ANALYSIS OF SPARES MANAGEMENT AND SUPPLIERS TRANSACTION CONTROL

Thesis submitted in partial fulfillment of the requirements
for the award of the degree of

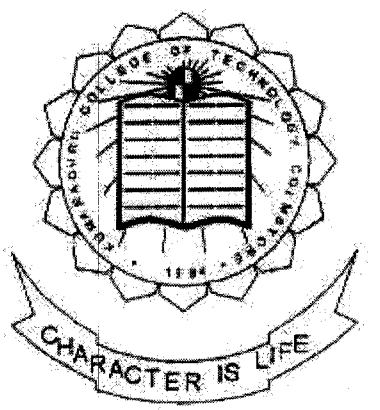
MASTER OF ENGINEERING IN MECHANICAL ENGINEERING
(INDUSTRIAL ENGINEERING)
of BHARATHIAR UNIVERSITY

By

K. RAJA
(Reg. No.0037H0008)

Under the Guidance of

Prof. G. MOHAN KUMAR, M.E., M.B.A., MISTE,
Dept. of Mechanical Engineering



DEPARTMENT OF MECHANICAL ENGINEERING
KUMARAGURU COLLEGE OF TECHNOLOGY
(Affiliated to Bharathiar University)
Coimbatore - 641 006

2000 – 2001

CERTIFICATE

Department of Mechanical Engineering

Certified that this is a bonofide report of thesis work done by

Mr. K . RAJA
(Reg. No.0037H008)

at

KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE- 641 006

During the year 2000-2001

Guide

Prof.G.MOHANKUMAR

Department of Mechanical Engineering
Kumaraguru college of Technology

Head of the Department

Dr.A.MOHANA KRISHNAN

Dr. A. MOHANAKRISHNAN
Professor & H.O.D
Dept. of Mech. Engineering
KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE-641 006.

Place : Coimbatore

Date : 3-12-01

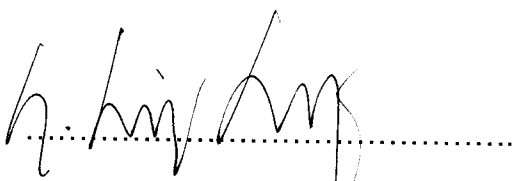
Submitted for viva –voice examination held at
Kumaraguru College of Technology on 4-12-01

Internal Examiner

External Examiner

CERTIFICATE

This is to certify that these thesis work entitled **ANALYSIS OF SPARES MANAGEMENT AND SUPPLIERS TRANSACTION CONTROL** carried out in **STEEL PLANT, SALEM** being submitted by K. RAJA (Reg. No 0037H008) for the award of **MASTER OF ENGINEERING IN MECHANICAL ENGINEEERING (INDUSTRIAL ENGINEERING) ,** is a bonafide work carried under my guidance. The results embedded in this thesis have not been submitted in any other University or institutes for the award of any degree or diploma.



Mr.G. Mohan Kumar
Senior Lecturer Dept. of Mechanical Engineering
Kumaraguru college of Technology
Coimbatore

CERTIFICATE

STEEL AUTHORITY OF INDIA LIMITED
A Government of India Enterprise

Salem Steel Plant
Salem 636 013. Tamil Nadu. India
Phone : 483021 Fax : 0427 - 482800
Grams : STAINLESS Telex : Admn. : 0450 - 236, Works : 0450 - 284

Ref No TR–15(6)

November 24, 2001

CERTIFICATE

Certified that
Shri K RAJA
Final Semester ME(Industrial Engineering) student of
Kumaraguru College of Technology, Coimbatore
has done a Project on
"ANALYSIS OF SPARES MANAGEMENT AND SUPPLIERS TRANSACTION CONTROL"
in Mechanical-Methods Department of
Salem Steel Plant
from 13/06/2001 to 24/11/2001

P Murugesan
Sr Manager (HRD)
24.11

ACKNOWLEDGEMENT

SYNOPSIS

SYNOPSIS

Salem steel plant , the first SAIL in south India, is one of the major processing industry now producing 65,000 tones of stainless steel sheets and strips per year and going to be increased to 1,30,000 tones in a year or two. In addition producing 50,000 tones of hot rolled annealed and pickled stainless steel sheets and strips.

The larger level production requirements needs very high maintenance at all stages. Analyzing the Preventive maintenance and in particularly the Breakdown Maintenance acquiring the data of the break down parts is not easily to identify and also not clearly visible to every one. Hence a wide survey is undertaken by analyzing the Preventive measures and diagnostic analysis of history of machine parts .Here concentrating the 'A' class items in "ABC" analysis a complete manual has been prepared.

The Salem steel plant has more than 750 suppliers and they are supplying more than 12,500 different spares and consumable items. It is very difficult to keep the records manually. For easy control and transaction all the data are prepared and processed. Microsoft-ACCESS has been used to store the data in the form of tables and the Front end menu driven program has been built using Visual Basic 6.0 .

The importance of computerized scheduling system is realized when the following factors are considered

Speed and accuracy

Versatility

Ease of communication

Storage capacity

Flexibility

Cost

CONTENTS

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CHAPTER I

INTRODUCTION

1.1 INTRODUCTION ABOUT SALEM STEEL PLANT

Steel authority of India ltd, government of India undertaking has five major units to its credit. These five unit which constitute the SAIL are salem steel plant, Bokaro steel plant, Rourkela steel plant, Bhilai steel plant and Dhurgapur steel plant. As such the SAIL units are individually known for their products and as well as SAIL units. The creditable futures of the SAIL organizations is their factor that, Salem steel plant is one of the kind which produces stainless steel products.

Salem steel plant was commisined in 1981. this plant is geared to produce the cold rolled stainless steel sheets and strips. In variety of grades sizes and finishes.

In Cold rolling mill the manufacturing sequences involve processing of coils through some or all stages of processing viz..

1 coil build up line
2 Annealing and pickling lines---- 2 nos
3 Zo-High sedzimir cold rolling mill
4 Strip grinding line
5 Skin pass mill
6 Shearing line
7 Slitting line
8 Sheet grinding and polishing unit
9 Stretcher leveler
10 Resquaring shear

1.2 INTRODUCTION TO SPARES

Successive breakdowns, low production level, undesirable quality, increasing production costs – the typical picture of most manufacturing complexes in our country. The maintenance manager is tired, worried and tries to get rid of it.

The absence of a systematic and scientific planning of spare parts procurement policy can be reasoned out in most of the cases to play the trick.

Spare parts, therefore, are seen to play a significant roll in the successful implementation of any maintenance program to meet the basic objective of smooth running of the plant at the lowest cost.

Analysis of stored items quite often reveal that the same items are stored at various places under different nomenclature and due to illogical arrangement of stores identification and retrieval of stored items are time consuming. This situation can be attributed to the general practice of requisitioning and storing of items by their trade name and also unawareness of proper identification system items. Identifying and storing of items as per the trade name or by misleading nomenclature leads to duplication, over stocking, obsolesce and deterioration.

Spare parts are secondary items, which are essentially linked with the parent equipment for which they are required. As such they are support for element for the plant and machinery. Unlike the plant and machinery they are not used continuously. In fact the requirements is intermittent extremely variable and unpredictable. The range of plant and machinery in a production unit is limited, but for each machine the whole range of spare part is required.

The minimum quantity of spare part then can be held is one, where as requirements over a given period for machine or even group of machines may be fractional so that stocking just one piece of most spare parts would be more adequate for one machine, out for several machines the frequently failing components are redesigned to make them cheap, accessible and easily replaceable.

These become the fast moving components contrarily, the slow moving components are the enclosed one, difficult to access and usually expensive.
The major part of the range of spare part required by any machine is, there fore slow moving. Since the minimum quantity that can be held is one and spare parts are expensive individually the total stock of such slow moving spares account for 80% to 90% of the spares holdings, yet the service offered by them is small in relation of their value.

1.3 INTRODUCTION TO PROJECT

By analyzing the regular processes and the scheduled maintenance and in particularly the breakdown maintenance of the Salem steel plant the "A" class equipments were found out and the spares manual for nearly more than twelve spares are prepared. Which is nearly nullifies the unwanted shut down and non-production time of machinery.

Finally software for the supplier's Transaction is also made. Which is menu driven program in Visual Basic 6.0 as front end with MS-Access as back end to store the data.

CHAPTER II

LITERATURE SURVEY

2.1 SPARES MANAGEMENT

2.1.1 CODIFICATION

Codification is a process of presenting each item by a number,the digits of which indicates the group, the sub group, the type and the dimension of the item.

The codification process could be obtained from the nature of items in grouping all items of the same metal content, say ferrous, non ferrous etc... The system of codification could be built by the end use of items use of items, that is, items grouped according to maintenance, machine shop etc...

2.1.2 STANDARDISATION

Standardization enables the materials manger to achieve the overall economy ensures interchangeability of parts. A standard is defined as a model or general agreement of a rule established by authority, consensus, or custom, created and used by various levels of interests for instance, an individual may be the starting point of using the standard and then the department will use the same standard to suit its needs. The firm may similarly prepare, by consulting different departments, a standard for guiding the activities.

2.1.3 SOURCE SELECTION

The process of search provides the list of all possible sources, which has to to be trimmed down. The focus here is on more specific information on the suppliers financially strength, quality, facilities, efficiency, industrial relation, technical excellence and position in industry. In other word, we want to identify the possible sources and select such sources, which will meet the delivery and quality requirements in the long run at competitive price levels. The selection of supplier's starts with the floating of enquires by the buyer to the possible sources that are made available through the search process.

2.2 TRANSACTION CONTROL

2.2.1 VALUE ANALYSIS

Value analysis is defined as an organized creative approach, which has, as its objective, the efficient identification of unnecessary cost-, which provides neither quality nor use nor life nor appearance nor customer futures. Value analysis focus engineering, manufacturing and purchasing attention to one objective- equal performance at a lower cost. In other words, functional performance remains unaffected.

2.2.2 REPORTING

Monthly reports consisting of purchases, inventory, stock outs, Cost reduction achieved through material departments. The important aspects in reporting are

1 clarity
2 brevity
3 periodicity

2.2.3 INTEGRATED MANAGEMENT SYSTEM

The distinct advantage of an integrated computer system are that it involves the line personnel and provides timely and quick information on the materials position. It is for operational convenience and not for mere calculations.

1 Long term production schedule
2 Materials manual
3 Requirements of non stock items
4 Material supplied
5 Material requisition from various departments
6 Vendor rating
7 Movement analysis
8 Store accounting
9 Sector wise and category wise purchase list
10 Items out of stock

2.3 VISUAL BASIC 6.0

Visual basic is an ideal programming language for developing sophisticated professional application Microsoft windows. It makes use of graphical user interface (GUI) for creating robust and powerful applications.
The graphical user interface as the name suggests, uses illustration for text, which enables users to in tract with an application. This feature makes it easier to comprehend things in a quicker and easier way.

Coding in GUI environment is quite transition, liner programming methods where the user is guided through a liner path of execution and is limited to a small set of operations. In a GUI environment, the number of options open to the user is much greater, allowing more freedom to the user and developer. Feature such as easier comprehension, user-friendliness, faster application development and many other aspect such as introduction to Active X technology and internet futures make Visual Basic an interesting tool to work with.

Visual basic was developed from the Basic programming language in 1970's, Microsoft starts developing ROM – based interpreted basic for the early microprocessor based computers. In 1982, quick basic revolutionized basic was legitimized as a series development language for MS dos environment. Later on, Microsoft Corporation created the enhanced version of basic called Visual Basic for windows.

One of the most significant changes in Visual Basic is the integrated development environment (IDE). IDE is a term commonly used in programming world to describe the interface and the environment that used to creates the application. It is called integrated because we can access virtually all of the development tools that we need from one screen called inteface. The IDE is also commonly referred to as the design environment, or the program.

2.4 MS-ACCESS

It is a data base management system. It offers capabilities of both partially

relational and object-oriented database systems. A client or front end data base application also in tracts with the data base by requesting and receiving information from the data base server.

It acts as a interface between the user and the data base. The data base server back end is used to manage the data base tables optimally among multiple clients who concurrently request the server for the same data. It also enforces data integrity cross all clients applications and controls data base access and other security.

A data access page is a Web page that you can use to add, edit, view, or manipulate current data in a Microsoft Access database or an SQL Server database. You can create pages that are used to enter and edit data, similar to Access forms. You can also create pages that display records grouped hierarchically, similar to Access reports.

- **Collect and distribute current data in several ways** You can use pages to add, edit, and view data within a Microsoft Access database or Microsoft Access project; you can use them on the Internet or on an intranet, and you can send them in e-mail.

- **View grouped records interactively** On grouped pages, you can view just the details you want by expanding and collapsing group headers. You can also sort and filter records.

- **Analyze data and make projections** You can organize data in different ways using a PivotTable list, make projections and do complex calculations using a spreadsheet control, and view data graphically in a chart.

- **Display HTML text** You can store HTML code in fields in your database and display it as formatted HTML text on the page. For example, if a value in a field includes the HTML tag that formats text as italic, <I>Text</I>, you can use a bound HTML control on the page to display the value in italic text.

- **Use familiar design tools** In Design view, create pages using toolbars, the toolbox, themes, and other features that are similar to the tools you use to create forms and reports.

- Replication Manager, which schedules updates among replicas, determines which objects in the database are

replicated, and manages multiple replica sets at one time. By using Replication Manager, you can see a visual display of all the replicas in a set.

- Microsoft Visual SourceSafe 6.0 (including the Visual SourceSafe Add-in for Access and the Visual SourceSafe Visual Basic Editor Add-in), which supports multideveloper application development.

- ActiveX controls that you can use to add versatility to your applications and duplicate Microsoft Windows 95 functionality, including controls for Internet applications and controls to connect Microsoft Outlook messaging with data and other Office applications.

- Updated Windows API Viewer with enhanced performance. The Windows API Viewer contains declarations and constants used with the Windows 95 application-programming interface (API). You can copy and paste these declarations and constants into your Visual Basic modules.

- The Data Environment, a user interfaces for easily connecting solutions to external databases.

- The Make Add-in feature, which you can use to create an add-in directly from the Visual Basic Editor for a specific Visual Basic Editor host.

- The Package and Deploy Wizard, which you can use to deliver Office programmable solutions for any Visual Basic for Applications 6.0 host to disk, network, and the Web.

- The Code Librarian, a tool for browsing existing source files for code snippets. You can search text, view descriptions and comment headers, and insert the text into your current project.

- The HTML Help Workshop Software Development Kit (SDK), with which you can create Help topics similar to those in Microsoft Office 2000. The SDK includes the HTML Help Workshop and the run-time version to distribute to your users.

- The Agent SDK, which provides programmatic control over Office Assistants you create.

- Microsoft Office WebBot Components, with which you create applets embedded inside Office 2000 documents. With the user interface these applets provide, users don't need to author script and Visual Basic for Applications code to take

advantage of DHTML features. Web Bots are written in Microsoft Script Editor.

- Microsoft Developer Network (MSDN), Office 2000 edition. The entire MSDN library is included, as well as a special default subset of Office and Visual Basic for Applications programming commands.

2.5 WINDOWS 98

Windows is now easier to use, more reliable, and more entertaining than ever. Many of the exciting Windows 98 features are summarized below.

Easier to Use

Navigating around your computer is easier than ever, *desktop* options such as single-clicking to open files and the addition of Browse buttons in every window. You can now use multiple monitors with a single computer, dramatically increasing the size of Workspace. Installing new hardware is easy because Windows 98 supports the *Universal Serial Bus (USB)* standard, allowing you to plug in new hardware and use it immediately without restarting your computer. With Windows 98, you can also use digital cameras and other digital imaging devices.

More Reliable

You can use the Support Online Web site for answers to common questions and to keep your copy of Windows up-to-date. Windows 98 tools can help you regularly test hard disk and check your system files and even automatically fix some problems.

Faster

Windows and programs open faster than ever before. By using the Maintenance wizard, you can easily improve your computer's speed and efficiency. The power management feature allows newer computers to go into hibernation mode and awaken instantly.

CHAPTER III

PROBLEM IDENTIFICATION

3.1 PROBLEM DEFINITION - SPARES MANUAL

The absence of systematic and scientific planning of spare parts in the Salem Steel Plant is the key area found to be improved. This lack of interchangeable or replaceable elements i.e., Spare Parts handling leads us the necessity of a very care full study of the spare parts management.

Spare parts are secondary items which are essentially linked with them parent equipments which they required. A comprehensive spare parts control system is aimed at accomplishing

1 to reduce the capital tied up in spares to a minimum

2 to ensure the availability of material when required

3 to minimize the losses in spare deterioration, obsolescence, damage or wastage

The system should function to determine the items to be Kept to lay down the specifications of the item, to determine quantity of stock, to maintain proper records, to check up physically, to keep perpetual control.

