

Wheel Specifications

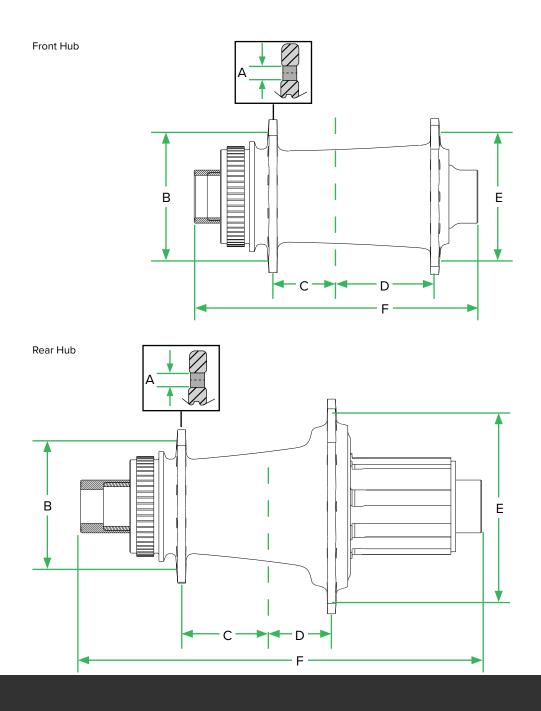


TABLE OF CONTENTS

Hub Dimensions - Road Disc Brake Hubs	4
Hub Dimensions - MTB Disc Brake Hubs	6
Hub Dimensions - Rim Brake Hubs	9
Hub Dimensions - Track Hubs	11
Rim Specifications - 1xx, 3ZERO MOTO, and 1ZERO Series Rims	12
Rim Specifications - 4xx Series Rims	14
Rim Specifications - 8xx Series Rims	15
Wheel Serial Number Locations	16
Wheel Model Code Matrix	17
101 XPLR Series Tubeless Disc Brake Wheels 101 XPLR (WH-101-XPLR-A1)	18
202 Series Tubeless Disc Brake Wheels 202 NSW CARBON TUBELESS DISC BRAKE (WH-202-NTLD-A2)	10
202 NSW CARBON TOBELESS DISC BRAKE (WH-202-NTLD-AZ)	
303 Series Tubeless Disc Brake Wheels	
353 NSW TUBELESS DISC BRAKE (WH-353-NTLD-A1)	20
303 FIRECREST CARBON TUBELESS DISC BRAKE (WH-303-FTLD-A1)	
303 FIRECREST 650B CARBON TUBELESS DISC BRAKE (WH-303-F650-A1)	
303 Series Tubeless Rim Brake Wheels	
303 NSW CARBON TUBELESS RIM BRAKE (WH-303-NTLR-A2)	
303 FIRECREST CARBON TUBELESS RIM BRAKE (WH-303-FTLR-A1)	23
303 Series Tubular Disc Brake Wheels	
303 FIRECREST CARBON TUBULAR DISC BRAKE (WH-303-FTUD-A1)	24
303 Series Tubular Rim Brake Wheels	
303 FIRECREST TUBULAR RIM BRAKE (WH-303-FTUR-A1)	25
302 Series Carbon Clincher Rim Brake Wheels	
302 CARBON TUBELESS RIM BRAKE (WH-302-TL-A1)	26
404 Series Tubeless Disc Brake Wheels	
454 NSW TUBELESS DISC BRAKE (WH-454-NTLD-A1)	
404 NSW TUBELESS DISC BRAKE (WH-404-NTLD-BI)	
404 FIRECREST CARBON TUBELESS DISC BRAKE (WH-404-FTLD-A1)	
404 FIRECREST TUBELESS DISC BRAKE (WH-404-FTLD-B1)	29
404 Series Tubeless Rim Brake Wheels	
454 NSW CARBON TUBELESS RIM BRAKE (WH-454-NTLR-A1)454 NSW CARBON TUBELESS RIM BRAKE (WH-454-NTLR-B1)	
404 Series Carbon Clincher Tubeless Rim Brake Wheels	
404 NSW CARBON TUBELESS RIM BRAKE (WH-404-NTLR-A2)	31
404 FIRECREST CARBON TUBELESS RIM BRAKE (WH-404-FTLR-A1)	31

404 Series Tubular Disc Brake Wheels	
454 NSW TUBULAR DISC BRAKE (WH-454-NTUD-A2)	32
454 NSW TUBULAR DISC BRAKE (WH-454-NTUD-B1)	32
404 Series Tubular Rim Brake Wheels	
454 NSW TUBULAR RIM BRAKE (WH-454-NTUR-A2)	33
454 NSW TUBULAR RIM BRAKE (WH-454-NTUR-B1)	33
404 Series Tubular Track Wheels	
404 TUBULAR TRACK (WH-404-TUTK-A1)	34
808 Series Tubeless Disc Brake Wheels	
858 NSW TUBELESS DISC BRAKE (WH-858-NTLD-A1)	35
858 NSW TUBELESS DISC BRAKE (WH-858-NTLD-B1)	
858 NSW TUBELESS DISC BRAKE (WH-858-NTLD-C1)	
808 NSW CARBON TUBELESS DISC BRAKE (WH-808-NTLD-A2)	
808 FIRECREST CARBON TUBELESS DISC BRAKE (WH-808-FTLD-A1)	
808 Series Tubeless Rim Brake Wheels	
858 NSW TUBELESS RIM BRAKE (WH-858-NTLR-A1)	
858 NSW TUBELESS RIM BRAKE (WH-858-NTLR-B1)	
808 NSW TUBELESS RIM BRAKE (WH-858-NTLR-A2)	
808 FIRECREST CARBON TUBELESS RIM BRAKE (WH-808-FTLR-A1)	39
808 Series Tubular Track Wheels	
808 FIRECREST TUBULAR TRACK (WH-808-TUTK-A1)	40
Super-9 Series Tubeless Wheels	
SUPER-9 CARBON TUBELESS DISC BRAKE DISC (WH-SP9-TLD-A1)	41
SUPER-9 CLINCHER TRACK DISC (WH-SP9-TLTK-B1)	
Super-9 Series Tubeless Wheels	
SUPER-9 CARBON TUBELESS RIM BRAKE DISC (WH-SP9-TLR-A1)	42
Super-9 Series Tubular Wheels	
SUPER-9 CARBON TUBULAR DISC BRAKE DISC (WH-SP9-TUD-A2)	12
SUPER-9 CARBON TUBULAR RIM BRAKE DISC (WH-SP9-TUR-A2)	
3ZERO MOTO Series Wheels	
3ZERO MOTO (WH-MOTO-30-A1)	
	•
1ZERO HITOP Series Wheels	
1ZERO HITOP SW (WH-1ZRO-HTSW-A1)	45
1ZERO HITOP S (WH-1ZRO-HTS-A1)	45

	Cognition Disc Brake				76 / 176 Disc Brake	
	Front	Rear	Front	Rear	Front	Rear
Spoke Count	20	20	24	24	24	24
A - Spoke hole diameter	2.6	2.6	2.6	2.6	2.7	2.7
B - Pitch Circle Diameter - NDS	45	45	45	45	45	53
C - Center to Flange - NDS	22.2	35.2	22.2	35.2	21.8	30.9
D - Center to Flange - DS	34.8	17.8	34.8	17.8	34.3	18.2
E - Pitch Circle Diameter - DS	Diameter - DS 45 66 45	itch Circle Diameter - DS 45 66 45	66	45	54	
F - Over Locknut Dimension	100	142	100	142	100	142



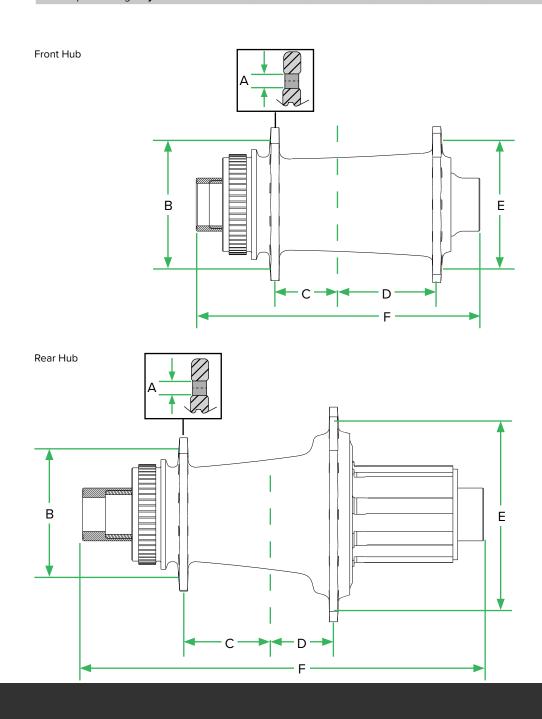
		ZR1 Disc Brake				
	Front	Rear	Front	Rear	Front	Rear
Spoke Count	20	20	24	24	28	28
A - Spoke hole diameter	2.7	2.7	2.7	2.7	2.7	2.7
B - Pitch Circle Diameter - NDS	44.3	50	44.3	50	44.3	50
C - Center to Flange - NDS	21.6	34.4	21.6	34.4	21.6	34.4
D - Center to Flange - DS	34.3	18.1	34.3	18.1	34.3	18.1
E - Pitch Circle Diameter - DS	41.8	60.5	41.8	60.5	41.8	60.5
F - Over Locknut Dimension	100	142	100	142	100	142

ZR1 Disc Brake Hub Wheel Building requirements and restrictions

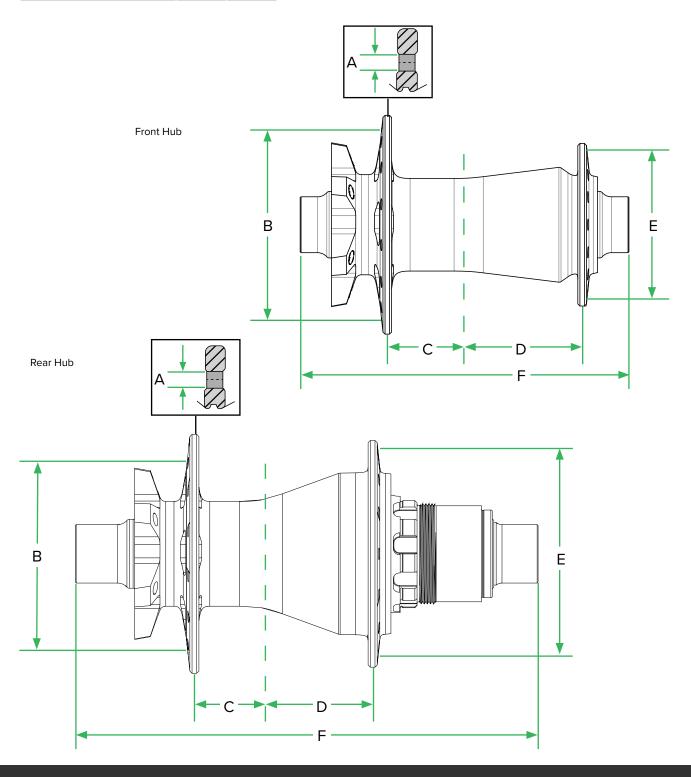
2-cross spoke lacing may only be used with 24 or 20 hole hubs.

