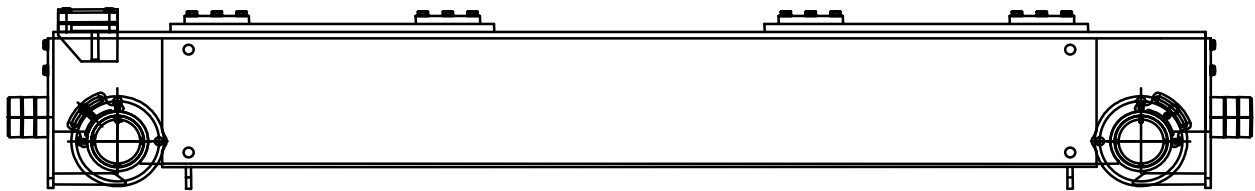
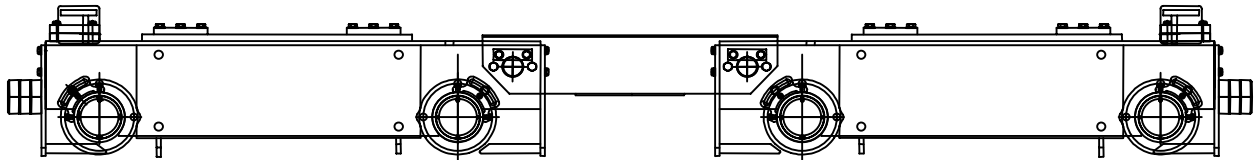




# SHR SERIES TOP RUNNING END TRUCKS



## TECHNICAL GUIDE



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## 1 GENERAL

The SH end truck series was renamed to SHR and the model code for end truck plus the model code for the top joint plate was changed accordingly.

Although the product itself remains unchanged, there are two rule changes with the SHR end trucks. The top joint plates and the side joint plates on the SHR end trucks are only suitable for double girder cranes with box girders. SHR end trucks cannot be used on cranes using profile (commercial) beams or on single cranes regardless of the bridge girder type (box or profile).

The heavy-duty, top running SHR end truck is often selected for double girder cranes with large capacities and/or long spans, or for outdoor cranes especially in high wind areas. These types of cranes usually have larger wheel loads or require more horsepower to drive the crane.

The standard end truck arrangement is two wheels per truck with one drive wheel and one idler wheel. The end trucks can be converted to an equalizing bogie configuration.

## 2 FRAME

The end truck frame is made from steel plates welded into a box construction and it is reinforced with diaphragms.

The truck frame are equipped with rail sweeps that will prevent the end truck from dropping more than one inch [25 mm] in case of an axle failure. The rail sweeps project below the top of the rail.

The steel plate material is S355J2G3 / EN10025. (Fe52D yield strength = 355 N/mm<sup>2</sup> [51ksi] minimum).

## 3 WHEELS

The SHR end trucks are available in wheel diameters of 250, 320, 400, 500, 630, 710 and 800 mm. The drive and idler wheels have double flanges and flat tread.

The actual wheel groove width depends on the rail size and the wheel diameter. The maximum groove width for the various wheel diameters is listed in the End Truck Dimensions section. Flangeless wheels and guide rollers are available as an option. This option is particularly useful when the rail including the minimum allowable float exceeds the maximum groove width of the wheel.

The material of the wheel is 42CrMo4V and the ultimate tensile strength is 800 N/mm<sup>2</sup> [116.1ksi]. The wheel is flame hardened to a depth of 4 - 6 mm [5/32 - 7/32"] and the hardness is approximately 45-55 HRC.

The axle for the wheel is supported by two spherical roller bearings, which include fittings for greasing. The bearings are located in a special bearing housing that allows wheel corrections in the axial direction of ± 3 mm [1/8"] to compensate for any misalignments.

The idler wheel can be replaced with a second drive wheel on most end truck models. The output shaft of the drive wheel receives the bridge drive.

