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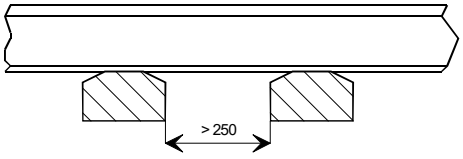
Fitting of the wheel sensor (DSS) by means of rail clamp type: SSK 6

Note: These installations instructions are based on a maximum wheel flange length of 36 mm (1.4173”) and a maximum head wear of 8 mm (0.315”). Our wheel sensors are designed to sense wheel flange lengths in the range of 27.5 mm to 36 mm.
When an application has wheel flange lengths or rail wear outside of these parameters damage can occur to the wheel sensor or the performance of the wheel sensor may be affected.
Pintsch North America is happy to support the client with any questions you may have regarding proper installation and operation of our wheel sensor.
Pintsch North America will do its best to support and assist the client when rail or wheel flange lengths are outside of these tolerances to determine if a suitable solution can be obtained.

Note:
The SSK 6 clamp can only be fitted within a sleeper bay. This bay must correspond to the dimensions in the sketch below.

Sleeper bay



Before fitting the SSK 6 the foot of the rail must be cleaned. The SSK 6 must be fitted to the rail so that the assembled DSS is positioned on the inner curve in the inner track space.

Fastening the DSS to the rail foot using the SSK rail clamp

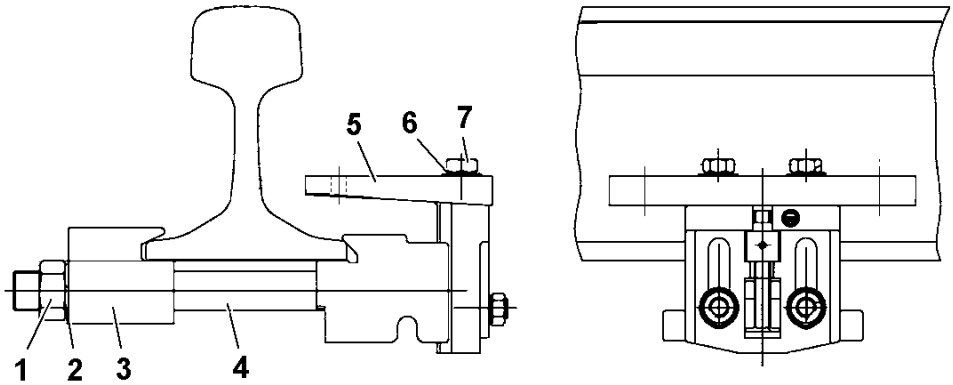


Fig. 1 Fastening the DSS using the SSK 6 rail clamp

Instillation procedures:

- Step 1: Remove the big nut (SW36) (1).
- Step 2: Remove the lock washer (2) and brass “V’ back stop (3).
- Step 3: Put the screw stud (4) below the rail foot.
- Step 4: The rail foot claw is clamped between “V” sections. Place the brass “V” back stop (3) and lock washer (2) and big nut (1) back on the screw stud.
- Step5: Tighten big nut (1) using a torque wrench between 88 to 110-foot-lbs of torque.
- Step 6: Put the adapter plate (5) onto the SSK 6 claw; take care for the correct plate position.
- Step 7: Fix the adapter plate (5) with 2 lock washers (6) and 2 hexagonal screws M12x25 mm (7) at the center of the SSK 6 claw. The final fastening position will come later during the adjusting procedure.
- Step 8: Tighten the fastening screws (7) with 36 to 44 foot-lbs of torque.