 $3\mbox{-}\mathrm{cross}$ spoke lacing may only be used with 28 hole hubs.

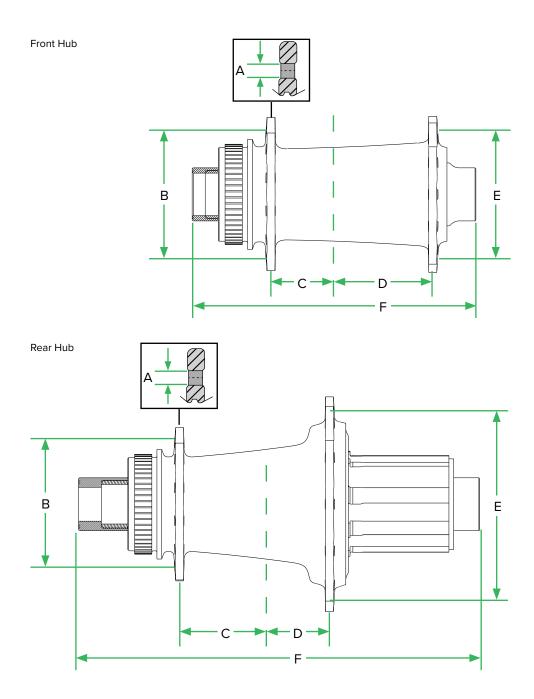
Radial spoke lacing may not be used.



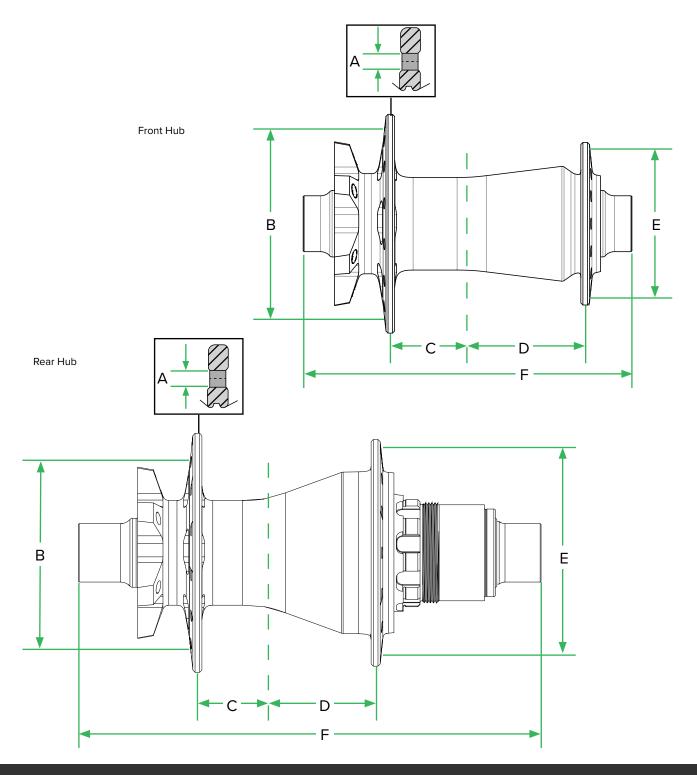
	ZM2 Disc Brake			
	Front Rear			
Spoke Count	32	32		
A - Spoke hole diameter	2.7	2.7		
B - Pitch Circle Diameter - NDS	61.2	64.4		
C - Center to Flange - NDS	26.1	36.2		
D - Center to Flange - DS	39.6	21.4		
E - Pitch Circle Diameter - DS	42.4 60.5			
F - Over Locknut Dimension	110	148		



	ZM2 SL Center Lock		
	Front Rear		
Spoke Count	24	24	
A - Spoke hole diameter	2.6	2.6	
B - Pitch Circle Diameter - NDS	44.3	48.5	
C - Center to Flange - NDS	27.5	38.1	
D - Center to Flange - DS	39.8	21	
E - Pitch Circle Diameter - DS	meter - DS 37.8 60		
F - Over Locknut Dimension	110	148	

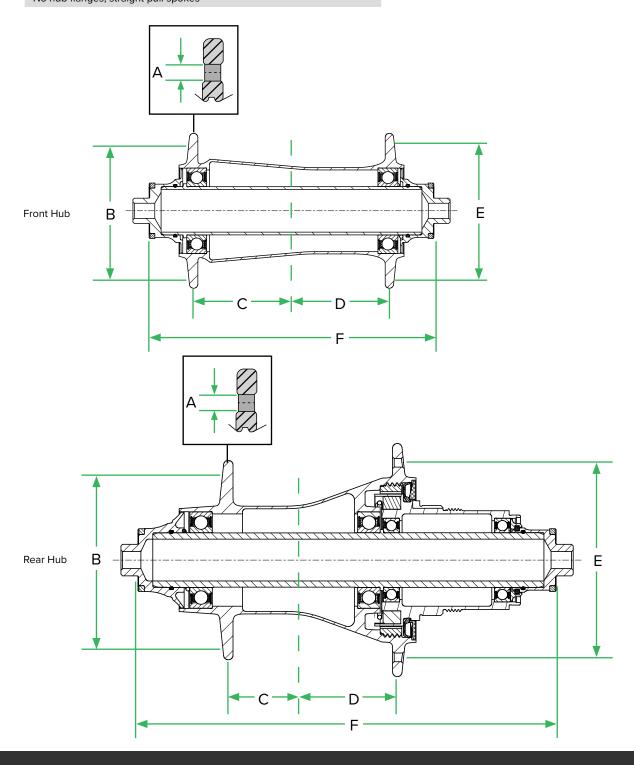


	ZM 900 6-Bolt					
	Front Rear Front Rear					
Spoke Count	24	24	28	28		
A - Spoke hole diameter	2.7	2.7	2.7	2.7		
B - Pitch Circle Diameter - NDS	60	58	60	58		
C - Center to Flange - NDS	26	35.3	26	35.3		
D - Center to Flange - DS	38.6	20.8	38.6	20.8		
E - Pitch Circle Diameter - DS	50	50	60			
F - Over Locknut Dimension	110	148	110	148		



	Cognition Rim Brake		76 / Rim E	176 Brake
	Front*	Rear*	Front	Rear
Spoke Count	18	24	20	24
A - Spoke hole diameter	2.5	2.5	2.7	2.7
B - Pitch Circle Diameter - NDS	-	-	45	53
C - Center to Flange - NDS	-	-	38.5	31.5
D - Center to Flange - DS	-	-	38.5	15.5
E - Pitch Circle Diameter - DS	-	-	45	54
F - Over Locknut Dimension	100	130	100	130

*No hub flanges; straight pull spokes



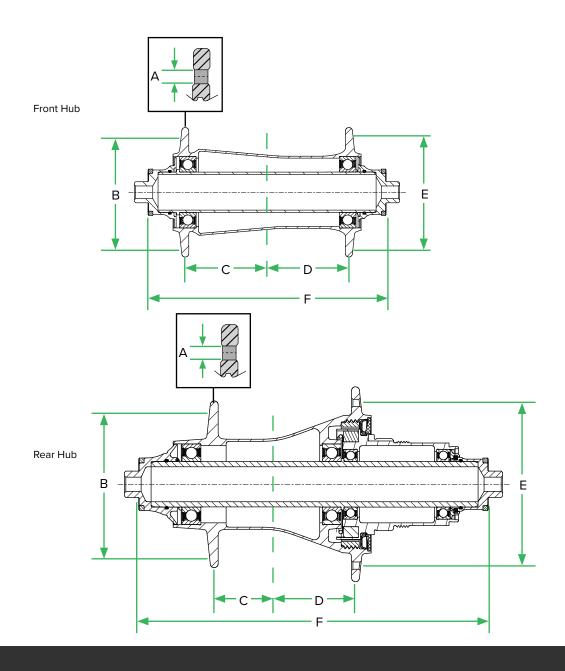
		ZR1 ı Brake
	Front	Rear
Spoke Count	24	24
A - Spoke hole diameter	2.7	2.7
B - Pitch Circle Diameter - NDS	42.4	50
C - Center to Flange - NDS	34.4	36
D - Center to Flange - DS	34.4	15.7
E - Pitch Circle Diameter - DS	42.4	60.5
F - Over Locknut Dimension	100	130
*No hub flanges; straight pull spokes		

ZR1 Rim Brake Hub Wheel Building requirements and restrictions

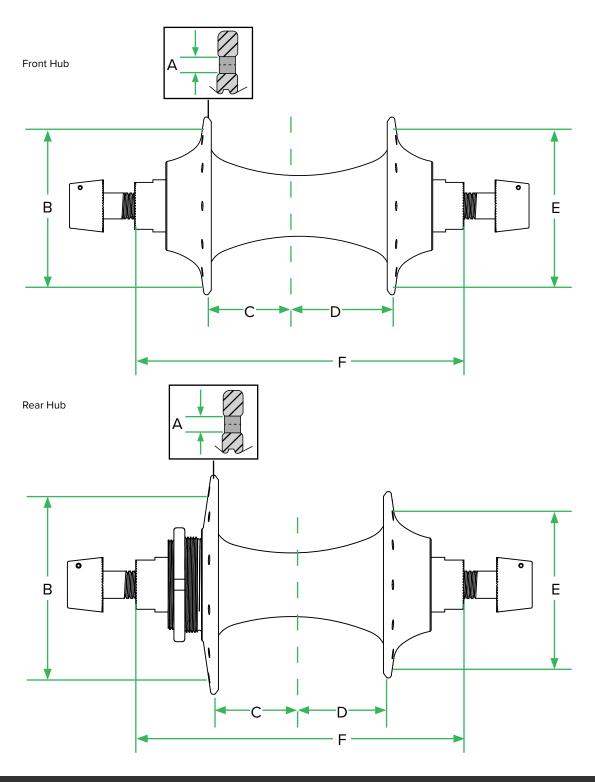
2-cross spoke lacing may only be used with 24 or 20 hole hubs.

