



**HYDRAULIC CYLINDER AREAS (STANDARD RODS)
FOR METALS INDUSTRY**

Bore, in.	Rod Diameter, inches	Head End Area in. ² (Gross)	Rod End Area in. ² (Net)
1 ¹ / ₂	3 ³ / ₄	1.77	1.33
2	3 ³ / ₄	3.14	2.70
2 ¹ / ₂	1	4.91	4.13
3	1	7.07	6.29
3 ¹ / ₂	1 ³ / ₄	9.62	7.22
4	1 ³ / ₄	12.57	10.17
5	2	19.64	16.50
6	2 ¹ / ₂	28.27	23.36
7	3	38.49	31.42
8	3 ¹ / ₂	50.27	40.65
10	4	78.54	65.97
12	4 ¹ / ₂	113.10	97.20

Force Required At Cylinder:

Roller mounted = 0.25 × total weight (including tension vector)

Sliding ways = 0.50 × total weight (including tension vector)

Correction Rate = 1/2" in 10 ft of strip (normal)

Oil Required At Cylinder:

in.³/sec = cylinder head end area × strip speed (ft/min) ÷ 1200

gpm = 0.26 × in.³/sec or 0.000 216 × cylinder head end area × strip speed (ft/min)

Use hydraulic power amplifier over 5 gpm or over 400 psi for best results.