of the wheel components, and use an in-line valve with gauge or a pressure regulator preset to a desired value when inflating a tire. When a tire is in a restraining device, do not lean any part of your body or equipment on or against the restraining device. (If parts are improperly installed they may fly apart with explosive force.)
- Never attempt to weld on an inflated tire/rim assembly or on a rim assembly with a deflated tire. (Heat from welding will cause a sudden, drastic increase in pressure, resulting in an explosion with the force of a bomb. Deflated tires can catch fire inside the air chamber.)

3. After Inflation

- Make sure no air leakage can be suspected, especially in tubeless tires.



■Safety Precautions for Operation

Operation

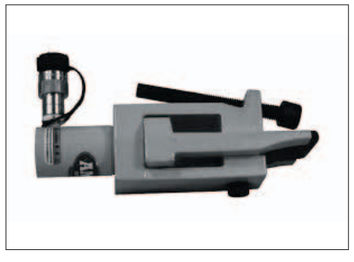
- Do not use under-inflated tires.
- Do not bleed or reduce air pressure to compensate for the increase in pressure resulting from operation.
- Do not use under-size rims. Use recommended rim for the tire.
- Do not overload or over-inflate tire/rim assemblies. Check for adequate rim strength if special operating conditions are required. (Excessive overload can cause damage to the tire and rim assembly.)
- Never run a vehicle on one tire of a dual assembly. (The carrying capacity of the single tire and rim is dangerously exceeded, and operating a vehicle in this manner can result in damage to the rim and tire or cause a tire fire.)
- Never use a tube in a tubeless tire/rim assembly where the rim is suspected of air leakage. (Loss of air pressure through fatigue cracks or other fractures in a tubeless rim warns you of a potential rim failure. This safety feature is lost when tubes are used with leaking rims. Continued use may cause the rim to burst with explosive force.)
- Always inspect rims and wheels for damage during tire checks. (Early detection of potential rim failure may prevent serous injury.)
- Never add or remove an attachment or otherwise modify a rim (Especially by heating, welding or brazing) unless the tire has been removed and approval has been received from the rim manufacturer. (Modification or heating of a rim or one of its parts may weaken it so that it cannot withstand forces created by inflation or operation.)
- Never mount bias tire and radial tire on the same axle. Follow vehicle manufacturer's recommendation.
- Never use tire under unintended service conditions for the tire. Please consult YOKOHAMA if vehicle operation requires specialized tire fitment.

Tools for Mounting and Demounting Tires

The following are all portable tools, and can be used both horizontally and vertically.

Hydraulic tire remover (tire push type) and bead wedges. Commonly used for 25 inch rims.

Hydraulic tire remover (tire push type) in operation



Hydraulic tire remover (rim flange push type). Commonly used for 33 inch or larger rims.

Hydraulic tire remover (rim flange push type) in operation

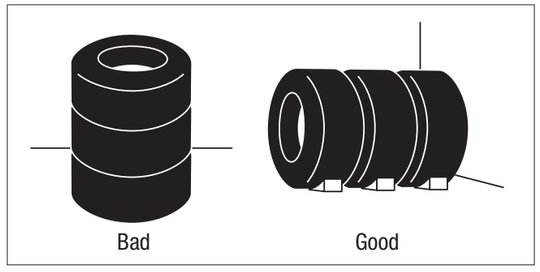
Tire handler

■Tire Storage

In general, tires should be removed from the rim, cleaned, and stored in a cool, dry room. They should be stored in an upright position, not horizontally, so that the proper space between the beads will be maintained. Make sure that the tire is not deformed by any external pressure exerted on it.
Avoid the following when storing tires:

- Direct sunlight.
- Ozone.
- Oil and grease.
- High temperatures and humidity.

If tires must be stored outside, cover them with a tarpaulin for protection. If a vehicle is stored with tires mounted, rest the vehicle on blocks to relieve the load on the tires. Deflate the tires and cover them. Rotate the tires once a month to prevent permanent deformation, if the vehicle cannot be rested on blocks.



■How to Reduce Tire Costs

Select the proper tire for the job:
- Tire size.
- Ply rating.
- Tire specification.

Maintain a tire record:
- Keep a tire card for each tire.
- Analyze scrap tires.

Carry out good tire maintenance:
- Perform regular inflation pressure checks.
- Regularly inspect tire appearance.
- Ensure proper matching of dual tires.
- Prevent oil saturation.
- Prevent high temperature and humidity.
- Prevent wavy condition.
- Keep haul road, loading and dumping area clean.
- Provide good drainage.

Maintain good job conditions:
- Do not overload.
- Avoid excessive speed.
- Train operator.

Tubes and Flaps

Tube type tires employ tubes to retain air under pressure within the carcass. The flap is a liner which is placed between the rim and tube to protect the tube from damage by the rim and beads. The size of the tube and flap are usually indicated by the size of tire for which they can be used, without regard for the ply rating. For example, a 23.5-25 size tube or flap can be used with a tire of 23.5 inch width and a diameter of 25 inches. Some tubes and flaps can be used for more than one size of tire. For example, a size 13.00-24 and 13.00-25.

Storage of Tubes and Flaps

Tubes and flaps should be cleaned and all of the air expelled before storage. They should always be stored in a dry, cool place. The tubes should be packed lightly when storing to prevent the metal valve stems from causing damage.

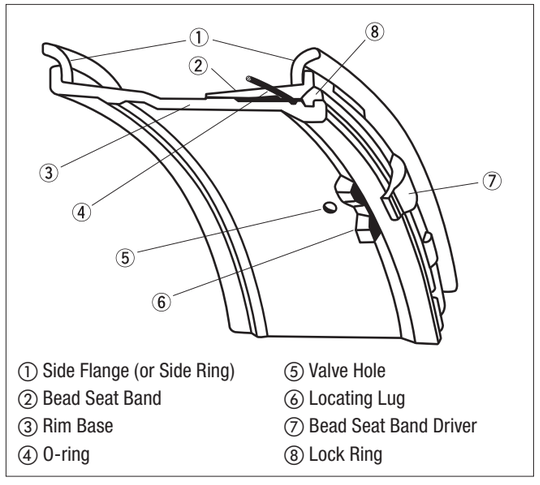
Valves for Tube Type Tires

The type of valve used for a tube type tire depends on the type of rim it is mounted to. Therefore, when purchasing tubes, proper attention should be given to the valve type.

Rims

Normally, a rim is composed of a rim base, two side flanges (or side rings), bead seat band and lock ring. On some smaller size rims, parts may be joined. For tubeless tires, an O-ring is also used.

Rim Construction Diagram



① Side Flange (or Side Ring)
② Bead Seat Band
③ Rim Base
④ O-ring
⑤ Valve Hole
⑥ Locating Lug
⑦ Bead Seat Band Driver
⑧ Lock Ring

Rim Identification

Rims are normally identified by a three-part code consisting of rim width (inches), flange shape (alphabetical) and rim diameter (inches). A flat base rim example would be: 9.00 V x 24. This follows the nomenclature of tire size with the addition of the flange identification, in this case.
The code for full tapered bead seat rims does not indicate the flange shape, but some indicate flange height in inches. An example would be 17.00 x 25 - 2.0, where 2.0 is the flange height in inches.

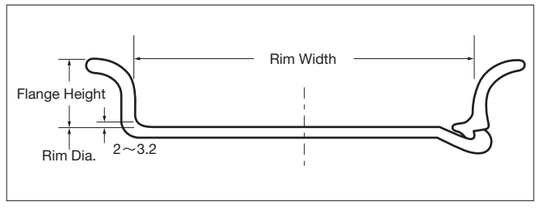
Type of Rims

Tires can function properly only when they are mounted on the right rim. There are four basic types of rims for OFF-THE-ROAD TIRES: flat base, full tapered bead seat, semi-drop center and drop center.

Flat Base Type Rims

There are two sub-classifications of interchangeable flat base type rims as shown below. A tire which fits on one kind of flat base rim will fit on all flat base rims of the same width and diameter. These rims are used for relatively small tube type OFF-THE-ROAD TIRES.