3-cross spoke lacing may only be used with 28 hole hubs.

Radial spoke lacing may not be used.



	Track		
	Front	Rear	
Spoke Count	24	24	
A - Spoke hole diameter	2.6	2.6	
B - Pitch Circle Diameter - NDS	45	45	
C - Center to Flange - NDS	22.2	35.2	
D - Center to Flange - DS	34.8	17.8	
E - Pitch Circle Diameter - DS	45	66	
F - Over Locknut Dimension	100	135	



		101 XPLR (WH-101-XPLR-A1)	3ZERO MOTO (WH-MOTO-30-A1)	3ZERO MOTO (WH-MOTO-30-B1)	1ZERO HITOP SW (WH-1ZRO-HTSW-A1)	1ZERO HITOP S (WH-1ZRO-HTS-A1)
Rim Description		Carbon - Hookless	Carbon - Hookless	arbon - Hookless Carbon - Hookless		Carbon - Hookless
ERD**	700C : 610 mm with Washers 650B : 572 mm with Washers		29" : 619 with Washers 27.5" : 581 with Washers	29" : 619 with Washers 27.5" : 581 with Washers	29" : 603 with Washers	29" : 603 with Washers
Rim Profile	Rim Specifications	Front: Asymmetrical Rear: Asymmetrical				
Rim Width		External: 34 mm Internal: 27 mm	External: 37.5 mm Internal: 30 mm	External: 37.5 mm Internal: 30 mm	External: 38 mm Internal: 30 mm	External: 38 mm Internal: 30 mm
Rim Orientation / Direction		Front: Short Side toward drive side Rear: Short Side toward non-drive side	Front: Short Side toward drive side Rear: Short Side toward non-drive side	Front: Short Side toward drive side Rear: Short Side toward non-drive side	Front: Short Side toward drive side Rear: Short Side toward non-drive side	Front: Short Side toward drive side Rear: Short Side toward non-drive side
Spoke Count		Front: 28 Rear: 28	Front: 32 Rear: 32	Front: 32 Rear: 32	Front: 24 Rear: 24	Front: 24 Rear: 24
Spoke Pattern		Front: 3X Rear: 3X	Front: 3X Rear: 3X	Front: 3X Rear: 3X	Front: 2X Rear: 2X	Front: 2X Rear: 2X
Min. Spoke Gauge	Spoke Specifications	2.0/2.25 - 1.25/2.0	2.0/1.65/2.0	2.0/2.25 - 1.25/2.0	2.0/2.2 - 0.9/2.0	2.0/2.25 - 1.25/2.0
Spoke Tension*	Spoke Sp	115 ±10 Kgf				
Spoke Nipple Size		2.0 x 14 mm	2.0 - 14 mm	2.0 x 14 mm	2.0 - 16 mm	2.0 x 16 mm
Washers		Sapim NRHM	Sapim NRHM	Sapim NRHM	Not Applicable	Not Applicable

		303 Firecrest Carbon Tubeless Disc Brake (WH-303-FTLD-A1)	303 Firecrest 650b Carbon Tubeless Disc Brake (WH-303-F650-A1)	303 S Carbon Tubeless Disc Brake (WH-303-STLD-A1)	303 Firecrest Carbon Tubeless Rim Brake (WH-303-FTLR-A1)	303 Firecrest Carbon Tubular Disc Brake (WH-303-FTUD-A1)	303 Firecrest Tubular Rim Brake (WH-303-FTUR-A1)
Rim Description		Carbon - Hookless	Carbon - w/Hooks	Carbon - Hookless	Carbon - w/Hooks	Carbon	Carbon
ERD**		564 mm with Washers	513 mm with Washers	551 mm with Washers	550 mm with Washers	552 mm with Washers	552 mm with Washers
Rim Profile	Rim Specifications	Symmetrical	Symmetrical	Symmetrical	Symmetrical	Symmetrical	Symmetrical
Rim Width	Rim	External: 29.7 mm Internal: 25 mm	External: 30 mm Internal: 21 mm	External: 28 mm Internal: 23 mm	External: 27 mm Internal: 19	External: 27 mm Internal: n/a	External: 27 mm Internal: n/a
Rim Orientation / Direction		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Spoke Count		Front: 24 Rear: 24	Front: 24 Rear: 24	Front: 24 Rear: 24	Front: 18 Rear: 24	Front: 24 Rear: 24	Front: 18 Rear: 24
Spoke Pattern	S	Front: 2X Rear: 2X	Front: 2X Rear: 2X	Front: 2X Rear: 2X	Front: Radial Rear: 2X	Front: 2X Rear: 2X	Front: Radial Rear: 2X
Min. Spoke Gauge	Spoke Specifications	2.0/2.25 - 1.25/2.0	2.0/2.2 - 0.9/2.0	2.0/2.25 - 1.25/2.0	2.0/2.25 - 1.25/2.0	2.0/2.2 - 0.9/2.0	2.0/2.25 - 1.25/2.0
Spoke Tension*	<i>S</i>	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf
Spoke Nipple Size		2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm
Washers		Oval	Oval	Oval	Oval	Oval	Oval

		404 Firecrest Carbon Tubeless Disc Brake (WH-404-FTLD-A1)	404 Firecrest Tubeless Disc Brake (WH-404-FTLD-B1)	404 Firecrest Carbon Tubeless Rim Brake (WH-404-FTLR-A1)	404 Firecrest Track Tubular (WH-404-TUTK-A1)
Rim Description		Carbon - w/Hooks	Carbon - Hookless	Carbon - w/Hooks	Carbon
ERD**		527 mm with Washers	531 mm with Washers	527 mm with Washers	Not Applicable
Rim Profile	Rim Specifications	Symmetrical	Symmetrical	Symmetrical	Symmetrical
Rim Width	Rim	External: 27 mm Internal: 19 mm	External: 28 mm Internal: 23 mm	External: 27 mm Internal: 19	External: 27 mm Internal: n/a
Rim Orientation / Direction		Not Applicable	Not Applicable	Not Applicable	Not Applicable
Spoke Count		Front: 24 Rear: 24	Front: 24 Rear: 24	Front: 18 Rear: 24	Front: 28 Rear: 28
Spoke Pattern		Front: 2X Rear: 2X	Front: 2X Rear: 2X	Front: Radial Rear: 2X	Front: Radial Rear: 2X
Min. Spoke Gauge	Spoke Specifications	2.0/2.2 - 0.9/2.0	2.0/2.25 - 1.25/2.0	2.0/2.25 - 1.25/2.0	2.0/2.2 - 0.9/2.0
Spoke Tension*	Spoke !	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf
Spoke Nipple Size		2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm	2.0 x 14 mm
Washers		Oval	Oval	Oval	Oval

		808 Firecrest Carbon Tubeless Disc Brake (WH-808-FTLD-A1)	808 Firecrest Carbon Tubeless Disc Brake (WH-808-FTLD-B1)	808 Firecrest Carbon Tubeless Rim Brake (WH-808-FTLR-A1)	808 Firecrest Tubular Track (WH-808-TUTK-A1)
Rim Description		Carbon - w/Hooks	Carbon - Hookless	Carbon - w/Hooks	Carbon
ERD**		478 mm with Washers	482 mm	478 mm with Washers	478 mm
Rim Profile	Rim Specifications	Symmetrical	Symmetrical	Symmetrical	Front: Symmetrical Rear: Asymmetrical
Rim Width	Rim 9	External: 27 mm Internal: 19 mm	External: 27 mm Internal: 23 mm	External: 27 mm Internal: 18 mm	External: 27 mm Internal: n/a
Rim Orientation / Direction		Not Applicable	Not Applicable	Not Applicable	Not Applicable
Spoke Count		Front: 24 Rear: 24	Front: 20 Rear: 20	Front: 18 Rear: 24	Front: 20 Rear: 24
Spoke Pattern		Front: 2X Rear: 2X	Front DS: Radial Front NDS: 2X Rear: 2X	Front: Radial Rear: 2X	Front: Radial Rear: 2X
Min. Spoke Gauge	Spoke Specifications	2.0/2.25 - 1.25/2.0	2.0/2.25 - 1.25/2.0	2.0/2.25 - 1.25/2.0	2.0/2.2 - 0.9/2.0
Spoke Tension*	Spoke	100 +10/-5 Kgf	125 +10/-5 Kgf	100 +10/-5 Kgf	100 +10/-5 Kgf
Spoke Nipple Size		2.0 x 14 mm	2.0 x 16 mm square head	2.0 x 14 mm	2.0 x 14 mm
Washers		Oval	No Washers	Oval	Oval

General Notes

The serial number on your Zipp wheels can be used to find the model code (ex. WH-MOTO-30-A1) by searching on the SRAM Service Page at www.sram.com/en/service.

Information in this document is subject to change without prior notice.