We have successfully executes all and a clear manual is prepared. Spare manual is the solution to the problem.

3.1 PROBLEM DEFINITION – TRANSACTION CONTROL

The Salem Steel Plant has large number of suppliers and supplying large number of items. The existing system f transaction control is of manual only. This leads to some difficulties such as..

Manual work is tedious and time consuming.

Updating are done manually

Change of errors expected in recording

Large volume file and register will occupy much space

Reports are to be prepared manually after gathering data.

The distinct advantages of an integrated computer system are all that involves the line personnel and provides timely and quick information.

We successfully executed the project, programs are created for the total supplier transaction control. The software package will give the remedy for the existing problem.

CHAPTER IV

SPARES MANUAL DESIGN

4.1 SPARES

4.1.1 INTRODUCTION

Any physical facility needed for manufacturing process is made up of either a single or combination of several parts. The interchangeable or replaceable elements are generally termed as spare parts.

The spare parts can be classified as the items which do not form a part of the product bt are consumed in the production process, maintenance repair and operating supplies like spare parts and consumable items.

Spare parts are secondary items, which are essentially linked with the parent equipment for which they are required. As such they are support for element for the plant and machinery. Unlike the plant and machinery they are not used continuously. In fact the requirements is intermittent extremely variable and unpredictable. The range of plant and machinery in a production unit is limited, but for each machine the whole range of spare part is required.

The minimum quantity of spare part then can be held is one, where as requirements over a given period for machine or even group of machines may be fractional so that stocking just one piece of most spare parts would be more adequate for one machine, out for several machines the frequently failing components are redesigned to make them cheap, accessible and easily replaceable.

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The major part of the range of spare part required by any machine is, there fore slow moving. Since the minimum quantity that can be held is one and spare parts are expensive individually the total stock of such slow moving spares account for 80% to 90% of the spares holdings, yet the service offered by them is small in relation of their value.

4.1.2 MAINTENANCE OF SPARES

Maintenance of spares are those which are consumed regularly like bearings, belts, wire ropes. Normally these are available in plenty and the spares can be stocked after building a data based on the consumption pattern. It is suggested that maintenance may be divided into four parts as in the defence.

1 Day to day maintenance
2 Preventive Maintenance
3 Breakdown maintenance
4 Capital repair & overhaul

4.1.2 ROTABLE SPARES

Costly spares such as pumps engines and mortar are not usually Scrapped. These are repaired and stored for use and usually interchanged.

4.1.3 INSURANCE SPARES

Insurance spares are those vital parts of machine, which have a life nearly equal to that of machine itself and are held as a stand by against any breakdown.

Like. stand by compressor in process industries and transformers in distributing stations etc... This stand by spares, which are costly, can be capitalized and also known as capital spares.

4.1.4 OVERHAULING SPARES

Overhauling spares are these, which are specially, needed during the regular overhauls of the original equipments.

4.2 CONCEPTS OF SPARES MANAGEMENT

Inventory in a company of medium size comprise of thousands of items in stock. the control of all these items creates a serious problem to the management in keeping track of each & every item & having the same extent of control in each of the items. in general, it can be said that over stocking or stock-outs do not affect all the items in store. It is quite common to come across some items which move so fast that it is difficult to keep them replenished, while in the next bin there are other items that have been collecting dust or rust for weeks or even months & tying up quite a good amount of capital. Therefore ,in order to execute proper control is necessary to take selective approach &find out the attention require for each item according to its importance. this essential for achieving maximum benefit with minimum efforts.

In order to segregate items in order of importance on the basis of selective approach, different analysis have been developed to help in bringing practical solution to the problem of controlling inventory of spares. each of this analysis in based on different criteria and is having specific advantages and purpose. the most and important of all such analysis is the

ABC analysis
HML/XYZ analysis
FSN-analysis
VED-analysis
SDE-analysis.

Each one of these analysis to be used only when & where found necessary & useful .otherwise turn to be of academic interest only .

ABC-ANALYSIS

This analysis is done for items on stock & the basis of analysis is the annual conception in term of money value. if analysis is the annual conception of every item is worked out, it may be noticed that in general only about 10% of the items account for 70% of total annual consumption(a item),about 20% of the items account for 20 % of total annual consumption (B item),and rest of 70 % of items account for only 10% of the annual total consumption(C item).

The pattern of ABC analysis can be clearly presented on a curve with percentage of items in X-axis and percentage of total annual usage amount on Y-axis .

A. Calculate annual usage of each item in RS,by multiplying annual usage in unit by unit price of the item.
B. Arrange the Items in descending order of annual usage in Rs.

C. Accumulator the number of items and their annual usage in Rs. As percentage of total number of items and total annual usage in Rs.
D. Plot the above two figures in descending order

For the purpose of inventory control is not necessary to draw the ABC-curve and in fact, while dealing with thousand of items, the calculations involved becomes too cumbersome and laborious. Primarily the analysis is aimed at segregating the items into three categories and the limits of annual consumption for each of the category. In practice therefore a simplified method of trial and error is adopted, which is described below:

After calculating the annual consumption in Rs. for the item, arbitrary limits of annual consumption figures are fixed for the three categories; e.g., above Rs.10,000 are A item; between Rs.10,000 and Rs.5,000 are B item and below Rs.5.000 C items. Segregation is done initially on this basis for A and B item and number of items in each category and the annual consumption values of each category are totaled. The percentage of theses with total are worked out and checked for recommended values of A and B class. If found unsatisfactory new limits are chosen and percentage are calculated once again. Within one or two trails it is possible to segregate the items in A, Band C categories.

The criteria for ABC—analysis on the basis of percentage of items and percentage of total annual consumption (i.e. 10-70,20-20 and 70-10 respectively) are only guideline for segregation. In many cases, how ever, these figures are different and in fact A items are still fewer in number representing greater bulk of money while above should not be followed blindly and the limits for A, Band C categories are to be fixed suitably keeping the guidelines in mind.

HML – ANALYSIS

Since the total annual usage is considered in case of ABC Analysis, we may come across quite a few items which fall in C or B category, although the unit cost (cost per piece/unit) is quite high. If controls are exercised on the basis of Analysis only, the importance of these items will be less than A or B items, even though the inventory or transaction of one unit of these items will mean quite a lot of money. Therefore, it is necessary that the unit cost is also considered here in order to find out the importance of the items on the basis of unit cost. Limits of unit costs are fixed for high cost items (H), Medium cost items (M) and low cost item (L) and all the items are segregation into H, M & L categories depending on their unit cost.

While deciding about the unit cost we have to be careful about the unit we choose. The unit for the same item may be Tonne /Kr/Lb., or no./dozen/gross and so on. And the results of the analysis will depend on the unit we choose. Therefore to have a common base it is recommended that units in which the items are issued from stores are to be used for the analysis.

This analysis is quite helpful in deciding the safety stock in relation to the availability of the material (SDE-Analysis).

SDE-ANALYSIS

The criteria for this analysis is the availability of the materials in the market. In industrial Situation where certain materials are in scarce supply (specially in a developing country like ours), this analysis proves to be very useful and gives proper guideline for deciding the inventory policies.

The characteristics of the three categories –SD&E-are given below:

S- Refers to scarce item, items which are in short supply. Usually these are raw material, spare parts and imported items.

D-stands for difficult item, items which are not readily available in local markets and to be procured from far off cities, or items for which there are a limited number of suppliers; or items for which quality suppliers are difficult to get.

E - refers to items which are easily available in the local markets.

VED-ANALYSIS

VED stands for vital, essential and desirable. This analysis specially pertains to the classification of maintenance spares are split into three categories of importance from the view points of functional utility, the effects of non-availability at the time of requirement of the operation, process, production, plant or equipment and the urgency of replacement in case of breakdown. Some spares would be so important their non-availability would render the equipment or a number of equipment in a process line, completely inoperative, or would cause extreme damage to plant, equipment or human life. On the other hand some spares would be non-functional, serving relatively unimportant purposes, and their replacement could be postponed or alternative method of repair found. All these factors will have direct effects on the stocks of spares to be maintained and therefore it is necessary to classify the spares in the following categories:

V- Vital item which render the equipment or the whole line operation in a process totally and immediately inoperative or unsafe; and if these items go out of stock or not readily available, results in loss of production for the whole period.

E- Essential items which reduce the equipment's performance but do not render it inoperative or unsafe; non-availability of these items may result in temporary loss of production or dislocation of production work; replacement can be delayed without affecting the equipment's performance seriously; temporary repairs are sometime possible.

D- Desirable items which are mostly von-functional and do not affect the performance of the equipment.

As the common saying goes "vital few-trial many", the number of vital spares in a plant or a particular equipment will only be a few while most of the spares will fall in the desirable and essential category . however the decision regarding the stock of spares to be mainted will depend not only on the critically of sprees from the functional point view (VED-Analysis) but also on the annual consumption cost of spares (ABC-Analysis) & therefore ,for control of spare parts both VED &ABC analysis are to be combined. This will give rise to 9 combination for the provisioning of spares of stock.

Control of 'A' items

The annual consumption cost of few 'A' items being very high, any small percentage saving in them will bring in large benefit such as reduction in expenditure ,replace of locked-up capital etc. normally these items are to be controlled directly by the top men in the department (materials manager/purchase officer/ store officers). All endeavors should be made to reduce the inventory, safety , stock , cost of purchasing , consumption , waste etc. the measures taken for control of 'A' items are described below:

A. Must be ordered frequently & scheduled to arrive just before use , to reduce capital tied up ; annual contract for suppliers with staggered deliveries is economical.

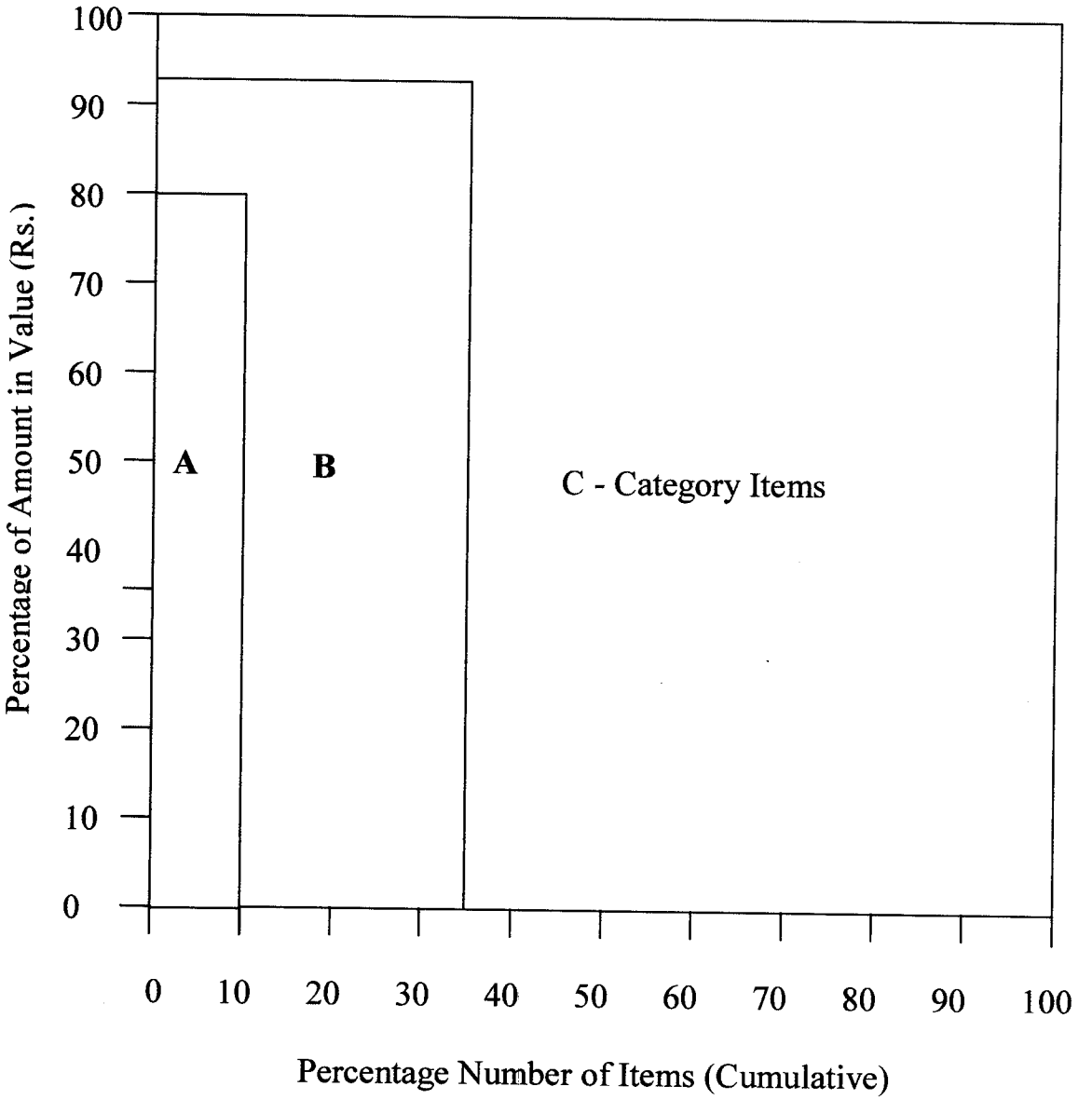
B. Minimum safety stock or even fluctuating safety stock should be kept by maintaining good vendor relationship , speculation of market condition , supply condition etc .

C. Stock position , consumption pattern , ordering point , ordering quantity & safety stock should be reviewed more frequently.

D. Precise quality specification & material standard should be evolved.

E. Purchasing must take maximum effort to buy these materials at competitive prices.

ABC - ANALYSIS



Though inventories are idle resources & block the working capital , these reasons are described bellow:

a. To provide sufficient material to meet demands with minimum delay.

b. To provide protection against uncertainty & sudden up-surges in demand.

c. To carry a reserve stock with a view to prevent stock outs.

4.2.1 What are the components (spares) taking to survey

1. Pneumatic cylinders
2. Hydraulic cylinders
3. Filters
4. Bearings- there are 650 verity in CRM
5. Filters
6. Belt & couplings
7. Hydraulic motors
8. Hydraulic pumps
9. Hydraulic filters
10. Pneumatic motors
11. Pneumatic pumps
12. Pneumatic filters
13. Direction control valves
14. Rolls
15. Gear box
16. Rails used in mills
17. Circlips
18. Cardon shaft.

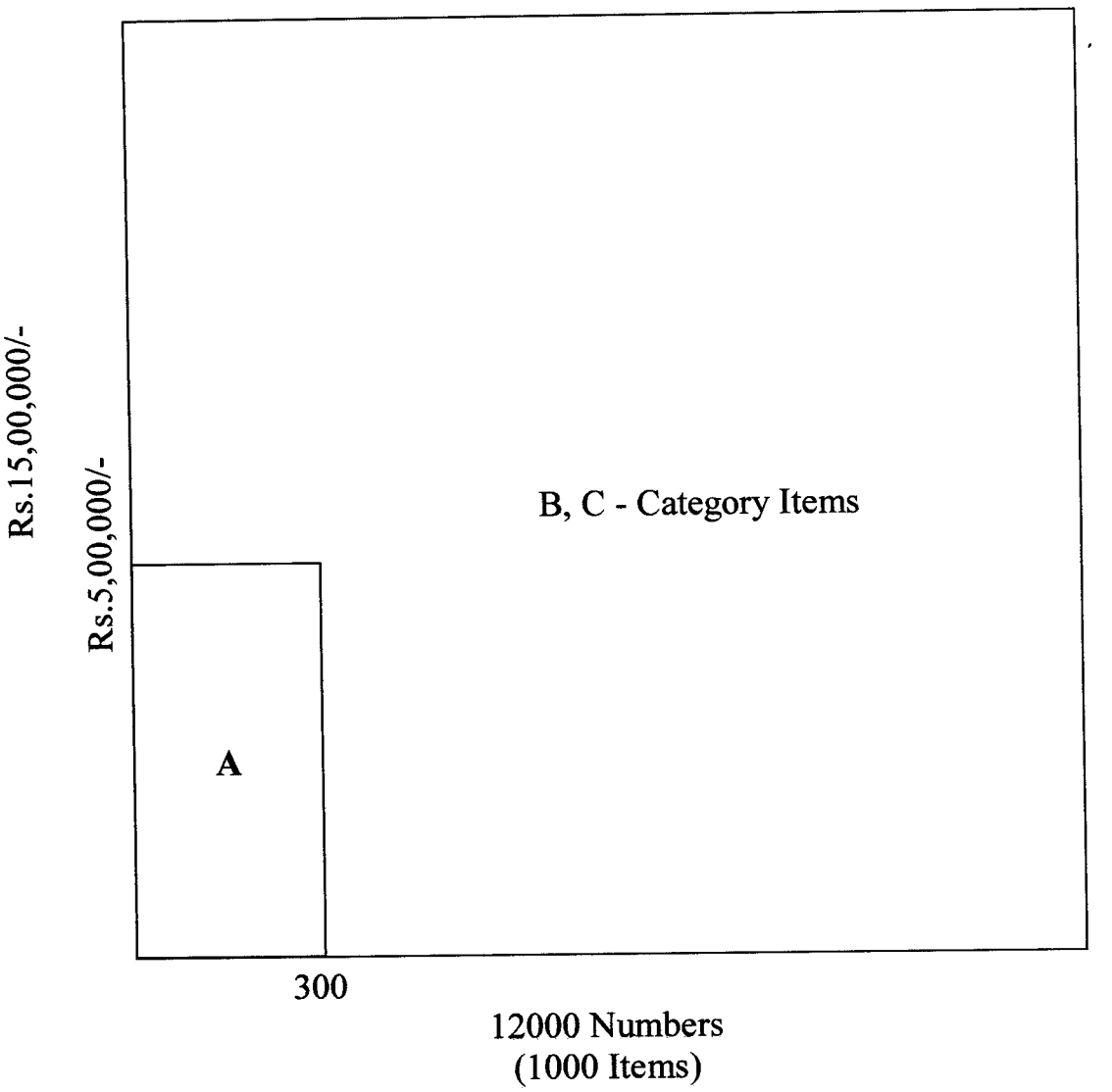
In salem steel plant ,cold rolling mill there are more than 1000 spares & consumable items. out of this 1000 items more than 12,000 verity of spares & consumable items are available.