## 4 ALLOWABLE WHEEL LOADS

The maximum allowable wheel load for the end trucks is determined by these criteria:

- ❑ Properties of the truck structure or frame
- ❑ Permissible surface pressure between the wheel and the rail
- ❑ Maximum bearing capacity
- ❑ Service life of the bearings

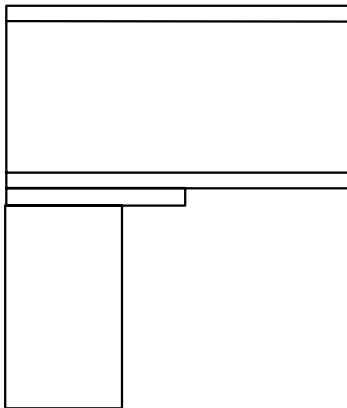
The following checks should be made when selecting the end trucks for the crane application:

- ❑ Wheel loading not to exceed allowed value
- ❑ Structure loading not to exceed allowed loading value
- ❑ Bridge girder connection (double girder crane with box girders)

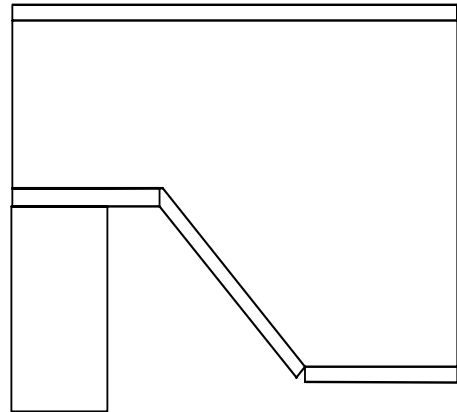
## 5 GIRDER CONNECTION TYPES

### 5.1 Top Joint Plate

All of the SHR end trucks are furnished with a top joint plate unless otherwise specified. The top joint plate is suitable for a box type girder in a STD or MED girder position.



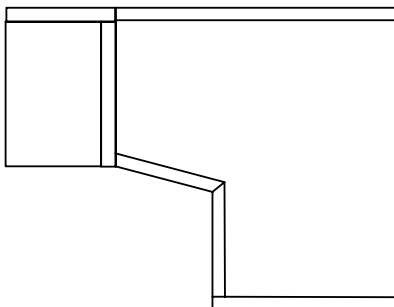
**STD girder position**



**MED girder position**

### 5.2 Side Joint Plate

Only the SHR25, SHR32, SHR40, and SHR50 end trucks can be equipped with side joint plates. The side joint plates are suitable for box type girders and are typically used in low clearance crane applications.



**LOW girder position**



## 6 BUMPERS (BUFFERS)

The bumpers are bolted to the end plates of the truck. Bumpers are available in rubber or polyurethane. Hydraulic bumpers are available as a special order item.

The bumpers are sized and selected for the crane package case by case through the QuoteMaster™ program. Bumper compatibility to the end truck must also be verified if an alternate bumper size is needed.

**Table 1.** Bumper types

CODE	Dia. mm	Length mm	Material
A	63	53	Rubber
B	80	68	Rubber
C	100	85	Rubber
D	125	105	Rubber
E	100	150	Polyurethane
F	125	190	Polyurethane
H	160	160	Polyurethane
I	200	200	Polyurethane
M	125	125	Polyurethane
P	160	240	Polyurethane
S	200	300	Polyurethane



## 7 END TRUCK MODEL CODE

### 7.1 End Truck Model Code in QuoteMaster™

SHR code example:

**SHR40 B 38 N 1700**

All dimensions in [mm]

Rail gauge, R [mm]

Additional feature (N = standard, E = special)

Wheel base x 100 [mm]

Description (- = std, B = Bogie)

End truck series and wheel diameter code (diameter = wheel code x 10)

25, 32, 40, 50, 63, 71, 80

## 8 ADDITIONAL FEATURES

### 8.1 Guide Rollers

- Guide rollers are bolted to the ends of the end trucks. Spring pins are also used.
- The position of the rollers can be fine tune  $\pm 8$  mm [5/16"].
- The clearance between the roller assembly and the rail clips or weld must be checked case by case.
- The end truck wheels are flangeless when guide rollers are furnished.
- Guide rollers are wider than the end truck frame and it may affect the crane end clearance.