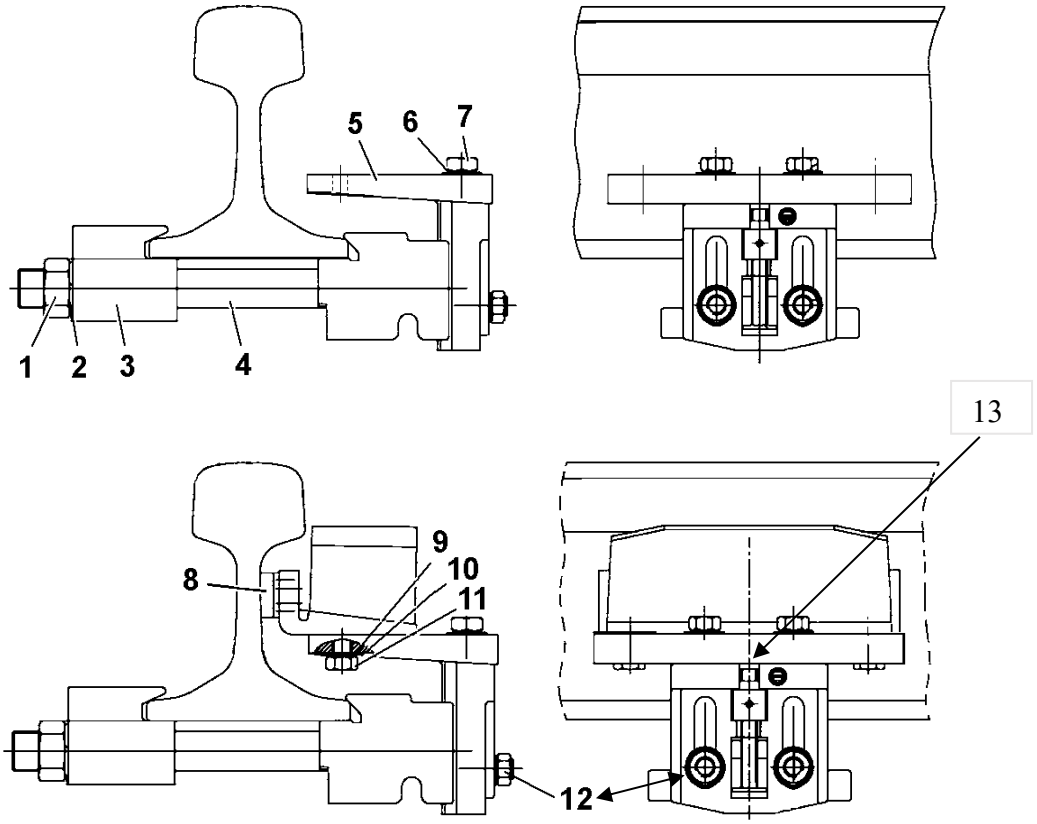
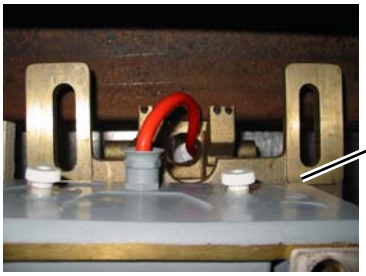


Fig. 2 Adjusting the SSK 6 claw, as an example with a Standard DSS (200-45)

- Step 9: Put the proper mounting plate spacers (8) onto the brass foot of the wheel sensor (DSS).
- Step 10: At this time loosely fasten the wheel sensor (DSS) using 2 washers (9), 2 lock washers (10) and 2 hexagonal screws (11) M12x25 mm onto the adapter plate (5).



- Step 11: Make sure that the cable is routed through the guide hole in the SSK 6 claw.
  Step 12: Slide the wheel sensor on the adapter plate until the wheel sensor (DSS) contacts the web of the rail via the mounting plates (8). At this point it must still be possible to slide the wheel sensor (DSS) on the mounting plate if necessary for final adjustments so just slightly snug the bolts holding the wheel sensor on the plate.
- Step 13: For the height adjustment of the sensor, loosen the hexagonal nuts (SW19) (12) on the brass slide bracket.
  The adjusted dimension can be changed by using the hexagon threaded stud (Inbus S 5) (13) to either lower or raise the wheel sensor attached to the plate to position the wheel sensor to the correct height “Y” value required. Use a 5mm Allen wrench in the hexagon stud to make this adjustment. Refer to the adjustment procedures.
- Note: For 141lb rail types add a 10mm spacer or 10mm brass washers underneath the wheel sensor between the wheel sensor bottom and SSK6 mounting plate. The spacer must allow for the mounting bolts to pass through them to keep them locked in place and firmly against the mounting plate.
- Note: It is not possible to use the 2N59-1R-400RE-40 wheel sensor with the SSK 6 clamp due to the fact that the off-rail function will not work.