It is not possible to make survey & create spare manual for all spares & consumable items.

So ,I have decided to take survey for above components only . I have choose components based upon in ABC-ANALYSIS.

In ABC-ANALYSIS A category items only to made survey.

ABC - ANALYSIS OF SPARES AND CONSUMABLE ITEMS IN COLD ROLLING MILL



In cold rolling mill they are allotting Rs 15 lakhs for purchasing spares & consumable items in one year.

Out of these 15 lakhs just 100 components are consuming Rs 10 lakhs (mainly bearings) .

Out of these 100 A category components I made survey for just 12 components.

4.3 IMPORTANCE OF SPARE PARTS MANAGEMENTS

The present thumb rule followed is to cover the spare parts provisioning for two years of operation. This may become totally inadequate in later years because of the higher wear and tear of the components due to which the frequency of faults bends to increase. Also due to obsolescence, change in process etc... the availability of spare parts gradually more and more difficult. In view of this, there is an absolute need of making a life assessment of the types and quality of spares required. This is a difficult engineering task and has t be done in consultation which the manufacturer expertise available inside and other industries.

The importance of inventory management in general and spare parts management in particular in a national economy. Many firms reports that they do not have a proper system of logging machinery downtime due to spare parts stock out and then resultant monitory loss.

The spare parts constitute about 75% of their maintenance expenses in refineries and steel plants while it is 50% in textile mills.

4.4 SCIENTIFIC INVENTORY CONTROL OF SPARE PARTS

The industry is fated with a grave problem of high level of spare parts Inventory, there by locking up a sizable amount of capital which by better management could be reduced or released for protective purposes. It is estimated the capital so locked up is anywhere between Rs 5000 and Rs 25000 million. As per survey shown that spare parts inventory to the tune of 40% in terms of value is obsolete.

The objective of effective spare parts inventory management is to provide right parts, in the right quantity, in the right place at the right time and at the right cost.

4.5 FACTORS INFLUENCING SPARE PARTS INVENTORY

1 Demand rate
2 Availability
3 Lead time
4 Preventive Maintence
5 Standardization of production equipments and materials
6 Type of industry
7 Criticality
8 Detailed drawing of spares
9 Government rules and regulation
10 Capital availability

4.6 DESIGN OF SPARES

Spare parts are required for routine, i.e. preventive Maintenance, repair or break down maintenance and for overhaul or Shutdown maintenance. During the design phase, the maintenance engineers should associate, with design process to simplify selection of accessible, failure-prone components as spares.

Opportunities for such simplifications are quite considerable but they need to be consciously incorporated and examined. The best person to influence to design is maintenance engineer.

Another very important area, where the designer tends to slip up often, is the use of non standard hardware or non standard parts. It s known that the higher the consumption rate, the lesser is the safety stock required to give a specified level of assurance. The benefits of standardization and interchangeability should not be under rated. The designer is likely to design each part of the mechanism purely on the basis of engineering stress and strength. However, in some cases it will be cost effective to have higher sizes and slightly more expensive part only to ensure the standardization, standardization in the case of hardware, nuts and bolts, fasteners and so on.

Proliferation of different sizes of nuts and bolts in a store is in deed confusing. Nuts and bolts having different number of threads or patterns of threads tend to get mixed up, case interference and damage. Human error is the most frequent problem caused by non-standardization of similar looking articles.

Similarly, it is useful for the maintenance engineer to point out to the designer such as those expensive and wearing parts in which the wearing portions can be built up by welding, soldering, razing etc.. Some times, the designer uses some unusual materials for which no standard repair techniques exist. If it is not possible to insist on standard materials in such cases, at least these interaction will give the maintenance engineer advance notice to develop new repair techniques on the basis of material specifications and property provided by the designer.

CHAPTER V

SUPPLIERS TRANSACTION CONTROL

5.1 INTRODUCTION

Computer and information technology has been utilized to support logistics for many years. Information technology is seen as the key factor that will affect the growth and development. The order processing and the information system forms the foundation for the corporate management and it is an area that offers considerable potential for improving performance. Hence the Salem steel plant's complete suppliers Transaction Control has governed by these Technologies.

5.2 ADVANCED ORDER PROCESSING SYSTEMS

The process of computerized order entry no component of the logistics function has beneficial more from electronic and computer technology than order entry and processing. The suppliers transaction Control can communicate useful sales information ,market analysis forecasting and for cash –flow planning.

5.3 DATA BASE MANAGEMENT

A database management system allows application programs to retrieve required data stored in the computer system. A database management system must store data in some logical way showing now different pieces of data are related in order form for retrieval to be efficient. This is a critical issue in logistics because of the large volume of data generated which may require analysis at a later date.

The database management system must be able to use the item no to reference the order and "pull up" the pertinent data. If a buyer sees that the two suppliers have been used the buyer may want the system to provide the transaction history with those suppliers over a given time period for all purchased items. The database management system must have the flexibility to sort the data in variety of ways that are meaningful to the user.

Relational data base structures are popular today because they allow access and sorting of data by relating the data to other data in many ways. This allows a great deal of flexibility increasingly computers are using what is known as a Local Area Network (LAN) . This consists of a mini computer linked to a number of microcomputers or terminals, which allows access to a conman database, software and other system futures.

Regardless of the sophistication of the software and hardware a system can't provide good results. if the data in the system are not accurate and timely. This system integrity is vital. If people do not use the system consistently the system will quickly be inaccurate. Once a system has data accuracy problem it is very difficult, costly and time consuming to correct.

5.4 INFORMATION FLOW

5.4.1 ACTIVITIES IN MOTION

The processing of transaction sets many logistics activities in motion such as

Determining the transaction model carrier and loading sequence

Inventory assignments and preparation of picking and packing lists

Warehouse picking and packing

Automatically printing replenishment lists

5.4.2 ORDER PROCESSING AND INFORMATION FLOW

Processing an order requires the flow of information from one department to another as well as the referencing or accessing of several files or databases such as inventory availability and transportations schedules. Depending on the sophistications of the order processing system and the corporate management information system. The quality and speed of the information flow will vary affecting the manufacturing ability to provide fast and consistent order cycle times and to achieve the transportation consolidations and the lowest possible inventory.

5.4.3 INFORMATION HAS VALUE

Indeed timely and accurate information has value. Generally Manual systems are very slow inconsistent and error prone. Information delay occurs frequently some comma problems include the inability to detect the prevailing error access timely credit information or determine inventory availability.

Automating and integrating the order process frees time and reduces the like hood of information data. Automation helps managers integrate the logistics system and allows them to reduce cost through reduction in inventory and freight rates. He communication delay is cleanly a key factor in achieving least total cost logistics.

5.5 SOFTWARE DESIGN

5.5.1 DESIGNING THE INFORMATION SYSTEM

The design of logistic management information system should begin with
the survey of both customers and the determination of standards of performance for meeting these needs. Next customer needs must be matched with the current abilities of the firm; the current operation must be surveyed to identify the areas that will require monitoring and improvements.

It is important at this stage to interview varies levels of management. In this way the organization can determine what strategic and operational decisions are made and what information is needed for decision making and in what form.

The next stage is the survey current data processing capabilities to determine what change must be done. Finally the system must support the management uses prevailingly described and must have the capabilities of moving information from location where it is collected to the appropriates levels of management.

5.5.2 SOURCES OF DATA

Data for the logistic information system can be from many sources. The most significant source of data for the common database are

1 the order processing system
2 company records
3 industry\external data
4 management data
5 operating data

5.5.3 SOFTWARE DESIGN

The store has many suppliers supplying to it. A supplier can supply one or more items. The store wants to record details of all available items in a VB front end menu and MS access backend.

The details to be stored are

Item code
Item description
Price
Quantity on hand
Record level

Many supplies can supply the items sold in the store and one supplier can supply many items. Each item is supplied at a particular price.

The details of suppliers are

Supplier identification no
Supplier name
Address
City

All transactions between the store and the supplies need to be recorded everyday.

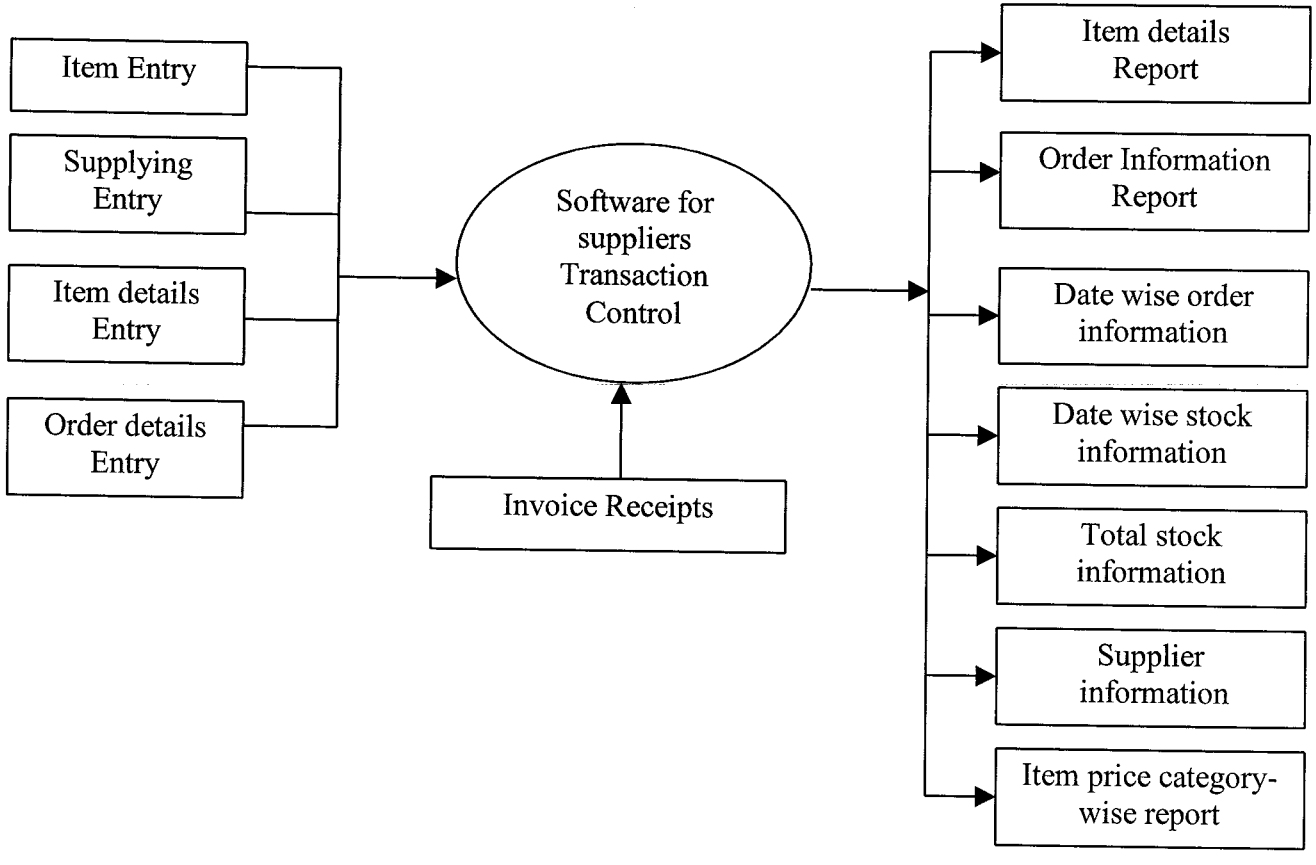
The system generates an order form which contains

Order no
Item code(s)
Suppliers identification no
Quantity ordered

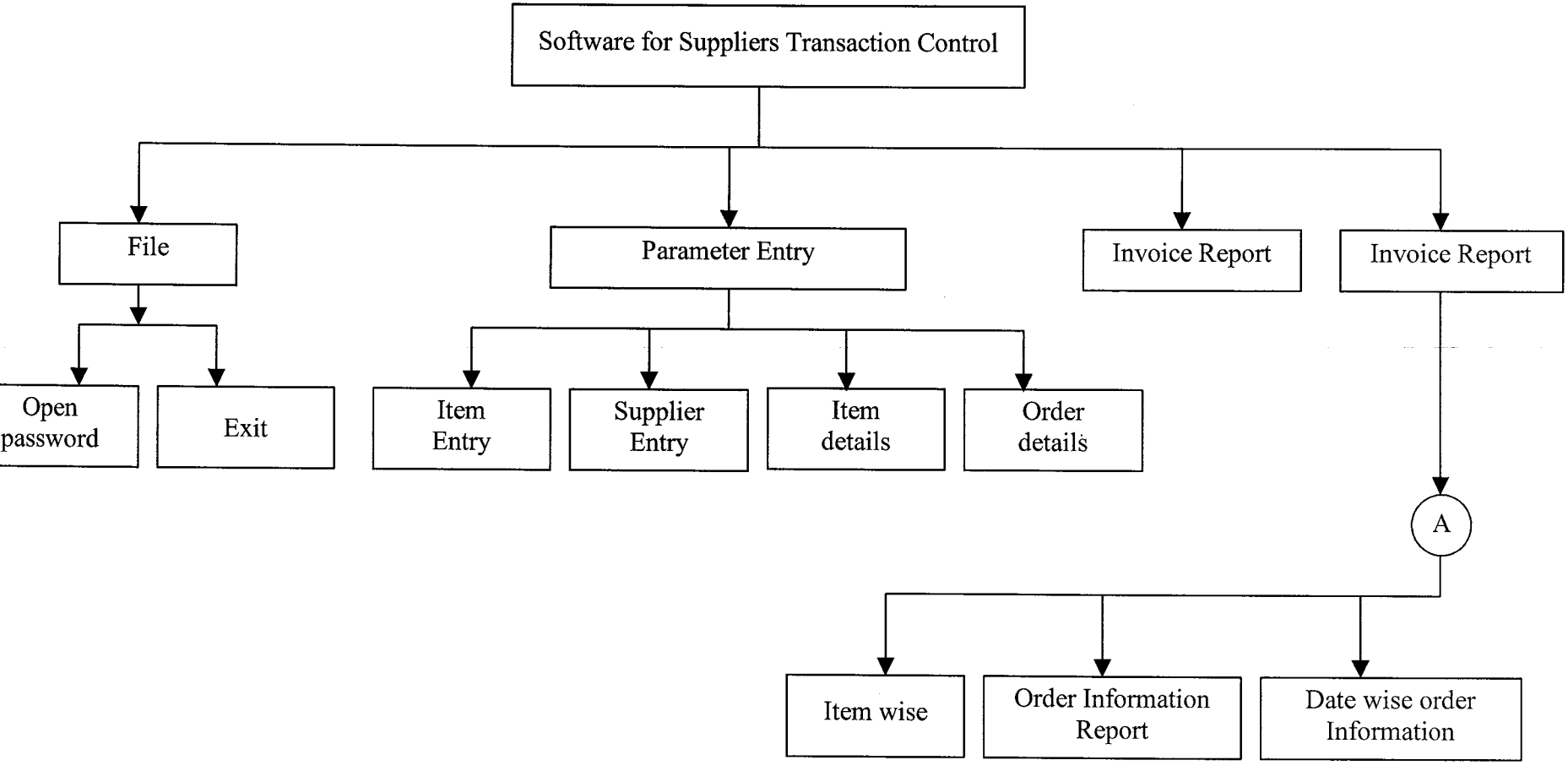
The contents of the main menu are as follows