### 8.2 Bumper Extensions

- Define the length of the extension needed.

### 8.3 Rail Brush or Rail Cleaner

- Rail brush material is steel or brass.
- Rail cleaner is a block of wood that floats on the rail-to-wheel surface.

### 8.4 Jacking Point

- A steel arm is bolted to the frame of the end truck near the wheel to allow a hydraulic jack to lift the end truck in order to service the wheel.

### 8.5 Storm Locks

- The storm lock is bolted to the end truck frame.

### 8.6 Earthquake Supports

- The earthquake support is bolted to a tab that is welded to the end truck frame on the crane side. Two earthquake supports are furnished on each end truck and are located near the wheels.

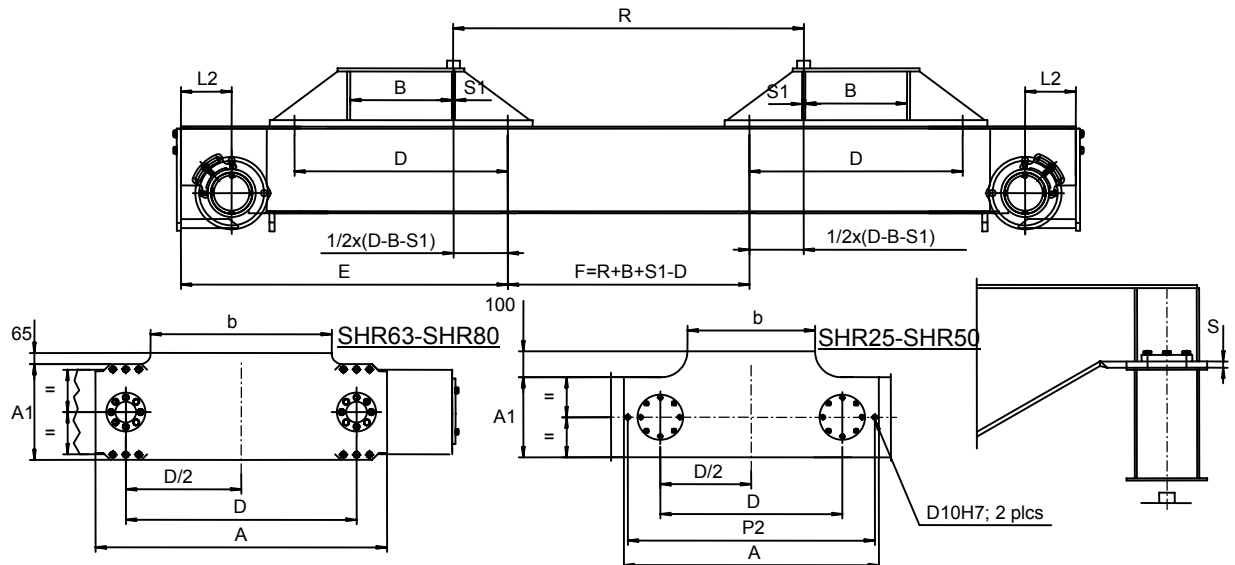


## 9 TOP JOINT PLATE

### 9.1 Top Joint Plate Code

<b>SHRxx - BJ</b>	<b>03</b>	<b>E =</b>	<b>D =</b>	<b>B =</b>	<b>All dimensions in [mm]</b>
					Position of the joint plate (box girder width, plate to plate)
					Position of the joint plate
					Position of the joint plate
					Joint plate type/size (01, 02, 03, etc)
					Top joint plate code (xx = wheel diameter code)

