



Installation guide

How to install Lip-, Side- and Heel shrouds.

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1. Welding instructions



1.1 General safety instructions

Before starting installation or removal, read all instructions completely. All persons performing maintenance and welding work must wear O.S.H.A. approved head protection, safety glasses, safety shoes and work gloves suitable to the task being performed.

Work pieces must be securely held and supported. Ventilation and fume extraction must be good. All parts outweigh 25 kg (55 pounds) are designed with a lifting eye for use of lifting aid equipment.



1.2 Some advice about welding of weld-on lip shrouds and heel shrouds

First of all, clean the parts to weld. The surfaces to weld must be free from dirt, scale, rust, grease, paint, water etc. Grind the contact areas on the shroud smooth, also grind matching areas on the cutting edge and side wall smooth. The contact surfaces on the shrouds must be in full contact with matching surfaces on the cutting edge and side walls in order to minimize residual stresses in the joint.

General welding

Method	Filler material
FCAW	AWS A5.20 E 70 T5
	DIN 8559 SGB1 C 5254
	OK Tubrod 15.00

Preheat the shrouds and welding area, extending 75 mm / 2.96 inches from shrouds, to recommended preheat temperature of 200°C / 392°F. Pre-heating will reduce the risk of hydrogen cracking, minimize the shrinkage stresses and avoid deformation.

It is recommended to preheat from the bottom side using burners with insulating blankets on the top side. The temperature shall be measured 75 mm / 2.96 inches from the welding area and on the opposite side of the heated side by using a temperature indicating crayon or an infrared thermometer. Maintain the temperature throughout the welding process. It is important to prevent hardness

loss in all parts off assembly by not exceeding the temperatures of 250°C / 482°F. Keep on welding all parts completely without any longer stops. Let the work piece cool down slowly afterwards, not faster than 50°C (122°F) per hour.

It is highly recommended to keep insulation blankets after finishing welding.

Always use dry and undamaged electrodes. Electrodes in open package should be kept in heating container at 100°C (212°F). If electrodes have become damp, they should be dried in an oven for 8-10 hours at a temperature of 200°C (392°F). If the electrodes are damaged by humidity to the extent that they begin to rust, they should be discarded. Use soft welding consumables with a yield strength of up to 500 Mpa. Such welding consumables reduce the residual stress level in the joint and thus the risk of hydrogen cracking.

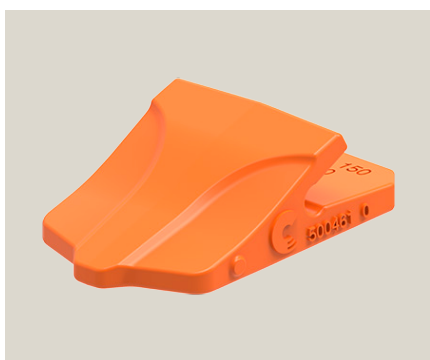
General welding

Method	Filler material
MMA	AWS A5:1 E-7016, E-7018
	DIN 1913 E51 53 B10
	ISO 2560 E51 5B 120 20H
	UNE-AN 499 E423, E46B
	OK 48.00, OK 53.68
MIG/MAG	AWS A5.18 ER 70S-X
	DIN 8559 SG2
	UNE-EN 440 G46M, G50M
	OK Autorod 12.51, 12.64



1.3 Weld-on lip shrouds

Combi Wear Parts has various weld-on shroud suitable for excavators buckets. Pictures below shows weld-on shrouds.



Weld-on shroud WSCE50, center
Fits 40-50 mm straight cutting edge.



Weld-on shroud WSCE70, center
Fits 60-70 mm straight cutting edge.



Weld-on shroud WSLE70, left
Fits 60-70 mm cutting edges with 15° angle from excavating direction.



Weld-on shroud WSRE70, right
Fits 60-70 mm cutting edges with 15° angle from excavating direction.



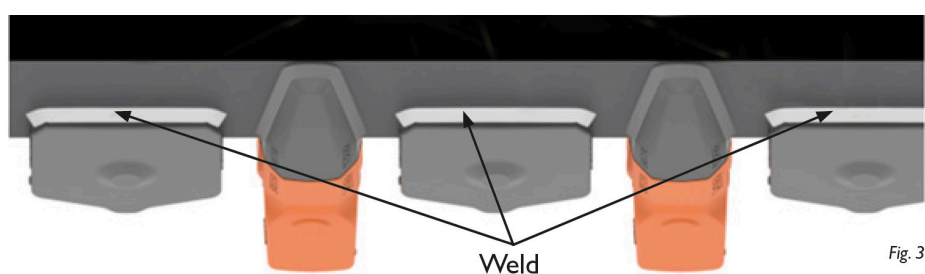
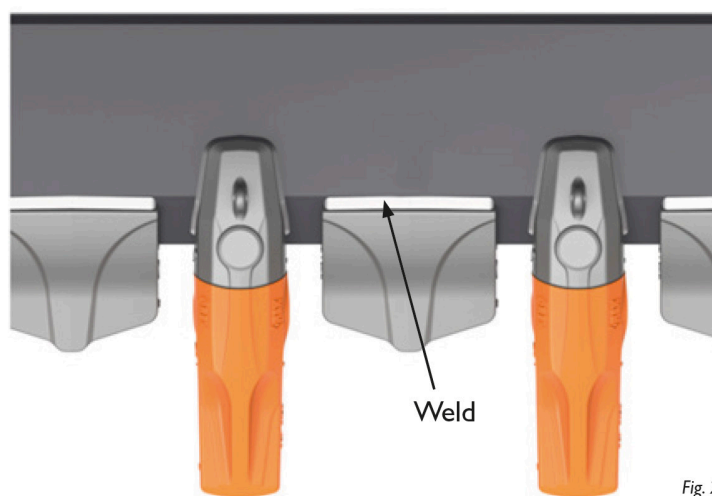
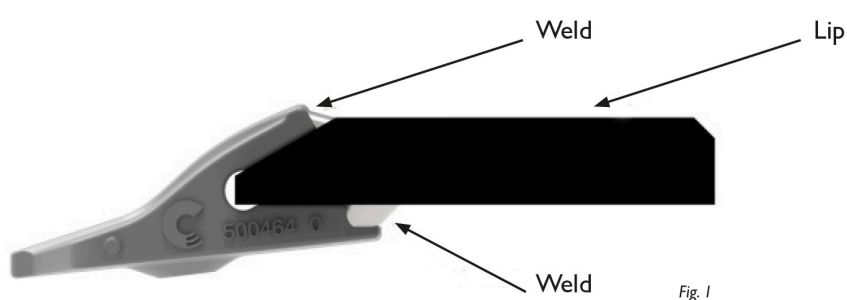
Welded shroud 16204
This shroud can be cut to length and mounted between the adapters on cutting edges between 75-90 mm thickness.



Welded shroud S4
This shroud can be mounted between the adapters on cutting edges between 40-75 mm thickness.