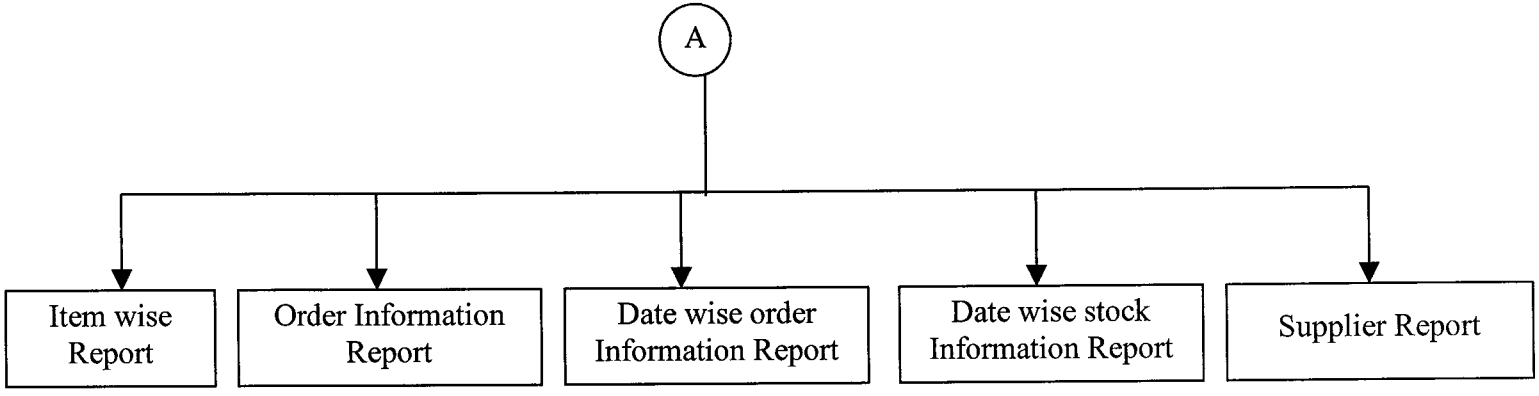
1 maintain suppliers details
2 maintain item details
3 maintain transaction details
4 print stock availability report
5 exit

5.6 Data Flow Diagram



5.7 System Flow Diagram




A
Item wise Report
Order Information Report
Date wise order Information Report
Date wise stock Information Report
Supplier Report

CHAPTER VI

IMPLEMENTATION AND INTERPRETATION

6.1 IMPLEMENTATION OF SPARES MANAGEMENT

The spares manual is prepared and placed in the manufacturing line to the knowledge of workers. Whenever a break down occurs in any part or place of machinery, our spares manual will give the ultimate information regarding the damaged parts and also gives the complex information about the inner parts of the machinery provided that the location of the machinery is known.

6.1.1 SYSTEM IMPLEMENTATION

While implementing the system it should possess the following criteria

1 System testing
2 Education training
3 Documentation
4 Change over

SYSTEN TESTING

System testing means identifying errors presenting in the proposal system to the administration and changes the modification and also check s the readability, quality of the output.

EDUCATION AND TRAINING

The purpose of training is to ensure that all the personnel that are activated with the system should possess the knowledge of the system to the end user to get training and uses the system effectively.

DOCUMEMTATION

After completes the jobs of testing and training the whole system was documented with the presence of modified problem parts and the related parts.

CHANGE OVER

The system is very dynamic and more flexible. The system should easily cope with the future change with minimum limitation.

CHAPTER VII

CONCLUSION

CONCLUSION

The present system of failure rectification during preventive and breakdown maintenance of Salem steel plant has no clear guidance for handling the spare parts. The lack of any standard reference for the machinery leads to a greater down time during breakdowns.

Our Spares manual will be the right solution for the current crises. The manual gives the clear idea about the machinery including

Spare location
Material code
Modal no
Bore size
Rod size
Stroke
Make
Seal kit details
Drawings

Hence the search for any data will end in our Spares Manual.

The "Software Package" for the suppliers transaction control maintain s the details about

Item details
Order details
Supplier details
Reports

Everything regarding the suppliers transaction is integrated and automated. Hence it is concluded that the software which has been designed for the transaction control completely eliminates the shortcomings of the present system. Also this system is being effective by update their works, and would never mind affording a higher installation cost. Implement the software and run for several months, in which way we will have get some ideas about the short comings of the software. The software will become more effective , by add the required modules.

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BIBILIOGRAPHY

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APPENDIX I

SPARES MANUAL

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

SL NO	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	SEAL	PISTON ROD DRG NO	REMARKS
1	COIL HEIGHT DETECTING DEVICE	ITC 63 C 70 B 595 - 75	1	63	35.50	560	T			NO SPARE
2	COIL OPENER 661504304048	H 160 80*45CBCM –48 (MILL 1)	1	80	45	480	W			1 NO WINTROL SPARE AVL
3		ITC –80B 70B 480 –AB (MILL 2)	1	80	45	480	T			
4	COIL OPENER 661504304060	H6 H160 –80*45 CBCM – 600 (MILL 1)	1	80	45	600	W			1 NO WINTROL SPARE AVL
5		ITC 80 B 70B 600 – AB (MILL 2)	1	80	45	600	T			
6	FEED LEVCELLER LIFT /LOWER	H 160 –250 * 140 CBCF –130 (MILL 1)	1	250	140	130	W			1 NO WINTROL SPARE AVL
7	MILL 2	MILL 2 TAIO CYL	1	250	140	130	T			NO SPARE
8	PUNCH ROLL BEBORE FEED LEVELLER 661504304006	H –160 –1000*56 CBHF –60 (MILL 1)	1	100	56	60	T			

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	SEAL KIT MATL. CODE & DRG NO	PISTON ROD DRG NO	REMARKS
	MILL 2	1FC 80 B 70B 60 AB(MILL2)	1	100	560	60	T	651120210302		NO SPARE
	MAIN TABLE LIFT / LOWER 661504307068	H 160 –160 *90 CBCM-675 (MILL 1)	1	160	90	675	W	661504030150		
		70H6 –1CA 160 B 70B 675 AB (MILL2)	1	160	90	675	T	65112050502		
	SUB TABLE IN/ OUT	H160-80*45CBLM2100 (OBSOLETE REPLESED BY ONE OMR 200 HYD MOTOR)	1	80	45	2100	W			1 SPARE AVL
	SECOND INTER HOLDUP 661504503004	1A – 1FA 63B – 70B 40-AB -5	1	63	35.50	40	T	661504050050 654420340602		NO SPARE
	WORK ROLL HOLD UP 661504502022 661504810003	1A-1FA-40C-70B 215-AB-LN-5	2	40	18	215	T	661504050010 661504050011 661504050012 MMB/ 5111 /078	MMB / 5111 / 079	
	VELJAN CYL (SPARE)	1	1	40	25	215	V	661504020005		

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	SEAL KIT MATL. CODE & DRG NO	PISTON ROD DRG NO	REMARKS
	LOWERSCREW DOWN 661504560501	1A-1FA-125C-70N135-AO-OS	2	125	56	132	T	661504050080 651120430202 MMB / 5111 / 144	MMB / 5111 / 150	1 TAIYO SPARE AVL
	UPPER SCREW DOWN 651120420101 6615045080113	1A-1FA-180C-140N-132-B0-0-S	4	180	80	132	T	651120420302		4 SPARE CYL AVL
	PRESS BOARD 661504507012	1A-1FA-160C-70B-120—BC-O	4	160	71	120	T	661504050090 651120340802		NO SPARE
	LOWER WIPERS 661504503010	1A-1FA-63B-70B-300-BC-Y-LN	8	63	35.50	100	T	661504050050 651120310602		NO SPARE
	UPPER WIPERS 661504503030	1A-1FA-63B-70B-300-AB Y-LN	8	63	35.5.0	300	T	66150405002 6511203606200		NO SPARE
	SPRAY HEADER OPEN/CLOSE 661504502002	1A-1CA-40B –70N – 165 -AO	2	40	22	16	T	661504020005	MMB 5111 / 099	1 VELJAN SPARE AVL
		VELJAN CYL (SPARE)	1	37.6	25.4	16.	V	661504020005		

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

L O	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	I N S T QTY	B O R E MM	R O D MM	S T R K E	M A K E	SEAL KIT MATL. CODE & DRG NO	PISTON ROD DRG NO	REMARKS
3	GAMMA RAY IN / OUT (MILL-1)	1A-1LB63B-70B 1300-BA-Y-LN	2	63	35.50	1300	T	6615040500050 MMB 5111 / 122		1 SPARE AVL
	MILL_1 SPARE	VELJON SPARE (SPARE)					V			
	GAMMARAY PROTECTION/ IN / OUT(MILL-2)	ITC-63B-70B-1300-BC	2	63	35.5.	1300	T	651120310602		NO SPARE
4	GAMMARAY GAUGE SCANING (MILL-1)	IA-ITC –63-70-B400-AB-Y-LN	2	63	35.5.	400	T	661504050050 MMB 5111 /122		1 SPARE AVL IN GENERAL STORE
5	UPPER STRIP GUIDE 661504503097	IA -ITC-63B-70B 970-BC-LN	4	63	35.5.	970	T	66150450050 MMB / 5111 / 122		NO SPARE
6	LOWER STRIP GUIDE 661504503073	IA ITC-63B-70B400-AB-Y-LN	4	64	35.50	730	T	661504050050 MMB / 5111 / 122		
		VELJON CYL (SPARE)	1	63	36	730	V	MMB 5112 / 025		1 VELJON SPARE AVL
7	PUNCH ROLL UP /DOWN	ITC 50B 70B 530BC	4	50	28	530	T	661504030080 651120260402		

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

SL NO	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	SEAL KIT MATL. CODE & DRG NO	PISTON ROD DRG NO	REMARKS
28	STREIPER PLATE 661504304155	H160-80*45 CBCM-1550 (MILL-1)	4	80	45	1550	W	661504030080		1 WINTROL SPARE AVL
		MILL-2(TAYO)	4	80	45	1550	T	651120200202 651120302		
29	OUTBOARD BEARING OPEN/ CLOS 66150430012	H160-200*110 CBTM-615(MILL-1)2	2	200	110	615	W	661504030180		
		MILL-2(TAYO)	2	100	110	615	T	6512021402		
0	OUT BOARD BEARING SLEEVE 66150430012	H160-100*56CBTM-115(MILL-1)	2	100	56	115	W	6615604030100		
		1TC –100870B115AD (MILL-2)	2	140	60	115	T	651120210302		
1	MILL LUBRICATION VALVE 3 WAY	IMPORTED CYL VALAE ASSY 200 DIA DRG NO 10Q-035-349	2	140	60		T	65110120502 651120530502 MMB /5111 / 143		NO SPARE

HYDRAULIC CYLINDERS &PNEUMATIC CYLINDERS—Z MILLS

SL NO	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	SEAL KIT MATL. CODE & DRG NO	PISTON ROD DRG NO	REMARKS
2	BEARING LUBRICATION 3 WAY VALAE	IMPORTED CYL VALVE ASSY 125DIA DRG NO 10Q-035-347	2	100	45		T	651110530502 651120530502		NO SPARE UNIT
3	DC MOTOR CLUTCH							651120550702		NO SPARE
4	TR EXPAND ROTATING CYL 651110180200		2	930	280	55	T	651120180202 651110180205 651110180205 MMB / 51111 /060		NOSPARE
5	POR EXPAND ROTATING CYL 651110040200			460	160	145	T	651120040202		NOSPARE
6	MILL HOOD RETRACTION MILL-2		2	80	45	2600	T	651120120302		
7	RECOVERY FILTER SHELL OP / CL MILL-1		25							SPARE INSTALLED IN S G L

Z MILL 1 HYDRAULIC SYSTEM FILTERS

SL NO	LOCATION & DESCRIPTION	MATERIAL CODE	MICRON RATING	MMB DRG. NO	PRESSURE BAR	MAKE
1	POR GEAR LUB SYS OIL FILTER LN 10					TAISEI KOGYO JAPAN
2	POR EPC SUC FILTER ASSM VN-12A- 150 MICRON	651120080201				TAISEI KOGYO JAPAN
3	POR EPC SUC FILTER ASSM P-VN-12A- 150 MICRON	651120080207				TAISEI KOGYO JAPAN
4	POR EPC LINE (MAG)FILTER FH –10-40 MICRON	651120080207				
5	POR EPC LINE FILTER ASSM UH- 10- 40 MICRON	651120080203				TAISEI KOGYO JAPAN

Z MILL 1 HYDRAULIC SYSTEM FILTERS

SL NO	LOCATION & DESCRIPTION	MATERIAL CODE	MICRON RATING	MMB DRG. NO	PRESSURE BAR	MAKE
6	SD SUCTION FILTER ELEMENT FOR MAIN & RECIRUCLATION PUMPS ISV-12-SUR-150 MESH	651110510401 651111000145	150	MMB/ 5111/ 050		TAISEI KOGYO CO JAPAN
7	SD RECIRCULATION LINE FILTER LUD-12-10	651110510402		MMB/ 5111/ 052		TAISEI KOGYO CO JAPAN
8	SD RECIRCULATOIN EARTH FILTER LINE PR. FILTER ELEMENT LND-06-10	651110510403		MMB/5111/052		TAISEI KOGYO CO JAPAN
9	SD MOOG VALVE 73-103 CARTRIDGE MAIN	651110510303				MOOG
10	SD MOOG VALVE 73-103 CARTRIDGE PILOT	651110510303				MOOG

Z MILL 1 HYDRAULIC SYSTEM FILTERS

SL NO	LOCATION & DESCRIPTION	MATERIAL CODE	MICRON RATING	MMB DRG. NO	PRESSURE BAR	MAKE
11	AUX HYDRALICS RETURN LINE FILTER	651110500412				VICKERS
12	AUX HYD SUCTION FILTER ELEMENT	651110500402				VICKERS
13	JACKUP PUMP PR FILTER ELEM SF-20/ 50S	651110630411				WAKO JAPAN
14	JACKUP PUMP SUCTION FILTER LMC-06-100	651120550102	100			WAKO JAPAN
15	GEAR LUB FILTER GA-MSCF-38-6095/ 00	651100540401	120			OTOKLAN MUMBAI
16	BRG LUBN INDL WATER LINE STRAINER 125NB ,BASKET TYPE ,2500 LPM					OTOKLAN MUMBAI

Z MILL 1 HYDRAULIC SYSTEM FILTERS

SL NO	LOCATION & DESCRIPTION	MATERIAL CODE	MICRON RATING	MMB DRG. NO	PRESSURE BAR	MAKE
16	SD MOOG VALVE 73-CARTRIDGE MAIN	651120510302				MOOG
17	SD MOOG VALVE 73-CARTRIDGE PILOT	651110510303				MOOG
18	AEX HYD RETURN LINE FILTER 25 MIC –VSI	651120500400				VICKERS
19	AEX HYD RETURN LINE FILTER-VSI/MS 2015	651120500401				VICKERS
20	AEX HYD RETURN LINE FILTER OFM- 201-25	651120500402				VICKERS

CBL BEARING SURVEY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
1	ENTRY COIL CAR	AXLE BERAING 346-092/ 05	20220 MB	4	951136110015
2	ENTRY COIL CAR	COIL CAR DRIVE CHAIN TENSIONER SPROCKET 348-088 / 05	6010.2RS	2	951121905022
3	ENTRY COIL CAR	COIL CAR ROLL BER 346-88/ 03	21312C	4	951121905022
4	PAY OFF REEL	GEARBOX 1- STAGE 341-481 / 06	23220	4	951136910011
5	PAY OFF REEL	GEARBOX 2- STAGE 341-482 / 06	24126	2	951137413011
6	PAY OFF REEL	GEARBOX 3- STAGE 341-482 / 07	23136	2	951136818011
7	PAY OFF REEL	MANDREL SHAFT BRG 345-166/ 03	23060	1	951136730011
8	PAY OFF REEL	MANDREL SHAFT BRG 345-166/ 04	23072CS	1	
9	PAY OFF REEL EMG	LIGHT SOURCE TRAVERSE SCREW ROD END BRG 342-202/28	6005B 2 RS	2	951121902511
10	SNUBBER ROLL	SNBBER ROLLBRG 341-498/ 40	22214C	4	951136507011
11	ENTRY PAPER MANDREL		1216K	3	951126208012
12	ENTRY PAPER MANDREL		1220K	3	951126210012
13	LEVELLER	300 DIA DEFLECTOR ROLL BEFORE LEVELLER 341-326/ 13	6315	2	951121607511
14	LEVELLER	LEVELLOR ROLL BRG 342-477/ 07	22217	14	951136508511
15	LEVELLER	LEVELLOR FINE ADG GEARBOX WORM SHAFT BRG	32006X	8	951151503046