## 9.2 Top Joint Plate Dimensions



G	b mm	B max. mm	A mm	A1 mm	D mm	P2 mm	S mm	Weight kg	
01	490	390	980	345	700	950	25	67	SHR25 SHR32 SHR40 SHR50
02	745	645	1230	345	950	1180	25	81	
03	1045	945	1580	345	1300	1560	25	109	
04	490	390	1080	375	730	950	25	81	
05	745	645	1300	375	950	1180	25	97	
06	1045	945	1680	375	1330	1560	25	126	
07	610	510	1100	345	820	1080	25	78	
08	610	510	1200	375	830	1180	25	88	
09	860	760	1350	345	1070	1330	25	100	
10	860	760	1450	375	1100	1330	25	112	
18	745	645	1300	556	950	---	25	137	SHR63
19	1045	945	1680	556	1330	---	25	183	
20	1330	1230	2000	556	1650	---	25	222	
27	745	645	1570	670	1090	---	30	228	SHR71 SHR80
28	1045	945	1870	670	1390	---	30	282	
29	1230	1130	2055	670	1575	---	30	315	
30	1480	1380	2305	670	1825	---	30	360	

**Note:** The size of the joint plate and the position of the joint plate on the end truck are based on the box girder width. If the final width of the box girder does not match the QuoteMaster™ generated box girder width (dimension B), the crane builder should inform the actual box girder width in order to ensure the joint plates are properly sized and positioned.

Box girder dimensions B is given for reference only. The crane builder is responsible for the design of the box girder.



