

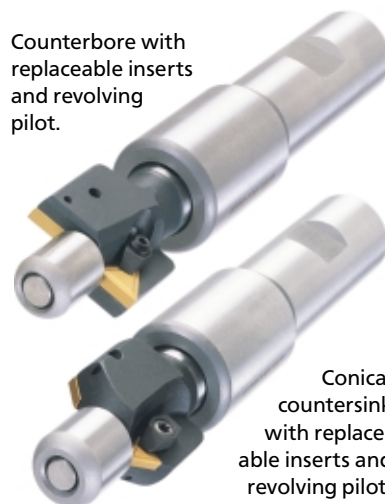
Countersinking & counterboring

Countersinking and counterboring are best performed using tools with replaceable inserts. Cooling water is also required. Always use a revolving pilot.

When countersinking reduce the cutting speed and feed by 30%.

	ARMOR 300T	ARMOR 370S	ARMOR 500S	ARMOR 600S
Cutting speed m/min	40–65	25–60	17–50	35–45
feed, mm/r	0.10–0.20	0.10–0.20	0.10–0.20	0.10–0.20
D, mm	Speed, rpm			
19	670–1090	420–1005	285–840	585–755
24	530–865	330–795	225–665	465–595
34	375–610	235–560	160–470	325–420
42	300–495	190–455	130–380	265–340
57	225–365	140–335	95–280	195–250

Counterbore with replaceable inserts and revolving pilot.



Conical countersink with replaceable inserts and revolving pilot.

Bending

ARMOR armour plate can be bent both by V-die bending and by roller bending.

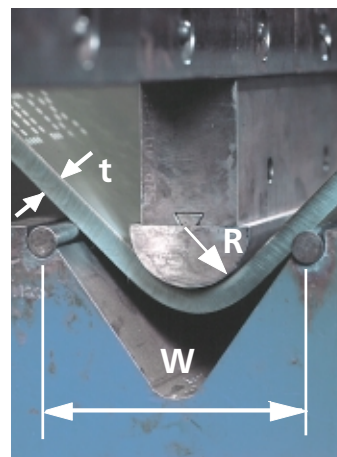
ARMOR plates should be bent at room temperature to avoid reduction of mechanical and ballistic properties. Other factors that may affect the bending results are as follow:

- Top tool radius (R).
- Die opening (W).
- Die edge radius and its hardness.
- Bending force.

Lubricated die edges lower the bending forces.

The easier the plate slides on the die edge, the better the concentration of bending force. Between 10 and 25% lower bending forces have been achieved by lubrication.

The table below shows the relationship between bending radius (R), die opening (W) and plate thickness (t).



	R/t	W/t	R/t	W/t	R/t	W/t	
Thickness	t < 8 mm		t = 8–15 mm		t > 15 mm		Springback
ARMOR 300T	3	16	4	18	5	20	8–12°
ARMOR 370S	4	18	5	20	6	20	9–13°
ARMOR 440T	5	18	6	20	7	20	10–15°
ARMOR 500S	6	18	7	20	8	20	12–20°
ARMOR 560S	7	20	8	20	–	–	14–25°
ARMOR 600S	Contact SSAB Oxelösund						



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Drilling

Drilling can be performed using high-speed steel drills or cemented carbide drills. To achieve a successful drilling operation, minimize vibrations and increase the wear life/time of tools, proceed as follows:

- Tighten the workpiece firmly against a stable foundation.
- The workpiece should be placed as close as possible to the main support.
- Use short drills and a short drilling head.
- Be careful at break through because machine play and springback can easily break the drill tip. Release feed until machine play/springback has been compensated for and then turn on the feed again. This could save many drill tips when using HSS-Co drills.
- Use plenty of lubricant.

	ARMOX 300T	ARMOX 370S	ARMOX 500S	ARMOX 600S
Cutting speed m/min	~ 15	~ 9	~ 30* / ~ 50**	~ 20* / ~ 30**
D, mm	Feed, mm/r / speed, rpm			
5	0.10 / 955	0.05 / 575	0.08* / 1910*	0.07* / 1275*
10	0.10 / 480	0.10 / 285	0.10* / 955*	0.10* / 635*
20	0.23 / 240	0.23 / 145	0.10** / 795**	0.05** / 475**
30	0.35 / 160	0.35 / 95	0.10** / 530**	0.05** / 320**

*) Solid cemented carbide drill

**) Drill with replaceable inserts

Tapping

With the correct tools tapping can be performed in all ARMOX grades.

We recommend four-fluted taps which can withstand the very high torque which occurs during tapping in hard materials. If the strength is not critical, the drilled hole can be 3% larger than standard. This increases the life of the tap, as will the use of tap oil.

	TiCN-coated HSS-Co (HSS-E)			Thread Milling*** / HM-TiCN	
	ARMOX 300T	ARMOX 370S	ARMOX 500S	ARMOX 500S	ARMOX 600S
Cutting speed m/min	8	5	2.5	50-90	40-80
D, mm	Speed, rpm				
M5	510	315	160	3200-5700	2500-5000
M10	255	160	80	1600-2800	1200-2500
M20	125	80	40	800-1400	600-1200
M30	85	55	25	500-1000	400-900

*** Feed/tooth: 0.03-0.05

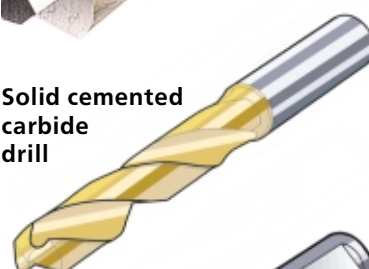
When thread milling, the thread should be made in two steps.

HSS-Co

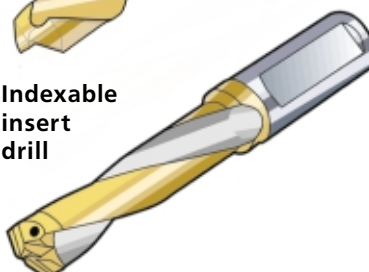
Use a HSS-Co drill with 8% cobalt and a small helix angle



Solid cemented carbide drill



Indexable insert drill



Tap for blind holes.



Tap for through holes.