CBL BEARING SURVAY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
16	LEVELLER	LEVELLER FINE ADG GEAR BOX WORM WHELL BRGS	51 /53213	8	981515321004
17	ENTRY CROP SHEAR	FOLDING TABLE ROLL BRG 342-011 / 08	6009.2Z	2	951121904519
18	ENTRY CROP SHEAR	SCRAP CAR WHEEL 342-414 / 11	6210	6	951121405011
19	ENTRY CROP SHEAR	SCRAP CAR AXLE 342 – 414 / 12	6210.12 RS	6	951121405022
20	ENTRY CROP SHEAR	SCARP CAR WIRE ROPE PULLY 342-416 /18	1216	2	951126208011
21	ENTRY CROP SHEAR	SCRAP CAR WIRE ROPE IDLE PULLEY 342-417 / 20	6210	2	951121405011
22	ROLLER TABLE	150 DIA ROLL BRG 342-001 / 08	6009 Z	8	951121904519
23	ROLLER TABLE	SIDE GUIDE ROLL BRG 342- 102 /12	6007-2 RS	8	951121903522
24	ROLLER TABLE	DRIVE CHAIN TESIONING SPROCKET 345 –141 /17	6206.2 RS	30	951121403022
25	VACUUM STACKER	TOP PULLY 346- 380 /180 ASSY DRG 346-379	6214. RS	8	951121407021
26	ANNEALING UNIT	TORCH TRAVERS CAM FOLLOWER	NUKD 52	2	
27	WELDING MACHINE	ANNEALING UNIT ROLL BRG DRG NO 763.52170 A	NUP 2211	8	951133305511
28	WELDING MACHINE	WELDING MACHINE 763.51348	6210	2	951121405011
29	WELDING MACHINE		6308.2 RS	4	951121604022
30	WELDING MACHINE		GE 100 F 0 RS	4	

CBL BEARING SURVEY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
33	WEALDING M / C		361205	4	
34	WEALDING M / C	763.51356 /14	6007.RS	4	951121903521
35	WEALDING M / C	SERVO PINCH ROLL END BRG 763.52050	6009.2RS	4	951121904522
34	WEALDING M / C	763.51356 / 14	6007.RS	4	951121904521
36	WEALDING M / C	SIDE GUIDE END SPROCKET BRG NO 763.52050	6008.2RS	8	951121904022
37	WEALDING M / C	SIDE GUIDE ROLL TROP BRG763.52050A	60012.2RS	4	951121905522
38	WEALDING M / C	SIDE GUIDE ROLL BOTTOM BRG NO 763.52050A	60013.2RS	4	951121906522
39	WEALDING M / C	SCARP CAR WHEEL 342-414 /12	6210.RS	6	951121405021
40	WEALDING M / C	SCARP CAR WHEEL 342-417 / 20	6210	2	951121405011
41	WEALDING M / C	OWM AUX PR		4	
42	WEALDING M / C	OWM MEASURING ROLL		2	
43	WEALDING M / C	OWM PR CYL		2	
44	NOTCHING M / C	SCARP CAR AXLE BRG 348-455 / 214	6307	2	951121603511
45	MAIN PITCH ROLL500 DIA	500DIA PINCH ROLLBRG 342-232 / 20	22218	4	951136509011
46	LOOPING PIT	LOOP TABLE ROOLS 346-232 / 20	6009.2Z	32	951121924519
47	SIDE TRIMER	200DIA PINCH ROLL BRG BEF S/ T346-040 /32	22217C	4	951136508511
48	SIDETRIMMER	PITCHROLL GEAR BOX DRGNO 346-034 /31	6313.RS	2	954421606521

CBL BEARING SURVEY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
49	SIDE TRIMMER	SIDE GUIDE ROLL 342-102 / 12	6007.2RS	2	951121903522
50	SIDE TRIMMER	EDGE TRIMMING SHEAR 346-051 /15	23040.C W33	5	951136720024
51	SIDE TRIMMER	LOWERCHOCKS POSITION ADJ 346-048 / 15	7210.B	4	951124205011
52	SIDE TRIMMER	EDGE TRIMMING SHEAR 346 –047 /05	7212B	4	9511242420601
53	SIDE TRIMMER	EDGE TRIMMING SHEAR 346 –053 / 06	5122B	8	951161214011
54	SIDE TRIMMER	EDGE TRIMMING SHEAR346-056 / 16,ASSYDRG 346-145	234420M/SMO	4	
55	SIDE TRIMMER	S /T STAND ADJ SCREW ROD 343-047 / 09	7310B	4	951124305011
56	SIDE TRIMMER	MAINDRIVESHAFT MIDDLE BRG 347-057 /11	22228C.W33	2	951136514024
57	SIDE TRIMMER	MAIN DRIVE SHAFT MIDLE BRG347-066 .11,ASSY DRG 348-0145	222226C.K W33	2	951136513157
58	SIDE TRIMMER	S/T GAS ADJ 346-066 /11 ASSY DRG 346-053	M 4936 /MP52	4	
59	SIDE TRIMMER	S/T GAP ADJ346-056/ 15	NU224/MP 525	4	
60	SIDE TRIMMER	FEED IN PINCH ROLL 346-040 /29	6012.2RS	64	951121906022
61	DRUM CHOPPER	DRUM SHEAR 299-451 /19	511345	4	951162117011
62	DRUM CHOPPER	D/C SUPPORTER BRG 320-0009/01	16024	4	
63	DRUM CHOPPER	SCARP CAR WHEELBRG 342-009 /01	6210	6	951121405011

CBL BEARING SURVEY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
65	DRUMCHOPPER	SCRAP CAR WIRE ROPE DRIVE PULLEY BRG 342-416/18	1216	2	951126209011
66	DRUMCHOPPER	SCRAP CAR WIRE ROPE IDLE PULLEY BRG 342-147/20	6210	2	95112140501
67	DRUMCHOPPER	DC ARBOURSHAFT 345-147/10	24028C	4	951137314011
68	DRUMCHOPPER	DC ARBOURSHAFT 345-147/11	7222.B.C	8	951121411011 951136822203
69	DRUMCHOPPER	DC ARBOURSHAFT 345-147/12	23122C	1	951136711011
70	DRUMCHOPPER	DRUM SHEAR 340-026 / 13	24024C	1	951136820110
71	DRUMCHOPPER	DRUM SHEAR346-172/16	3307	2	951124704045
72	DRUMCHOPPER	D/C ARBOR SHAFT 346-172/17	2209K	2	951126604512
73	EXIT CROPSHEAR	SHARP PINCH ROLL BRG 338-011/08	22308C	4	951136604011
74	EXIT CROPSHEAR	SHEAR FOLDING TABLE ROLL BRG 342-414 /11	6009.2Z	4	95121904519
75	EXIT CROPSHEAR	SCARP CAR AXL 342-414/11	6210	6	951121405011
76	EXIT CROPSHEAR	SCARP CAR AXL 342-414/12	6210.RS	6	951121405011
77	EXIT CROPSHEAR	SCARP CAR WIRE ROPE DRIVE PULLEY 342-4171/12	1216	2	951126208011
78	EXIT CROPSHEAR	SCARP CAR WIRE ROPE IDLY PULLEY 342-417 /20	6210	2	951114E05021
79	EXIT CROPSHEAR	FOLDING TABLE ROLL BRG	6009.2Z	8	951121904519

CBL BEARING SURVEY

SL NO	EQUIPMENT	SUB ASSEMBLY & PART NO	BEARING NO	QTY	MATERIAL CODE
80	BRAKE STAND	180DIABRAKE STAND ROLL 341-384 /11	22217C	10	951136508511
81	BRAKE STAND	110 D1A BRAKE STAND ROLL 341-384/12	22212C	4	951136306011
82	TENSION REEL	BRAKE STAND SYN SHAFT 341-384/13	22218C	2	95113600112
82	TENSION REEL	BRAKE STAND SYN SHAFT 341-384/13	22218C	2	951136509011
83	TENSION REEL	500 DIA DEFLECTOR ROLL BEF TEN REEL 342-232/20	22218C	2	9511363306011
84	TENSION REEL	LIGGHT SOUR SE TRAVERSE MECA NISM342-212/24 ASSY DRG 342-212/24	620-02RS	1	9511214093022
85	TENSION REEL	TENSION REEL 298-497/09	6008	1	951121903011
86	TENSION REEL	TENSION REEL 298-497/10	6013	1	951121906511
87	TENSION REEL	GEAR BOX 341-481/06	23220	3	951121906511
88	TENSION REEL	GEAR BOX 341-48106	24126	3	951137413011
89	TENSION REEL	GEARBOX 341-482/07	23136	2	951136818011
90	TENSION REEL	MANTREL SHAFT FRONT BRG 345-309/03 ASSY DRG 345-308	23072CA	1	
91	TENSION REEL	MANDREL SHAFT REAR BRG 345-309/03 ASSY DRG 345-308	23060C	1	951136730011
92	EXIT COIL CAR	COIL CAR DRIVE CHAIN 345-092/05	23060C	2	951121905022
93	EXIT COIL CAR	AXILE BRG346-092/05	20220MB	4	951136110015

CBL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH	PAPER SIZE
1	8/28/82	10	RUBBER BUFFER FOR LOOPING TABLE	5101/001	3101	A4
2	2/5/83	08	STUBAXLE FOR SNABBER ROLL DRIVE CHINE TENSONER	5101/002	3101	A4
3	2/7/83	11	HYD MOTER FLANGE FOR W/CTRAVERS	5101/003	3101	A4
4	10/24/83	10	DAMPER FOR VACUUM CUP ASSY	5101/004	3101	A4
5	11/8/83		RUBBER CUP FOR VACUUM PILER	5101/005	3101	A3
6	11/30/83		DIFLECTED PLATE FOR MG W/C	5101/006	3102	A3
7	12/16/83		ADOPTER SEGMENT UN COILER	5101/007	3102	A1
8	3/12/84		ADAPTER NIPPLE-POR GEAR LUB PIPING	5101/008	3102	A4
9	6/1/84		HOLDER FOR WELDING TORCH ASSY	5101/009	3102	A3
10	7/6/84		NIPPLE FOR PN HOSE CONNECTION FOR VACUUM CUP	5101/010	3102	A4
11	8/31/84	01	CELLING ELEMENTS FOR SIDE GUIDE 4" BORE AIR CYL	5101/011	3103	A3
12	9/18/84	03	FILTER INSERT FOR W/C HYD .PR.FILTER 10 MICRON	5101/012	3103	A3
13	10/10/84		CLAMP FOR SIDE TRIMMER SCARP CHUTE	5101/013	3103	A4
14	10/12/84	11	END COVER PLATE FOR DRUM CHOPPER KNIFE HEAD	5101/014	3103	A4
15	12/15/84		EJECTOR RING	5101/015	3103	A4
16	12/19/84		ADAPTER FOR ARGON GAS CYL	5101/016	3104	A3
17	4/13/85		PULLY MOUNTING FRAME FOR VACUUM STACKER CRANE BRIDGE	5101/017	3104	A2
18	8/30/85	06	SHEAR PIN CUPLING FOR PINCH ROLL	5101/018	3104	A4
19	10/26/85	06	CUPLING FLANGE FOR PINCHROLL-ROLL END	5101/019	3104	A3
20	10/28/85	06	COUPLING FOR PINCH ROLL-MOTOR END	5101/020	3104	A4
21	2/4/86		BASE PLATE FOR LIMIT SWITCH	5101/021	3105	A4
22	2/5/86	02	PISTON ROD FOR SIDE GUIDE HYD CYL BEFORE WELDER	5101/022	3105	A4
23	3/19/86		NOTCHING UNIT EXT PIECE	5101/023	3105	A4
24	4/18/86	02	PISTON ROD FOR 500 DIA PINCH ROLL HYD CYL	5101/024	3105	A3

CBL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH	PAPER SIZE
25	4/22/86	02	MODIFIED FEEDIN –IDLE-ROLL	5101/025	3105	A3
26	4/24/86	04	RUBBER LINING DETAILS FOR 200 DIA PINCH ROLL	5101/026	3106	A4
27	8/1/87	0	WIPER SEAL FOR UNCOILER MANDREL SEGMENT GUIDE PIN	5101/027	3106	A4
28	8/13/87	01	TR/POR ROTORY CYL PISTON PACKING SET	5101/028	3106	A3
29	12/31/87	01	PISTON PACKING FOR PISTON ACCUMULATER-WELDING M/C	5101/029	3106	A3
30	1/7/88	01	PISTON ROD PACKING FOR PISTON ACCUMULATER W/M/C	5101/030	3106	A3
31	6/9/88	01	SEAL KIT- CROPSHER HYD CYL 2P3S220*190*32	5101/031	3107	A4
32	1/9/89		PISTON ROD FOR WELDER SERVO PINCH ROLL	5101/032	3107	A3
33	3/7/89		CABLE DRAG CHAIN FOR CBL COIL CAR	5101/033	3107	A4
34	4/17/89	04	ROLL POSITION FOR CBL & SGL	5101/034	3107	A2
35	4/20/89	04	ROLLS FOR CBL & SGL	5101/035	3107	A3
36	7/13/89	01	ROTATING FOR OIL SUPPLY ASSY	5101/036	3108	A4
37	8/9/89		FIXED CELL FOR ROTATING OIL SUPPLY	5101/037	3108	A4
38	2/15/90	01	FLANGES FOR ROTATING OIL SUPPLY	5101/038	3108	A3
39	2/17/90	11	BASE PLATE FOR WELDING CARRIGE	5101/039	3108	A4
40	4/21/90		WELDING M/C WIRE FEED PINCH ROLL	5101/040	3108	A4
41	9/7/90	04	RUNWAY RAIL FOR GUIDE WAY LIFT HYD CYL-W/M/C	5101/041	3109	A4
42	4/17/91	02	PISTON ROD FOR GUIDE ROLL LIFT HYD CYL –W /M/C	5101/042	3109	A3
43	7/13/91	02	PISTON ROD FOR SNUBBER ROLL HYD CYL 56 * 710	5101/043	3109	A4
44	9/23/91	01	SEAL KIT—POR/ TR AUTO CETERING HYD CYL 200 * 100 * 300	5101/044	3109	A4
45	1/31/92	06	LEVELER CUPLING BOLT	5101/045	3109	A3
46	3/20/92	06	PISTON ROD FOR BREAK ST 1 ST ROLL	5101/046	3110	A4
47	4/17/92	02	WHEELS FOR COIL CAR	5101/047	3110	A3

CBL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH	PAPER SIZE
48	9/23/91		WHEELS FOR COIL CAR	5101/048	3110	A4
49	1/30/92	08	SHAFT FOR WLDING M/C CLAMPING BEAM ADJ HYD CYL	5101/049	3110	A4
50	3/20/92		SHEAR PIN & BUSH FOR 500 DIA PIN ROLL DRIVE COUPLING	5101/050	3110	A3
51	4/17/92		BLANK FOR SIDE TRIMMER LATERAL ADJ HYD CYL	5101/051	3111	A4
52	8/21/92	02	PARTS FOR WELDING M/C CLAMPING BEAM ADJ HYD CYL	5101/052	3111	A3
53	8/22/92	02	HYD CYL FOR WELDING M/C GUIDE ROLL	5101/053	3111	A3
54	8/26/92	02	HYD CYL FOR WELDING M/C LOCK BEAM	5101/054	3111	A3
55	8/28/92	02	HYD CYL FOR WELDING M/C CLAMPING	5101/055	3111	A3
56	9/1/92	02	HYD CYL FOR WELDING M/C STRIP CENTERING	5101/056	3112	A3
57	9/26/92	02	FILTER INSERT FOR VACUUM PUMP SUCTION	5101/057	3112	A3
58	9/25/92	02	HYD.CYL FOR WELDING M/C STRIP ALIGNING	5101/058	3112	A3
59	10/15/92	02	HYD CYL FOR WELDING M/C SERVO PINCH ROLL	5101/059	3112	A3
60	8/4/89	08	WORM SHAFT EOR LEVELLER SCREW DOWN GEAR BOX	5101/060	3113	A3
61	9/3/93	04	LINING DETAILS FOR COIL CAR	5101/061	3112	A3
62	9/8/93	04	POLYURETHNE LINIG DETAILS FOR TABLE ROPLLS	5101/062	3113	A3
63	11/12/93	04	LEVELLER ROLL	5101/063	3113	A4
64	2/14/94	04	GLAND FOR CBL MAIN PINCH ROL HYD CYL	5101/064	3113	A3
65	2/18/93	02	PARTS FOR LEVELLER DISTRIBUTION GEAR BOX	5101/065	3113	A3
66	3/2/94	09	RUBBER LINING –TABLE ROLLS	5101/066	3114	A3
67	3/5/94	09	DISTRIBUTION GEAR BOX FOR CBL LEVELLER	5101/067	3114	A3
68	3/26/94	09	GEAR ARRANGEMENT FOR LEVELLER DISTRIBUTION GEARPUMP	5101/068	3114	A3