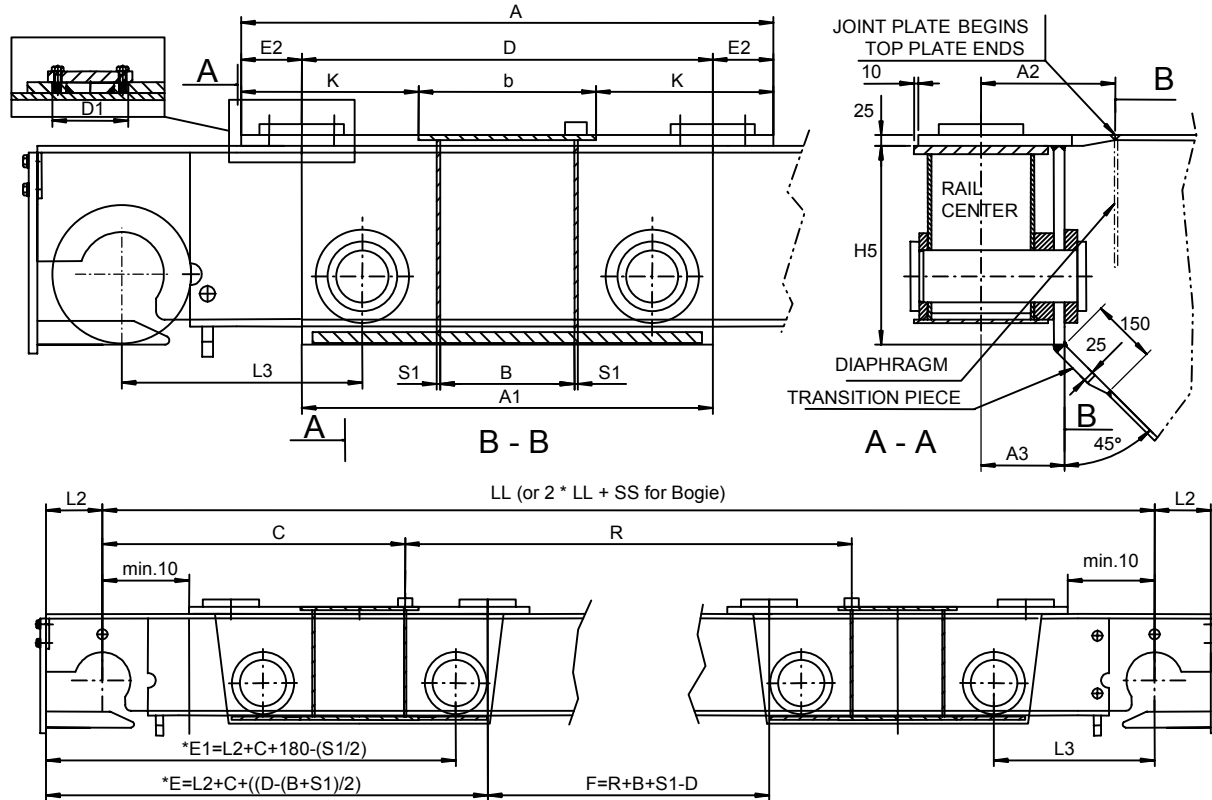
## 10 SIDE JOINT PLATE

### 10.1 Side Joint Plate Code

SHxxN	GO1	C =	B =	K =	R =	S1 =	T4 =	T5 =
<b>All dimensions in [mm]</b>								
C = Center distance from crane wheel to trolley rail								
B = Inside distance between box girder side plates								
K = Concentricity location of girder and joint plate								
R = Rail gauge								
S1 = Thickness of box girder side plate								
T4 = Thickness of box girder top plate								
T5 = Thickness of box girder bottom plate								
Joint plate type/size (G01, G02...)								
Side joint plate code (xx = wheel diameter code)								
25, 32, 40, 50								

The side joint plate is available only for the SHR25, SHR32, SHR40, and SHR50 end trucks.

## 10.2 Side Joint Plate Dimensions



Dimension H5 is found in the End Truck Dimensions tables in the next section.

Joint plate	bmax mm	B mm	A mm	A1 mm	D mm	D1 mm	E2 mm	K ± Tol. mm	P2 mm
G01	490	390	1020	1020	740	175	140	265.0 ±0	960
G02	645	545	1230	1175	950	175	140	292.5 ±25	1180
G03	845	845	1580	1475	1300	175	140	317.5 ±50	1560
G04	390	390	1080	1020	730	205	175	295.0 ±30	950
G05	545	545	1300	1175	950	205	175	327.5 ±60	1180
G06	845	845	1680	1475	1330	205	175	367.5 ±100	1560

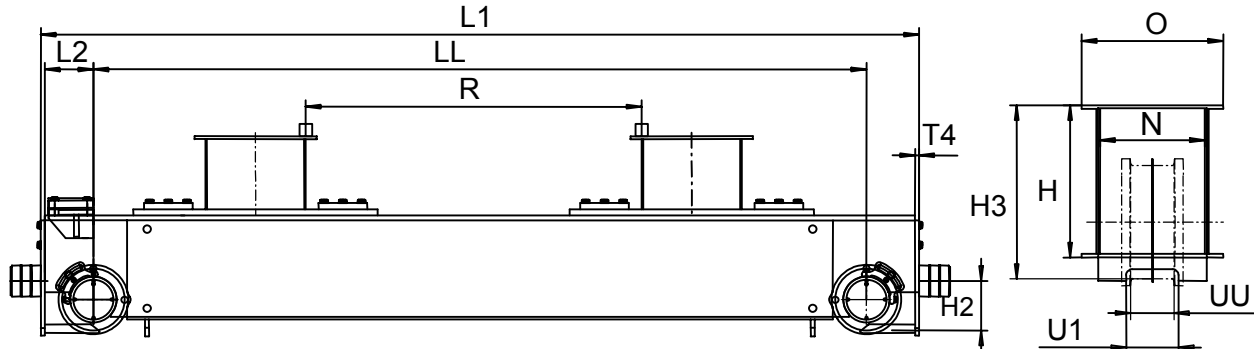
End truck	Joint	A2 mm	A3 mm	L2 mm	L 3min mm
SHR25	SH25N	310	193	195	310
SHR32	SH32N	310	193	195	345
SHR40	SH40N	320	205	235	365
SHR50	SH50N	345	230	285	420

**Note:** The size of the joint plate and the position of the joint plate on the end truck are based on the box girder width. If the final width of the box girder does not match the QuoteMaster™ generated box girder width (dimension B), the crane builder should inform the actual box girder width in order to ensure the joint plates are properly sized and positioned.