1.4 Weld-on lip shrouds welding procedure

The shroud should be pressed tightly onto the edge and care taken to ensure that there is good contact. Tack weld into position and preheat to 200°C (392°F). Welding process is straight forward with welding the whole back length of the shrouds against lip as shown on pictures below:



1.5 Bolted lip shrouds

Mark out and drill the lip plate according to fig. 23



Fig. 23

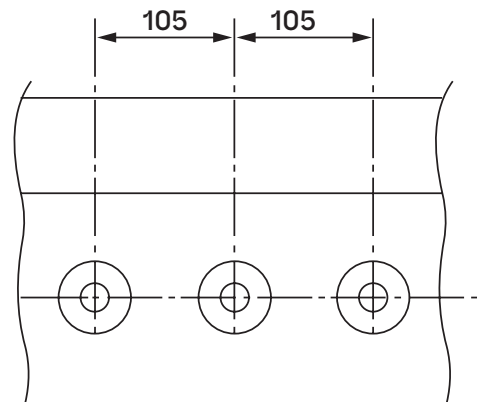
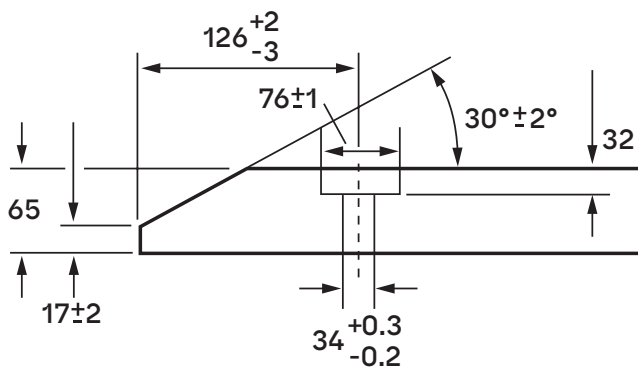
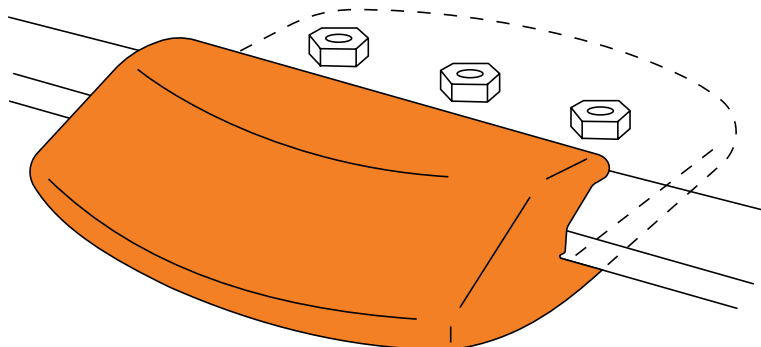
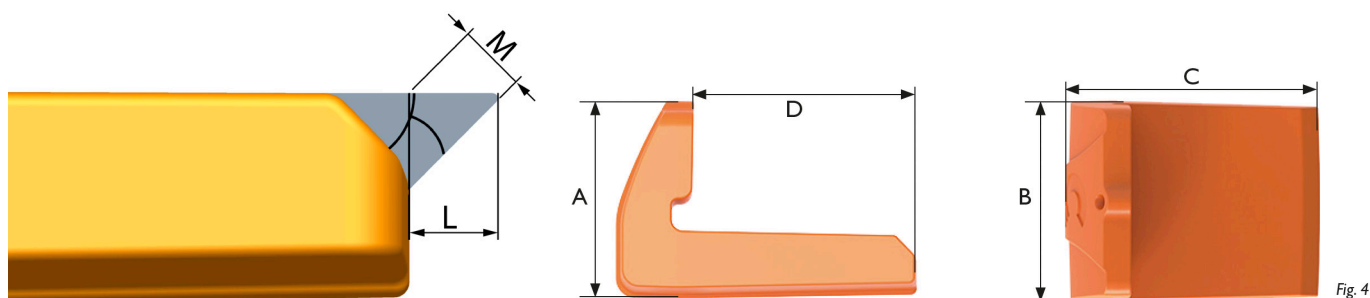


Fig. 24



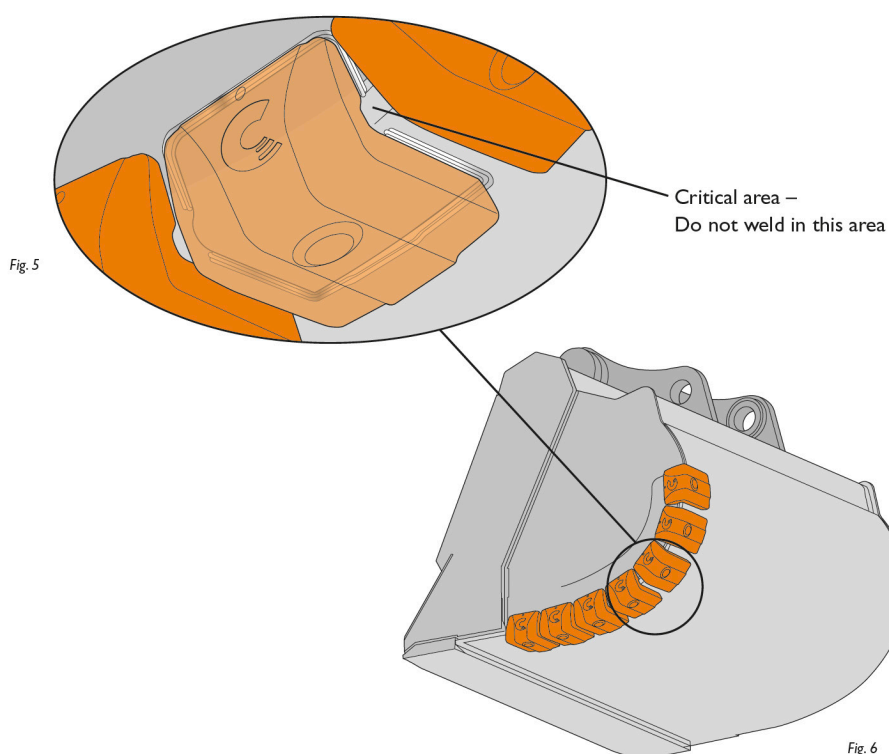
1.6 Welding heel shrouds

Tack weld the heel shrouds in position, preheat them to 200 °C (392 °F) before adding the welding beams.



Type	Part number	Weight kg/lbs	Dimensions - mm/inches					
			A	B	C	D	L	M
WHS15	700651	15.2 kg/33.5 lbs	130 mm/5.12 in	180 mm/7.09 in	210 mm/8.23 in	160 mm/6.3 in	14	10
WH520	700652	20 kg/44.1 lbs	150 mm/5.91 in	180 mm/7.09 in	240 mm/9.45 in	180 mm/7.09 in	16	12
WHS30	700653	37 kg/81.5 lbs	199 mm/7.83 in	250 mm/9.84 in	300 mm/11.81 in	236 mm/9.29 in	26	18
WHS70	700655	73.5 kg/161.7 lbs	240 mm/9.45 in	262 mm/10.31 in	345 mm/13.58 in	250 mm/9.84 in	28	20