CBL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH	PAPER SIZE
70	3/28/95		SPRING PLATE FOR W / M/ C WIRE PLATE	5101/070	3112	A4
71	9/1/95		GUIDE ROLL HINGE FOR W / M/ C	5101/071	3113	A3
72	12/28/95	02	HYD CYL NOTCHING ASSY	5101/072	3113	A3
73	12/28/95	02	HYD CYL FOR NOTCHING UNIT FORWARD REVERSE	5101/073	3114	A3
74	2/9/96	01	SEAL KIT FOR LEVELLER UP/ DOWN HYD	5101/074	3114	A4
75	7/1/96	01	SEAL KIT FOR W/ M/C LOCKING BNEAM CYL	5101/075	3114	A4
76	17/1/96	02	PISTON ROD FOR TR THREADING TABLE	5101/076	3115	A3
77	6/24/96		OXY TECHING W/M /C	5101/077	3115	A3
78	123/30/96		PISTON ROD FOR OW M/C CLAMPING BEAM RETRACTCYL 3MM STROKE	5101/078	3115	A4
79	1/11/97	02	COUPLING BORE DIMENSIONS	5101/079	3115	A4
80	11/8/97		SEAL KIT FOR OWM/C CYL	5101/080	3115	A3
81	12/8/97	01	CASING FOR LEVELLOR FINE ADJ GEAR BOX	5101/081	3115	A4
82	12/11/97		PARTS FOR LEVELLOR ADJ GEAR BOX	5101/082	3116	A4
83	12/15/97		PAPERMANDREL	5101/083	3116	A4
84	12/15/97		COUPLING FOR PAY OF REELMANDREL	5101/084	3116	A4
85	3/24/98		PISTON ROD FOR LEVELLOR UP /DOWN HYD CYL	5101/085	3116	A3
86	10/9/98	02	PISTON ROD FOR ENTRY SIDE TABLE LIFT HYD CYL	5101/086	3116	A4
87	10/16/98	02	MODIFIED ROLLER DRIVE ROLL	5101/087	3116	A3
88	1/2/99		COUPLING BORE DIMENSIONS	5101/088	3116	A4
89	3/20/99		COUPLING BUSHES FOR POR & TR	5101/089	3116	A3
90	4/23/99	01	SEAL KIT FOR WBC UP/DOWN	5101/090	3116	A4
91	6/29/99	02	PISTON &PISTON ROD FOR WBCUP/DOWN	5101/091	3116	A4
92	11/27/99	02	HYD CYL &EYE FOR WBC UP/DOWN	5101/092	3116	A4

93	11/21/99	02	BARREL FOR WBC LIFT HYD CYL	5101/093	3116	A3
94	1/5/00		ANEALING ROLL	5101/094	3117	A3
95			TENSION REEL &POR GEAR BOX LINE DIAGRAM	5101/095	3117	A4

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
1	WALKING BEAM CONVEYOR UP/ DOWN	CD350 C 250/180 -300A 10/1 CFGDM R 11/2	4	250	180	300							NO SPARE
2	WALKING BEAM CONVEYORTRVERSE	CD250E 140/100 2760 A 10/1 CGDMR 11 / 4	2	140	100	2760	R		661504010065	661504010072	661504010073		NO SPARE
3	POR& COILBUGGY UP / DOWN	CD 250E160/100-1000A-10/1CGDM R11/ 4	1	160	100	1000	R		661504010071	661504010072	661504010073		1 SPARE AVL
4	POR EXP/ COLLAPSE CYL		1	300	100	149		661504010090					1 SPARE AVL
5	POR STRIPPER PLATE 661504103050	CD 250E 63/45-500A 10/1 CGDM R ¾	1	63	45	500	R		661504010031	661504010032	661504010033		1 SPARE AVL IN C.S
6	POR SNUBBER ROLL UP/DOWN 661504103050	CD250B 100/56-370A 10/1 CGDM R 1	1	100	56	370	R	661504010030	661504010051	661504010042	661504010043	MMB /5101 /044	1 SPARE AVL

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
7	POR TR EMG 666666511320	G200/ 100/ 100 ZMI-M300 R ½ DOUBLE END ROD	2	200	100	300		661504010060					/
8	OUT BOARDING BEARING	D/125/90-ZMI-M300 E+173=378 R1	2	125	90	1125			661504010061	661504010062	661504010063		
9	PELLER SPADE 66150410455	CD 250A 100/56-550A 10/1 CGDM R1	1	100	56	550	R	66154010060	661504010041	661504010042	661504010043		1 SPARE AVL IN C.S.
10	SPADE GRIP ROLL UP /DOWN 661504104018	CD 250A-80/45-180A 10/1CGDM R1 ½	2	80	45	180	R	661504010040	661504010041	661504010032	661504010033		1 SPARE AVL IN C.S
11	LEVELLOR UP/ DOWN 661504107025	CD 250A 160/100-250A10/1 CGDM R1 ½	2	160	100	250	R	661504010090	661504010071	661504010072	661504010073		1 SPARE AVL IN C.S

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
12	CROP SHEAR 661504109021	CD 250E 229/140-210A 10/1 CGDM-R1 ½	2	220	140	210	R	661504010100 MMB 5101 /031	661504010081	661504010082	66150401008 3		1 SPARE AVL
13	CROP SHEAR PINCH ROLL 661504102022	CD 250B 40/28 – 220A 10/1 CGDM ½	4	40	28	220	RM	661504010011	661504010012	661504010011	661504010013		1 SPARE AVL IN C.S
14	FOLDING TABLE AFTER CROP 661504104010	CD 250B 80/56 100A-10/1 CGDM R ½	2	80	46	100	R	661504010041	661504010042	661504010041	661504010043		1 SPARE AVL IN C.S

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INST QTY	BORE MM	ROD MM	STRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
15	W / M /C TOP CLAMPING CYL		2	76	40	100	MECMAN						1 SPARE AVL
16	W/ M /C BOTTAM CLAMP 6614504703002		2	76	40	50	MECMAN						NO SPARE
17	W / M/C CARRIGE TRVERSE 651132000058		1	100	65	1550	MECMAN						1 SPARE AVL INCS
18	TRANSPORT TABLE 661504103202 1	CD25OB 63/45-210 A 10/1 CGDM R1/2	2	63	45	210	R	661504010030	661504010031	661504010032	661504010033		1 SPARE AVL
19	BILLY ROLL UP /DOWN	250 H MOD A	6	150	75	300	MECMAN						
20	CARRY OVER PINCH ROLL	CD 250 B 80/56 160 A10/1CGD M R ¾"	4	80	56	160	R	661504010050	661504010041	661504010042	661504010043		1 SPARE AVL

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INST QTY	BOREMM	ROD MM	STRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
21	DEFLECTOR ROLL STAND BENDING ROLL	CD 250 B 80/56 160 A-10/1 CGDM R ½"	1	50	36	410	R	661504010020	661504010021	661504010022	661504010023		1 SPARE AVL
22	DEFL.ROLL STANF 500 DIA URRER ROLL	CD 250 B 80/56 160 A-10/1 CGDM R 1" TRUNNION MOUNTED	2	100	70	150	R	661504010070	661504010051	661504010052	661504010053		1 SPARE AVL
23	DEFL ROLL STAND DIPPING ROLL 6651041004016	CD 250 B 80/56 200 A-10/1 CGDM	1	100	70	200	R	661504010070	661504010051	661504010052	661504010053		1 SPARE AVL

SGL HYDRAULIC CYLINDER SURVAY

SL NO	CYLINDER LOCATION & MATL. CODE	MODEL NO	INSTQTY	BOREMM	ROD MM	SUGANYATRKE	MAKE	FULL SEAL KIT MATL. CODE & DRG NO	PISTON SEAL MATL CODE & DRG NO	ROD SEAL MATL CODE & DRG NO	WIPER SEAL MATL CODE & DRG NO	PISTON ROD DRG NO	REMARKS
24	TESION RELL THERDING TABLE	CD 250 B 80/56 160 A-10/1 CGDM R ½"	1	36	36	400	R	661504010020	661504010021	661504010022	661504010023		1 SPARE AVL
25	TENSION REEL STRIPPER PLATE 661504104180	CD 250E-80/56 1800A -10/1 CGDM R ¾"	1	50	56	1800	R	661504010050	661504010041	661504010042	661504010043		2 SPARE AVL

26	RIDDER ROLL 661504104055	CD250 B 100/56-370A 100/1CGDM R1	1	80	56	370	R	661504010060	661504010051	661504010052	661504010043		2 SPARE AVL
27	EXIT COIL CAR UP/DOWN	CD250E 160/100-1000A 10/1CGDM R1 ¼"	1	100	100	1000	R	661504010090	661504010071	661504010072	661504010073		2 SPARE AVL
28	TENSION REEL EXP.COLLAPSE CYL 65101200005		1	160	100	60	R						1 SPARE AVL

PNUMATIC CYLINDERS--SGL

LINDER CATION & IATL. CODE	MODEL NO	INST QTY	BORE MM	ROD	STROKE	MAKE	SEAL KIT MATL CODE & DRG NO	PISTON ROD DRG NO	REM
LDING M/C CLAMP		4		50		MARTONAER			
LDING MC DE GATE	SRM 9100/125/ A	2		32					
IDING BELT NSIONING CYL	SRM 940	6	260		125	MARTONAER	661505040070		1 SPAI
DING HEAD XHAUST AMPER		6	110		30	MARTONAER	661505040020		1 SP
NDING OIL ET VALUE JATING CYL		6	50	25	125	MARTONAER	661505040010 MMB/5113/063		
HAUSTER T DAMPER VYL									
WIPER EN/CLOSE		2	63	20	100	MARTONAER			

SGL BEARING SURVAY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
1	WALKING BEAM CONVEYR	WALKING BEAM CONVEYOR 342-102 /13	6220	16	951121410011
2	WALKING BEAM CONVEYR	WALKING BEAM CONVEYOR 342-102 /13	6220	16	951121410011
3	COIL CAR	COIL CAR AXLE342-092/05	20220MB	4	951136110015
4	COIL CAR	COIL CAR AXLE 342-092/03	21313C	4	951136306011
5	COIL CAR	COIL CAR DRIVE CHAIN TENSIONER348-091/05	6010.2RS	2	951121904022
6	PAPER WINDER	PAPER WINDER/UNWINDER DRIVE SIDE	1216K	3	951126208012
7	OUTBOARD BEARING	OUT BOARDBEARING337-457/28	6214	4	951121407011
8	PAY OF REEL	PAY OF REEL 341-498/10	6214.2K	4	951121407019
9	PAY OF REEL	PAY OF REEL 345-498/10	22214C	4	951136507011
10	PAY OF REEL	PAY OF REEL 345-177/03	23060C	1	951136730011
11	PAY OF REEL	PAY OF REEL 345-177/04	23084CA	1	951136742015
12	PAY OF REEL	PAY OF REEL341-433/07	23130	2	95113615011
13	PAY OF REEL	PAY OF REEL 341-433/06	24048	2	951137324011
14	PAY OF REEL	PAY OF REEL 341-432/08	24122	2	951137411011
15	PAY OF REEL	PAY OF REEL 349-096/09	NKIB5911	1	
16	PAY OF REEL	PAY OF REEL 345-183/13	SLO1 V4844	11	951192232403
17	PAY OF REEL	PAY OF REEL 345-180/14	SL 4844	2	951192322011

SGL BEARING SURVAY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
17	PAY OF REEL	PAY OF REEL 345-180/14	3200-6X	1	951151503046
18	LEVELLER	300DIA DEFLECTOR ROLL BEFORE LEVELER 341-326/13	51/53214	2	951151532100
19	LEVELLER	LEVELER ROLL BRG 342-477/07	6009.2Z	14	951151503045
20	LEVELLER	LEVELER FINE ADJ GEARBOX WORM WHEELBRG	6009.2Z	8	951151503046
21	LEVELLER	LEVELLOR FINE ADJ GEAR BOX WORM SHAFT BRG	51/5213	8	981515321004
22	CROP SHEAR	CROP SHEARFOLDING TABLE 342-414/12	32006X	4	951121904519
23	CROP SHEAR	CROP SHEAR SCARP CAR WHEEL342-414/12	6210	6	951121405011
24	CROP SHEAR	CROP SHEAR SCARP CAR AXLE342-414/12	6210.2RS	0	951121405022
25	WEALDING MACHINE	W/ M/C CENTERING DEVICE A 0584-0277	6206.2RS	12	951121403018
26	WEALDING MACHINE	W/ M/ C CARRIGE DRIVE	6207.2Z	4	951121403519
27	WEALDING MACHINE	W / M/C LOWER TABLE 0504-4194	GC 62 EE	4	
28	WEALDING MACHINE	W / M /C CARRIGE DRIVE	GC 80.EE	4	
29	WEALDING MACHINE	W /M /C ENT EXT CLAMBS A 0504-4205	MB2225DU	4	
30	WEALDING MACHINE	W /M /C ENT EXT CLAMBS A 0504-4205	MB3040DU	4	
31	WEALDING MACHINE	W / M/C LOWER TABLE A 0504-4205	MB3040DU	4	
32	ROLLER TABLE	TRANSPORT TABLE ROLL 342-011/08	6009.2Z	4	9511121904519

SGL BEARING SURVAY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
33	ENTRY PINCH ROLL	CARRY OVER PINCH ROLL 342-231/18	22218 C	8	951136509011
34	PINCH ROLL	CARRY OCER PINCH ROLL GEARED MOTOR BRG 342-115/10	6323.2Z	2	951136606519
35	IDLE ROLL GRINDING HEAD	GRINDING HEAD IDELER ROLL A 0584-0353	6313	6	951121606211
36	IDLE ROLL GRINDING HEAD	GRINDING HEAD IDELER ROLL 7600-0121	N313	6	951132606011
37	CONTACT ROLL	CONTACT ROLL DRIVE BLOCK E 7600-0020	7222BG	2	951900722203
38	CONTACT ROLL	CONTACT ROLL DRIVE BLOCK E 7600-0020	NU319	2	952800031909
39	CONTACT ROLL	CONTACT ROLL FRONT BRG E 7600-0421	NU312	1	952500031203
40	BILLY ROLL	BILLY ROLL 7600-70550	22312 C	6	951136606011
41	BILLY ROLL	BILLY ROLL ROLLER STOP 7600-7050	53210U	6	
42	FOLDING TABLE	FOLDING TABLE ROLL 342-011/ 18	6009.2Z	2	961121901419
43	DEFLECTOR ROLL STAND	DEFLECTOR ROLL STAND 342-231/18	22218C	4	921136509011
44	DEFLECTOR ROLL STAND	DEFLECTOR ROLL STAND 342-232/20	22218C	4	951136509011
45	TENSION REEL	TENSION REEL 342-498 /40	22214C	2	951136507011
46	TENSION REEL	TENSION REEL 345-319 /03	23060C	1	951136730011
47	TENSION REEL	TENSION REEL 345-319/03	23084CA	1	961136742015
48	TENSION REEL	TENSION REEL 341-433/06	23130	2	951136815011
49	TENSION REEL	TENSION REEL341-433 /07	24048	10	951137324011

SGL BEARING SURVAY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
50	TENSION REEL	TENSION REEL 341-432 /08	24122	14	951137411011
51	TENSION REEL	TENSION REEL 298-491 /9	6008	2	951121904011
52	TENSION REEL	TENSION REEL 298-491 /10	6013	2	951121906511
53	TENSION REEL	TENSION REEL 345-180/13	SLO14848	4	
54	TENSION REEL	TENSION REEL 345 –180 /14	SL014844	5	
55	COIL CAR EXT	COIL CAR AXLE 346-092 /05	20220 MB	4	951136110015
56	COIL CAR EXT	COIL CAR ROLL 346-088 /03	21312C	4	95113606011
57	COIL CAR EXT	COIL CAR DRIVE CHAIN TENSIONER 346-091 /05	6010.2RS	2	951121905022
58	EMG SYSTEM	STRIP CENTERING CONTROL 342-202 /28	1220 K	2	951126210012
59	EMG SYSTEM	STRIP EDGE CONTROLLIGHT SOURCE TRAVEL342-212/24	6206.2RS	2	951121403022
60	VACUUM UNIT	VACCUM FILTER EXHAUSTER	NU 209	5	952500020903
61	FILTERUNIT	FILTER BELT DRIVE SHAFT DRIVE END	12123		951126206011
62	FILTERUNIT	FILTER BELT DRIVE SHAFT NON DRIVE END			