Box girder dimensions B, S1, T4, and T5 are given for reference only. The crane builder is responsible for the design of the box girder.

## 11 END TRUCK DIMENSIONS

### 11.1 2 - wheel End Truck

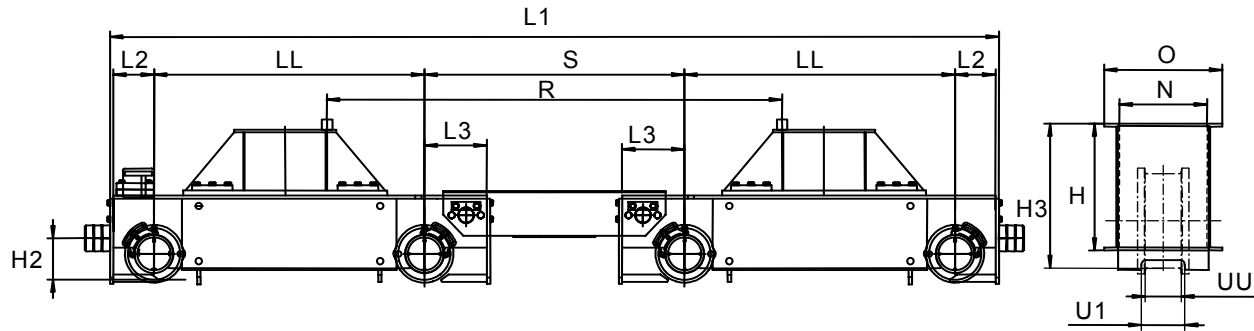


End Truck	U1	UU max	LL	L1	L2	H	H2	H3	H5 (1)	N	O	T4
<b>SHR25-</b> 31	140	125	3100	3522	195	420	200	465	470	230	310	16
38	140	125	3800	4222	195	420	200	465	470	230	310	16
45	140	125	4500	4922	195	450	200	493	500	230	310	16
55	140	125	5500	5922	195	481	200	520	525	230	310	16
<b>SHR32-</b> 31	140	125	3100	3530	195	451	200	490	495	230	310	20
38	140	125	3800	4230	195	451	200	490	495	230	310	20
45	140	125	4500	4930	195	481	200	520	525	230	310	20
55	140	125	5500	5930	195	570	200	609	615	230	310	20
<b>SHR40-</b> 31	140	140	3100	3610	235	520	225	559	565	260	330	20
38	140	140	3800	4310	235	520	225	559	565	260	330	20
45	140	140	4500	5010	235	570	225	609	615	260	330	20
55	140	140	5500	6010	235	740	225	775	780	260	330	20
<b>SHR50-</b> 31	160	150	3100	3710	285	680	300	719	725	306	380	20
38	160	150	3800	4410	285	680	300	719	725	306	380	20
45	160	150	4500	5110	285	740	300	775	780	306	380	20
55	160	150	5500	6110	285	800	300	835	840	306	380	20
<b>SHR63-</b> 45	200	190	4500	5250	355	795	315	845	---	380	480	20
55	200	190	5500	6250	355	810	315	850	---	380	480	20
65	200	190	6500	7250	355	960	315	1000	---	380	480	20
<b>SHR71-</b> 50	200	190	5000	5830	395	950	395	1010	---	490	590	20
63	200	190	6300	7130	395	1000	395	1060	---	490	590	20
80	200	190	8000	8830	395	1145	395	1195	---	490	590	20
<b>SHR80-</b> 50	200	190	5000	5920	440	1000	440	1060	---	490	590	20
63	200	190	6300	8220	440	1105	440	1160	---	490	590	20
80	200	190	8000	8920	440	1260	440	1315	---	490	590	20

All dimensions are in mm. Dimension "UU" is the maximum wheel groove.