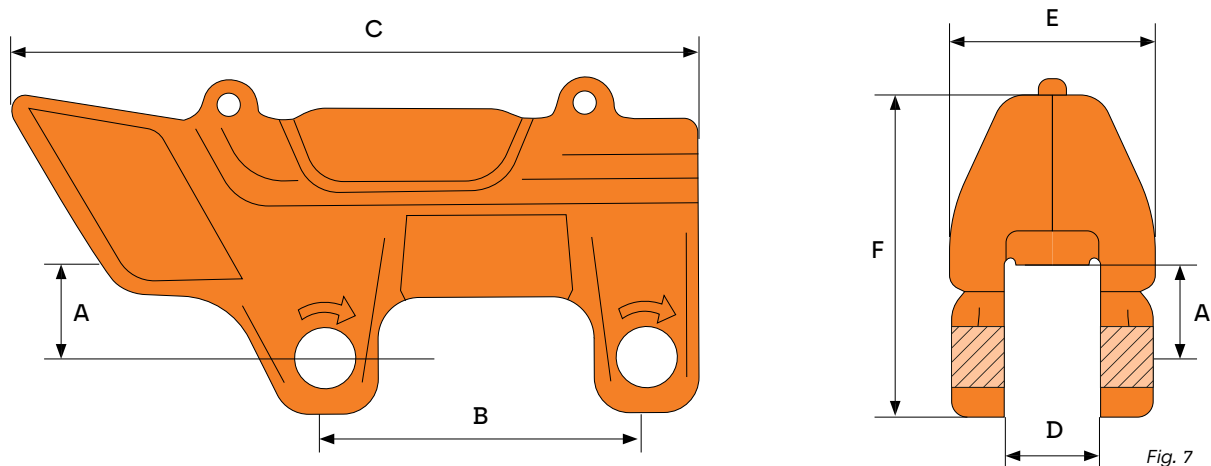
Table 1



2. Protect side shrouds



2.1 ProTest Mechanical side shrouds

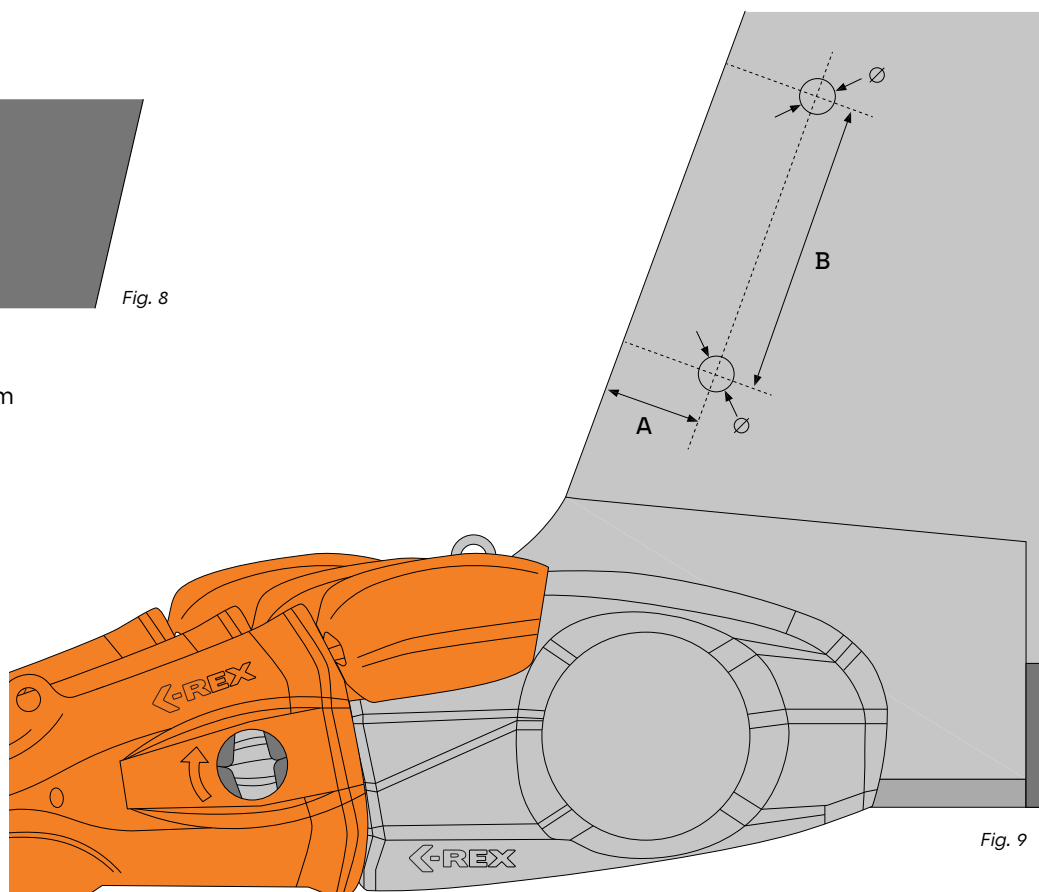
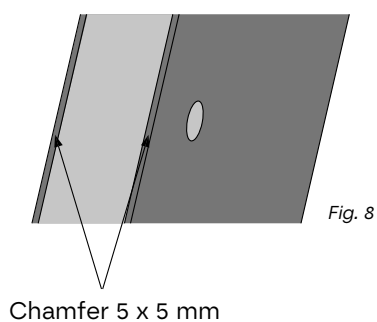


Part no	Side wall thickness	Weight kg/ lbs	Dimensions - mm/inches					
			A	B	C	D	E	F
500603	80 mm/3.15 in	112 kg/246.9 lbs	101 mm/4.02 in	310 mm/12.2 in	666 mm/26.2 in	82 mm/3.2 in	192 mm/7.6 in	287 mm/11.3 in
500604	90 mm/3.54 in	110 kg/242.5 lbs	101 mm/4.02 in	310 mm/12.2 in	666 mm/26.2 in	92 mm/3.6 in	192 mm/7.6 in	287 mm/11.3 in
500605	35 mm/1.38 in	23,9 kg/52.6 lbs	69 mm/2.72 in	200 mm/7.9 in	460 mm/18.1 in	36,5 mm/1.4 in	112 mm/4.4 in	169 mm/6.6 in
500606	40 mm/1.57 in	23 kg/50.6 lbs	69 mm/2.72 in	200 mm/7.9 in	460 mm/18.1 in	41,5 mm/ 1.6 in	112 mm/4.4 in	169 mm/6.6 in
500607	50 mm/1.97 in	45,9 kg/101 lbs	82 mm/3.23 in	245 mm/9.65 in	570 mm/ 22.4 in	51,5 mm/2 in	130 mm/5.1 in	204 mm/8 in
500608	60 mm/2.36 in	43,8 kg/9.64 lbs	82 mm/3.23 in	245 mm/9.65 in	570 mm/ 22.4 in	61,5 mm/2.4 in	130 mm/5.1 in	204 mm/8 in

Table 2

2.2 ProTest mechanical side shrouds 500603-8 installation procedure

Step 1 – Drill holes in the bucket side walls as specified in table 3 and in the picture below, apply a 5 x 5 mm chamfer on the edges of the side walls.



Pattern for drilling				
Side shroud	Side wall	A	B	Ø
500603	80 mm/3.15 in	101 mm/4.02 in	310 mm/12.2 in	38 mm/1.49 in
500604	90 mm/3.54 in	101 mm/4.02 in	310 mm/12.2 in	38 mm/1.49 in
500605	35 mm/1.38 in	69 mm/2.72 in	200 mm/7.9 in	26 mm/1.03 in
500606	40 mm/1.57 in	69 mm/2.72 in	200 mm/7.9 in	26 mm/1.03 in
500607	50 mm/1.97 in	82 mm/3.33 in	245 mm/9.65 in	31 mm/1.22 in
500608	60 mm/2.36 in	82 mm/3.33 in	245 mm/9.65 in	31 mm/1.22 in

Table 3



Step 2 – Fit Side shroud against bucket side walls ensuring contact on the highlighted surfaces shown in picture below.

