

I. Product and its uses

Lashing Chain is used in Railways' open type wagon to fasten the Stores/goods with the wagon body firmly so that the goods do not fall or throw out while the wagon is in motion. It is made of Steel, Link, turn buckle, handle, staple plate, shackle nut and hook. This is a most important item for BR MBW, BWM and BWL type wagons.

II. Market Potential

This item is required for repeated replacement due to frequent uses, irregular handling and for building of new wagons. The Railways are the major transport media in the country. As such, there is scope for establishment of small scale units considering the increasing demand of export market for Railway wagon and local requirements of Railways.

III. Production Target

Production target is fixed at 7800 Nos. per annum on the basis of single shift working.

IV. Product Details and Process of Manufacture

The Lashing Chain with hook is made from mild steel bar, M.S. forged nut, M.S. forged hook, Screw coupling of class IV Steel, forged staple plate.

The M.S. Bar is first cut to sizes of each link length. Then these are heated and sent to power press for bending and forming and links are joined with each other. Then joints of links are welded together.

The shackle, nut, screw, handle, hook are forged and after performing their machining operation it is assembled at stages with each other to make a complete lashing chain with hook. It is then finished by painting.

V. Inspection and Quality Control

Since the lashing Chain hook has got several components to be assembled together it is advisable to check them at every stage of production. Uses of various types of measuring instruments ganges are necessary for the purpose.

The chains are tested in Hydraulic tensile testing machines such as for breaking load upto 10.4 proof load 3.6 tons and safe load of 1.5 tons as specified by the Railways standards.

VI. Land & Building

Work shed 400 Sq. meter Rented per month	4,000
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VII. Machines & Equipment

	Rs.
1. Centre lathe 2000 mm bed 250 mm height, complete with 3 H.P. motor with Standard accessories	3Nos. 90,000
2. Pillar Drill Machine 50 mm. with 2H.P. motor sarter etc.	2Nos. 25,000
3. Shaping machine 600 mm stroke with H.P. Motor	1No. 20,000
4. Arc Welding Generator 400amp (2KVA) complete with cable holder etc.	2Nos. 80,000
5. Arc Welding transformer 350amp. (10KVA) complete with accessories.	1No. 10,000
6. Heavy Duty Ball Press 16 No. Size	2Nos. 30,000
7. Power Shearing machine for red, flat cutting upto 2 5mm dia with 5 H. P. Motors	1No. 25,000
8. Power Press 60 ton cap. with 10H.P. motors.	1No. 150,000
9. Universal Milling machine No. 2 Size 250 mm x 1000 table with 3 H. P. motor, and standard accessories	1 No. 80,000
10. Pneumatic Hammer 250 kg. cap. with 25 H. P. Motor etc.	1No. 2,75,000
11. Open/close different set of dies.	L.S. 30,000
12. Hydraulic chain testing machine 30 ton cap.	1 40,000
13. Blacksmithy furnace with a 1H. P. motor and pipe line etc.	2 10,000
14. Harness Testing Machine	1 15,000
15. Gen. Engg. Blacksmithy testing instruments ganges etc.	L.S. 15,000
16. Beach grinding machines	2Nos. 10,000
17. Spring Hammer cap 7 ton with 5 H.P. motor	1 10,000
18. Measuring tools, equipments etc.	L.S. 30,000
19. Office Furniture & equipments	15,000
20. Installation & Electrification water & Sanitation etc.	80,000
	9,40,000

VIII. Raw Material (Per month)

1. M.S. Round/Class IV. type steel I.R.S. 20-38 mm dia @ Rs. 7000	28MT. 1,96,000
2. M. S. Billet 2" ; 3 Sq. @ Rs. 6500MT.	3.5mt. 22,750
	2,18,750
	or Say 2,19,000

IX. Staff & Labour (Per month)

	Nos.	Rs.
1. Works Manager	1	1,500
2. Supervisor	2	2,400
3. Skilled Workers	3	2,100
4. Semi-Skilled Workers	10	5,000
5. Un-skilled labour	8	3,200
6. Store Keeper/Clerk	1	600
7. Accountant	1	700
8. Salesman	1	1,000
9. Watchman	2	800
10. Sweeper (part time)		200
11. Cost of laour benefit 10%		2,500
		<u>20,000</u>

X. Other Expenses (Per month)

1. Rent	4,000
2. Electricity	3,000
3. Coal 5 M. T.	5,000
4. Electrode	10,000
5. Hot die, Steel 20 Kgs.	1,500
6. Machine Maintenance Repairs	1,500
7. Consumable Stores	4,000
8. Office expenses.	1,000
9. Transport & Freight	6,000
10. Packing cost.	2,000
11. Publicity	2,000
12. Misc expenses.	1,000
Rs.	<u>41,000</u>

XI. Working Capital Required (Per month)

1. Raw material	2,19,000
2. Staff & Labour	20,000
3. Other expenses	41,000
Rs.	<u>2,80,000</u>

3 Months working capital = $2,80,000 \times 3 = 8,40,000$

XII. Total Capita Investment

1. Machinery & Equipment	9,40,000
2. Working capital for 3 months	8,40,000
	<u>17,80,000</u>

XIII. Cost of Production (Per annum)

1. Working capital	33,60,000
2. Interest on capital @ 15% P. A.	2,67,000
3. Depreciation on machine & Equipment @ Rs. 10% P. A.	94,000
	<u>37,21,000</u>

XIV. Total Sale (Per annum)

By sale of 7800 Nos. lashing chain with Hook having 30 links (size of each link 167×65 mm) @ Rs. 550 42,90,000

XV. Profitability (Per annum)

Total sale cost of production—profit	42,90,000—37,21,000=5,69,000
1. % of profit on sale	$\frac{569000 \times 100}{42,90,000} = 13.2\%$
2. % of return on investment	$\frac{569000 \times 100}{17,80,000} = 32\%$

XVI. Break Even Analysis

Annual Fixed cost $\times 100$	
Annual fixed cost + Annual profit	
Fixed cost (per annum)	
	Rs.
1. Rent	48,000
2. Interest	2,67,000
3. Depreciation on m/c. & equipment.	94,000
4. 40% of salary	96,000
5. 40% of other expenses (excluding rent).	1,77,600
	<u>6,82,600</u>

$$\text{B.E.P.} = \frac{682600 \times 100}{682600 + 569000} = 54.5\%$$

XVII. Name & Address of Machinery & Equipment Suppliers

1. M/s. Alfred Horbert (I) Ltd., 13/3, Strand Road, Calcutta.
2. M/s. Power Tools & Appliances, 2, Dalhousie Square Estate, Calcutta.
3. M/s. New Standard Engg. Co. Ltd., Himalaya House, 10th floor, New Delhi.
4. Jayems Engg. Co., 139, Cannaught Place, New Delhi.