Flat Base Rim/5° Flat Base Rim

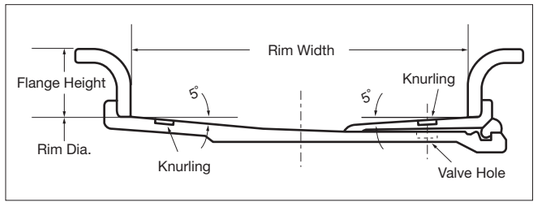


Rim Size		Tire Size	
Flat Base Rim	5° Flat Base Rim	Standard	Alternative
6.50T	6.5	8.25-20	9.00-20
7.00T	7.0	9.00-20	10.00-20
7.50V(VM)	7.5	10.00-20	11.00-20
8.00V	8.0	11.00-20	12.00-20.24
8.50V(VM)	8.5	12.00-20.24	13.00-24
9.00V	9.0	13.00-24	12.00-20.24, 14.00-20.24
10.00WI(W)	—	14.00-20.24, R24	13.00-24

Full Tapered Bead Seat Rims

Most large-wheeled construction machinery employ full tapered bead seat rims. These rims have a 5° taper in the bead seat which strengthens the rim/bead binding. Additionally, a fine groove called "knurling" lines the bead surface to prevent further slippage. Flat base rims have a looser fit and some slippage may occur under quick acceleration if used on the same large-wheeled vehicle. Almost all rims with diameters over 25" are full tapered bead seat types. Wide base variations are also available.

Full Tapered Bead Seat Rim

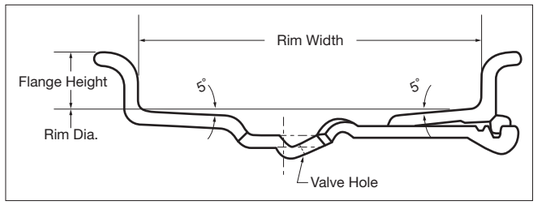


Narrow Base		Wide Base	
Rim Size	Tire Size	Rim Size	Tire Size
8.50	12.00-25, 13.00-25	12.00	15.5-25
10.00	14.00-25	14.00	17.5-25, 17.5R25
11.25	16.00-25, 16.00R25	17.00	20.5-25, 20.5R25
13.00	18.00-25, 33, 18.00R33	19.50	23.5-25, 23.5R25
15.00	21.00-25, 35	22.00	26.5-25, 26.5R25
17.00	24.00-25, 29, 35, 49	25.00	29.5-25, 29, 35, 29.5R25
19.50	27.00-49	27.00	33.25-35
22.00	27.00-33, 30.00-51	28.00	33.5-33, 39, 35/65-33
24.00	33.00-51	31.00	37.25-35
26.00	36.00-51	32.00	37.5-33, 39, 51, 40/65-39
29.00	40.00-57	36.00	45/65-45

Semi-Drop Center Rims (SDC)

This rim has a 5°-inclined bead seat and a depressed center. It is abbreviated as the "SDC" rim. Most SDC rims for OFF-THE-ROAD TIRES have diameters of 20" or 24". They are used on graders and loaders, and are identified by the marking on the tire sidewall: "For SDC RIM" or "For SDC RIMS".

Semi-Drop Center Rim



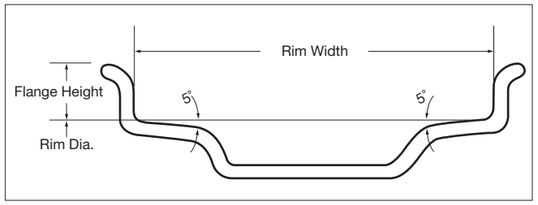
Rim Size	Tire Size
8.00TG	12.00-20, 24
	13.00-24
	14.00-24, 14.00R24
10.00VA	13.00-24
	14.00-24, 14.00R24
	16.00-24

Rim Size	Tire Size
11.00TG	14/70-20
14.00TG	42×17-20
12.00SDC	15.5-25
14.00SDC	17.5-25, 17.5R25

Drop Center Rims (DC)

The drop center rim also has a 5°-inclined bead seat, but with a deeply depressed center (dropped rim center) section for easier tire mounting. Most DC rims are used on small loaders.

Drop Center Rim



Rim Size	Tire Size
7JA	23×8.50-12
	27×8.50-15
	27×9.50-15
8-1/2JA	10.0/70-12
W10L	12.5/65-18
10LB	12.5/70-16

Rim Size	Tire Size
11LB	14.0/65-15
W13	15.5/60-18
	15.5/70-18.20
W14L	17.5/65-20
W15L	16.9-24, 28, 30
W16L	18.4-24
12.00DC*	15.5-25
13.00DC*	15.5-25, 17.5-25, R25
14.00DC*	17.5-25, R25

* Bias-12PR max. Radial-one star max

Caution with Wheel Use

Wheel defects such as cracks or corrosion can lead to air leakage, causing among other dangers, deteriorated traction and braking performance. Service life of the tire will degrade, also. More importantly, safe operation of the vehicle will be jeopardized.

- Do not use wheels with defects such as corrosion or cracks.
- Do not use rims for tubeless application that have been welded, have rust or have air leakage.
- Do not use wheels with cracks, breakage or rust erosion on the nut seat of the wheel.
- Do not use wheels if packing gutters are deformed by rust.
- Do not re-use O-rings.

Valves

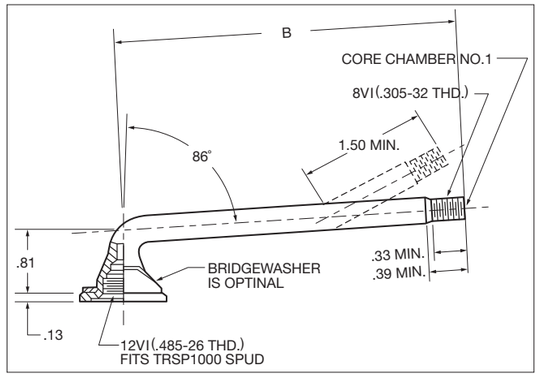
Valves for OFF-THE-ROAD TIRES are of two types, tube or rim valves and are available in three makes: standard bore, large bore and air/water. Tube valves are for tube type tires and rim valves are for tubeless type tires.

Tube Valves

(1) Standard Bore Tube Valves

This valve has an opening to accommodate a standard valve core. This type of valve is mainly used for tires smaller than 14.00-24.

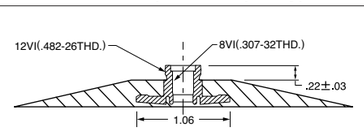
Screw-on Standard Bore Tube Valve



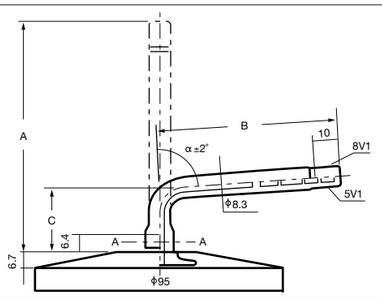
unit inch (mm)

Size \ Valve No.	TR1075A	TR1077A	TR1078A	TR1175A	TR1177A	TR1179A
B (mm)	3.0 (76)	4.1 (105)	5.0 (127)	4.5 (115)	3.7 (95)	5.6 (142)

TRSP1000 Spud Air-Liquid Type



Rubber Base Valve



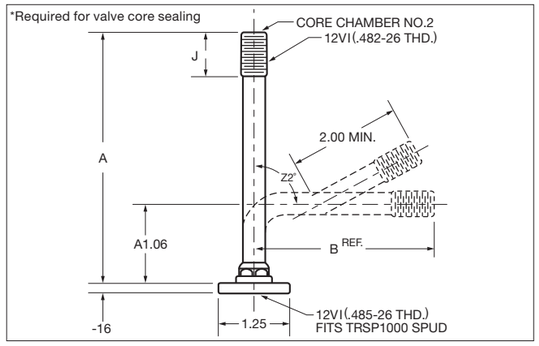
unit inch (mm)