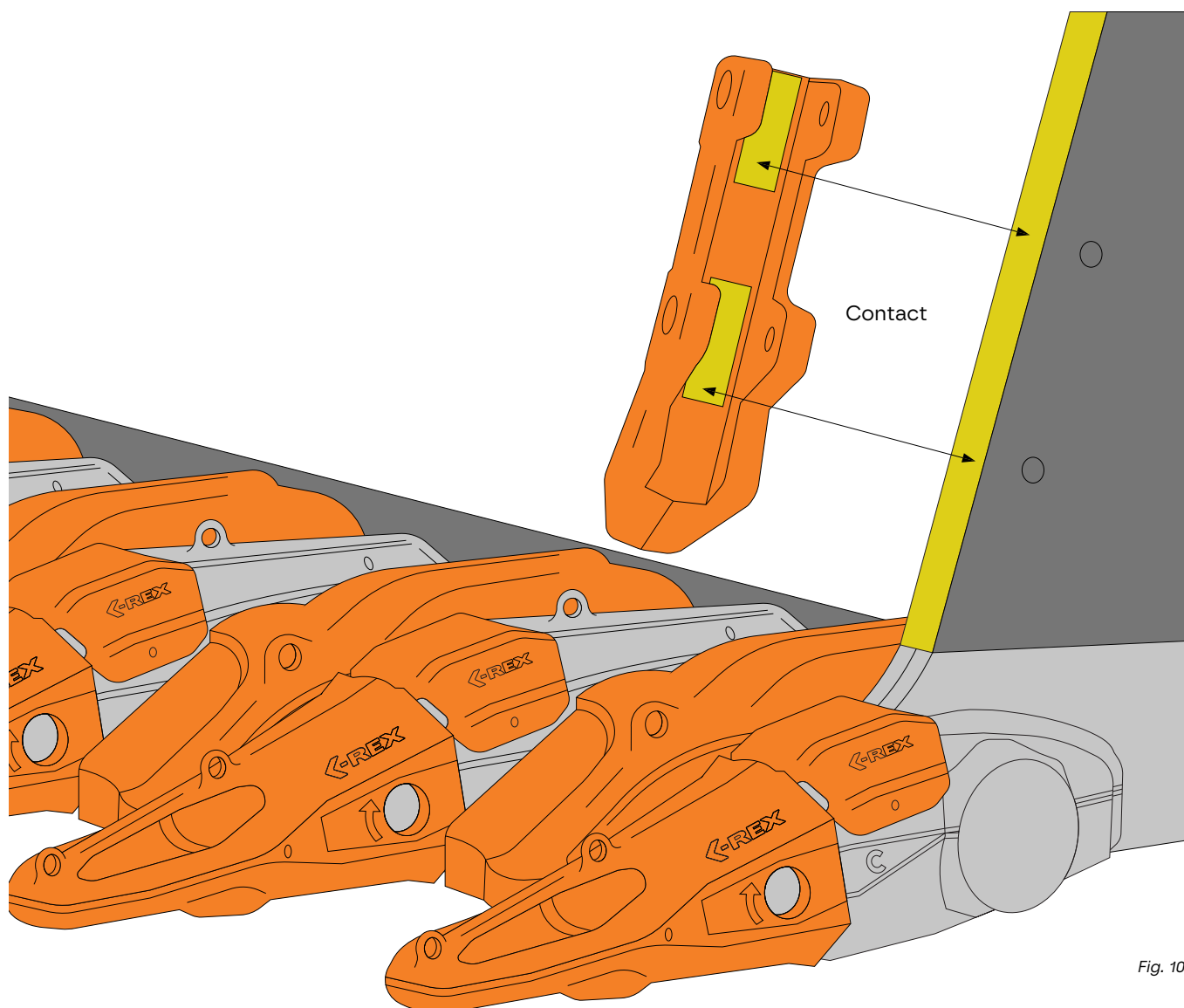


Fig. 10



Step 3 – Place side shroud into position and insert the locking pins as shown below.

