

I. Product & Its Uses

(a) Industrial fasteners comprise a very wide range of items like bolts, nuts, washers, studs, wire, nails, etc. Bolts constitute a fairly large part of it. Bolts upto 12mm (upto 15mm in special cases) are made by cold forging process, but bigger sizes need to be made by bolt forging process. Although bolts are used alongwith nuts, manufacture of bolts only is done by majority of units.

(b) Market Potential

Hot forged bolts are used in engineering industry in number of applications—structures, railways foundation bolts, packaging etc.

II. Production Targets

50 MT bolts per month.

III. Production details and process of manufacture

The raw material used for manufacture of bolts is M. S. rounds. As some of the rounds available are rusty & not perfectly round and straight, it is necessary to make them round. The rounds are pickled in acid tanks, washed and drawn in a draw bench. According to length of bolts required (allowing for approx. 24 diameters for head formation), the rods are cut on a power press. These are then straightened on straightening machine.

The other end of the piece is heated in oil fired furnace and head formation done on hot forging press. The fins are then trimmed in a trimming machine. In quality bolts, the lower side of head is also faced. Threading is then done on die head machines.

Before packing, auto black is also done to make it rust resistant.

IV. Inspection and Quality Control

Depending on usage, bolts of different lengths (for the same diameter) and threading length are required. Again the purchaser has to specify the type of thread i.e., BSW, BSF, Metric, etc.

In process, checking is necessary for quality control IS : 1363 specifies the properties of hot forged bolts.

V. Land & Building

For the envisaged production, a shed of 300 meters is necessary.

VI. Machinery & Equipment

	No.	Rs.
1. Heavy duty draw Bench 10 meter length, having 7½ H.P. Motor	1	35,000
2. Pointing machine with 2 H.P. Motor	1	4,000
3. Power press 50 to. with 5 H.P. Motor	1	40,000
4. Straightening machine with 8" rollers, fitted with 5 H. P. Motor	1	20,000
5. Chamfering machine 1 H.P. Motor	1	3,000
6. Hot forging press, friction screw type, capacity 30mm, with 12½ H.P. Motor	1	35,000
7. Hot forging press, friction screw type with capacity of 20 mm (with 7½ H.P. Motors)	1	25,000
8. Oil fired furnace, with blower	1	15,000
9. Power Presses 30 Tons. (for trimming)	2	30,000
10. Filing machines (with collets.)	2	15,000
11. Die head Threading machine	2	25,000
12. SS & SC Lathe 1500 MM Bed	1	25,000
13. Pillar drilling machine	1	30,000
14. Bench grinder 200 mm wheel	1	5,000
15. Pickling tanks (2 Nos.) autoblackening tanks, handling equipment		20,000
16. Weighing Machine		5,000
17. Hardness tester, Gauges & instruments		20,000
18. Dies, Tools		30,000
19. Taxation & transportation		20,000
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		3,83,000
20. Installation & Electrification		40,000
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		Tot. I 4,23,000

VII. Raw Material (Per month)

1. M.S. round 12 mm to 30 mm diameter 55 mt. @7000 Ton	3,85,000
2. Furnace oil	50,000
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	4,35,000

VIII. Staff & Labour (Per month)

	No.	Rs.
1. Manager	1	2,000
2. Fireman	1	1,000
3. Skilled workers	8	4,500
4. Accountant	1	500
5. Peon/Chowkidar	3	500
6. Sweeper	1	200
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		14,200
		1,400
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		15,600
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	Say	15,000

IX. Other Expenses (Per month)

	Rs.
1. Electricity and Water	5,000
2. Lubricants, cutting tools	3,000
3. Rent	3,000
4. Postage, Stationery	2,000
5. Packing	6,000
6. Travelling, Freight and other expenses	4,000
7. Acids & Chemicals	3,000
	26,000

X. Working Capital (For 3 months)

1. Raw Materials 4,35,000 × 3	13,05,000
2. Staff & Labour 15,840 × 3	47,520
3. Other expenses 26,000 × 3	78,000
	14,30,520

XI. Total Capital Investment

1. Machinery & Equipment	4,23,000
2. Working capital for 3 months	14,30,520
	18,53,520
or say	18,53,500

XII. Cost of Production (Per annum)

1. Raw Materials	52,20,000
2. Staff & Labour	1,90,080
3. Other Expenses	3,12,000
4. Depreciation on machinery & equipment @ 10%	42,300
5. Interest on capital investment @ 15%	2,78,028
	60,42,408

XIII. Sales Proceeds (Per annum)

1. 600 MT of finished bolts @ Rs. 10,800 18 ton	64,80,000
2. Sale of Scrap	60,000
	65,40,000

XIV. Profitability

Profit = 65,40,000 — 60,42,400	= 4,97,600
% Profit on sales =	
$\frac{4,97,600 \times 100}{65,40,000}$	= 7.6%
% Profit on Investment =	
$\frac{4,97,600 \times 100}{18,53,500}$	= 26.8%

XV. Break Even Point

$$\text{B.E.P.} = \frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{Profit}}$$

Fixed cost :-

	Rs.
1. Rent	36,000
2. Interest	2,78,028
3. 40% of salary & wages	76,032
4. 40% of other expenses	1,24,800
5. Depreciation	42,300
	5,57,160

$$\text{Break Even Point} = \frac{5,57,160 \times 100}{5,57,160 + 4,97,600} = 52.8\%$$

XVI. Machinery Suppliers

1. M/s. Basand Mechanical Works, Indl. Area 'B', Ludhiana.
2. M/s. Niranyan Singh Karatar Singh, Link Road, Indl. Area 'A', Ludhiana-3.
3. M/s. New Standard Engg. Co. Ltd., 23, Kasturba Gandhi Marg, New Delhi.
4. M/s. Dutta Engg. Works, 2366, Teliwara, Delhi.
5. M/s. Power Machine Tools, 19/224, Basti Sarsi Rohilla, Old Rohtak Road, Delhi-110 035.
6. M/s. Universal Screw Factory, Chheharta, Amritsar.
7. M/s. Devendra Industries, 693, Indl. Area 'B', Link Road, Ludhiana.
8. M/s. Lateny Industrial Corporation, Industrial Area, Jalandhar.