Measure wear on the rail (initial dimension) with a slip gauge

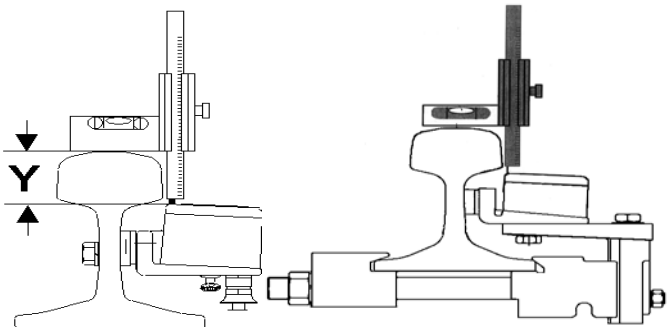
Determine the overall height of the rail from the foot of the rail to the top of the rail using a caliper like a Starrett 79B-12 spring caliper along with a 12” ruler.

Read the dimension obtained from your caliper as this will be your dimension "X" and compare with the table “A” below. The value used for the variable" depends on the measure height compared to dimension “X”.
Example: 136RE rail measured rail height dimension is greater than 178mm then use variable “B” value of 141.
If the 136RE rail height measured equal to or less than 178mm then use variable “B” value of 133.

Table A: (based on maximum 36 mm flange depth): Initial dimensions of the rail

Rail type	Dimension rail height "A" for new rails in mm	Initial rail height dimension "X" measured in mm	Variable "B" in mm	Assembly plate spacers required	Thickness of the assembly plates in mm
S 49	149	> 141	104	red, red	1 + 4.3 = 5.3
S 49	149	≤ 141	95	red	1
S 54	154	> 146	109	black, black	2.8 + 3.2 = 6
S 54	154	≤ 146	100	black	2.8
UIC 60	172	> 164	127	white	4.3
UIC 60	172	≤ 164	118	None	0
UIC 54E	161	> 153	116	white	4.3
UIC 54E	161	≤ 153	107	None	0
90 RA	142.9	> 135	97.9	None	0
90 RA	142.9	≤ 135	88.9	None	0
100 ASCE	146.0	> 138	101	None	0
100 ASCE	146.0	≤ 138	92	None	0
100 RE	152.4	> 145	107.4	blue	1.5
100 RE	152.4	≤ 145	98.4	None	0
100 RA	152.4	> 145	107.4	red	1.0
100 RA	152.4	≤ 145	98.4	None	0
115 RE	168.3	> 160.8	123.8	None	0
115 RE	168.3	≤ 160.8	114.8	None	0
119 RE	173.0	> 165	128	red	1.0
119 RE	173.0	≤ 165	119	None	0
129 TR	185.7	> 178	141	thick red	4.3
129 TR	185.7	≤ 178	133	none	
132 RE	181.0	> 173	136	green	3.6
132 RE	181.0	≤ 173	127	None	0
136 RE	185.7	> 178	141	red / grey	4.3 + 1,3
136 RE	185.7	≤ 178	133	blue	1.5
140 RE	185,7	> 178	141	red / red	4.3 + 1,0
140 RE	185.7	≤ 178	133	brown	2
141 RE	188.9	> 180.9	143.9	red / red	1 + 4.3 = 5.3
141 RE	188.9	≤ 180.9	134.9	white	4.3

- Step 14: Make sure you have put on the proper plastic shim plates (8) based on the table (value “X”) above to the foot of the wheel sensor (DSS) to obtain the required distance from the web of the rail. Check that the assembly plates are correctly positioned as shown above.
- Step 15: After you have slightly loosened both hexagonal nuts (SW 19) (12), place the rail height measurement gauge type: SAHL 2 on the rail head. Make sure the plastic side of the SAHL 2 rests as flat as possible on the top of the rail head.