Size \ Valve No.	TR76A	TR77A	TR78A	TR175A	TR177A	TR179A	JS1	JS179	JS75	JS179A
A (mm)	4.1 (105)	4.9 (124)	5.7 (146)	5.2 (134)	4.5 (114)	6.3 (160)	3.1 (79.5)	6.5 (164)	3.5 (89.5)	6.3 (161)
B (mm)	3.4 (86)	4.1 (105)	5.1 (127)	4.5 (115)	3.7 (95)	5.4 (141)	2.4 (60)	5.2 (133)	2.8 (70)	5.4 (137)
C (mm)	0.9 (24)	0.9 (24)	0.9 (24)	0.9 (24)	0.9 (24)	0.9 (24)	0.9 (24)	1.4 (36)	0.9 (24)	1.1 (29)
α (°)	86	86	86	86	86	86	82	86	82	86

(2) Large Bore Tube Valves

More air is required to fill larger tires. To decrease the filling time, a large bore valve can be utilized due to its increased internal diameter. This type of valve is used for wide base and narrow base tires with tread widths larger than 15.5 and 16.00, respectively. The large bore valve is also called a "jumbo valve", for which the third letter of its part number stands for.

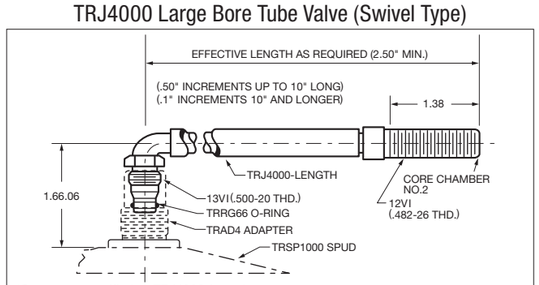
Screw-On Large Bore Convertible Tube Valve



unit inch (mm)

Valve No.	A	A1	B (Ref.)	J	Z
TRJ1014A	1.91 (41)	—	—	1.44 (37)	—
TRJ1076A	4.16 (105)	—	—	0.75 (19)	—
TRJ1076D	—	2.06 (52)	2.31 (59)	0.75 (19)	90
TRJ1076E	—	1.38 (35)	3.00 (76)	0.75 (19)	88
TRJ1175A	5.28 (134)	—	—	0.75 (19)	—
TRJ1175C	—	1.38 (35)	4.13 (105)	0.75 (19)	88
TRJ1178A	5.78 (147)	—	—	0.75 (19)	—
TRJ1078B	—	1.38 (35)	4.62 (117)	0.75 (19)	82
TRJ1179A	6.41 (163)	—	—	0.75 (19)	—
TRJ1179B	—	1.38 (35)	5.25 (134)	0.75 (19)	88
JSJ1175	—	1.22 (31)	4.13 (105)	0.63 (16)	88
JSJ1175B	—	1.22 (31)	4.13 (105)	0.63 (16)	80
JSJ1078S	—	4.70 (121)	1.18 (30)	0.75 (19)	84

TRJ4000 Large Bore Tube Valve (Swivel Type)

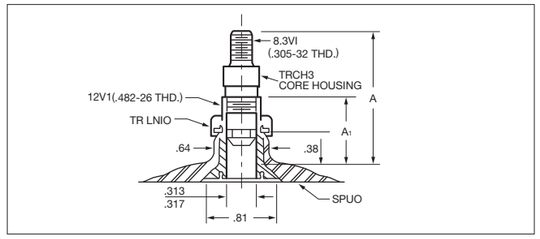


*Stems are specified as TRJ4000-Length.
Example: For an effective length of 9.50", the stem number is TRJ4000-9.50.
Recommended torque at installation: 70-80 inch-pounds.
Valve core: TRC2

(3) Air/Water Tube Valves

A liquid compound (normally a calcium chloride solution) can be injected into a tube with this valve. Two types are available, the TR218A and TR220A.

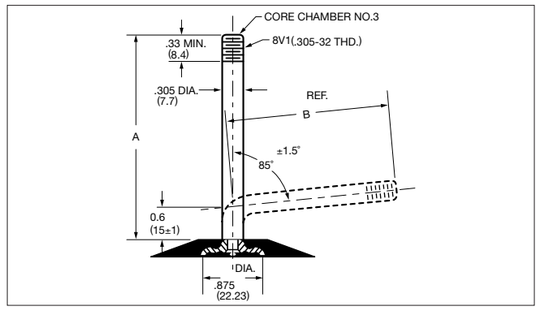
Air-Liquid Type



unit inch (mm)

Valve No.	A1	A
TR218A	0.81 (20.6)	1.63 (41.1)
TR220A	1.19 (30.2)	2.00 (50.7)

Convertible Tube Valve Air-Liquid Type



unit inch (mm)

Valve No.	A	B (Ref)
440	3.35 (85)	3.0 (75)
441	4.13 (105)	3.7 (95)
442	4.53 (115)	4.1 (105)
443	4.92 (125)	4.5 (115)
444	5.51 (140)	5.1 (130)
445	6.10 (155)	5.7 (145)

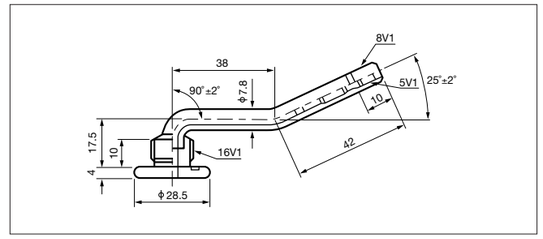
Valve Core: TRCa (short core only)

Rim Valves

(1) Standard Bore Rim Valves

This is the rim valve counterpart to the standard bore tube valve explained on the opposite page.

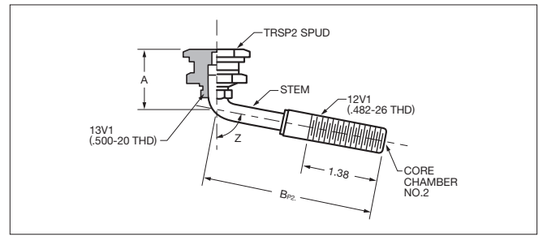
TR503A Dimension



(2) Large Bore Rim Valves

This is a rim valve with a large valve core, corresponding to the large bore tube valve. There are three types available.

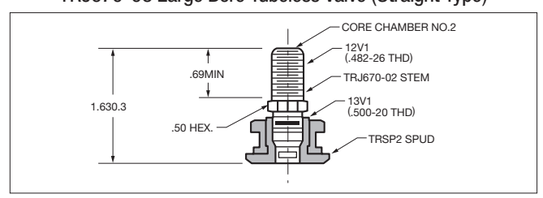
Large Bore Tubless Valve (Swivel Type)



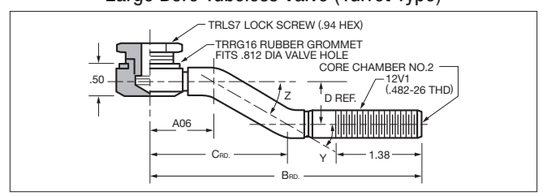
Valve No.	*TR Stem No.	A	B	Zº
TRJ650-03	J650-02	1.08	3.12	80

* Recommended torque at installation: 70-80 inch-pound

TRJ670-03 Large Bore Tubeless Valve (Straight Type)



Large Bore Tubeless Valve (Turret Type)