Some products do not have a serial number as formatted in this document.

If you have any questions please contact your SRAM representative.

Possible serial number locations

- Depending on the wheel model, the serial number is located on the spoke bed, tire bed, or on the inside edge of the rim next to or across from the valve hole.
- ZZZZZZZ = Sequential number (0000001-9999999)



			Disc Brake		Rim Brake
	HiTop	WH-1ZRO-HTSW-A1	1ZERO HITOP SW		
		WH-IZRO-HTSW-AT	IZERO HITOP SW		
. :	1ZERO	WH-1ZRO-HTS-A1	1ZERO HITOP S		
	ERO	WH-MOTO-30-A1	3ZERO MOTO		
	3ZE	WH-MOTO-30-B1	3ZERO MOTO		
	101	WH-101-XPLR-A1	101 XPLR		
	202	WH-202-FTLD-A1	202 Firecrest Carbon Tubeless Disc Brake		
	7	WH-202-NTLD-A2	202 NSW Carbon Tubeless Disc Brake		
:		WH-353-NTLD-A1	353 NSW Tubeless Disc Brake	WH-303-FTLR-A1	303 Firecrest Carbon Tubeless Rim Brake
	9	WH-303-FTLD-A1	303 Firecrest Carbon Tubeless Disc Brake	WH-303-NTLR-A2	303 NSW Carbon Tubeless Rim Brake
SS	303	WH-303-F650-A1	303 Firecrest 650b Carbon Tubeless Disc Brake	WH-302-TL-RB-A1	302 Carbon Tubeless Rim Brake
Tubeless		WH-303-STLD-A1	303 S Carbon Tubeless Disc Brake		
Tub		WH-454-NTLD-A1	454 NSW Carbon Tubeless Disc Brake	WH-454-NTLR-A1	454 NSW Carbon Tubeless Rim Brake
		WH-454-NTLD-B1	454 NSW Tubeless Disc Brake	WH-454-NTLR-B1	454 NSW Carbon Tubeless Rim Brake
	404	WH-404-NTLD-A2	404 NSW Carbon Tubeless Disc Brake	WH-404-NTLR-A2	404 NSW Carbon Tubeless Rim Brake
	4	WH-404-FTLD-A1	404 Firecrest Tubeless Disc Brake	WH-404-FTLR-A1	404 Firecrest Carbon Tubeless Rim Brake
		WH-404-FTLD-B1	404 Firecrest Tubeless Disc Brake		
		WH-858-NTLD-A1	858 NSW Tubeless Disc Brake	WH-858-NTLR-A1	858 NSW Carbon Tubeless Rim Brake
		WH-858-NTLD-B1	858 NSW Tubeless Disc Brake	WH-858-NTLR-B1	858 NSW Tubeless Rim Brake
	m	WH-858-NTLD-C1	858 NSW Tubeless Disc Brake	WH-808-NTLR-A2	808 NSW Carbon Tubeless Rim Brake
	808	WH-808-FTLD-A1	808 Firecrest Carbon Tubeless Disc Brake	WH-808-FTLR-A1	808 Firecrest Carbon Tubeless Rim Brake
		WH-808-FTLD-B1	808 Firecrest Carbon Tubeless Disc Brake		
		WH-808-NTLD-A2	808 NSW Carbon Tubeless Disc Brake		
	Super-9	WH-SP9-TLD-A1	Super-9 Carbon Tubeless Disc Brake Disc	WH-SP9-TLR-A1	Super-9 Carbon Tubeless Rim Brake Disc
	303	WH-303-FTUD-A1	303 Firecrest Carbon Tubular Disc Brake	WH-303-FTUR-A1	303 Firecrest Carbon Tubular Rim Brake
Ä	4	WH-454-NTUD-A2	454 NSW Carbon Tubular Disc Brake	WH-454-NTUR-A2	454 NSW Carbon Tubular Rim Brake
Tubular	404	WH-454-NTUD-B1	454 NSW Tubular Disc Brake	WH-454-NTUR-B1	454 NSW Tubular Rim Brake
1	Super-9	WH-SP9-TUD-A2	Super-9 Carbon Tubular Disc Brake Disc	WH-SP9-TUR-A2	Super-9 Carbon Tubular Rim Brake Disc
	404	WH-404-TUTK-A1	404 Firecrest Track Tubular		
Track	808	WH-808-TUTK-A1	808 Firecrest Track Tubular		
	Super-9	WH-SP9-TLTK-B1	Super-9 Clincher Track Disc		

101 XPLR (WH-101-XPLR-A1)					
Max Recommended System Wei	ight (Bike, Rider, and Equipr	ment): 286 lbs / 130 kg			
Air Pressure	4.48 bar / 65 psi	,			
Tire Compatibility	Tubeless tires only	Minimum: 35 mm			
Hub Model	ZR1				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications					
Rim Description	Carbon - Hookless				
ERD**	700C : 610 mm w/washers	5	650B : 572 mm w/washers		
Rim Profile	Front: Asymmetrical		Rear: Asymmetrical		
Rim Width	External: 34 mm		Internal: 27 mm		
Rim Orientation / Direction	Front: Short Side toward of	drive side	Rear: Short Side toward non-drive side		
Spoke Specifications					
Spoke Type	CX-Sprint				
Spoke Count	Front: 28		Rear: 28		
Spoke Pattern	Front: 3X		Rear: 3X		
Spoke Length - 700C	Front DS: 304 mm	Front NDS: 302 mm	Rear DS: 302 mm	Rear NDS: 304 mm	
Spoke Length - 650B	Front DS: 286 mm	Front NDS: 284 mm	Rear DS: 282 mm	Rear NDS: 284 mm	
Min. Spoke Gauge	2.0 mm / 2.25 mm - 1.25 mm / 2.0 mm				
Spoke Tension*	115 ±10 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size	2.0 x 14 mm				
Washers	Sapim NRHM				

202 NSW Carbon Tubeless Dis	c Brake (WH-202-NTLD-A2	2)				
Max Recommended System Wei	ight (Bike, Rider, and Equipr	nent): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Tube-type or Tubeless Minimum: 25 mm				
Hub Model	Cognition					
Brake Compatibility	Disc (Center Lock)					
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road				
Rim Specifications						
Rim Description	Carbon - w/Hooks					
ERD**	578 mm w/washers					
Rim Profile	Symmetrical					
Rim Width	External: 29 mm		Internal: 21 mm			
Rim Orientation / Direction	Not Applicable					
Spoke Specifications						
Spoke Type	CX-Ray - Black					
Spoke Count	Front: 24		Rear: 24			
Spoke Pattern	Front: 2X		Rear: 2X			
Spoke Length	Front DS: 280 mm	Front NDS: 278 mm	Rear DS: 274 mm	Rear NDS: 280 mm		
Min. Spoke Gauge	2.0/2.2 - 0.9/2.0					
Spoke Tension*	100 +10/-5 Kgf					
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock					
Spoke Nipple Size 2.0 x 14 mm						
Washers	Material: Steel Shape: Oval					

202 Firecrest Carbon Tubeless	Disc Brake (WH-202-FTLD	D-A1)		
Max Recommended System We	ight (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg		
Air Pressure	6.9 bar / 100 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 25 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road		
Rim Specifications				
Rim Description	Carbon - w/Hooks			
ERD**	578 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 29 mm		Internal: 21 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint - Black			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 280 mm	Front NDS: 278 mm	Rear DS: 274 mm	Rear NDS: 280 mm
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ıre Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		

353 NSW Tubeless Disc Brake	353 NSW Tubeless Disc Brake (WH-353-NTLD-A1)						
Max Recommended System Wei	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg						
Air Pressure	5 bar / 73 psi						
Tire Compatibility	Tubeless tires only	Minimum: 28 mm					
Hub Model	Cognition v2						
Brake Compatibility	Disc (Center Lock)						
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road					
Rim Specifications							
Rim Description	Carbon - Hookless						
ERD	552 mm						
Rim Profile	Symmetrical						
Rim Width	External: 30 mm		Internal: 25 mm				
Rim Orientation / Direction	Not Applicable						
Spoke Specifications							
Spoke Type	CX-Ray - Black						
Spoke Count	Front: 24		Rear: 24				
Spoke Pattern	Front: 2X		Rear: 2X				
Spoke Length	Front DS: 266 mm	Front NDS: 264 mm	Rear DS: 260 mm	Rear NDS: 266 mm			
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm / 2.0 mm						
Spoke Tension*	125 +10/-5 Kgf						
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock						
Spoke Nipple Size	ze 2.0 x 16 mm square head						
Washers	No washers						

303 Firecrest Carbon Tubeless	Disc Brake (WH-303-FTLD	P-A1)		
Max Recommended System Wei	ght (Bike, Rider, and Equipr	nent): 250 lbs / 115 kg		
Air Pressure	5 bar / 73 psi			
Tire Compatibility	Tubeless tires only	Minimum: 28 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - Hookless			
ERD**	565 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 29.7 mm		Internal: 25 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint [†]			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 272 mm	Front NDS: 270 mm	Rear DS: 266 mm	Rear NDS: 270 mm
Min. Spoke Gauge	2.0/2.25 - 1.25/2.0			
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock			
Spoke Nipple Size 2.0 x 14 mm				
Washers	Material: Steel Shape: Oval			

[†]During calendar year 2022 Zipp changed from CX-Ray to CX-Sprint spokes on 303 and 404 Firecrest series wheels to guarantee production quantities. When replacing spokes, please take care to confirm and match spoke type in the wheel, or rebuild the entire wheel. 303 and 404 Firecrest wheels will continue with the CX-Sprint spoke specification moving forward.