The required assembly height "Y" (distance between top of rail and the top of wheel sensor (DSS) depends on the initial actual rail height dimension "X" measured minus the variable "B".

The height value "Y" is obtained by turning the threaded stud (13) (Inbus S5). The measurement is taken from the lowest point of the rail head to the highest point of the wheel sensor (DSS) when using the SAHL-2. See examples of measured heights on a 136RE rail type below.

- Step 16: Adjust SAHL 2 to value –**Y**– then turn the screw to lock the slide portion in place, put the SAHL 2 onto the rail and adopt the rail head inclination as best as possible. Typically, it should rest in the flat area which the wheel runs on.
- Step 17: Raise the sensor up to the SAHL 2 until it starts to make contact; then, fasten the vertical brass slide to the claw using the hexagon nuts (12) with a torque of 36 – 44 ft. lbs, then check the dimension again.
- Step 18: Finally make sure that the plastic spacer plates make complete contact with the web of the rail (due to the stem bulge) by sliding the wheel sensor towards the web and then tighten the hexagon nuts (11) with a torque of 36 – 44 ft. lbs., then check the dimension “Y” again to make sure you have the correct “Y” dimension.

  Note: Avoid altering the position of the sensor when fastening the SSK 6 screws and the mounting screws. If the position is altered, measure and adjust once more. Do not mount the wheel sensor in an area of the rail which has raised letters unless you grind these letters down flush with the web of the rail.

Example 1:

Rail type		**:**	**136RE**
Initial actual dimension "X"		**:**	**182 mm**
Variable "B"		**:**	**141 mm (see table)**
Assembly height "Y"	**:**	**Initial dimension "X" – variable "B"**	
“Y”	**:**	**182 mm – 141 mm = 41 mm**	

Example 2:

Rail type		**:**	**136RE**
Initial actual dimension "X"		**:**	**179 mm**
Variable "B"		**:**	**141 mm (see table)**
Assembly height "Y"	**:**	**Initial dimension "X" – variable "B"**	
“Y”	**:**	**179 mm – 141 mm = 38 mm**	

Note: If rail wear is right at the minimum tolerance of 38 mm as in example 2's case it is recommended to use the second mounting position values "if less than ≤178" and its related variable "B" value in the chart in your calculations. Recalculate what the mounting height should be using this second value "B". See example 3 which shows recalculations for the 136RE rail done using :if less than ≤178" value and the Variable "B" value of 133 as shown in the chart .

Example 3: Using ≤ 178 value and its Variable "B" value of 133

Rail type	**:**	**136RE**
Initial dimension "X"	**:**	**178 mm**
Variable "B"	**:**	**133 mm (see table)**
Assembly height "Y"	**:**	**Initial dimension "X" – variable "B"**
"Y"	**:**	**178 mm – 133 mm = 45 mm**

The second mounting position values allow a New "Y" value of 45mm when using the charts second setting values for the 136 RE rail type. The second mounting position values are only to be used if the actual measure rail height was equal to or less than the 178mm value as in the example for the 136RE rail type. Using the second mounting position calculations in the example is done so that we install the sensor on the safe side and not get the wheel sensor damaged. If the height from the top of the rail head to the top of the sensor is measures at 37mm wear the sensor may be damaged. Below the 37mm the sensor will be damaged by a wheel flange.

Note:
After assembly of the wheel sensor claw SSK 6 care must be taken that there is no contact with the ballast below the rail switch claw.

Consult with Pintsch North America regarding installation of the SSK 6 if wheel flange heights exceed 36 mm. It will be necessary to deviate some from the typical method of deriving value "Y".