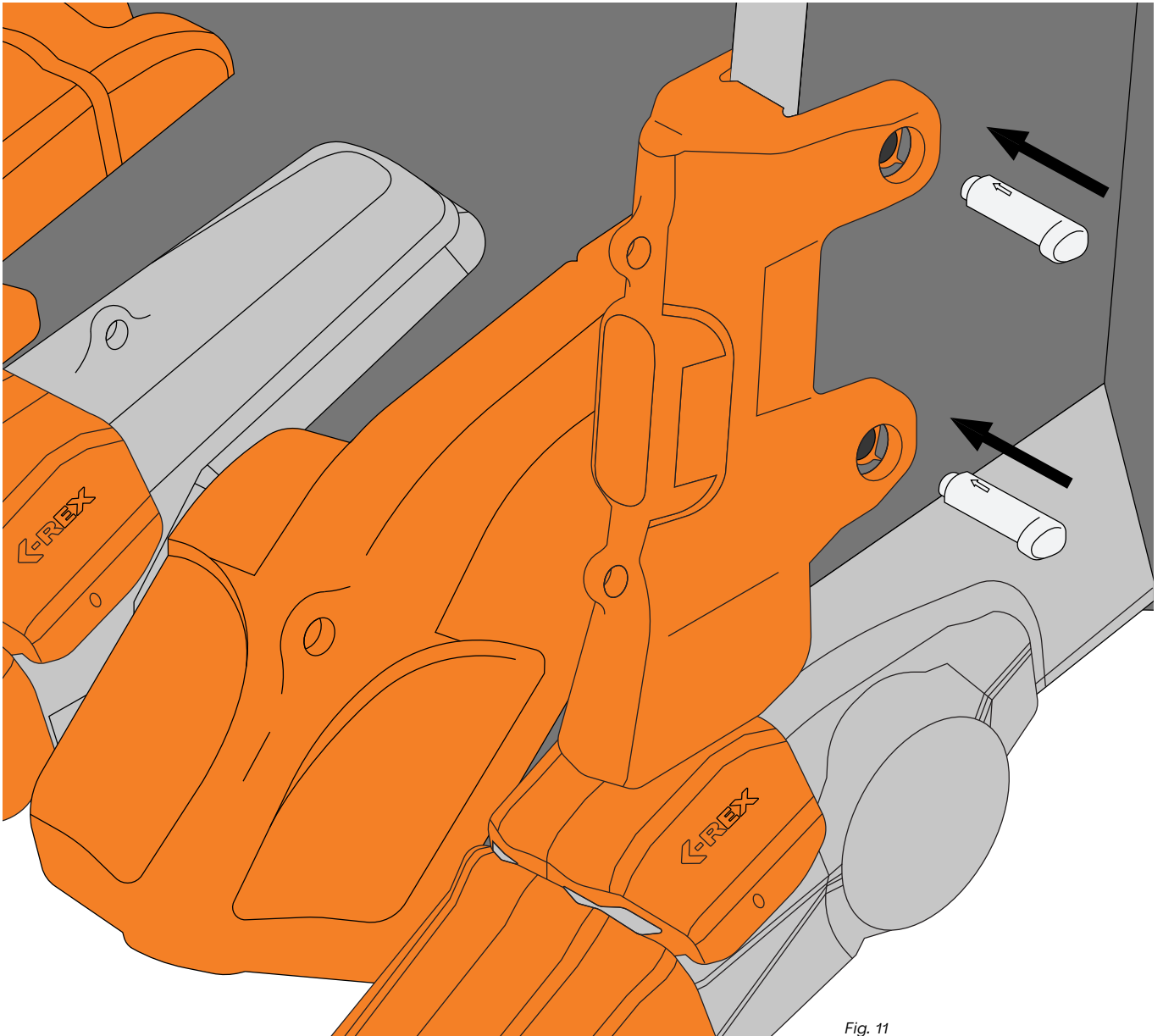
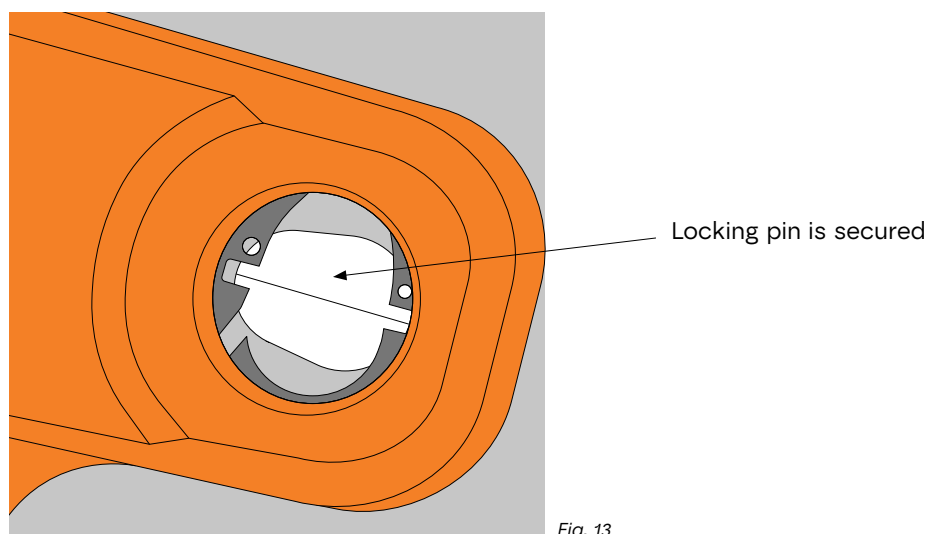
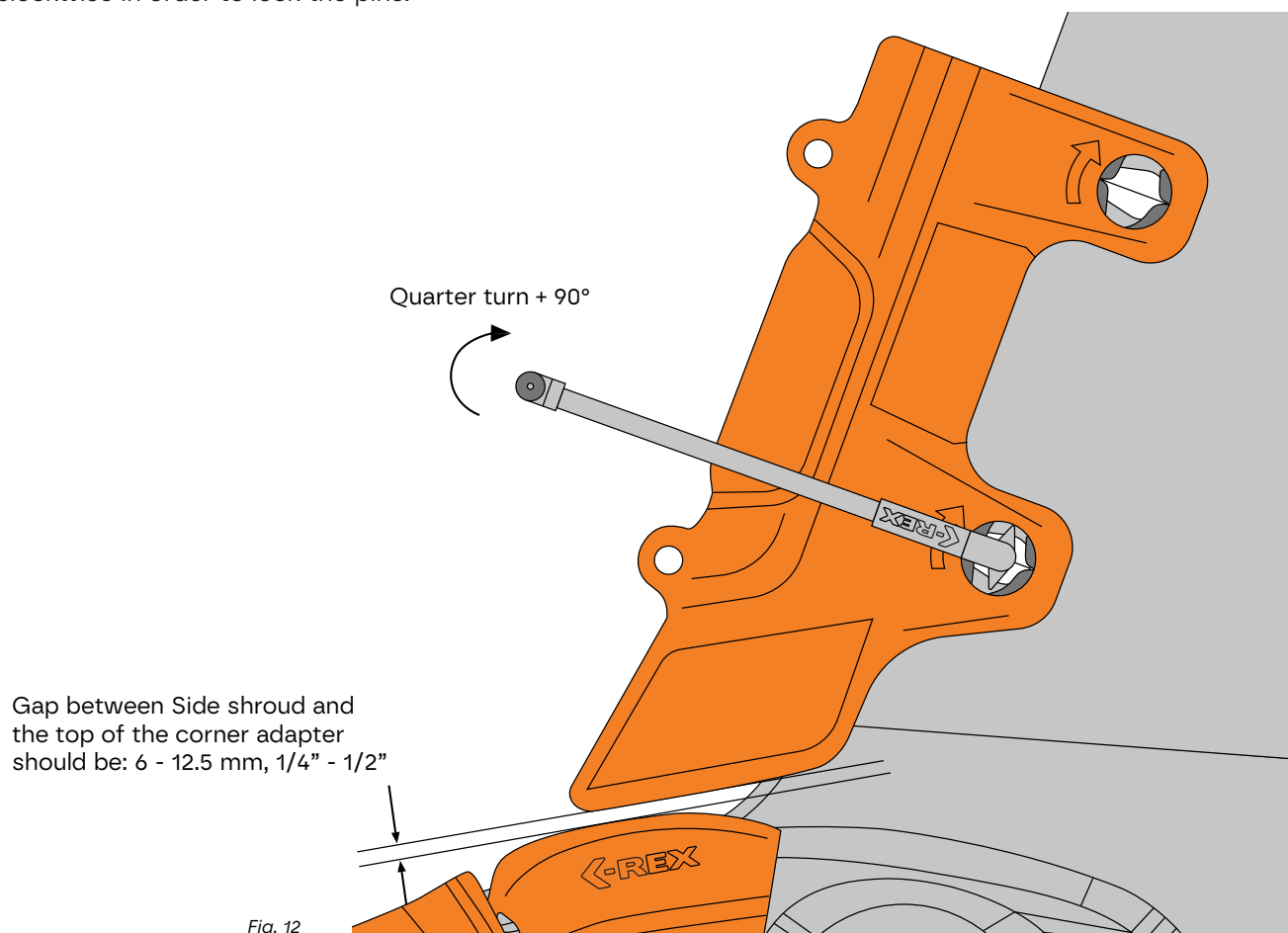


Fig. 11

Step 4 – Place the tool correctly fitted into the grooves in the locking ring. Turn the locking rings a quarter turn clockwise in order to lock the pins.



Step 5 – Fit the weld-on base on both sides of the bucket wall like described in figures 14 and 15. Secure contact in areas A and B. Spot weld the base to the bucket walls and preheat weld-on base (material Hardox 450) to the recommended temperature 150°C. Proceed with welding inside/outside of the base.