303 Firecrest 650b Carbon Tu	ubeless Disc Brake (WH-303	3-F650-A1)			
Max Recommended System W	eight (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg			
Air Pressure	8.5 bar / 100 psi				
Tire Compatibility	Tubeless tires only	Minimum: 25 mm			
Hub Model	ZR1				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road			
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD**	513 mm w/washers				
Rim Profile	Symmetrical				
Rim Width	External: 30 mm		Internal: 21 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Sprint				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X		Rear: 2X		
Spoke Length	Front DS: 248 mm	Front NDS: 246 mm	Rear DS: 242 mm	Rear NDS: 246 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm / 2.0 mm				
Spoke Tension*	100 +10/-5 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size 2.0 x 14 mm					
Washers	Material: Steel	seel Shape: Oval			

303 S Carbon Tubeless Disc Br	ake (WH-303-STLD-A1)				
Max Recommended System Wei	ight (Bike, Rider, and Equipn	nent): 250 lbs / 115 kg			
Air Pressure	5 bar / 73 psi	5 bar / 73 psi			
Tire Compatibility	Tubeless tires only	Minimum: 25 mm			
Hub Model	Front: 76D		Rear: 176D		
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications	Rim Specifications				
Rim Description	Carbon - Hookless				
ERD**	551 mm w/washers				
Rim Profile	Symmetrical				
Rim Width	External: 28 mm		Internal: 23 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Sprint				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X		Rear: 2X		
Spoke Length	Front DS: 266 mm	Front NDS: 268 mm	Rear DS: 264 mm	Rear NDS: 266 mm	
Min. Spoke Gauge	2.0 mm / 2.25 mm - 1.25 mm / 2.0 mm				
Spoke Tension*	100 +10/-5 Kgf				
Nipple Type	Material: Brass Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Steel Shape: Oval				

303 NSW Carbon Tubeless Rin	m Brake (WH-303-NTLR-A2)			
Max Recommended System We	eight (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg			
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road, Campagnolo			
Rim Specifications					
Rim Description	Carbon - w/Hooks				
ERD**	550 mm w/washers				
Rim Profile	Front: Symmetrical	Front: Symmetrical Rear: Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 260 mm	Front NDS: 260 mm	Rear DS: 270 mm	Rear NDS: 272 mm	
Min. Spoke Gauge	2.0 / 2.2 - 1.25 / 2.0				
Spoke Tension*	100 +10/-5 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size 2.0 x 14 mm					
Washers	Material: Steel Shape: Oval				

Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg Air Pressure 8.6 bar / 125 psi Tire Compatibility Tube-type or Tubeless Minimum: 23 mm Hub Model ZR1 Brake Compatibility Rim Brake Compatible Drivers SRAM XDR, SRAM/Shimano Road Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Pattern Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 v 14 mm Washers Material: Steel Shape: Oval	303 Firecrest Carbon Tubeless	Rim Brake (WH-303-FTLR	-A1)				
Tire Compatibility Tube-type or Tubeless Minimum: 23 mm Hub Model ZRI Brake Compatibility Rim Brake Compatibility Rim Brake Compatible Drivers SRAM XDR, SRAM/Shimano Road Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Spoke Pattern Front: Radial Spoke Pattern Front DS: 254 mm Front NDS: 254 mm Front NDS: 254 mm Rear: 2X Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* Not Hobis Sprim Secure Lock Spoke Nipple Size Anti-Rotation: Sapim Secure Lock Spoke Nipple Size	Max Recommended System Wei	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Hub Model ZR1 Brake Compatibility Rim Brake Compatible Drivers SRAM XDR, SRAM/Shimano Road Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 × 14 mm	Air Pressure	8.6 bar / 125 psi					
Brake Compatibility Rim Brake Compatible Drivers SRAM XDR, SRAM/Shimano Road Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 × 14 mm	Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm				
Compatible Drivers SRAM XDR, SRAM/Shimano Road Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Spoke Pattern Front DS: 254 mm Front NDS: 254 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* Not Applicable Rear: 24 Spoke Type Spoke Type Alient Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Front NDS: 254 mm Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Hub Model	ZR1					
Rim Specifications Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Spoke Pattern Front DS: 254 mm Front NDS: 254 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Brake Compatibility	Rim Brake					
Rim Description Carbon - with Hooks ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Compatible Drivers	SRAM XDR, SRAM/Shima	no Road				
ERD** 550 mm w/washers Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Rim Specifications						
Rim Profile Symmetrical Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Rim Description	Carbon - with Hooks					
Rim Width External: 27 mm Internal: 19 mm Rim Orientation / Direction Not Applicable Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	ERD**	550 mm w/washers					
Rim Orientation / Direction Spoke Specifications Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* Not Applicable Rear: 24 Rear: 2X Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Rim Profile	Symmetrical					
Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Rim Width	External: 27 mm		Internal: 19 mm			
Spoke Type CX-Sprint Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Rim Orientation / Direction	Not Applicable					
Spoke Count Front: 18 Rear: 24 Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Spoke Specifications						
Spoke Pattern Front: Radial Rear: 2X Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Spoke Type	CX-Sprint					
Spoke Length Front DS: 254 mm Front NDS: 254 mm Rear DS: 260 mm Rear NDS: 264 mm Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Spoke Count	Front: 18		Rear: 24			
Min. Spoke Gauge 2.0 / 2.2 - 1.25 / 2.0 Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Spoke Pattern	Front: Radial		Rear: 2X			
Spoke Tension* 100 +10/-5 Kgf Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Spoke Length	Front DS: 254 mm	Front NDS: 254 mm	Rear DS: 260 mm	Rear NDS: 264 mm		
Nipple Type Material: Aluminum Anti-Rotation: Sapim Secure Lock Spoke Nipple Size 2.0 x 14 mm	Min. Spoke Gauge	2.0 / 2.2 - 1.25 / 2.0					
Spoke Nipple Size 2.0 x 14 mm	Spoke Tension*	100 +10/-5 Kgf					
	Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock			
Washers Material: Steel Shape: Oval	Spoke Nipple Size	2.0 x 14 mm					
	Washers	Material: Steel	Shape: Oval				

303 Firecrest Carbon Tubular Disc Brake (WH-303-FTUD-A1)					
Max Recommended System Wei	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tubular	Minimum: Not Applicable			
Hub Model	ZR1				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications					
Rim Description	Carbon				
ERD**	552 mm w/washers				
Rim Profile	Symmetrical				
Rim Width	External: 27 mm		Internal: Not Applicable		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Sprint				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X		Rear: 2X		
Spoke Length	Front DS: 268 mm	Front NDS: 266 mm	Rear DS: 260 mm	Rear NDS: 266 mm	
Min. Spoke Gauge	2.0/2.2 - 0.9/2.0				
Spoke Tension*	100 +10/-5 Kgf				
Nipple Type	Material: Aluminum	aterial: Aluminum Anti-Rotation: Sapim Secure Lock			
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Steel	Shape: Oval			

303 Firecrest Tubular Rim Brake (WH-303-FTUR-A1)					
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tubular	Tubular Minimum: Not Applicable			
Hub Model	ZR1	ZR1			
Brake Compatibility	Rim Brake				
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications					
Rim Description	Carbon				
ERD**	552 mm w/washers				
Rim Profile	Front: Symmetrical		Rear: Symmetrical		
Rim Width	External: 27 mm		Internal: Not Applicable		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Sprint				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 256 mm	Front NDS: 256 mm	Rear DS: 260 mm	Rear NDS: 266 mm	
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0				
Spoke Tension*	100 +10/-5 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Steel	Shape: Oval			

302 Carbon Tubeless Rim Brak	e (WH-302-TL-A1)			
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 20 mm		
Hub Model	Front: 76		Rear: 176	
Brake Compatibility	Rim Brake			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - w/Hooks			
ERD**	551 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 26 mm		Internal: 17 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint - Black			
Spoke Count	Front: 20		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 256 mm	Front NDS: 256 mm	Rear DS: 262 mm	Rear NDS: 264 mm
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Brass	Anti-Rotation: Not Applica	ble	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		

454 NSW Tubeless Disc Brake (WH-454-NTI D-B1)

454 NSW Tubeless Disc Brake (WH-454-NTLD-A1)					
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.5 bar / 100 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road			
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD**	527 mm w/washers				
Rim Profile	Symmetrical				
Rim Width	External: 28 mm		Internal: 19 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X		Rear: 2X		
Spoke Length	Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 254 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mn	n / 2.0 mm			
Spoke Tension*	115 +10/-5 Kgf				
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock		
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Titanium	Shape: Round			

·	WH-454-NTLD-B1)			
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	5 bar / 73 psi			
Tire Compatibility	Tubeless tires only	Minimum: 25 mm		
Hub Model	Cognition v2			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - Hookless			
ERD	528 mm			
Rim Profile	Symmetrical			
Rim Width	External: 28 mm		Internal: 23 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 254 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	ı / 2.0 mm		
Spoke Tension*	125 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	re Lock	
Spoke Nipple Size	2.0 x 16 mm Square Head			
Washers	Not Applicable			

404 NSW Tubeless Disc Brake	(WH-404-NTLD-A2)			
Max Recommended System We	ight (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	Cognition			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD**	527 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 254 mm
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	100 10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ıre Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		

404 Firecrest Carbon Tubele	ss Disc Brake (WH-404-FTI	D-A1)		
Max Recommended System W				
Air Pressure	8.6 bar / 125 psi	meng. 230 ib3 / 113 kg		
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	ano Road		
Rim Specifications	Carlo an are // La alea			
Rim Description	Carbon - w/Hooks			
ERD**	527 mm w/washers			
Rim Profile	Symmetrical		1	
Rim Width	External: 27 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 252 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 m	m / 2.0 mm		
Spoke Tension*	100 10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Sec	ure Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		
404 Firecrest Tubeless Disc B	Brake (WH-404-FTLD-B1)			
Max Recommended System W	eight (Bike, Rider, and Equip	ment): 250 lbs / 115 kg		
Air Pressure	5 bar / 73 psi			
Tire Compatibility	Tubeless Tires Only	Minimum: 25 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	ano Road		
Rim Specifications				
Rim Description	Carbon - Hookless			
ERD**	529 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 28 mm		Internal: 23 mm	
Rim Orientation / Direction	Not Applicable		internal. 25 min	
	Treet Applicable			
Spoke Specifications	CV Consint			
Spoke Type Spoke Count	CX-Sprint [†] Front: 24		Rear: 24	
Spoke Count	Front: 2X		Rear: 2X	
Spoke Pattern		Front NDC: 254		Poor NDC: 254
Spoke Length Min. Spoke Cauge	Front DS: 256 mm	Front NDS: 254 mm	Rear DS: 250 mm	Rear NDS: 254 mm
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	100 +10/-5 Kgf	Anti Detetican Coming C		
Nipple Type Spoke Nipple Size	Material: Aluminum 2.0 x 14 mm	Anti-Rotation: Sapim Sec	ure LOCK	
	7 U X 14 [[[[[]			

[†]During calendar year 2022 Zipp changed from CX-Ray to CX-Sprint spokes on 303 and 404 Firecrest series wheels to guarantee production quantities. When replacing spokes, please take care to confirm and match spoke type in the wheel, or rebuild the entire wheel. 303 and 404 Firecrest wheels will continue with the CX-Sprint spoke specification moving forward.