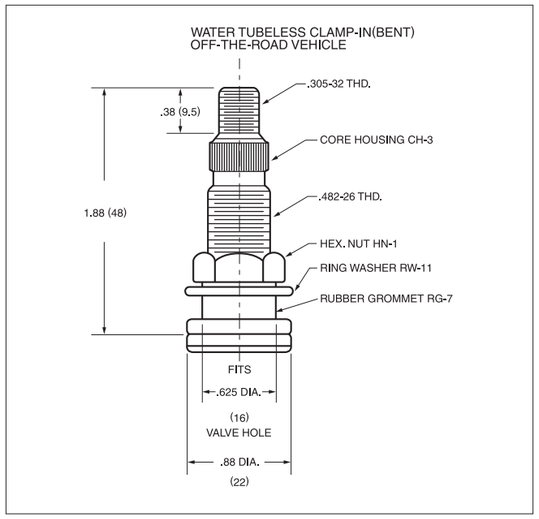
Valve No.	A	B	C	D	Yº	Zº
TRJ690	1.25	4.69	2.31	0.56	28	28

Rim Valves

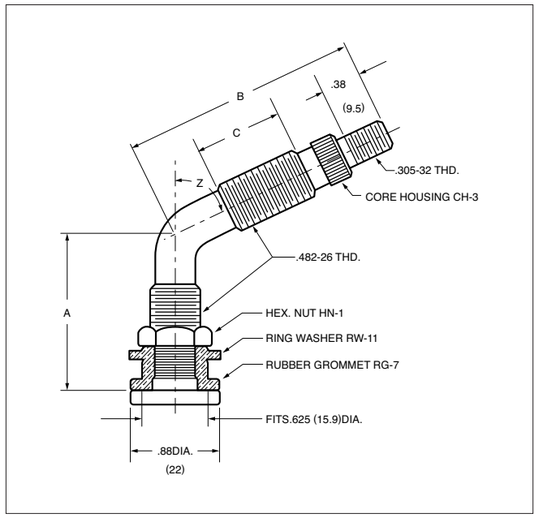
(3) Air/Water Rim Valves

This is a rim valve with a core housing, corresponding to its tube valve type explained previously. There are four types of these valves available: TR618A, TR621A, TR622A and TR623A.

TR618A Dimensions



TR621A, TR622A and TR623A Dimensions



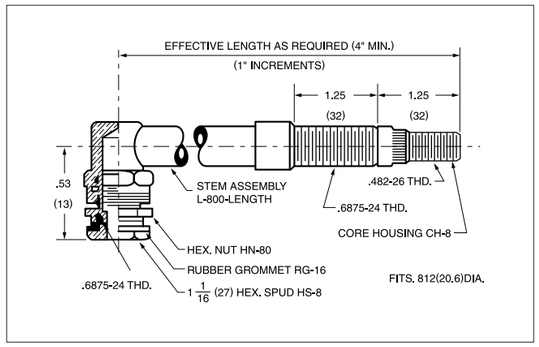
unit inch (mm)

Valve No.	A	B	C	Z
TR621A	1.53 (39)	2.97 (75)	1.59 (40)	65°
TR622A	1.75 (44)	4.53 (115)	1.84 (47)	65°
TR623A	1.53 (39)	2.25 (57)	0.88 (22)	65°

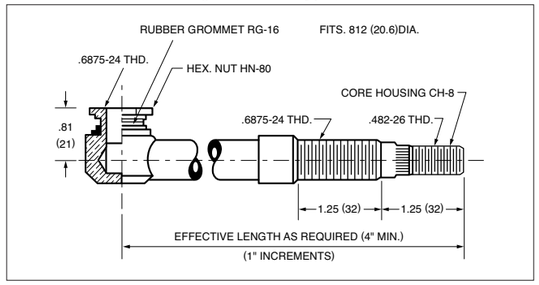
(4) Super Large Bore Rim Valves

Super large bore rim valves have an internal diameter 50% larger than large bore valves which makes air inflation easier and faster.

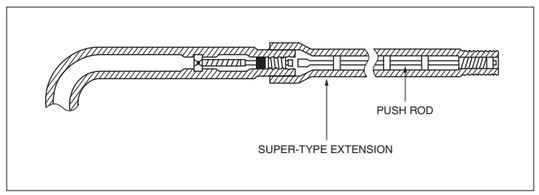
TRL850 Length (Swivel Type) Dimensions



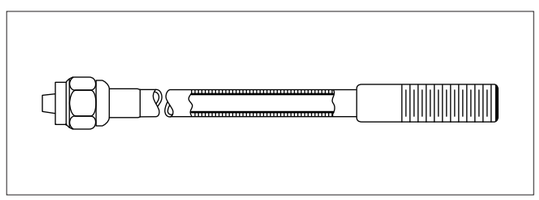
TRL890 Length (Turret Type) Dimensions



Extension



Semi-flexible Extension



unit : mm

Type	Number	Overall Length	Effective Length	Thred Length
SUPER TYPE EXTENSION	3605	55	38	25
	3607	75	58	36
	3610	100	83	36
	3612	120	103	36
	3613	133	116	36
	3616	165	148	36
	3620	200	183	36

(5) Caution with Tubeless Air Valves

Whenever the tubeless tire is demounted and changed, the tubeless air valve (rim valve) must be replaced with a new one, regardless of appearance.

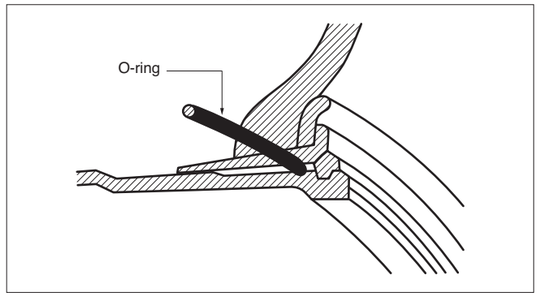
Valve Classification by Rim Type			
Type of Rim	Tire Width	Tube Type	Tubeless
FLAT BASE TYPE	14.00 and Under 16.00 and Over	Standard Bore Tube Valve Large Bore Tube Valve	Standard Bore Rim Valve Large Bore Rim Valve
FULL TAPERED	14.00 and Under 16.00 and Over 15.5 and Over	Standard Bore Tube Valve Large Bore Tube Valve Large Bore Tube Valve	Standard Bore Rim Valve Large Bore Rim Valve Large/Super Large Bore Rim Valve
SEMI-DROP CENTER	All Sizes	Standard Bore Tube Valve Air/Water Tube Valve	Air/Water Rim Valve
DROP CENTER	All Sizes	Air/Water Tube Valve	Air/Water Rim Valve

NOTES: Valves for inside dual-pair tire are equipped with a supplemental valve extension to facilitate air inflation. The extension is made of brass which is apt to nicks, scratches and dents. Care is required when (de)mounting, and storage should be in a clean, moisture free area.

O-rings

Rims for tubeless OFF-THE-ROAD TIRES require the use of an O-ring. Also referred to as a "seal ring" or "gasket", the O-ring forms an air-tight seal between separate parts of the rim. It must be used properly. It is very important to note that even if rim diameters are the same, different size O-rings may be necessary depending on the type of rim used.

O-ring Structure



O-ring No.	Rim	Tire	Section Diameter		Inside Circumference	
			mm	inch	mm	inch
OR224TG	24" SDC	24" rim diameter	6.7	0.26	1768	69.61
OR225T	25" SDC	14.00-25 and under	6.7	0.26	1802	70.94
	25" TB	17.5-25 and under 20.5-25 (use 17.00×25-1.7 rim)				
OR325T	25" TB	16.00-25 and over 20.5-25 (use 17.00×25-2.0 rim) and over	9.8	0.39	1800	71.06
OR329T	29" TB	29" rim diameter	9.8	0.39	2127	83.74
OR333T	33" TB	33" rim diameter	9.8	0.39	2447	96.34
OR335T	35" TB	35" rim diameter	9.8	0.39	2560	100.79
OR339T	39" TB	39" rim diameter	9.8	0.39	2868	112.91
OR345T	45" TB	45" rim diameter	9.8	0.39	3311	130.35
OR349T	49" TB	49" rim diameter	9.8	0.39	3572	140.63
OR451T	51" TB	51" rim diameter	12.7	0.50	3666	144.33
OR457T	57" TB	57" rim diameter	12.7	0.50	4103	161.54

SDC: semi-drop center rim TB: tapered bead seat rim

O-ring identification

OR 3 25 T

- T → Type of rim (Full tapered bead seat rim)
- 25 → Rim diameter (Bead diameter in inches)
- 3 → Cross section diameter O-ring (in eights of an inch)
- OR → Indicates that the ring is for OFF-THE-ROAD TIRES

Caution with O-rings

- Do not use used or damaged O-rings.
- Clean rim and then lubricate with vegetable oil before mounting the O-ring.
- Take caution not to damage O-ring with tire lever. Avoid twisting.
- Keep spare O-rings on hand for emergencies. A 20% backup rate is recommended.