Z MILL BEARING SERVEY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
1	WALKING BEAM CONVEYR	RTR.C CONVEYOR LIFTING ARMS 10P071-876-16	46232	12	951153316011
2	COIL CAR	COIL CAR ROLLS 10Q116-677	22217	12	951136508511
3	COIL CAR	COIL CAR AXLE	23030.W33	12	951136715024
4	COIL CAR	COIL CAR ENTRY EXIT	CAM FOLLOWER CP 20UU	12	9511361517054
5	PAY OFF REEL	POR GB INPUT PINION D/SUGANYA 10PO74-398-32	22234.W33.C3	1	951136714056
6	PAY OFF REEL	POR GB INPUT PINION D/S10PO74-33	23028.W33.C3	1	951136732076
7	PAY OFF REEL		23064.W33.C3	1	
8	PAY OFF REEL	POR GB INPUT PINION D/SUGANYA10PO74-36	23072.W33.C3	1	951136732076
9	PAY OFF REEL	POR GB INTERMEDIATE GEAR 10PO74-398-36	23136.W33.C33	1	951136736056
10	PAY OFF REEL	POR ROTATING CYL 10Q121-098	6017	1	951163736056
11	PAY OFF REEL	POR ROTATING CYL OPN SIDE	6018	2	951121909011
12	PAY OFF REEL	WIDTH CENTERING DEVICE 10Q116-640-30	FLG HOUSING UCF C204	14	9511864087101
13	PAY OFF REEL	WIDTH CENTERING DEVICE 10Q116-64011	FLG.HOUSING UCP 205	2	951186102021
14	SSNUBBER ROLL	SNUBBER ROLL ASSY 10PO74-340-23	FOLLOW BLOCKUCP 205	6	951186102511
15	PAPER MANDDREEL	PAPER MANDREL OPN SIDE BRG	6212.2Z	5	951121908119
16	LEVELLER	PAPER MANDREL D/ SUGANYA BRG	6016.2Z	5	951121908019
17	LEVELLER	LEVELLOR GB INPUT SHAFT 10P087-193-34	22210.W33	8	951136505024
18	LEVELLER	LEVELLOR GB INTER MEDIATE 10P087-193-35	22216.W33	5	951136505024

Z MILL BEARING SERVEY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
19	LEVELLER	FEED LEVELLER ROOLS 10Q120-318-16	22217	14	951136508511
20	LEVELLER	LEVELLER GB OUTPUT SHAFTS	22217	7	951136508511
21	LEVELLER	LEVELLERGB OUTPUT SHAFT 10Q-105-625-40	22220.W33	2	951136510024
22	LEVELLER	LEVELLERGB OUTPUT SHAFT 10P087-193-36	22310	1	951136605011
23	LEVELLER	LEVELLERGB IDLER SHAFT OUTPUT SIDE 10Q105-625-42	6218.2Z	4	951121409019
24	LEVELLER	DEFLECTER ROOLS 260DIA DEFL B/A LEVELLER	NU2217	7	951131508511
25	LEVELLER	LEVELLER GB IDELER SHAFT INPUT SIDE 10Q 105-625-43	NU2310	1	951131605011
26	THREADING TABLE	THREADING TABLE ROLLS 1Q120-324-20	6306.2Z	28	951121603019
27	THREADING TABLE	THREADING TABLE ROLLS 1Q120-324-23	CAM FOLLOWER CF24OUR	4	
28	TENSION REELS	LH&RH TENSION REEL REDUCER 10P077-684-7	230/630.W33	4	
29	TENSION REELS	LH&RH TENSION REEL REDUCER 10P077-684-21	24064.W33	2	951137332024
30	TENSION REELS	TENSION REEL DRUM ASSY 10P077-686-22	24140.W33	2	951137420024
31	TENSION REELS	LH&RH TENSION REEL REDUCER 10P077-684-5	339 / 600.W33	2	
32	TENSION REELS	TENSION REEL DRUM ASSY 10Q121-096-5	6026	2	951121913011
33	TENSION REELS	TENSION REEL DRUM ASSY 10Q121-096-8	6028	2	951121914011
34	PINCH ROOL	PINCH ROLL BEARING	22213	4	951136506511
35	PINCH ROOL	PINCH ROLL SHAFT SUPPORT BRG 10P072-911-27	6214	4	951121407011

Z MILL BEARING SERVEY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
36	DEFLECTER ROLL	DEFLECTER ROLL BRG	23236.W33	4	951136813011
37	TENSIOMETER ROOL	TENSIOMETER ROLL BRG	23126	4	951121903019
38	GAMMA RAY GAGE	GAGE ASSY WHEEL BRG	6206..2Z	8	951121407511
39	WIPER ROLL	3 ROLL WIPER ASSY	6215	4	951121407511
40	WIPER ROLL	BRONZE WIPER ROLL	6215	16	
41	SIDE GUIDE	SIDE GUIDE ROLLERS 10Q115-391-58	BD20-7	8	
42	MAIN DOOR	MAINDOOR TOP HINGE BRG 10P072-913-15	30308	1	
43	MAIN DOOR	MAINDOOR TOP HINGE BRG 10P072-913-16	6208.2Z	1	951151702011
44	SUB DOOR	MAINDOOR TOP HINGE BRG 10P072-913-10	32034	1	951121404019
45	SUB DOOR	SUB DOOR THURST BRG 10P072-921-20	5204	1	951124702011
46	WORK ROLL THURST BRG	WORK ROLL THURST BRG 10P072-921-20	RNUP1012		651114530501 951133650601
47	WORK ROLL THURST BRG	WORK ROLL THURST BRG	3310	4	951124705045
48	SECOND INTER	SPINDLE ASSYMBLY 10P072-918-14	7305ABD	4	951121302511 951124302542
49	SECOND INTER	SECOND INTRROLLS IDLE ROOLS	7313C	2	951145930214
50	WORK ROLL HOLD UP	WORK ROLL HOLD UP NEEDLE BRG	TA 202820	4	951121401019
51	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-924-29	6200.2Z	2	951121401011
52	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-924-5	6216	4	951121408011

Z MILL BEARING SERVEY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
53	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-924-6	7216 BDB	4	951124208011
54	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-924-28	CAM FOLLOWER CR-10	4	
55	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-922-11	FLG HOUSING UCFC 206	6	951187103021
56	FIRST INTER	FIRST INTER ADJ NUT ASSY 10P072-922-10	FLY HOUSING UCFC 207	2	951187103521
58	PINION STAND	MILL PINION STAND 10P070-164-8	23130.C3.W33	5	951136815046
59	PINION STAND	MILL PINION STAND 10P070-164-22	23148.C3.W33	1	951136824056
60	PINION STAND	MILL PINION STAND 10P070-164-35	23234.C3.W33	2	951136912056
61	PINION STAND	MILL PINION STAND 10P070-164-40	24034.C3.W33	4	951136917056
62	PINION STAND	MILL PINION STAND 10P070-164-61	7417	1	951124408511
63	PINION STAND	MILL PINION STAND 10P070-164-69	N217	2	951132508511
64	SCREW DOWN	D/S UPPER S/D GEAR-EXIT SIDE10Q-115-389-19	6006.2Z	2	951121903019
65	SCREW DOWN	D/S UPPER S/D GEAR-EXIT SIDE10Q-115-389-12	6205.2Z	1	951121402519
66	SIDE ECCENTRIC	SIDE ECC.INDICATER GB 10Q115-393-12	6201.2Z	1	951121401211 951121401219
67	SIDE ECCENTRIC	SIDE ECC WORM PINION SHAFT 10P072-919-25	6204	4	951140221011
68	SIDE ECCENTRIC	SIDE ECC WORM PINION SHAFT 10P072-919-32	6207.2Z	2	951121403519
69	STRIPPER PLATE	LH&RH STRIPPER PLATE 10P070-053-25	6203.2Z	2	951121401719
70	STRIPPER PLATE	LH&RH STRIPPER PLATE 10P070-054-25	6203.2Z	6	951121401719
71	OIL CELLER VENTELATION FAN(MILL 1)	OIL CELLER VENTILATION FAN(MILL 1)	1319K	6	951126309512

Z MILL BEARING SERVEY

SL NO	EQUIPMENT	LOCATION & PART NO	BEARING NO	QTY	MATL.CODE
72	OIL CELLER VENTILATION FAN(MILL 2)	OIL CELLER VENTILATION FAN (MILL 2)			
73	ROTOCLONE	ROTOCLONE BLOWER	22222CK	4	951136511012
74	DC MOTOR VENTILATION	DC MOTOR VENTILATION BLOWER			

SGL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH NO	PAPER SIZE
27	10/5/90	08	SCREW ROD FOR BILLY ROLL GEAR BOX	5113/02	3796	A4
28	12/20/90	14	RUBBER LINING FOR DEFL ROLL 305 DIA	5113/28	3796	A4
29	1/2/91	04	DEFL ROLL BEF GRINDING HEAD	5113/29	3796	A4
30	1/9/91	04	DEFL ROLL ENTRY &EXIT	5113/30	3796	A3
31	2/14/91	04	DEFL ROLL ADJUT	5113/31	3797	A3
32	2/21/91	08	BR LOCATING PLATE	5113/32	37974	AA3
33	3/4/91	089	FILTER BELT CHAIN	5113/33	3797	A4
34	3/5/91		CONNECTINGLINK FORFILTERBELTCHAI	5113/34	3797	A2
35	10/26/91		BLANK FOR WORM WHJEEL	5113/35	3798	A2
36	11/22/91	09	SHAFT FOR CENTIFUGE INTER MEDIATE	5113/37	3798	A2
37	3/17/91	08	END COVER FOR SWARF CONVEYOR	5113/38	3798	A2
38	3/24/91	11	COVER MODIFIED ROLL GEAR BOX	5113/39	3798	A2
39	3/27/92	11	WORM WHEELMODIFIED GEAR BOX	5113/40	3798	A3
40	6/24/92	08	ROLL CHANGING JIG FOR CONTACT ROLL	5113/41	3799	A3
41	7/11/92		PISTON CYL FOR SGL WIPER	5113/42	3799	A4
42	7/20/92		CONTACT ROLL	5113/43	3799	A4
43	7/23/92		MACHING DETAILS FOR BILLY ROLL GB	5113/44	3799	A2
44	4/8/93	02	SHAFT FOR CENTIFUGE ROTETING DRUM	5114/45	3799	A2
45	4/9/93	04	SHAFT FOR SWARF CONVEYOR BELT	5113/46	3799	A3
46	7/25/93		SCHEMATIC OIL FILT SYSYEM	5113/46	3800	A4
47	2/17/94	08	PROTECING NUT FOR ROLL END THERAD	5113/47	3800	A3
48	4/1/94	04	HEAT EXANGER FOR SGL LINE	5113/48	3800	A3
49	4/5/94	08	TUBE BUNDLE FOR SGL HEAT EXAN	5113/49	3800	A3

DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH NO	PAPER SIZE
5/18/95	08	BEARING HJOLDER FOR SGL CENTRIFIED FEED	5113/53	3800	A4
8/26/95		SIDE GUIDE COUPLING PIN	5113/54	3800	A4
8/28/95		WIPER GUIDE WASHER	5113/55	3800	A3
8/28/95		SWARF PRESS CONVEYOR LINK	5113/56	3800	A2
11/4/95	04	AIR BELLOW FOR PAPER WINDER MANDREL	5113/56	3800	A4
1/1/96	05	SEAL KIT FOR WIPER PIN CYL	5113/57	3800	A4
1/5/96	06	WIPER GUIDE PLATE	5113/59	3799	A4
3/11/96		PISTON ROD FOR SHEAR AUX PINCH ROLL	5113/60	3799	A3
6/10/96		COUPLING BOLT FOR ENTRY PINCH ROLL	5113/61	3799	A3
4/1/97	08	CO 2 CYL	5113/62	3799	A3
5/20/2000	02	MODIFIEDCOIL CAR AXLE FOR 4 WHEEL DRIVE	5113/63	3799	A2
5/20/2000	01	MODIFIED SPRAY HEADER HOLDER	5113/64	3799	A3

SGL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH NO	PAPER SIZE
			SHIBAURA MACHINE	5151/1	3151	A4
1	1/4/83	02	PARTS FOR Z-MILL ROLL GRIMDER TABLE TRVERSE CYLINDER	5151/2	3151	3
2	2/7/84	11	SIDE FLANGE FOR STEADY REST	5151/3	3150	3
3	2/9/84	12	GLAND FOR COOLANT PUMP	5151/4	3151	3
4	2/23/84	12	SLEEVE FOR COOLANT PUMP	5151/5	3151	3
5	5/10/84		TOP SCREW AND FLANGE FOR STEADY REST	5151/6	3152	4
6	9/22/94		COUPLING BOLT ,RUBBER PUSH FOR COOLANT PUMP	5151/7	3152	2
7	5/4/85		PARTS FOR DOG ASSY	5151/8	3152	3
8	11/13/85	06	HOLDER FOR DIAMAND DRESSER	5151/9	3152	4
9	5/3/86		BR FOR GRINDING WHELL SPINDLE	5151/10	3152	4
10	5/17/86		LUB PUMP-TROCHOID PUMP	5151/11	3153	4
11	9/4/86	12	BR FOR GRINDING WHEEL PULLEY SIDE	5151/12	3153	4
12	10/3/86	12	HYD PUMP	5151/13	3153	4
13	10/3/86		STEADY REST-130 DIA TO 250DIA	5151/14	3153	4
14	10/3/86		STEADY REST BODY –130 DIA TO250	5151/15	3154	4
15	11/8/86		STEADY REST BODY –130 DIA TO250	5151/16	3154	2
16	11/11/86		STEADY REST BODY –130 DIA TO250	5151/17	3154	2
17	11/25/86		STEADY REST 40 –130DIA	5151/18	3154	2
18	11/25/86		STEADY REST 40 –130DIA	5151/19	3154	3
19	12/24/85		FILTER CONVEYOR CHAIN	5151/20/	3154	3
20	6/29/87	09	PAPER FILTER DRIVE GEAR BOX	51561/21	3155	3
21	7/1/87	03	FILTER BAG FOR COOLANT SYSTEM	5151/22	3155	3
22	12/4/89	09	FILTRATION PUMP FOR Z MILL ROLL GRINDER	5151/23	3155	3

SGL MMB DRAWINGS

SL NO	DATE	CODE	DESCRIPTION	MMB DRG NO	POUCH NO	PAPER SIZE
23	5/1/92		FLOW CONTROL VALVE PARTS Z –M ROLL GRINDER TABLE TRAVERSE	5151/26	3156	A4
24	6/1/92		SCREW ROD WORM WHEEL SYS FOR JACK UP CAMBERING	5151/27	3156	3
25	7/29/93	02	PISTON ROD FOR Z –M ROLL GRIN HTD CYL	5157/28	3156	2
26	3/29/94		FACE PLATE AND DOG PIN FOR SHIB M/C	5151/30	3156	4
27	8/26/97		GLAND BUSH FOR SHIB M/C BED TRAVERSE	5151/31	3156	3
28	9/16/97		HYD CYL FOR SHIB M/C BED TRAVERSE	5151/43	3158	3
			HERKULES MACHINE			
1	6/28/91		PADS FOR STEADY REST-HER GRINDING M/C	5151/23	3157	3
2	1/31/94		STEADY REST WORK ROLL FOR HER M/C	5151/31	3157	2
3	2/3/94		BODY FOR STEADY REST WORK ROLL HER M/C	5151/32	3157	3
4	2/11/94		LEVEL FOR STEADY RESTWORK ROLL HER M/C	5151/32	3157	3
5	2/22/94		PARTS FOR STEADY REST WORK ROLL HER M/C	5151/33	3157	3
6	31/16/94		PARTS FOR STEADY REST WORK ROLL HER M/C	5151/34	3158	3
7	8/25/94	WH	WHEEL MOUNTING FLANGE FOR HER M/C	5151/35	3158	3
8	10/24/95		HER M/C TAIL STOCK ECCENTERIC JACK BOLT	5151/36	3158	4
9	10/24/95		HER M/C TAIL STOCK ECCENTERIC JACK BOLT	5151/40	3154	4
			HMT MACHINE			
1	9/11/92	03	FILTER INSERT FOR HMT ROLL GRINDER HYD SUCTION FILTER	5151/28	3156	4
2	8/12/95		PARTS FOR HMT M/'C STEADY REST	5151/38	3158	3