(1) See Top Joint Plate Dimensions section.

### 11.2 4 - wheel Bogie End Truck



End Truck	S min	U1	UU max	LL	L1 min	L2	L3	H	H2	H3	H5 (1)	N	O	T4
<b>SH25B</b> 13	900	140	125	1300	3922	195	300	360	200	407	410	230	310	16
16	900	140	125	1600	4522	195	300	360	200	407	410	230	310	16
18	900	140	125	1800	4922	195	300	420	200	465	470	230	310	16
20	900	140	125	2000	5322	195	300	420	200	465	470	230	310	16
22	900	140	125	2200	5722	195	300	420	200	465	470	230	310	16
<b>SH32B</b> 13	1000	140	125	1300	4030	195	310	410	200	457	460	230	310	20
16	1000	140	125	1600	4630	195	310	410	200	457	460	230	310	20
18	1000	140	125	1800	5030	195	310	451	200	490	495	230	310	20
20	1000	140	125	2000	5430	195	310	451	200	490	495	230	310	20
22	1000	140	125	2200	5830	195	310	451	200	490	495	230	310	20
<b>SHR40B</b> 13	1100	140	140	1300	4210	235	320	480	225	525	530	260	330	20
16	1100	140	140	1600	4810	235	320	480	225	525	530	260	330	20
18	1100	140	140	1800	5210	235	320	520	225	559	565	260	330	20
20	1100	140	140	2000	5610	235	320	520	225	559	565	260	330	20
22	1100	140	140	2200	6010	235	320	520	225	559	565	260	330	20
<b>SHR50B</b> 13	1505	160	150	1300	4715	285	475	600	300	639	645	306	380	20
16	1505	160	150	1600	5315	285	475	600	300	639	645	306	380	20
18	1505	160	150	1800	5715	285	475	680	300	719	725	306	380	20
20	1505	160	150	2000	6115	285	475	680	300	719	725	306	380	20
22	1505	160	150	2200	6515	285	475	680	300	719	725	306	380	20
<b>SHR63B</b> 22	1700	200	190	2200	6850	355	475	786	315	840	---	380	480	20
25	1700	200	190	2500	7450	355	475	786	315	840	---	380	480	20
28	1700	200	190	2800	8050	355	475	791	315	845	---	380	480	20
32	1700	200	190	3200	8850	355	475	795	315	845	---	380	480	20
<b>SHR71B</b> 20	1900	200	190	2000	6730	395	520	955	450	1010	---	490	590	20
25	1900	200	190	2500	7730	395	520	955	450	1010	---	490	590	20
28	1900	200	190	2800	8330	395	520	955	450	1010	---	490	590	20
32	1900	200	190	3200	9130	395	520	955	450	1010	---	490	590	20
36	1900	200	190	3600	9930	395	520	1065	450	1115	---	490	590	20
40	1900	200	190	4000	10730	395	520	1065	450	1115	---	490	590	20
<b>SHR80B</b> 20	2070	200	190	2000	4920	440	565	1045	460	1100	---	490	590	20
25	2070	200	190	2500	5920	440	565	1045	460	1100	---	490	590	20
28	2070	200	190	2800	6520	440	565	1045	460	1100	---	490	590	20
32	2070	200	190	3200	7320	440	565	1045	460	1100	---	490	590	20
36	2070	200	190	3600	8120	440	565	1115	460	1165	---	490	590	20
40	2070	200	190	4000	8920	440	565	1185	460	1235	---	490	590	20

All dimensions are in mm. Dimension "UU" is the maximum wheel groove.  
 (1) See Top Joint Plate Dimensions section.