Combination Tables

OFF-THE-ROAD TIRES, Tube, Flap and O-ring Combination Table

Tire Size	Tube Size	Valve Size		Flap Size	O-ring Size
		Tube Valve	Rim Valve		
12.5/70-16	—	—	TR575,TR415	—	—
10-16.5	10-16.5	TR15	TR575	—	—
17.5/65-20	17.5/65-20	TR218A	TR618A	—	—
14/70-20	14/70-20	TR179A	—	14/70-20	—
13.5-20	13.5-20	TR78A	—	13.5-20	—
15.0-20	15.0-20	TJ179W	—	15.0-20	—
42×17-20	42×17-20	TR179A	—	42×17-20	—
16.9-24	16.9-24	TR218A	TR618A	—	—
18.4-24	18.4-24	TR218A	TR618A	—	—
750/65R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
15.5-25	15.5-25	JSJ1175B,JSJ1175	TRJ650,TRJ670,TRJ690	15.5/17.5-25	OR225T
17.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR225T
17.5-25	17.5-25	JSJ1175B,JSJ1175	TRJ650,TRJ670,TRJ690	15.5/17.5-25	OR225T
20.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T/OR225T
20.5-25	20.5-25	JSJ1175B,JSJ1175	TRJ650,TRJ670,TRJ690	20.5-25	OR325T/OR225T
23.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
23.5-25	23.5-25	JSJ1175B,JSJ1175	TRJ650,TRJ670,TRJ690	23.5-25	OR325T
26.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
26.5-25	26.5-25	JSJ1175	TRJ650,TRJ670,TRJ690	26.5-25	OR325T
29.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
29.5-25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
29.5R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
29.5-25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
26.5-29	—	—	TRJ650,TRJ670,TRJ690	—	OR329T
29.5-29	—	—	TRJ650,TRJ670,TRJ690	—	OR329T
33.25-29	—	—	TRJ650,TRJ670,TRJ690	—	OR329T
35/65-33	—	—	TRJ650,TRJ670,TRJ690	—	OR333T
29.5-35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
33.25-35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
37.25-35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
37.5-39	—	—	TRJ650,TRJ670,TRJ690	—	OR339T
40/65-39	—	—	TRJ650,TRJ670,TRJ690	—	OR339T
45/65-45	—	—	TRJ650,TRJ670,TRJ690	—	OR345T
385/95R25	—	—	TRJ650	—	OR225T
445/95R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
505/95R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T

OFF-THE-ROAD TIRES, Tube, Flap and O-ring Combination Table

Tire Size	Tube Size	Valve Size		Flap Size	O-ring Size
		Tube Valve	Rim Valve		
9.00-20	9.00-20	TR175A,TR76A	—	8.25/9.00(R)20	—
10.00-20	11.1/10.00(R)20	TR78A,TR76A	—	10.00/11.1(R)20	—
11.00-20	11.00-20	TR78A,TR76A	—	11.00/12.00(R)20	—
12.00-20	12.00-20	TR78A,TR76A	—	11.00/12.00(R)20	—
14.00-20	14.00-20	TR179A,JS179	—	13/80,13.00/14.00/15.0(R)20	—
12.00-24	11.00/12.00(R)24	TR78A,TR77A	TR618A,TR503A	10.00/11.00/12.00-24	—
13.00-24	13.00-24/25	TR77A,JS179A	TR618A,TR503A	13.00/14.00-24/25	OR224TG
14.00R24	14.00(R)24/25	JS179	TR618A	13.00/14.00-24/25	OR224TG
14.00-24	14.00-24/25	TR77A,TR175A,TR179A	TR618A,TR503A	13.00/14.00-24/25	OR224TG
16.00-24	16.00-24/25	JSJ1175B,JSJ1175	TR618A,TR503A	16.00/18.00-24/25	OR224TG
14.00-25	14.00-24/25	TR77A,TR175A,TR179A	TR508,TR650	13.00/14.00-24/25	OR225T
16.00R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
16.00-25	16.00-24/25	JSJ1175B,JSJ1175	TRJ650,TRJ670,TRJ690	16.00/18.00-24/25	OR325T
18.00R25	—	—	TRJ650,TRJ670,TRJ690	—	OR325T
18.00-25	18.00-24/25	JSJ1175B,JSJ1175C	TRJ650,TRJ670,TRJ690	16.00/18.00-24/25	OR325T
21.00-25	21.00-24/25	JSJ1175	TRJ650,TRJ670,TRJ690	21.00-24/25*15.5/17.5-25	OR325T
24.00-25	24.00-25	JSJ1175	TRJ650,TRJ670,TRJ690	20.5/24.00-25	OR325T
24.00-29	—	—	TRJ650,TRJ670,TRJ690	—	OR329T
18.00R33	—	—	TRJ650,TRJ670,TRJ690	—	OR333T
18.00-33	—	—	TRJ650,TRJ670,TRJ690	—	OR333T
21.00-35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
24.00R35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
24.00-35	—	—	TRJ650,TRJ670,TRJ690	—	OR335T
24.00-49	—	—	TRJ650,TRJ670,TRJ690	—	OR349T
27.00R49	—	—	TRJ650,TRJ670,TRJ690	—	OR349T
27.00-49	—	—	TRJ650,TRJ670,TRJ690	—	OR349T
30.00-51	—	—	TRJ650,TRJ670,TRJ690	—	OR451T
33.00R51	—	—	TRJ650,TRJ670,TRJ690	—	OR451T
33.00-51	—	—	TRJ650,TRJ670,TRJ690	—	OR451T
36.00-51	—	—	TRJ650,TRJ670,TRJ690	—	OR451T
40.00-57	—	—	TRL870,TRL850	—	OR457T

The valve sizes for tubes and rims shown in tables (p.72-73) correspond with the conventional standards of TRA,JATMA, etc.

Earthmover Data

Formulas and Rules

The following are useful formulas and rules of thumb:

