

HUGH SMITH 3000 TONNE VERTICAL BENDER CAPACITY LIST

Thicknesses which can be bent to all diameters down to the following minima using the Main Roller.
The **3000 Tonne** Machine can accommodate plates up to **200 mm** thick.

7.874

3.0M (10ft) Machine	860 mm Main Roller Diameter								
Yield Stress Kg/mm²	25	35	50	25	35	50	25	35	50
Min. Inside Dia.	Small Dia. Range			Medium Diameter			Large Dia. Range		
	1000	1100	1200	2300			5500 and above		
Plate Width	Plate Thickness								
3000	86	77	67	108	96	83	142	123	104
2500	93	82	72	117	103	89	153	134	113
2000	102	89	78	128	112	97	168	146	126
1500	113	100	88	145	126	110	188	165	143

3.6M (12ft) Machine	920 mm Main Roller Diameter								
Yield Stress Kg/mm²	25	35	50	25	35	50	25	35	50
Min. Inside Dia.	Small Dia. Range			Medium Diameter			Large Dia. Range		
	1100	1160	1280	2300			5500 and above		
Plate Width	Plate Thickness								
3600	80	71	62	100	88	77	130	112	94
3500	81	72	63	102	90	79	133	114	96
3000	86	77	67	108	96	83	142	123	104
2500	93	82	72	117	103	89	153	134	113
2000	102	89	78	128	112	97	168	146	126
1500	113	100	88	145	126	110	188	165	143

4.0M Machine	960 mm Main Roller Diameter								
Yield Stress Kg/mm²	25 35 KSI	35 49 KSI	50 71 KSI	25 35 KSI	35 49 KSI	50 71 KSI	25 35 KSI	35 49 KSI	50 71 KSI
Min. Inside Dia.	Small Dia. Range			Medium Diameter			Large Dia. Range		
	1150	1170	1340	2300			5500 and above		
Plate Width	45.275 46.062 52.755 90.551 216.535 Plate Thickness 18'-1/2"								
4000 13'-1 1/2"	77	68	60	97	85	74	125	107	90
3500 11'-5 3/4"	81	72	63	102	90	79	133	114	96
3000 9'-10 1/8"	86	77	67	108	96	83	142	123	104
2500 8'-2 1/2"	93	82	72	117	103	89	153	134	113
2000 6'-6 3/4"	102	89	78	128	112	97	168	146	126
1500 5'9"	113	100	88	145	126	110	188	165	143

Contact Centres for above thickness	500 19.685	650 25.590	800 31.496
---	---------------	---------------	---------------

Thickness which can be bent to all daimeters down to the following minimun using the Main Roller.
The 3000 Ton Machine can accommodate plates up to 200mm/7.875" thick

4.0M Machine		960 mm Main Roller Diameter																	
Yeild Stress																			
Kg/mm ²	25	35	50	25	35	50	25	35	50	25	35	50	25	35	50	25	35	50	
KSI	35	49	71	35	49	71	35	49	71	35	49	71	35	49	71	35	49	71	
Minimum Inside Diameter		Small Diameter Range						Medium Diameter						Large Diameter Range					
MM	1150	1170	1340	2300						5500 and above									
INCHES	42.27"	46.06"	52.75"	90.55"						18'-1/2"									
Plate Width		Plate Thickness																	
4000mm	13'-1.50"	77mm	3.03"	68mm	2.67"	60mm	2.36"	97mm	3.81"	85mm	3.34"	74mm	2.91"	125mm	4.92"	107mm	4.21"	90mm	3.54"
3500mm	11'-5.57"	81mm	3.19"	72mm	2.83"	63mm	2.48"	102mm	4.01"	90mm	3.54"	79mm	3.11"	133mm	5.23"	114mm	4.48"	96mm	3.77"
3000mm	9'-10.125"	86mm	3.39"	77mm	3.03"	67mm	2.63"	108mm	4.25"	96mm	3.77"	83mm	3.26"	142mm	5.59"	123mm	4.84"	104mm	4.09"
2500mm	8'-2.50"	93mm	3.66"	82mm	3.22"	72mm	2.83"	117mm	4.60"	103mm	4.05"	89mm	3.50"	153mm	6.02"	134mm	5.27"	113mm	4.44"
2000mm	6'-6.75"	102mm	4.02"	89mm	3.50"	78mm	3.07"	128mm	5.03"	112mm	4.40"	97mm	3.81"	168mm	6.61"	146mm	5.74"	126mm	4.96"
1500mm	59.00"	113mm	4.45"	100mm	3.93"	88mm	3.46"	145mm	5.70"	126mm	4.96"	110mm	4.33"	188mm	7.40"	165mm	6.49"	143mm	5.62"
Contact Centers for above thickness		500mm						650mm						800mm					
		19.68"						25.59"						31.49"					

NOTES ON CAPACITY TABLE

All the above plate thickness have been calculated using the maximum allowable load utilising the main roller, with the narrower plates raised towards the centre of the machine. Plates narrower than the full height of the machine can be formed at floor level but using a reduced load.

The maximum load (tonnes per metre) apply to any cold form plate is:- Yield Strength (kg/mm^2) x 80.

eg for 25 kg/mm^2 yield strength material, maximum **load per metre** width = $25 \times 80 = 2000$ tonnes.

A range of contact centres is available depending on the diameters to be formed; the wider centres would not be suitable for the smaller diameters. Contact centres used in the table are typical for the diameter and thickness shown. By increasing or reducing the centres the plate thickness would alter respectively, although they should be kept as close as possible to minimise the end flat.

ie thinner plates require smaller centres.

The Contact Centres quoted above represent approx. 80% of those available at the specified diameters.

The approximate end flat is in the region of 30 - 40% of the contact centres used, this depends on such factors as material yield, plate thickness and springback etc.

Effect of altering contact centres on plate thickness:-

The new plate thickness will approximate to: $t_2 = t_1 \times \square(\text{new contact centres/original centres})$.

As a guide 'hot' bending increases the cold bending thickness by a factor of two.