Shape: Oval

Material: Steel

Washers

454 NSW Carbon Tubeless Ri	m Brake (WH-454-NTLR-A1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Tube-type or Tubeless Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Rim Brake				
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road			
Rim Specifications					
Rim Description	Carbon - w/ Hooks				
ERD**	527 mm w/washers				
Rim Profile	Symmetrical	Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 248 mm	Front NDS: 248 mm	Rear DS: 258 mm	Rear NDS: 260 mm	
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	115 +10/-5 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Titanium	Shape: Round			

454 NSW Carbon Tubeless Rim Brake (WH-454-NTLR-B1)					
Max Recommended System Wei	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	Cognition 2				
Brake Compatibility	Rim Brake				
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications					
Rim Description	Carbon - w/ Hooks				
ERD**	527 mm w/washers				
Rim Profile	Symmetrical				
Rim Width	External: 27 mm		Internal: 19 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 248 mm	Front NDS: 248 mm	Rear DS: 258 mm	Rear NDS: 260 mm	
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0				
Spoke Tension*	115 +10/-5 Kgf				
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock		
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Titanium	Shape: Round			

404 NSW Carbon Tubeless R	Rim Brake (WH-404-NTLR-A	2)		
Max Recommended System V	Veight (Bike, Rider, and Equip	oment): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	Cognition			
Brake Compatibility	Rim Brake			
Compatible Drivers	SRAM XDR, SRAM/Shim	ano Road		
Rim Specifications				
Rim Description	Carbon - w/Hooks			
ERD**	527 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
<u> </u>	CV Pay Plack			
Spoke Type Spoke Count	CX-Ray - Black Front: 18		Rear: 24	
•	Front: 18		Rear: 2X	
Spoke Pattern Spoke Length	Front: Radial Front DS: 246 mm	Front NDS: 246 mm	Rear: 2X Rear DS: 256 mm	Rear NDS: 258 mm
		FIORENDS. 246 IIIIII	Real DS. 256 IIIIII	Redi NDS. 256 IIIIII
Min. Spoke Gauge	2.0/2.2 - 0.9/2.0			
Spoke Tension*	100 +10/-5 Kgf	Anti Datation, Canina Cas	una Laale	
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Sec	ure Lock	
Spoke Nipple Size	2.0 x 14 mm	Characa Oval		
Washers	Material: Steel	Shape: Oval		
404 Firecrest Carbon Tubele	ss Rim Brake (WH-404-FTL	R-A1)		
Max Recommended System V	Veight (Bike, Rider, and Equip	oment): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	ZR1			
Brake Compatibility	Rim Brake			
Compatible Drivers	SRAM XDR, SRAM/Shim	ano Road		
Rim Specifications				
Rim Description	Carbon - w/Hooks			
ERD**	527 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint [†]			
Spoke Count	Front: 18		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 242 mm	Front NDS: 242 mm	Rear DS: 248 mm	Rear NDS: 252 mm
Min. Spoke Gauge	2.0/2.25 - 1.25/2.0			
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Sec	ure Lock	
Spoke Nipple Size	2.0 x 14 mm	Notation. Jupini Sec		
Washers	Material: Steel	Shape: Oval		
[†] During calendar year 2022 Z	ipp changed from CX-Ray to	CX-Sprint spokes on 303 a		3
production quantities. When r 303 and 404 Firecrest wheels				, or rebuild the entire wheel.

^{*}Spoke tension must be measured without a tire installed, and wheel tensioning must be completed without a tire installed.

**Washers are required for wheel builds with this rim.

	·	·		
VH-454-NTUD-A2)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
8.6 bar / 125 psi				
Tubular	Minimum: 22 mm			
Cognition				
Disc (Center Lock)				
SRAM XDR, SRAM/Shimar	no Road			
Rim Specifications				
Carbon				
525 mm w/washers				
Symmetrical				
External: 27 mm		Internal: Not Applicable		
Not Applicable				
CX-Ray - Black				
Front: 24		Rear: 24		
Front: 2X		Rear: 2X		
Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 254 mm	
2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm			
115 +10/-5 Kgf				
Material: Aluminum Anti-Rotation: Sapim Secure Lock				
2.0 x 14 mm				
Material: Titanium	Shape: Round			
	ght (Bike, Rider, and Equiprose 8.6 bar / 125 psi Tubular Cognition Disc (Center Lock) SRAM XDR, SRAM/Shiman Carbon 525 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 2X Front DS: 254 mm 2.0 mm / 2.2 mm - 0.9 mm 115 +10/-5 Kgf Material: Aluminum 2.0 x 14 mm	ght (Bike, Rider, and Equipment): 250 lbs / 115 kg 8.6 bar / 125 psi Tubular Minimum: 22 mm Cognition Disc (Center Lock) SRAM XDR, SRAM/Shimano Road Carbon 525 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 2X Front DS: 254 mm 2.0 mm / 2.2 mm - 0.9 mm / 2.0 mm 115 +10/-5 Kgf Material: Aluminum Anti-Rotation: Sapim Security Securit	ght (Bike, Rider, and Equipment): 250 lbs / 115 kg 8.6 bar / 125 psi Tubular Minimum: 22 mm Cognition Disc (Center Lock) SRAM XDR, SRAM/Shimano Road Carbon 525 mm w/washers Symmetrical External: 27 mm Internal: Not Applicable Not Applicable CX-Ray - Black Front: 24 Rear: 24 Front: 2X Rear: 2X Front DS: 254 mm Front NDS: 252 mm Rear DS: 248 mm 2.0 mm / 2.2 mm - 0.9 mm / 2.0 mm 115 +10/-5 Kgf Material: Aluminum Anti-Rotation: Sapim Secure Lock 2.0 x 14 mm	

454 NSW Tubular Disc Brake (WH-454-NTUD-B1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular	Minimum: 22 mm		
Hub Model	Cognition v2			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon			
ERD**	525 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: Not Applicable	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 254 mm	Front NDS: 252 mm	Rear DS: 248 mm	Rear NDS: 254 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm		
Spoke Tension*	115 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Titanium	Shape: Round		

454 NSW Tubular Rim Brake (V	VH-454-NTUR-A2)	<u> </u>		
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular Minimum: 22 mm			
Hub Model	Cognition			
Brake Compatibility	Rim Brake			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon			
ERD**	525 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: Not Applicable	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 18		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 248 mm	Front NDS: 248 mm	Rear DS: 258 mm	Rear NDS: 260 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm		
Spoke Tension*	115 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Titanium	Shape: Round		

454 NSW Tubular Rim Brake (WH-454-NTUR-B1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular	Minimum: 22 mm		
Hub Model	Cognition 2			
Brake Compatibility	Rim Brake			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon			
ERD**	525 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: Not Applicable	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 18		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 248 mm	Front NDS: 248 mm	Rear DS: 258 mm	Rear NDS: 260 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mn	n / 2.0 mm		
Spoke Tension*	115 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Titanium	Shape: Round		

404 Tubular Track (WH-404-TUTK-A1)					
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tubular	Minimum: 22 mm			
Hub Model	Front: Track		Rear: Track		
Brake Compatibility	Not Applicable				
Compatible Drivers	Not Applicable				
Rim Specifications					
Rim Description	Carbon				
ERD**	Not Applicable				
Rim Profile	Front: Symmetrical		Rear: Symmetrical		
Rim Width	External: 27 mm		Internal: Not Applicable		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 28		Rear: 28		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 238 mm	Front NDS: 238 mm	Rear DS: 242 mm	Rear NDS: 246 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm			
Spoke Tension*	100 10/-5 Kgf				
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock				
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Steel	Shape: Oval			

858 NSW Tubeless Disc Brake (WH-858-NTLD-A1)					
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road			
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD	478 mm				
Rim Profile	Symmetrical				
Rim Width	External: 24 mm		Internal: 18 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X		Rear: 2X		
Spoke Length	Front DS: 232 mm	Front NDS: 230 mm	Rear DS: 226 mm	Rear NDS: 232 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm			
Spoke Tension*	115 +10/-5 Kgf				
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ıre Lock		
Spoke Nipple Size	2.0 x 16 mm square head				
Washers	Not Applicable				

858 NSW Tubeless Disc Brake (WH-858-NTLD-B1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	Cognition v2			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD	478 mm			
Rim Profile	Symmetrical			
Rim Width	External: 24 mm		Internal: 18 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 232 mm	Front NDS: 230 mm	Rear DS: 226 mm	Rear NDS: 232 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mn	n / 2.0 mm		
Spoke Tension*	115 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock	
Spoke Nipple Size	2.0 x 16 mm square head			
Washers	Not Applicable			