- Production, hourly = Load (BCY)/Cycles × Cycles/hr
  = Load (BM^3)/Cycles × Cycles/hr
- Load factor (L.F.) = $\frac{\text{Bank cubic yards (BCY)}}{\text{Loose cubic yards (LCY)}}$
- Load factor (L.F.) = $\frac{\text{Bank cubic meters } (BM^3)}{\text{Loose cubic meters } (LM^3)}$
- Load factor (L.F.) = $\frac{100\%}{100\% + \%\text{ of swell}}$
- Load (bank measure) = Loose cubic yards (LCY) × L.F.
  = Loose cubic meters (LM^3) × L.F.
- Shrinkage factor (S.F.) = $\frac{\text{Compacted cubic yards (CCY)}}{\text{Bank cubic yards (BCY)}}$
- Shrinkage factor (S.F.) = $\frac{\text{Compacted cubic meters } (CM^3)}{\text{Bank cubic meters } (BM^3)}$
- Density = Weight/Unit volume
- Load (bank measure) = $\frac{\text{Weight of Load}}{\text{Bank density}}$
- Rolling resistance factor = 40 lbs/ton + (30 lbs/ton/inch × inches)
  = 20 kg/ton + (15 kg/ton/2.5 cm × cm)
- Rolling resistance = 2% of GVW* + 1.5% of GVW × inch of tire penetration
  = 2% of GVW + 0.6% of GVW × cm of tire penetration
  *GVW = Gross Vehicle Weight
- Grade resistance factor (GR factor) = 20 lbs/ton × % of grade
  = 10 kg/ton × % of grade
- Grade resistance = GR factor (lbs/ton) × GVW (tons)
  = GR factor (kg/ton) × GVW (tons)
- Grade resistance = 1% of GVW × % of grade
- Total resistance = Rolling resistance (lbs or kg) + Grade resistance (lbs or kg)
- Rolling Resistance (%) = 2% + 1.5% per inch of tire penetration
  = 2% + 0.6% per cm of tire penetration
- Grade (%) = % of grade
- Effective grade (%) = PR (%) + GR (%)
- Usable pull (traction limitation) = Coeffective of traction × Weight on drivers
  = Coeffective of traction × (Total weight × % on drivers)
- Pull required = Rolling resistance + Grade resistance
  = Total resistance
- Total cycle time = Fixed time + Variable time
- Fixed time: Refer to respective machine production section.
- Variable time = Total haul time + Total return time
- Travel time = $\frac{\text{Distance (ft)}}{\text{Speed (ft/min)}}$
- Travel time = $\frac{\text{Distance (m)}}{\text{Speed (m/min)}}$
- Cycles per hour = $\frac{60 \text{ minutes}}{\text{Total cycle time (minutes)}}$
- Adjusted productivity = Hourly productivity × Efficiency factor
- No. of units requires = $\frac{\text{Hourly production required}}{\text{Unit hourly production}}$
- No. of scrapers a pusher will load = $\frac{\text{Scraper cycle time}}{\text{Unit hourly production}}$

Earthmover Data

Typical Rolling Resistance Factors

Road Surface	lbs/ton	(kg/ton)
A roadway of hard, smooth, stabilized surface without penetration under load, watered, maintained:	40	(20)
A firm, smooth rolling roadway with dirt or light surface flexing slightly under or undulating, maintained fairly regularly, watered:	65	(35)
Snow packed:	50	(25)
Snow loose:	90	(45)
A dirt roadway, rutted, flexing under load, little if any maintenance, no water, 1" (25 mm) or more tire penetration:	100	(50)
Rutted dirt roadway, soft under travel, no maintenance, no stabilization, 4" (100 mm) to 6" (150 mm) tire penetration:	150	(75)
Loose sand or gravel:	200	(100)
Soft, muddy, rutted roadway, no maintenance:	200 to 400	(100 to 200)

Various tire sizes and inflation pressures will greatly reduce or increase the above figures. The quantities given are sufficiently accurate for estimating purposes when specific information on performance of particular equipment on given soil conditions is not available. See other Earthmoving Data Section tables for additional information.

Approximate Coefficient of Traction Factors

Road Surface	Traction Factors	
	Rubber Tires	Tracks
Concrete	.90	.45
Dry clay loam	.55	.90
Wet clay loam	.45	.70
Rutted clay loam	.40	.70
Dry sand	.20	.30
Wet sand	.40	.50
Quarry pit	.65	.55
Loose gravel road	.36	.50
Packed snow	.20	.25
Ice	.12	.12*
Firm earth	.55	.90
Loose earth	.45	.60
Stockpiled coal	.45	.60

*Semi-skeleton shoes = .27

Material* Swell Percentage & Load Factors

Materials	Swell %	Load Factor (%)
Cinders	45	69
Clay, dry or wet	40	72
Clay and gravel dry or wet	40	72
Coal, anthracite or bituminous	35	74
Earth, loam and dry or wet	25	80
Gravel, dry	12	89
wet	11	89
Gypsum	74	57
Hardpan	50	67
Limestone	67	60
Rock, well blasted	65	60
Sand, dry or wet	12	89
Sandstone	54	65
Shale and soft rock	65	60
Slag, bank	23	81
Slate	65	60
Trap rock	65	61

*Varies with moisture content, grain, size, degree of compactness, etc. Tests must be made to determine exact material characteristic.

Swell-Voids-Load Factor Table

Swell (%)	Voids (%)	Load Factor
5	4.8	.952
10	9.1	.909
15	13.0	.870
20	16.7	.833
25	20.0	.800
30	23.1	.769
35	25.9	.741
40	28.6	.714
45	31.0	.690
50	33.3	.667
55	35.5	.645
60	37.5	.625
65	39.4	.606
70	41.2	.588
75	42.9	.571
80	44.4	.556
85	45.9	.541
90	47.4	.526
95	48.7	.513
100	50.0	.500

Swell-Voids-Load Factor Table

Load Factor (%)	Voids (%)	Swell (%)
95	5	5.3
90	10	11.1
85	15	17.6
80	20	25.0
75	25	33.3
70	30	42.9
65	35	53.8
60	40	66.7
55	45	81.8
50	50	100.0

Conversion Tables

Metric to Standard (UK, US, etc.)

Multiply Metric Unit	by	to Obtain English Unit
Kilometer (km)	0.6214	Mile
Meter (m)	1.0936	Yard
Centimeter (cm)	0.0328	Foot
Millimeter (mm)	0.03937	Inch
Square Kilometer (km^2)	0.3861	Square Mile
Hectare (Ha)	2.471	Acre
Square meter (m^2)	10.76	Square foot
Square centimeter (cm^2)	0.1550	Square inch
Cubic meter (m^3)	1.308	Cubic yard
kilograms/cubic meter (kg/m^3)	1.686	Pounds/cubic yard
Liter (l or ltr.)	0.2642	Gallon (US)
Liter (l or ltr.)	61.02	Cubic inch
Imperial gallon	1.20	US gallon
Kilometer per hour (kph)	0.621	MPH
Cubic centimeter (cm^3)	0.0338	Fluid ounce
Metric tonne (t)	0.984	Long ton
Metric tonne (t)	1.102	Short ton
Kilogram (kg)	2.205	Pound, avdp.
Gram (g or gr.)	0.0353	Ounce, avdp.
Calorie, Kilo (C or Cal.)	3.968	BTU
Kilogram-meter (kgm)	7.233	Foot-pound
Meter-kilogram (m-kg)	7.233	Pound-foot
Metric horsepower (CV)	0.9863	HP
kg/square centimeter ($kgs./cm^2$)	14.225	Pounds/square inch
kilopascal (kPa)	0.14503	Pounds/square inch

1 km = 1,000 m 1m = 100 cm 1 cm = 10 mm 1 km^2 = 100 Ha
1 Ha = 10,000 m^2 1 m^2 = 10,000 cm^2 1 cm^2 = 100 mm^2
1 m^3 = 1,000 liters 1 liters = 1,000 cm^3
1 metric ton = 1,000 kg 1 quintal = 100 kg 1 kg = 1,000 g
1 Cal = 427 kgm = 0.0016 CVH = 0.00116 KWH
1 kg/cm^2 = 98.066 kPa Torque unit: 1 CV = 75 kgm/sec
1 kg/cm^2 =0.97 atmosph 1 bar = 100 kPa

Standard (UK, US, etc.) to Metric

Multiply English Unit	by	to Obtain Metric Unit
Mile, statute (M)	1.609	Kilometer
Foot (ft)	0.3048	Meter
	30.48	Centimeter
Inch (in., ")	0.025	Meter
Square mile ($mile^2$)	2.590	Square kilometer
Acre	0.4047	Hectare
Square foot (ft^2)	0.0929	Square meter
Square inch (in^2)	6.452	Square centimeter
Cubic yard (yd^3)	0.765	Cubic meter
Cubic foot (ft^3)	0.0283	Cubic meter
Pound/cubic yard (lbs/yd^3)	0.5933	Kilogram/cubic meter
US gallon (US gal)	3.785	Liter
US gallon	0.833	Imperial gallon
MPH	1.61	Kilometer per hour
TMPH	1.459	TKPH
Cubic inch (in^3)	0.016	Liter
Fluid ounce (fl oz)	29.57	Cubic centimeter
Long ton (lg ton)	1.016	Metric tonne
Short ton (sh ton)	0.907	Metric tonne
Pound (lb)	0.4536	Kilogram
Ounce (oz)	28.35	Gram
BTU	0.2520	Kilogram-calorie
Foot-pound (ft-lb)	0.1383	Kilogram-meter
Horse power (HP)	1.014	Metric horsepower
Pound/square inch (PSI)	0.0703	Kg/square centimeter
Pound/square inch (PSI)	6.895	Kilopascal