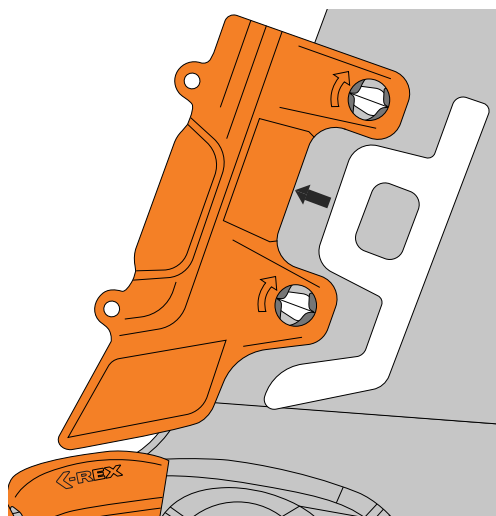


Fig. 14

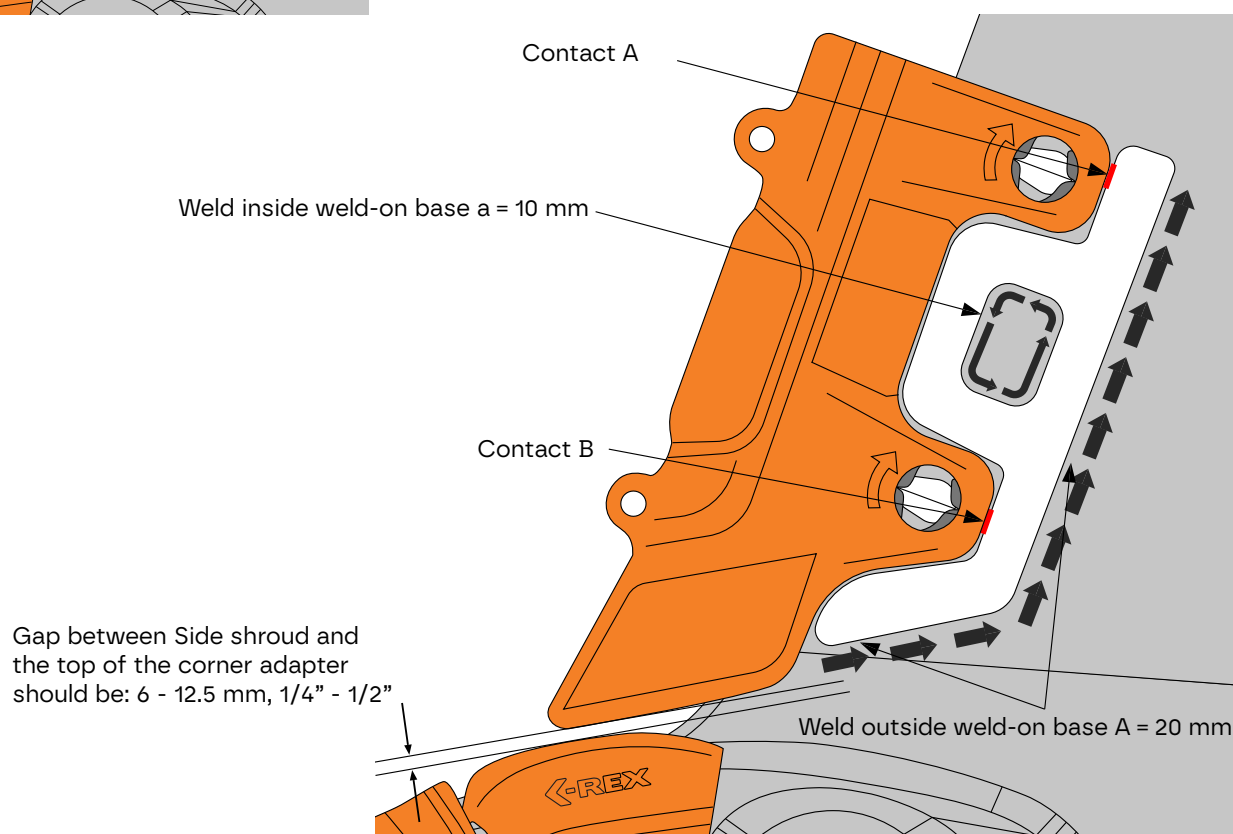


Fig. 15

Repeat all steps to install the side shroud in the upper position – see figure 16-17.

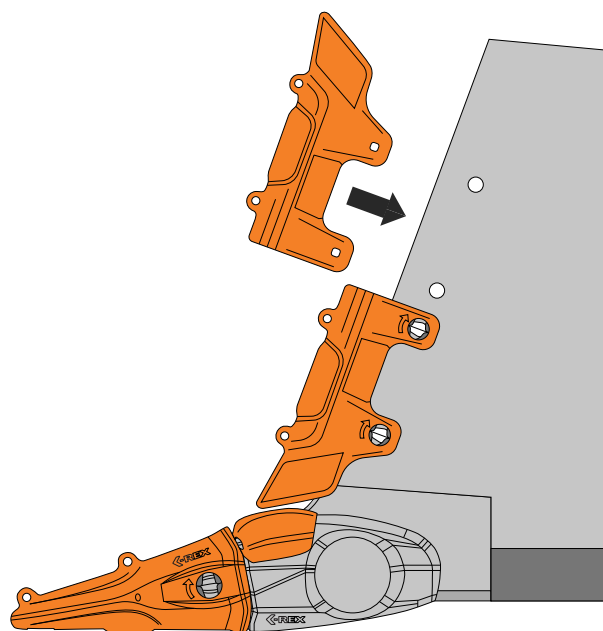


Fig. 16

Gap between upper and lower Side shroud:
6 - 12.5 mm, 1/4" - 1/2"

Gap between Side shroud and corner adapter
Wear Cap should be: 6 - 12.5 mm, 1/4" - 1/2"

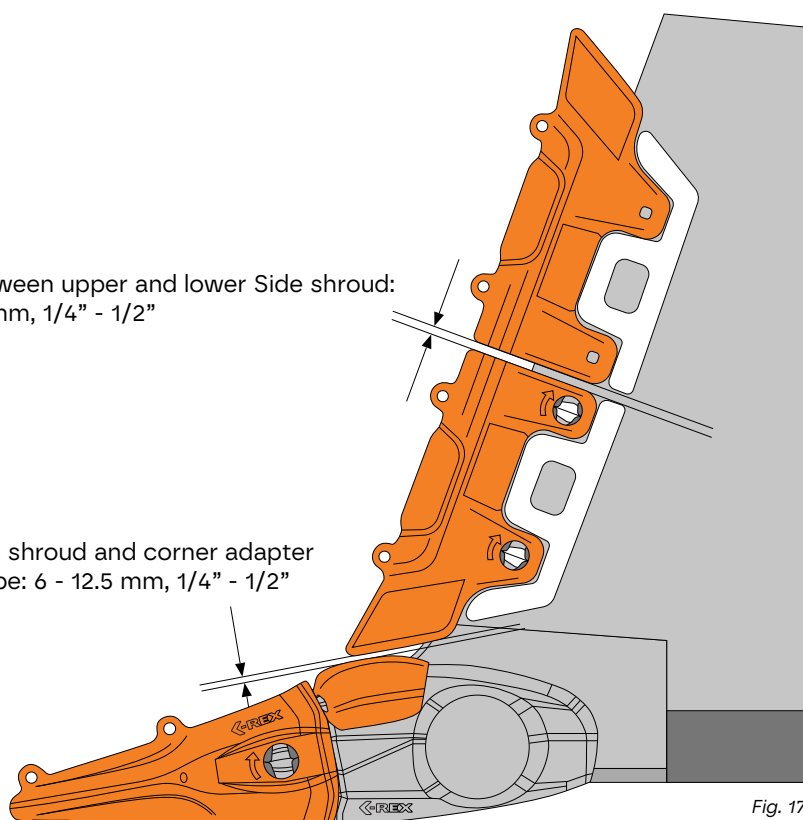


Fig. 17



Step 6 – To dismount side shroud and the locking pins turn the locking ring a quarter turn counterclockwise. Use locking tool as stated in table 4.