858 NSW Tubeless Disc Brake	e (WH-858-NTI D-C1)				
Max Recommended System W		ment): 250 lbs / 115 ka			
Air Pressure	5 bar / 73 psi				
Tire Compatibility	Tubeless tires only	Minimum: 25 mm			
Hub Model	Cognition v2				
Brake Compatibility	Disc (Center Lock)				
Compatible Drivers	SRAM XDR, SRAM/Shima	ano Road			
				_	
Rim Specifications					
Rim Description	Carbon - Hookless				
ERD	478 mm				
Rim Profile	Symmetrical				
Rim Width	External: 27 mm		Internal: 23 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 20		Rear: 20		
Spoke Pattern	Front: DS: Radial	Front NDS: 2X	Rear: 2X		
Spoke Length	Front DS: 218 mm	Front NDS: 232 mm	Rear DS: 230 mm	Rear NDS: 234 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 m	m / 2.0 mm			
Spoke Tension*	125 +10/-5 Kgf				
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Sec	ure Lock		
Talbbie Tabe		·	2.0 x 16 mm square head		
Spoke Nipple Size					
Spoke Nipple Size Washers	2.0 x 16 mm square head Not Applicable				
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A	2)			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip	2)			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi	2) ment): 250 lbs / 115 kg			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless	2)			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition	2) ment): 250 lbs / 115 kg			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock)	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock)	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock)	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-Aleight (Bike, Rider, and Equipal 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shimal	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD**	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Internal: 19 mm		
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-Areight (Bike, Rider, and Equipare) 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shimate Carbon - with Hooks 478 mm w/washers Symmetrical	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Internal: 19 mm		
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Internal: 19 mm		
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Internal: 19 mm		
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Internal: 19 mm		
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black	2) ment): 250 lbs / 115 kg Minimum: 23 mm			
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count Spoke Pattern	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24	2) ment): 250 lbs / 115 kg Minimum: 23 mm	Rear: 24	Rear NDS: 232 mm	
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count Spoke Pattern Spoke Length	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 24	2) ment): 250 lbs / 115 kg Minimum: 23 mm ano Road, Campagnolo Front NDS: 230 mm	Rear: 24 Rear: 2X	Rear NDS: 232 mm	
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count Spoke Pattern Spoke Length Min. Spoke Gauge	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 2X Front DS: 232 mm 2.0 mm / 2.2 mm - 0.9 m	2) ment): 250 lbs / 115 kg Minimum: 23 mm ano Road, Campagnolo Front NDS: 230 mm	Rear: 24 Rear: 2X	Rear NDS: 232 mm	
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count Spoke Pattern Spoke Length Min. Spoke Gauge Spoke Tension*	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 2X Front DS: 232 mm	ment): 250 lbs / 115 kg Minimum: 23 mm ano Road, Campagnolo Front NDS: 230 mm m / 2.0 mm	Rear: 24 Rear: 2X Rear DS: 226 mm	Rear NDS: 232 mm	
Spoke Nipple Size Washers 808 NSW Carbon Tubeless D Max Recommended System W Air Pressure Tire Compatibility Hub Model Brake Compatibility Compatible Drivers Rim Specifications Rim Description ERD** Rim Profile Rim Width Rim Orientation / Direction Spoke Specifications Spoke Type Spoke Count Spoke Pattern Spoke Length Min. Spoke Gauge	2.0 x 16 mm square head Not Applicable isc Brake (WH-808-NTLD-A eight (Bike, Rider, and Equip 8.6 bar / 125 psi Tube-type or Tubeless Cognition Disc (Center Lock) SRAM XDR, SRAM/Shima Carbon - with Hooks 478 mm w/washers Symmetrical External: 27 mm Not Applicable CX-Ray - Black Front: 24 Front: 24 Front DS: 232 mm 2.0 mm / 2.2 mm - 0.9 m 100 +10/-5 Kgf	2) ment): 250 lbs / 115 kg Minimum: 23 mm ano Road, Campagnolo Front NDS: 230 mm	Rear: 24 Rear: 2X Rear DS: 226 mm	Rear NDS: 232 mm	

808 Firecrest Carbon Tubeles	ss Diss Brake (WH 909 ETI	D A4)		
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi	, ,		
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shim	ano Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD**	478 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint			
Spoke Count	Front: 24		Rear: 24	
Spoke Pattern	Front: 2X		Rear: 2X	
Spoke Length	Front DS: 232 mm	Front NDS: 230 mm	Rear DS: 226 mm	Rear NDS: 230 mm
Min. Spoke Gauge	2.0 mm / 2.25 mm - 1.25	mm / 2.0 mm		
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Sec	cure Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		

808 Firecrest Carbon Tubeless Disc Brake (WH-808-FTLD-B1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	5 bar / 73 psi			
Tire Compatibility	Tubless tires only	Minimum: 25 mm		
Hub Model	ZR1			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road		
Rim Specifications				
Rim Description	Carbon - Hookless			
ERD**	482 mm			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 23 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint			
Spoke Count	Front: 20		Rear: 20	
Spoke Pattern	Front DS: Radial	Front NDS: 2X	Rear: 2X	
Spoke Length	Front DS: 224 mm	Front NDS: 238 mm	Rear DS: 236 mm	Rear NDS: 240 mm
Min. Spoke Gauge	2.0 mm / 2.25 mm - 1.25 r	mm / 2.0 mm		
Spoke Tension*	125 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ure Lock	
Spoke Nipple Size	2.0 x 16 mm square head			
Washers	Not Applicable			

SES NEW Tubologo Dim Broke (WH OFO NTI D A4				
858 NSW Tubeless Rim Brake (WH-858-NTLR-A1) Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Rim				
Compatible Drivers	SRAM XDR, SRAM/Shimai	no Road			
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD	478 mm				
Rim Profile	Symmetrical				
Rim Width	External: 24 mm		Internal: 18 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 224 mm	Front NDS: 224 mm	Rear DS: 234 mm	Rear NDS: 236 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mn	n / 2.0 mm			
Spoke Tension*	115 +10/-5 Kgf				
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock		
Spoke Nipple Size	2.0 x 16 mm Square Head				
Washers	Not Applicable				

858 NSW Tubeless Rim Brake (WH-858-NTLR-B1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	Cognition 2			
Brake Compatibility	Rim			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD	478 mm			
Rim Profile	Symmetrical			
Rim Width	External: 24 mm		Internal: 18 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 18		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 224 mm	Front NDS: 224 mm	Rear DS: 234 mm	Rear NDS: 236 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm	n / 2.0 mm		
Spoke Tension*	115 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ire Lock	
Spoke Nipple Size	2.0 x 16 mm Square Head			
Washers	Not Applicable			

808 NSW Tubeless Rim Brake	e (WH-858-NTLR-A2)				
Max Recommended System W	eight (Bike, Rider, and Equip	ment): 250 lbs / 115 kg			
Air Pressure	8.6 bar / 125 psi	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Tube-type or Tubeless Minimum: 23 mm			
Hub Model	Cognition				
Brake Compatibility	Rim				
Compatible Drivers	SRAM XDR, SRAM/Shima	ano Road			
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD**	478 mm w/washers	478 mm w/washers			
Rim Profile	Symmetrical				
Rim Width	External: 27 mm		Internal: 18 mm		
Rim Orientation / Direction	Not Applicable				
Spoke Specifications					
Spoke Type	CX-Ray - Black				
Spoke Count	Front: 18		Rear: 24		
Spoke Pattern	Front: Radial		Rear: 2X		
Spoke Length	Front DS: 224 mm	Front NDS: 224 mm	Rear DS: 234 mm	Rear NDS: 236 mm	
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 m	m / 2.0 mm			
Spoke Tension*	100 +10/-5 Kgf	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Material: Aluminum Anti-Rotation: Sapim Secure Lock			
Spoke Nipple Size	2.0 x 14 mm				
Washers	Material: Steel	Shape: Oval			

808 Firecrest Carbon Tubeless Rim Brake (WH-808-FTLR-A1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm		
Hub Model	ZR1			
Brake Compatibility	Rim			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD**	478 mm w/washers			
Rim Profile	Symmetrical			
Rim Width	External: 27 mm		Internal: 18 mm	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Sprint - Black			
Spoke Count	Front: 18		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 220 mm	Front NDS: 220 mm	Rear DS: 226 mm	Rear NDS: 230 mm
Min. Spoke Gauge	2.0 mm / 2.25 mm - 1.25 n	nm / 2.0 mm		
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Secu	ıre Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Material: Steel	Shape: Oval		

808 Firecrest Tubular Track (W	H-808-TUTK-A1)			
Max Recommended System Wei	ght (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular	Minimum: Not Applicable		
Hub Model	Zipp 333			
Brake Compatibility	Not Applicable			
Compatible Drivers	Not Applicable			
Rim Specifications				
Rim Description	Carbon			
ERD**	478 mm			
Rim Profile	Front: Symmetrical Rear: Asymmetrical			
Rim Width	External: 27 mm		Internal: Not Applicable	
Rim Orientation / Direction	Not Applicable			
Spoke Specifications				
Spoke Type	CX-Ray - Black			
Spoke Count	Front: 20		Rear: 24	
Spoke Pattern	Front: Radial		Rear: 2X	
Spoke Length	Front DS: 214 mm Front NDS: 214 mm		Rear DS: 226 mm	Rear NDS: 228 mm
Min. Spoke Gauge	2.0 mm / 2.2 mm - 0.9 mm / 2.0 mm			
Spoke Tension*	100 +10/-5 Kgf			
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock			
Spoke Nipple Size	2.0 x 14 mm			
Washers	Oval			

Super-9 Carbon Tubeless Disc Brake Disc (WH-SP9-TLD-A1)				
Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubeless	Minimum: 23 mm		
Hub Model	177 Disc Brake			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shima	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD	Not Applicable			
Rim Profile	Symmetrical			
Rim Width	External: 28 mm		Internal: 19 mm	
Rim Orientation / Direction	Not Applicable			

Super-9 Clincher Track Disc (WH-SP9-TLTK-B1)					
Max Recommended System We	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg				
Air Pressure	8.6 bar / 125 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm			
Hub Model	WH-SP9-TLTK-B1				
Brake Compatibility	Not Applicable				
Compatible Drivers	Not Applicable				
Rim Specifications					
Rim Description	Carbon - with Hooks				
ERD	Not Applicable				
Rim Profile	Symmetrical				
Rim Width	External: 27.5 mm		Internal: 21 mm		
Rim Orientation / Direction	Not Applicable				