1 mile = 1,760 yds 1yd = 3 ft 1 ft = 12 in 1 sq mile = 640 acres
1 acre = 43,560 sq ft 1 sq ft = 144 sq in 1 cu ft = 7.48 gal
1 gal = 231 cu in = 4 quarts liq 1 quart = 32 fl oz 1 fl oz = 1.80 cu in
1 sh ton = 2,000 lbs 1 lg ton = 2,240 lbs 1 lb = 16 oz, avdp.
1 BTU = 778 ft lb = 0.000393 HPH = 0.000293 KWH
1 HP = 550 ft lb/sec 1 atmosph = 14.7 psi

Inches to Millimeters

in/32	mm	in/32	mm	in/32	mm	in/32	mm
1	0.8	21	16.7	41	32.5	105	83.3
2	1.6	22	17.5	42	33.3	110	87.3
3	2.4	23	18.3	43	34.1	115	91.3
4	3.2	24	19.1	44	34.9	120	95.3
5	4.0	25	19.8	45	35.7	125	99.2
6	4.8	26	20.6	46	36.5	130	103.2
7	5.6	27	21.4	47	37.3	135	107.2
8	6.4	28	22.2	48	38.1	140	111.1
9	7.1	29	23.0	49	38.9	145	115.1
10	8.0	30	23.8	50	39.7	150	119.1
11	8.7	31	24.6	55	43.7	155	123.0
12	9.5	32	25.4	60	47.6	160	127.0
13	10.3	33	26.2	65	51.6	165	131.0
14	11.1	34	27.0	70	55.6	170	134.9
15	11.9	35	27.8	75	59.5	175	138.9
16	12.7	36	28.6	80	63.5	180	142.9
17	13.5	37	29.4	85	67.5	185	146.9
18	14.3	38	30.2	90	71.4	190	150.8
19	15.1	39	31.0	95	75.4	195	154.8
20	15.9	40	31.8	100	79.4	200	158.8

Millimeters to Inches

mm	in/32	mm	in/32	mm	in/32	mm	in/32
1	1	21	27	41	52	105	132
2	3	22	28	42	53	110	139
3	4	23	29	43	54	115	145
4	5	24	30	44	55	120	151
5	6	25	32	45	57	125	158
6	8	26	33	46	58	130	164
7	9	27	34	47	59	135	170
8	10	28	35	48	61	140	176
9	11	29	37	49	62	145	183
10	13	30	38	50	63	150	189
11	14	31	39	55	69		
12	15	32	40	60	76		
13	16	33	42	65	82		
14	18	34	43	70	88		
15	19	35	44	75	95		
16	20	36	45	80	101		
17	21	37	47	85	107		
18	23	38	48	90	113		
19	24	39	49	95	120		
20	25	40	50	100	126		

Conversion Tables

Pounds to Kilograms

lbs	kg	lbs	kg	lbs	kg	lbs	kg
1	0.5	220	99.8	800	362.9	4200	1905.1
10	4.5	240	108.9	900	408.2	4400	1995.8
20	9.1	260	117.9	1000	453.6	4600	2086.6
30	13.6	280	127.0	1100	499.0	4800	2177.3
40	18.1	300	136.1	1300	589.7	5000	2268.0
50	22.7	320	145.2	1400	635.0	5200	2358.7
60	27.2	340	154.2	1500	680.4	5400	2449.4
70	31.8	360	163.3	1600	725.8	5600	2540.2
80	36.3	380	172.4	1700	771.1	5800	2630.9
90	40.8	400	181.4	1800	816.5	6000	2721.6
100	45.4	420	190.5	1900	861.8	7000	3175.2
110	49.9	440	199.6	2000	907.2	8000	3628.8
120	54.4	460	208.7	2200	997.9	9000	4082.4
130	59.0	480	217.7	2400	1088.6	10000	4536.0
140	63.5	500	226.8	2600	1179.4	11000	4989.6
150	68.0	520	235.9	2800	1270.1	12000	5443.2
160	72.6	540	244.9	3000	1360.8	13000	5896.8
170	77.1	560	254.0	3200	1451.5	14000	6350.4
180	81.6	580	263.1	3400	1542.2	15000	6804.0
190	86.2	600	272.2	3600	1633.0	16000	7257.6
200	90.7	700	317.5	3800	1723.7	17000	7711.2
				4000	1814.4	18000	8164.8
						19000	8618.4
						20000	9072.0

Kilograms to Pounds

kg	lbs	kg	lbs	kg	lbs	kg	lbs
1	2	110	243	450	992	2100	4630
5	11	120	265	500	1102	2200	4850
10	22	130	287	550	1213	2300	5071
15	33	140	309	600	1323	2400	5291
20	44	150	331	650	1433	2500	5512
25	55	160	353	700	1543	2600	5732
30	66	170	375	750	1654	2700	5952
35	77	180	397	800	1764	2800	6173
40	88	190	419	850	1874	2900	6393
45	99	200	441	900	1984	3000	6614
50	110	210	463	950	2094	3500	7716
55	121	220	485	1000	2205	4000	8818
60	132	230	507	1100	2425	4500	9921
65	143	240	529	1200	2646	5000	11023
70	154	250	551	1300	2866	5500	12125
75	165	260	573	1400	3086	6000	13228
80	176	270	595	1500	3307	6500	14330
85	187	280	617	1600	3527	7000	15432
90	198	290	639	1700	3748	7500	16535
95	209	300	661	1800	3968	8000	17637
100	221	350	772	1900	4189	8500	18739
		400	882	2000	4409	9000	19841
						9500	20944
						10000	22046

Miles Per Hour to Kilometers Per Hour

mph	kph	mph	kph	mph	kph	mph	kph
1	1.61	16	25.74	31	49.88	46	74.01
2	3.22	17	27.35	32	51.49	47	75.62
3	4.83	18	28.96	33	53.10	48	77.23
4	6.44	19	30.57	34	54.71	49	78.84
5	8.05	20	32.18	35	56.32	50	80.45
6	9.65	21	33.79	36	57.92		
7	11.26	22	35.40	37	59.53		
8	12.87	23	37.01	38	61.14		
9	14.48	24	38.62	39	62.75		
10	16.09	25	40.23	40	64.36		
11	17.70	26	41.83	41	65.97		
12	19.31	27	43.44	42	67.58		
13	20.92	28	45.05	43	69.19		
14	22.53	29	46.66	44	70.80		
15	24.14	30	48.27	45	72.41		

Kilometers Per Hour to Miles Per Hour

kph	mph	kph	mph	kph	mph	kph	mph
1	0.62	26	16.16	51	31.70	76	47.23
2	1.24	27	16.78	52	32.32	77	47.86
3	1.86	28	17.40	53	32.94	78	48.48
4	2.49	29	18.02	54	33.56	79	49.10
5	3.11	30	18.65	55	34.18	80	49.72
6	3.73	31	19.27	56	34.80	81	50.34
7	4.35	32	19.89	57	35.43	82	50.96
8	4.97	33	20.51	58	36.05	83	51.58
9	5.59	34	21.13	59	36.67	84	52.21
10	6.22	35	21.75	60	37.29	85	52.83
11	6.84	36	22.37	61	37.91	86	53.45
12	7.46	37	23.00	62	38.53	87	54.07
13	8.08	38	23.62	63	39.15	88	54.69
14	8.70	39	24.24	64	39.78	89	55.31
15	9.32	40	24.86	65	40.40	90	55.94
16	9.94	41	25.48	66	41.02	91	56.56
17	10.57	42	25.10	67	41.64	92	57.18
18	11.19	43	26.72	68	42.26	93	57.80
19	11.81	44	27.35	69	42.88	94	58.42
20	12.43	45	27.97	70	43.51	95	59.04
21	13.05	46	28.59	71	44.13	96	59.66
22	13.67	47	29.21	72	44.75	97	60.29
23	14.29	48	29.83	73	45.37	98	60.91
24	14.92	49	30.45	74	45.99	99	61.53
25	15.54	50	31.08	75	46.61	100	62.15