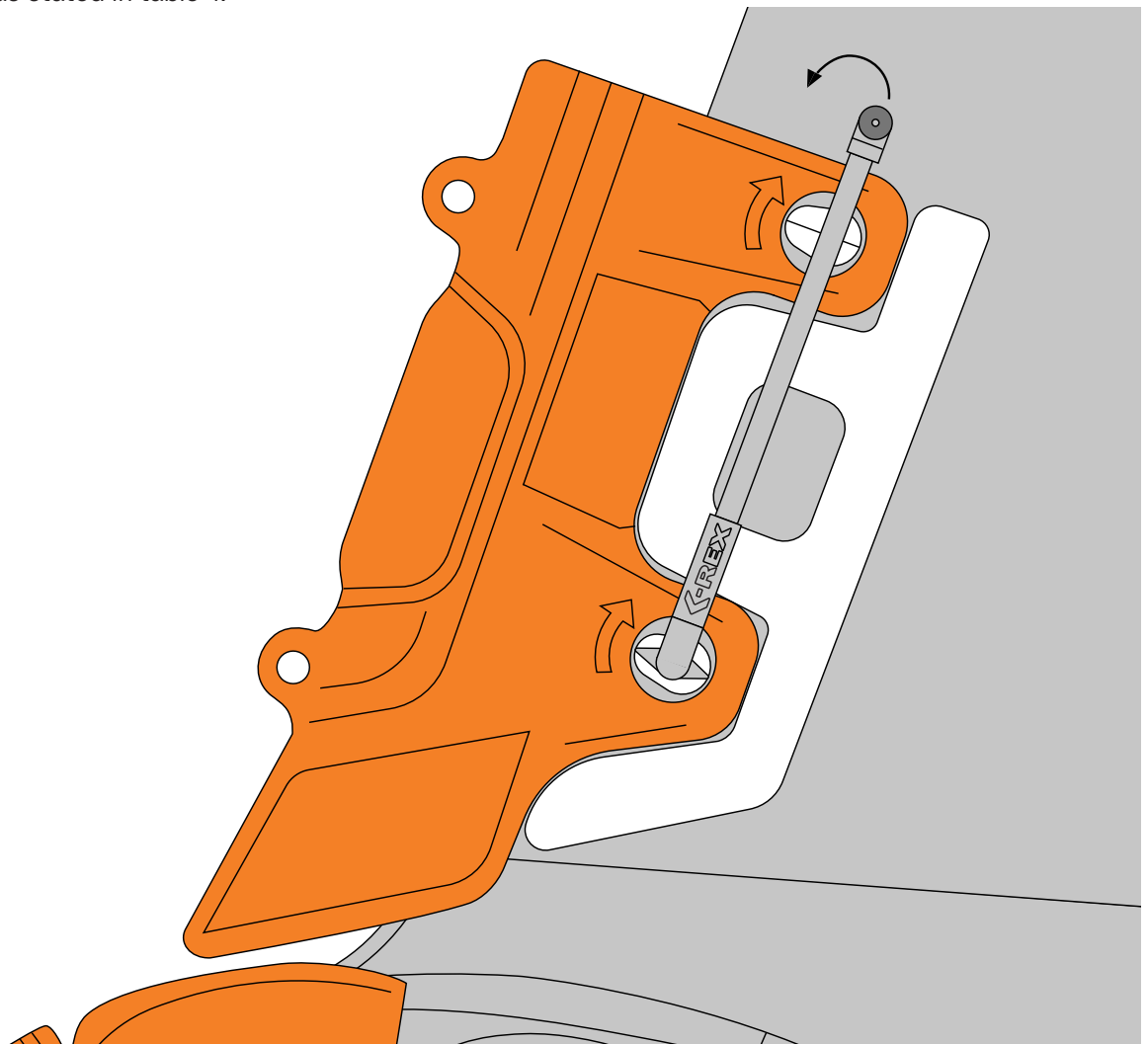


Fig. 18

Side shroud	Locking tool for mounting & dismounting
500603	R70LT
500604	R70LT
500605	R35LT
500606	R35LT
500607	R50LT
500608	R50LT

Table 4

IMPORTANT! Clean the locking pins and side wall holes before installing a new side shroud.

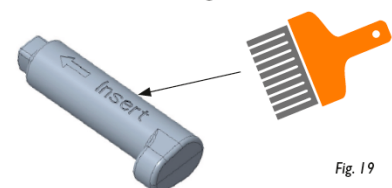


Fig. 19

2.3 ProTest mechanical side shrouds 700601/700602/700603 installation procedure

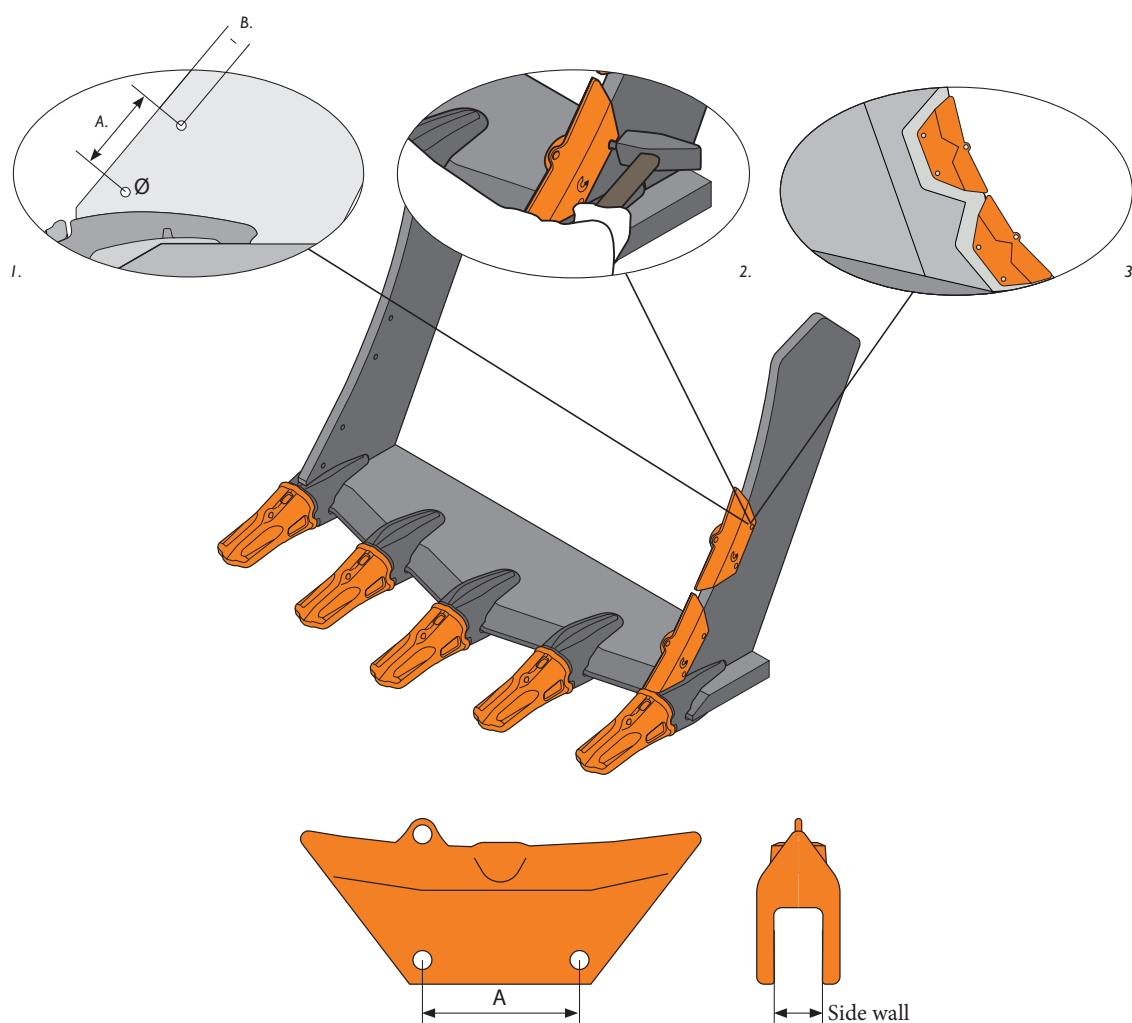
1. Cut the side wall and drill holes according to table 5.

2. Use pin and ring to fasten the side shroud. The ring is placed in the pocket inside the shroud. Use a hammer to drive the pin into

locked position in the ring. Make sure that the ring is securely locked in the groove on the pin.

3. For extra protection of the ring, pin and shroud it is recommended to weld a 30 mm steel plate on

the back side of the shroud; both inside and outside the bucket as shown in figure 3.