Super-9 Carbon Tubeless Rim Brake Disc (WH-SP9-TLR-A1)						
Max Recommended System We	Max Recommended System Weight (Bike, Rider, and Equipment): 250 lbs / 115 kg					
Air Pressure	8.6 bar / 125 psi					
Tire Compatibility	Tube-type or Tubeless	Minimum: 23 mm				
Hub Model	188 / Super-9 RB					
Brake Compatibility	Rim					
Compatible Drivers	SRAM XDR, SRAM/Shimano Road					
Rim Specifications						
Rim Description	Carbon - with Hooks					
ERD	Not Applicable					
Rim Profile	Symmetrical					
Rim Width	External: 28 mm		Internal: 18 mm			
Rim Orientation / Direction	Not Applicable					

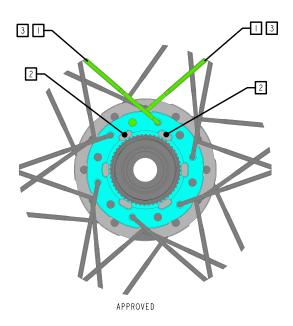
Super-9 Carbon Tubular Disc Brake Disc (WH-SP9-TUD-A2)				
Max Recommended System We	ight (Bike, Rider, and Equipr	ment): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular	Minimum: Not Applicable		
Hub Model	177 Disc Brake			
Brake Compatibility	Disc (Center Lock)			
Compatible Drivers	SRAM XDR, SRAM/Shimar	no Road		
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD	Not Applicable			
Rim Profile	Symmetrical			
Rim Width	External: 27.5 mm		Internal: Not Applicable	
Rim Orientation / Direction	Not Applicable			

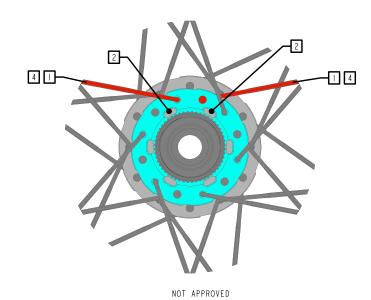
Super-9 Carbon Tubular Rim Brake Disc (WH-SP9-TUR-A2)				
Max Recommended System We	ight (Bike, Rider, and Equipn	nent): 250 lbs / 115 kg		
Air Pressure	8.6 bar / 125 psi			
Tire Compatibility	Tubular	Minimum: Not Applicable		
Hub Model	177 Rim Brake			
Brake Compatibility	Rim			
Compatible Drivers	SRAM XDR, SRAM/Shimano Road			
Rim Specifications				
Rim Description	Carbon - with Hooks			
ERD	Not Applicable	Not Applicable		
Rim Profile	Symmetrical			
Rim Width	External: 27.5 mm		Internal: Not Applicable	
Rim Orientation / Direction	Orientation / Direction Not Applicable			

3ZERO MOTO (WH-MOTO-30	D-A1)			
Max Recommended System V	Veight (Bike, Rider, and Equi	pment): 286 lbs / 130 kg		
Air Pressure	4.48 bar / 65 psi			
Tire Compatibility	Tubeless tires only	Minimum: 47 mm		
Hub Model	ZM1			
Brake Compatibility	Disc (6-bolt)			
Compatible Drivers	SRAM XD, SRAM/Shima	ino MTB		
Rim Specifications				
Rim Description	Carbon			
ERD**	29" : 619 mm w/washers	S	27.5" : 581 mm w/washe	ers
Rim Profile	Front: Asymmetrical		Rear: Asymmetrical	
Rim Width	External: 37.5 mm		Internal: 30 mm	
Rim Orientation / Direction	Front: Short Side toward	d drive side	Rear: Short Side toward	d non-drive side
Spoke Specifications				
Spoke Type	Sapim D-Light			
Spoke Count	Front: 32		Rear: 32	
Spoke Pattern	Front: 3X		Rear: 3X	
Spoke Length - 29"	Front DS: 302 mm	Front NDS: 300 mm	Rear DS: 300 mm	Rear NDS: 302 mm
Spoke Length - 27.5"	Front DS: 284 mm	Front NDS: 282 mm	Rear DS: 280 mm	Rear NDS: 282 mm
Min. Spoke Gauge	2.0 / 1.65 / 2.0			
Spoke Tension*	115 ±10 Kgf			
Nipple Type	Material: Aluminum	Anti-Rotation: Sapim Se	ecure Lock	
Spoke Nipple Size	2.0 x 14 mm			
Washers	Sapim NRHM			
3ZERO MOTO (WH-MOTO-30 Max Recommended System V Air Pressure		pment): 286 lbs / 130 kg		
Tire Compatibility	Tubeless tires only	Minimum: 47 mm		
Hub Model	ZM2			
Brake Compatibility	Disc (6-bolt)			
Compatible Drivers	SRAM XD			
Rim Specifications				
Rim Description	Carbon - Hookless			
ERD**	29" : 619 mm w/washers	S	27.5" : 581 mm w/washe	ers
Rim Profile	Front: Asymmetrical		Rear: Asymmetrical	
Rim Width	External: 37.5 mm		Internal: 30 mm	
Rim Orientation / Direction	Front: Short Side toward	d drive side	Rear: Short Side toward	d non-drive side
Spoke Specifications				
Spoke Type	CX-Sprint			
Spoke Count	Front: 32		Rear: 32	
Spoke Pattern	Front: 3X		Rear: 3X	
Spoke Length - 29"	Front DS: 302 mm	Front NDS: 298 mm	Rear DS: 298 mm	Rear NDS: 300 mm
	Front DS: 284 mm	Front NDS: 280 mm	Rear DS: 280 mm	Rear NDS: 280 mm
Spoke Length - 27.5"				
	2.0 / 2.25 - 1.25 / 2.0			
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0 115 ±10 Kgf			
Min. Spoke Gauge Spoke Tension*		Anti-Rotation: Sapim Se	ecure Lock	
Spoke Length - 27.5" Min. Spoke Gauge Spoke Tension* Nipple Type Spoke Nipple Size	115 ±10 Kgf	Anti-Rotation: Sapim Se	ecure Lock	

	1ZERO HITOP SW (WH-1ZRO-HTSW-A1)					
Max Recommended System Wei	ight (Bike, Rider, and Equipr	ment): 286 lbs / 130 kg				
Air Pressure	3.4 bar / 50 psi					
Tire Compatibility	Tube-type or Tubeless	Minimum: 47 mm	Maximum: 7	1 mm		
Hub Model	ZM2 SL					
Brake Compatibility	Disc (Center Lock)					
Compatible Drivers	SRAM XD, Shimano Micro	spline				
Rim Specifications						
Rim Description	Carbon - Hookless					
ERD**	603 mm					
Rim Profile	Front: Asymmetrical		Rear: Asymmetrical			
Rim Width	External: 38 mm		Internal: 30 mm			
Rim Orientation / Direction	Front: Short Side toward drive side		Rear: Short Side toward n	on-drive side		
Spoke Specifications						
Spoke Type	CX-Ray, J-Bend Black					
Spoke Count	Front: 24		Rear: 24			
Spoke Pattern	Front: 2X / 2X		Rear: 2X / 2X			
Spoke Length - 29"	Front DS: 294 mm Front NDS: 290 mm		Rear DS: 286 mm	Rear NDS: 290 mm		
Min. Spoke Gauge	2.0 / 2.2 - 0.9 / 2.0					
Spoke Tension*	115 ±10 Kgf					
Nipple Type	Material: Aluminum Anti-Rotation: Sapim Secure Lock					
Spoke Nipple Size	2.0 x 16 mm					
Washers	Not Applicable					

1ZERO HITOP S (WH-1ZRO-H	TS-A1)				
Max Recommended System W	eight (Bike, Rider, and Equip	ment): 286 lbs / 130 kg			
Air Pressure	3.4 bar / 50 psi				
Tire Compatibility	Tube-type or Tubeless	Minimum: 47 mm	Maxii	mum: 71 mm	
Hub Model	ZM 900				
Brake Compatibility	Disc (6-bolt)				
Compatible Drivers	SRAM XD, Shimano Micro	ospline			
Rim Specifications					
Rim Description	Carbon - Hookless	Carbon - Hookless			
ERD**	603 mm	603 mm			
Rim Profile	Front: Asymmetrical	Front: Asymmetrical Rear: Asymmetrical			
Rim Width	External: 38 mm Internal: 30 mm				
Rim Orientation / Direction	Front: Short Side toward drive side		Rear: Short Side to	Rear: Short Side toward non-drive side	
Spoke Specifications					
Spoke Type	CX-Sprint, J-Bend Black				
Spoke Count	Front: 24		Rear: 24		
Spoke Pattern	Front: 2X / 2X	Front: 2X / 2X		Rear: 2X / 2X	
Spoke Length - 29"	Front DS: 292 mm	Front NDS: 288 mm	Rear DS: 288 mm	Rear NDS: 290 mm	
Min. Spoke Gauge	2.0 / 2.25 - 1.25 / 2.0	2.0 / 2.25 - 1.25 / 2.0			
Spoke Tension*	115 ±10 Kgf				
Nipple Type	Material: Aluminum	Material: Aluminum Anti-Rotation: Sapim Secure Lock			
Spoke Nipple Size	2.0 x 16 mm				
Washers	Not Applicable				





- 1 Spoke
- 2 Hub Cutout
- 3 Spokes shall be assembled on the non-drive side of the hub in a direction facing away from cutouts, as shown in the image.
- A Not approved: when spokes are laced on the non-drive side of the hub in a direction facing the cutouts, as shown in the image, the hub flange has lower fatigue strength.
- 5 Image is for reference only and applies to all applicable hubs and spoke counts.



ASIAN HEADQUARTERS SRAM Taiwan No. 1598-8 Chung Shan Road Shen Kang Hsiang, Taichung City Taiwan WORLD HEADQUARTERS SRAM LLC 1000 W. Fulton Market, 4th Floor Chicago, Illinois 60607 U.S.A. EUROPEAN HEADQUARTERS SRAM Europe Paasbosweg 14-16 3862ZS Nijkerk The Netherlands