Grade in Degrees to Grade in Percent

Grade in Degrees	Grade in Percent	Grade in Degrees	Grade in Percent
1°	1.8%	11°	19.4%
2°	3.5%	12°	21.3%
3°	5.2%	13°	23.1%
4°	7.0%	14°	24.9%
5°	8.8%	15°	26.8%
6°	10.5%	16°	28.7%
7°	12.3%	17°	30.6%
8°	14.0%	18°	32.5%
9°	15.8%	19°	34.4%
10°	17.6%	20°	36.4%

Inflation Pressure (kg/cm^2 to lbs/in^2)

kg/cm^2	lbs/in^2	kg/cm^2	lbs/in^2	kg/cm^2	lbs/in^2	kg/cm^2	lbs/in^2
0.1	1	2.6	37	5.1	72	7.6	108
0.2	3	2.7	38	5.2	74	7.7	109
0.3	4	2.8	40	5.3	75	7.8	111
0.4	6	2.9	41	5.4	77	7.9	112
0.5	7	3.0	43	5.5	78	8.0	114
0.6	9	3.1	44	5.6	80	8.1	115
0.7	10	3.2	45	5.7	81	8.2	116
0.8	11	3.3	47	5.8	82	8.3	118
0.9	13	3.4	48	5.9	84	8.4	119
1.0	14	3.5	50	6.0	85	8.5	121
1.1	16	3.6	51	6.1	87	8.6	122
1.2	17	3.7	53	6.2	88	8.7	124
1.3	18	3.8	54	6.3	89	8.8	125
1.4	20	3.9	55	6.4	91	8.9	126
1.5	21	4.0	57	6.5	92	9.0	128
1.6	23	4.1	58	6.6	94	9.1	129
1.7	24	4.2	60	6.7	95	9.2	131
1.8	26	4.3	61	6.8	97	9.3	132
1.9	27	4.4	62	6.9	98	9.4	133
2.0	28	4.5	64	7.0	99	9.5	135
2.1	30	4.6	65	7.1	101	9.6	136
2.2	31	4.7	67	7.2	102	9.7	138
2.3	33	4.8	68	7.3	104	9.8	139
2.4	34	4.9	70	7.4	105	9.9	141
2.5	36	5.0	71	7.5	107	10.0	142

Temperature (Centigrade to Fahrenheit)

°C	°F	°C	°F	°C	°F	°C	°F
-19	-2.2	+26	+78.8	+71	+159.8	+116	+240.8
-18	-0.4	27	80.6	72	161.6	117	242.6
-17	+1.4	28	82.4	73	163.4	118	244.4
-16	3.2	29	84.2	74	165.2	119	246.2
-15	5.0	30	86.0	75	167.0	120	248.0
-14	6.8	31	87.8	76	168.8	121	249.8
-13	8.6	32	89.6	77	170.6	122	251.6
-12	10.4	33	91.4	78	172.4	123	253.4
-11	12.2	34	93.2	79	174.2	124	255.2
-10	14.0	35	95.0	80	176.0	125	257.0
-9	15.8	36	96.8	81	177.8	126	258.8
-8	17.6	37	98.6	82	179.6	127	260.6
-7	19.4	38	100.4	83	181.4	128	262.4
-6	21.2	39	102.2	84	183.2	129	264.2
-5	23.0	40	104.0	85	185.0	130	266.0
-4	24.8	41	105.8	86	186.8	131	267.8
-3	26.6	42	107.6	87	188.6	132	269.6
-2	28.4	43	109.4	88	190.4	133	271.4
-1	30.2	44	111.2	89	192.2	134	273.2
0	32.0	45	113.0	90	194.0	135	275.0
+1	33.8	46	114.8	91	195.8	136	276.8
2	35.6	47	116.6	92	197.6	137	268.6
3	37.5	48	118.4	93	199.4	138	280.4
4	39.2	49	120.2	94	201.2	139	282.2
5	41.0	50	122.0	95	203.0	140	284.0
6	42.8	51	123.8	96	204.8	141	285.8
7	44.6	52	125.6	97	206.6	142	287.6
8	46.8	53	126.4	98	208.4	143	289.4
9	48.2	54	129.2	99	210.2	144	291.2
10	50.0	55	131.0	100	212.0	145	293.0
11	51.8	56	132.8	101	213.8	146	294.8
12	53.6	57	134.6	102	215.6	147	296.6
13	55.4	58	136.4	103	217.4	148	298.4
14	57.2	59	138.2	104	219.2	149	300.2
15	59.0	60	140.0	105	221.0	150	302.0
16	60.8	61	141.8	106	222.8		
17	62.6	62	143.6	107	224.6		
18	64.4	63	145.4	108	226.4		
19	66.2	64	147.2	109	228.2		
20	68.0	65	149.0	110	230.0		
21	69.8	66	150.8	111	231.8		
22	71.6	67	152.6	112	233.6		
23	73.4	68	154.4	113	235.4		
24	75.2	69	156.2	114	237.2		
25	77.0	70	158.0	115	239.0		

Approximate Weight of Materials*

Materials	Lbs per Loose Yd^3	Kg per Loose M^3	Lbs per Bank Yd^3	Kg per Bank M^3
Bauxite	2400	1425	3200	1900
Caliche	2500	1485	3700	2200
Cinders	1100	650	—	—
Dry Excavated Clay	2500	1485	3100	1840
Wet Excavated Clay	2900	1725	4500	2675
Natural Bed Clay	2800	1650	3400	2015
Dry Clay & Gravel	2000	1185	2800	1650
Wet Clay & Gravel	2800	1650	3100	1840

Materials	Lbs per Loose Yd^3	Kg per Loose M^3	Lbs per Bank Yd^3	Kg per Bank M^3
Anthracite Raw Coal	2000	1190		
Bituminous Raw Coal	1600	950		
Decomposed Rock				
75% R 25% E	3300	1955	4720	2800
50% R 50% E	2900	1725	3860	2290
25% R 75% E	2650	1580	3320	1970
Dry Earth	2600	1550	3000	1780
Wet Earth	2900	1725	3500	2075
Loam Earth	2100	1250	2700	1600
Granite	2800	1650	4600	2725

R: Rock, E: Earth

Materials	Lbs per Loose Yd^3	Kg per Loose M^3	Lbs per Bank Yd^3	Kg per Bank M^3
Pit Run Gravel	3200	1900	3700	2200
Dry Gravel	2500	1485	2800	1650
Dry 1/4" - 2" Gravel	2800	1650	3200	1900
Wet 1/4" - 2" Gravel	3400	2015	3800	2250
Sand & Gravel	2700	1600	3400	2015
Gypsum	2700	1600	3400	2015
Limestone	2600	1550	4400	2600
Dry Peat	700	415	1150	675
Moist Peat	1350	800	2250	1340
Wet Peat	1900	1125	3200	1900
Sandstone	2660	1550	4300	2550
Dry Sand	2400	1425	2700	1600
Damp Sand	2850	1680	3200	1900
Wet Sand	3100	1840	3500	2075

Materials	Lbs per Loose Yd^3	Kg per Loose M^3	Lbs per Bank Yd^3	Kg per Bank M^3
Dry Sand & Gravel	2900	1725	3400	2015
Wet Sand & Gravel	3400	2015	3800	2250
Slag	3000	1780	5000	2965
Dry Snow	220	130		
Wet Snow	860	515		
Crushed Stone	2700	1600		
Top Soil	1600	960	2300	1365
Trap Rock	2900	1725	4400	2600

*Varies with moisture content, grain, degree of compactness, etc. Tests must be made to determine exact material characteristics.