Pattern for drilling				
Side shroud	Side wall	A	B	Ø
700601	63.5 mm/2.5 in	220 mm/8.68 in	75 mm/2.96 in	27 mm/1.06 in
700602	50 mm/1.97 in	190 mm/7.48 in	64 mm/2.52 in	23 mm/0.91 in
700603	60 mm/2.36 in	220 mm/8.68 in	75 mm/2.96 in	27 mm/1.06 in

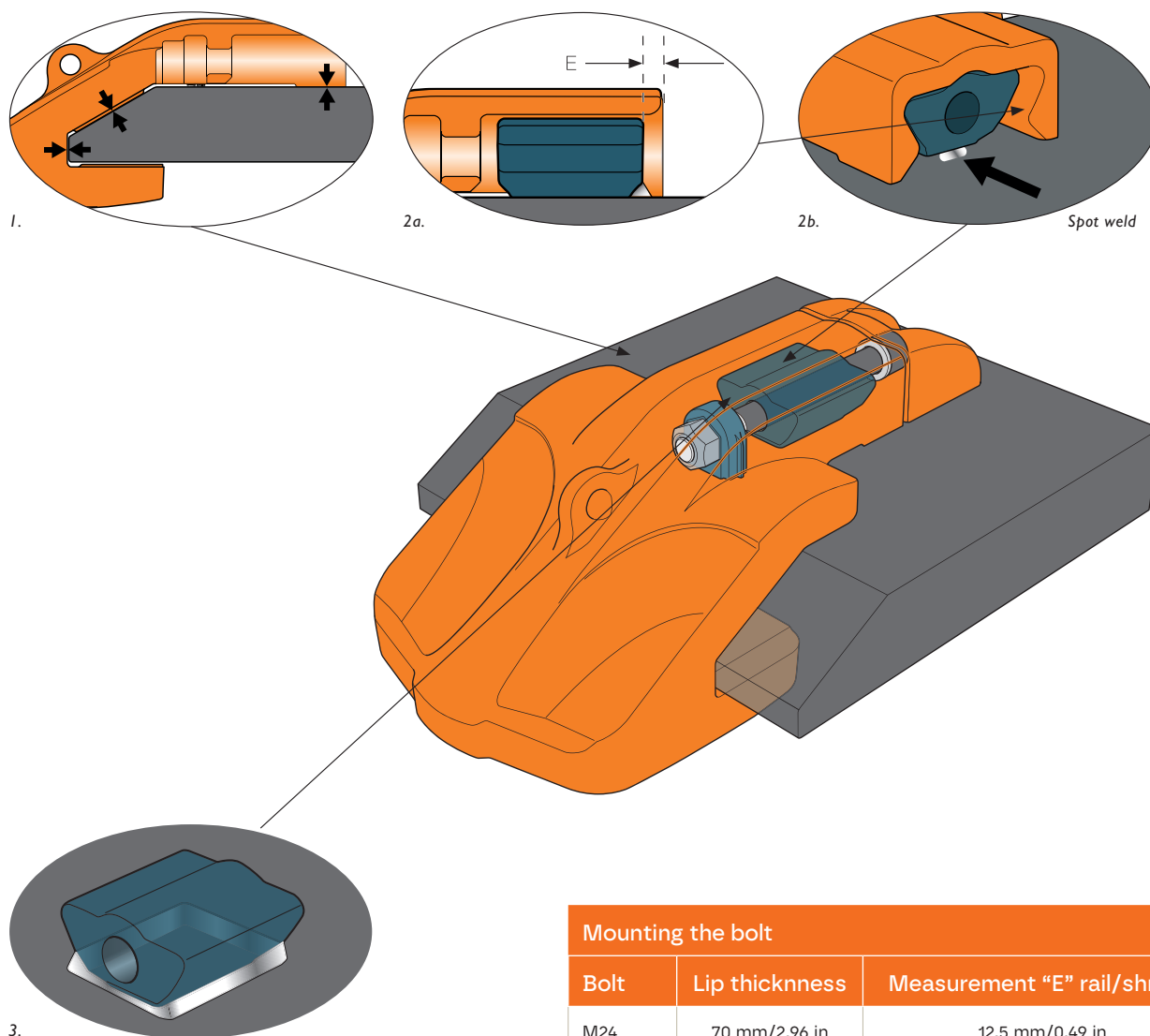
Table 5



3. Protect mechanical lip shroud - mounting instructions

1. Place the shroud on the lip. Make sure that there is contact in the three areas as shown in picture 1.

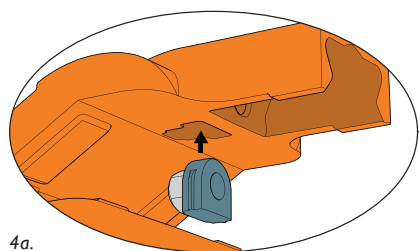
2. Place the rail inside the slot following the E measurement in Table 6. Spot weld the rail when placement is correct.



3. After removing the shroud complete welding of rail. Preheat to 150 °C (334 °F).

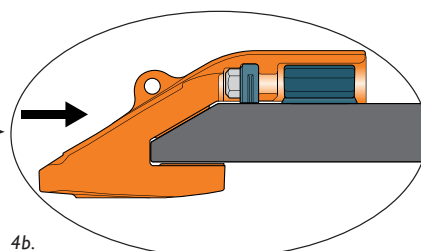
Mounting the bolt		
Bolt	Lip thickness	Measurement "E" rail/shroud
M24	70 mm/2.96 in	12.5 mm/0.49 in
M24	75 mm/2.96 in	12.5 mm/0.49 in
M27	75 mm/2.96 in	15 mm/0.59 in
M27	90 mm/3.55 in	15 mm/0.59 in
M30	100 mm/3.94 in	16 mm/0.63 in
M30	120 mm/4.73 in	19 mm/0.75 in
M30	140 mm/5.51 in	23 mm/0.91 in

Table 6

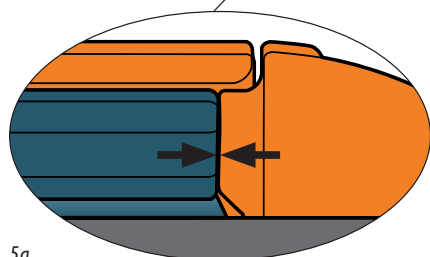
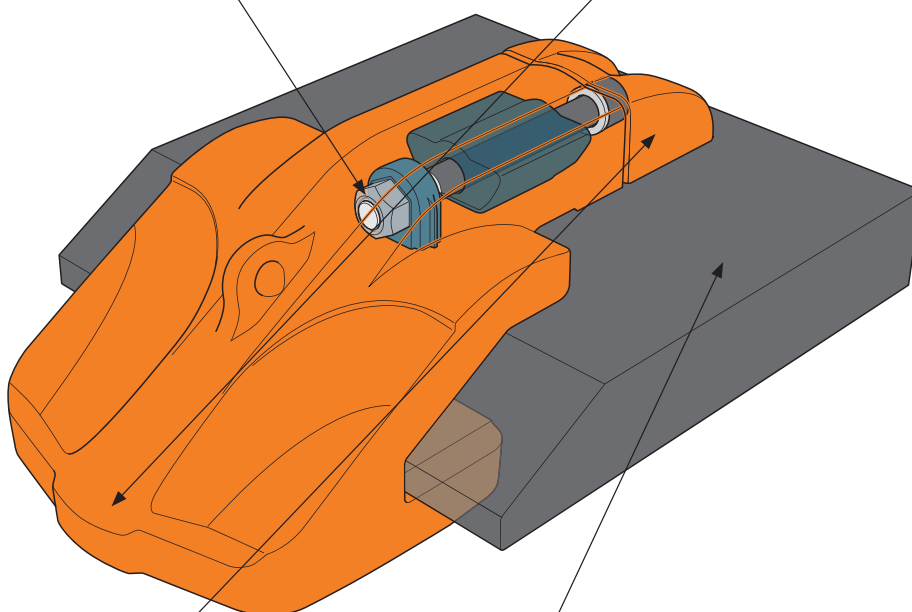


4a.

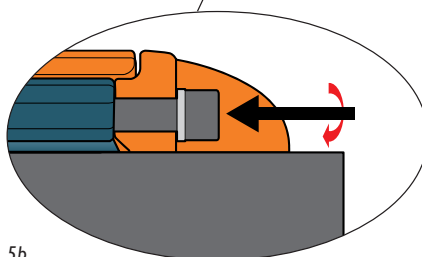
4. Place the lock in the recess inside the shroud and slide it back on to the rail.



4b.



5a.



5b.

5. Put the bolt protector in place and tighten the screw to recommended torque in Table G.

6. We recommend to retighten all bolts after the first hours in use to secure a good fit



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