CBL HYDRALIC CYLINDER SURVEY 1

Sl no	Cylinder Location & Matl code	Model No	Inst Qty	Bore mm	Rod mm	Stroke mm	MAKE	Full seal Kit Matl.code & Drg no	Piston Seal Mat. Code & drg no	Rod seal Matl code & drg no	Wiper Seal matl. Code & drg no	Piston rod Drg no	remarks
1	WALKING BEAM CONVEYOR UP\ DN	H160,250NCHF 300	2	250	180	330	WIN TRO L	MMB 5101\88					NO SPARES
2	WALKING BEAM CONVEYOR		1										
3	POR COIL BUGGY UP\DN 661504107140	CD 250 E 160\ 100-1400A-10/ 1CGDMR1\4	1	160	100	1400	R	6615040100 90	661504010071	6615040100 72	661504010073		1
4	POR EXP\COLLAPSE CYL651012000005		1	225	100	150			651010040611 MMB / 5101/028				
5	STRIPER PLATE 661504103050	CD 250 E63/45-500A 10/1 CGDM R ¾	1	63	45	500	R	661504010030	661504010031	661504010032	661504010033		1
6	POR SNU BBER ROLL UP\DN 661504104037	CD 250B 100/56-370A 10/1 CGDM R1	1	100	56	370	R	661504010060	6615040110051	661504010042	661504010043	MMB/5101/ 044	1
7	PEE LER SPADE 661504104055	CD 250 A 100/56-550A 10/1,CG DM R1	1	100	56	550	R	661504010060	661504010051	661504010042	661504010043		1
8	SAPDE GRIP ROLL UP\DN 661504104018	CD 250A-80\ 45-18A 10\1 CGDM R1 1\2	2	80	45	180	R	6615004010040	661504010041	661504010032	661504010033		1

CBL HYDRALIC CYLINDER SURVEY 2

Sl no	Cylinder Location & Matl code	Model No	Inst Qty	Bore mm	Rod mm	Stroke mm	MAKE	Full seal Kit Matl.code & Drg no	Piston Seal Mat. Code & drg no	Rod seal Matl code & drg no	Wiper Seal matl. Code & drg no	Piston rod Drg no	remarks
9	LEVELLER UP\ DN 661504107025	CD 250A 160/ 100 –250A 10/ 1 CGDN R1 ½	2	160	100	250	R	661504010090	661504010071	661504010072	661504010073		1
10	OLDIND TABLE BEFORE SHEAR 661504102031	CD 250B 50/ 36-300B 10/ 1 CGDM R ½	1	50	36	300	R	661504010020	661504010021	661504010022	661504010023		1
11	CROP SHEAR (SUND WIG) 661504109021	CG 250E 220/ 140-210A 10 /1 CGDM- R1 ½	2	220	140	210	R	661504010100 MMB5101/ 031	661504010081	661504010082	661504010083		1
12	CROP SHEAR (MECON)		1	280	200	210	OSCAR	MMB 5101/ 093					
13	FOLDING TABLE AFTER CROP SHEAR 661504104010	CD 250B 80/56 100A- 10/1 CGDM	1	80	56	100	R	661504010050	661504010041	661504010042	661504010043		1
14	PULL OVER TABLE 661504103030	CD 250B 63/45-300A 10/1 CGDM R ½	3	63	45	300	R	661504010030	661504010031	661504010032	661504010033		1
15	ROLLER TABLE CARRY OVER PINCH ROLL 661504102012	CD 250B 40/28 120B 10/1 CGDM R ½	2	40	28	120	R	661504010010	661504010011	661504010012	661504010013		1
16	FOLDING TABLE AFTER WELDING M\C 661504103023	CD 250B 63/45-230A	1	63	45	230	R	661504010030	661504010031	661504010032	6615040133		1

CBL HYDRALIC CYLINDER SURVEY

Sl no	Cylinder Location & Matl code	Model No	Inst Qty	Bore mm	Rod mm	Stroke mm	MAKE	Full seal Kit Matl.code & Drg no	Piston Seal Mat. Code & drg no	Rod seal Matl code & drg no	Wiper Seal matl. Code & drg no	Piston rod Drg no	remarks
17	LEVELLER UP\ DN 661504107025	CD 250A 160/ 100 –250A 10/ 1 CGDN R1 ½	2	160	100	250	R	661504010090	661504010071	661504010072	661504010073		1
18	OLDIND TABLE BEFORE SHEAR 661504102031	CD 250B 50/ 36-300B 10/ 1 CGDM R ½	1	50	36	300	R	661504010020	661504010021	661504010022	661504010023		1
19	CROP SHEAR (SUND WIG) 661504109021	CG 250E 220/ 140-210A 10 /1 CGDM- R1 ½	2	220	140	210	R	661504010100 MMB5101/ 031	661504010081	661504010082	661504010083		1
20	CROP SHEAR (MECON)		1	280	200	210	OSCAR	MMB 5101/ 093					
21	FOLDING TABLE AFTER CROP SHEAR 661504104010	CD 250B 80/56 100A-10/1 CGDM	1	80	56	100	R	661504010050	661504010041	661504010042	661504010043		1
22	PULL OVER TABLE 661504103030	CD 250B 63/45-300A 10/1 CGDM R ½	3	63	45	300	R	661504010030	661504010031	661504010032	661504010033		1
23	ROLLER TABLE CARRY OVER PINCH ROLL 661504102012	CD 250B 40/28 120B 10/1 CGDM R ½	2	40	28	120	R	661504010010	661504010011	661504010012	661504010013		1
24	FOLDING TABLE AFTER WELDING M\C 661504103023	CD 250B 63/45-230A	1	63	45	230	R	661504010030	661504010031	661504010032	6615040133		1

CBL HYDRALIC CYLINDER SURVEY

Sl no	Cylinder Location & Matl code	Model No	Inst Qty	Bore mm	Rod mm	Stroke mm	MAKE	Full seal Kit Matl.code & Drg no	Piston Seal Mat. Code & drg no	Rod seal Matl code & drg no	Wiper Seal matl. Code & drg no	Piston rod Drg no	remarks
25	CROP SHEAR PINCH ROLL 661504102022	CD 250B 40/28-220B-10/1 CGDM ½	2	40	28	220	RM	661504010010	661504010011	661504010012	661504010013		1
26	BREAK STAND NO1 661504105030	CD 250D-125/90 300A-10/1 CGDM R1/4	2	125	90	300	RM	661504010080	661504010061	661504010062	661504010063	MMB 5101/047	1
27	BREAK STAND NO 2 661504102031	CD 250D-50/36-300B-10/1 CGDM R1/2	1	50	36	300	RM	661504010020	661504010021	661504010022	661504010023		1
28	DEFLECTOR ROLL 661504102018	CD 250B-50/36-180B-10/1 CGDM R1/2	2	50	36	180	RM	661504010020	661504010021	661504010022	661504010023		1
29	THREADING TABLE 661504102033	CD 250B-50/36 330B 010/1	2	50	36	330	R	661504010020	661504010021	661504010022	661504010023	MMB 5101/076	1
30	STRIPER PLATE 661504104180	CD 250E 80/56 1800A-10/1 CGDM R ¼	2	80	56	18000	R	661504010050	661504010041	661504010042	661504010043		2
31	EXIT COIL CAR UP\DN	CD 250E 160/100-1000A 10/1 CGDM R1/4	1	160	100	1000	R	661504010090	661504010071	661504010072	661504010073		1
32	TENSION REL EXP\ COLLAPSE CYL		1	225	100	60							

CBL WELDING & NOTCHING M/C HYD.CYLINDERS 1

SL	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	BORE mm	ROD Mm	STROKE Mm	MAKE	FULL STEAL KIT MATL.CODE & DRG NO	PISTON ROD DRG NO	REMARKS
1	STRIP ALLIGNING CYLINDER 651010182601 661504603010	PH Z 25-F/S 63/36 *100	63	36	100	DMF	661504060040		1 DMF
2	CLAMP RETRACTING CYLINDER 3MM SINGLE ACTING 661504604020		90		3	DMF	661504060060 MMB 5101/079		
3	CLAMP FOR REV 661504604015	HD GZ 80/50*100	80	50	150	DMF	661504060050		1
4	GUIDE ROLLER DN 661504602013	HD –D50/30*125	50	30	125	DMF	661504060020 MMB\ 5101/097	MMB 5101/043	1
5	CLAMPING BEAM 661504604035	HDE /S100/60*350	100	60	350	DMF	661504060030	MMB/5101/032	1DMF
6	SHEAR CYLINDER 661504604034	PHZ –Z5E/S 160 90*720	160	90	720	DMF			1

CBL WELDING & NOTCHING M/C HYD.CYLINDERS 2

SL	CYLINDER LOCATION & MATERIAL CODE	MODEL NO	BORE mm	ROD Mm	STROKE Mm	MAKE	FULL STEAL KIT MATL.CODE & DRG NO	PISTON ROD DRG NO	REMARKS
7	LOCKING BEAM 651010182401 661504604034	HD-C/S 100*60*335	100	60	335	DMF	661504060075 MMB 5101/075	MMB / 5101 / 069	1 DMF
8	NOTCHING MACHINE TRAVERSE 661504703090	250H/76*40*900	76	40	900	MECMAN	661504070010		1 VELJAN
9	NOTCHING SHEAR CYLINDER	250H 200* 90 * 160	200	90	160	MECMAN	661504070030		1 MECMAN
10	MEASURING ROLLE UP/DN (SERVO PINCH ROLL EXIT)	PHZ – 25 F 40/28 * 150	40	28	150	DMF	661504060010		
11	ANNEALING UNIT ROLLS UP/DN	250H TYPE 29	100	65	275	MECMAN	661504070020		
12	SERO PINCH ROLL UP/DN (ENTRY SIDE)	PHZ - 25 – F 50 36 * 150	50	36	150	DMF	661504060030	MMB / 5101/ 032	

APPENDIX II

SOURCE CODE
FOR
SUPPLIERS TRANSACTION CONTROL

```
Dim co As ADODB.Connection
Dim rs As ADODB.Recordset
Private Sub Command1_Click()
rs.AddNew
clea
Text1.SetFocus

End Sub

Private Sub Command2_Click()
rs.Delete
End Sub

Private Sub Command3_Click()
Dim frs As ADODB.Recordset
Dim s As String
Dim f
f = InputBox("Please enter Itemid", "Sprint")
Set frs = New ADODB.Recordset
s = "select * from itemdet where itemid= " & f
frs.Open s, co, adOpenDynamic, adLockOptimistic
If frs.EOF = True And frs.BOF = True Then
MsgBox "Please Enter correct Itemid"
Else
Text1.Text = frs!itemid
Text2.Text = frs!itname
Text3.Text = frs!itemprice
Text4.Text = frs!rol
Text5.Text = frs!stock
End If
fena
End Sub

Private Sub Command4_Click()
rs.MoveLast
display
End Sub

Private Sub Command5_Click()
rs.MoveNext
If rs.EOF Then
MsgBox " You are in Last Record"
Else
display
End If
End Sub
```

```
Private Sub Command6_Click()
rs.MovePrevious
If rs.BOF Then
MsgBox "You are in First Record"
Else
display
End If

End Sub

Private Sub Command7_Click()
rs.MoveFirst
display

End Sub

Private Sub Command8_Click()
Unload Me
End Sub

Private Sub Command9_Click()
fdis
End Sub

Private Sub Form_Load()
Set co = New ADODB.Connection
Set rs = New ADODB.Recordset
co.Provider = "microsoft.jet.oledb.4.0"
co.Open "c:\project\stock.mdb"
rs.Open "itemdet", co, adOpenDynamic, adLockOptimistic
End Sub

Private Sub Text1_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text2.SetFocus
End If



End Sub

Private Sub Text2_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text3.SetFocus
End If
```

```
End Sub

Private Sub Text3_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text4.SetFocus
End If

End Sub

Private Sub Text4_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text5.SetFocus
End If
End Sub

Private Sub Text5_KeyPress(KeyAscii As Integer)
Dim ch As Integer
If KeyAscii = 13 Then
ch = MsgBox("Do you want Save changes", vbYesNo)
If ch = vbYes Then
rs!itemid = Text1.Text
rs!itname = Text2.Text
rs!itemprice = Text3.Text
rs!rol = Text4.Text
rs!stock = Val(Text5.Text)
rs.Update
Command1.SetFocus
Else
MsgBox "Please correct the data"
End If
End If

End Sub

Private Sub Timer1_Timer()
Label3.Caption = Date
Label5.Caption = Time
End Sub

Public Sub display()
Text1.Text = rs!itemid
Text2.Text = rs!itname
Text3.Text = rs!itemprice
Text4.Text = rs!rol
Text5.Text = rs!stock
```

```
End Sub

Public Sub clea()
Text1.Text = ""
Text2.Text = ""
Text3.Text = ""
Text4.Text = ""
Text5.Text = ""
End Sub


Public Sub fena()
Command1.Enabled = False
Command2.Enabled = False
Command4.Enabled = False
Command5.Enabled = False
Command6.Enabled = False
Command7.Enabled = False
Command8.Enabled = False
Text1.Enabled = False
Text2.Enabled = False
Text3.Enabled = False
Text4.Enabled = False
Text5.Enabled = False
End Sub

Public Sub fdis()
Command1.Enabled = True
Command2.Enabled = True
Command4.Enabled = True
Command5.Enabled = True
Command6.Enabled = True
Command7.Enabled = True
Command8.Enabled = True
Text1.Enabled = True
Text2.Enabled = True
Text3.Enabled = True
Text4.Enabled = True
Text5.Enabled = True
End Sub


Private Sub Command1_Click()
rs.AddNew
```

```
clea
Text1.SetFocus

End Sub

Private Sub Command2_Click()
rs.Delete
End Sub

Private Sub Command3_Click()
Dim frs As ADODB.Recordset
Dim s As String
Dim f
f = InputBox("Please enter Itemid", "Sprint")
Set frs = New ADODB.Recordset
s = "select * from itemdet where itemid= " & f
frs.Open s, co, adOpenDynamic, adLockOptimistic
If frs.EOF = True And frs.BOF = True Then
MsgBox "Please Enter correct Itemid"
Else
Text1.Text = frs!itemid
Text2.Text = frs!itname
Text3.Text = frs!itemprice
Text4.Text = frs!rol
Text5.Text = frs!stock
End If
fena
End Sub

Private Sub Command4_Click()
rs.MoveLast
display
End Sub

Private Sub Command5_Click()
rs.MoveNext
If rs.EOF Then
MsgBox " You are in Last Record"
Else
display
End If
End Sub

Private Sub Command6_Click()
rs.MovePrevious
If rs.BOF Then
```

```
MsgBox "You are in First Record"
Else
display
End If

End Sub

Private Sub Command7_Click()
rs.MoveFirst
display

End Sub

Private Sub Command8_Click()
Unload Me
End Sub

Private Sub Command9_Click()
fdis
End Sub

Private Sub Form_Load()
Set co = New ADODB.Connection
Set rs = New ADODB.Recordset
co.Provider = "microsoft.jet.oledb.4.0"
co.Open "c:\project\stock.mdb"
rs.Open "itemdet", co, adOpenDynamic, adLockOptimistic
End Sub

Private Sub Text1_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text2.SetFocus
End If



End Sub

Private Sub Text2_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text3.SetFocus
End If

End Sub

Private Sub Text3_KeyPress(KeyAscii As Integer)
```

```
If KeyAscii = 13 Then
Text4.SetFocus
End If

End Sub

Private Sub Text4_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 Then
Text5.SetFocus
End If
End Sub

Private Sub Text5_KeyPress(KeyAscii As Integer)
Dim ch As Integer
If KeyAscii = 13 Then
ch = MsgBox("Do you want Save changes", vbYesNo)
If ch = vbYes Then
rs!itemid = Text1.Text
rs!itname = Text2.Text
rs!itemprice = Text3.Text
rs!rol = Text4.Text
rs!stock = Val(Text5.Text)
rs.Update
Command1.SetFocus
Else
MsgBox "Please correct the data"
End If
End If

End Sub

Private Sub Timer1_Timer()
Label3.Caption = Date
Label5.Caption = Time
End Sub

Public Sub display()
Text1.Text = rs!itemid
Text2.Text = rs!itname
Text3.Text = rs!itemprice
Text4.Text = rs!rol
Text5.Text = rs!stock

End Sub

Public Sub clea()
```

```
Text1.Text = ""
Text2.Text = ""
Text3.Text = ""
Text4.Text = ""
Text5.Text = ""
End Sub


Public Sub fena()
Command1.Enabled = False
Command2.Enabled = False
Command4.Enabled = False
Command5.Enabled = False
Command6.Enabled = False
Command7.Enabled = False
Command8.Enabled = False
Text1.Enabled = False
Text2.Enabled = False
Text3.Enabled = False
Text4.Enabled = False
Text5.Enabled = False
End Sub

Public Sub fdis()
Command1.Enabled = True
Command2.Enabled = True
Command4.Enabled = True
Command5.Enabled = True
Command6.Enabled = True
Command7.Enabled = True
Command8.Enabled = True
Text1.Enabled = True
Text2.Enabled = True
Text3.Enabled = True
Text4.Enabled = True
Text5.Enabled = True
End Sub
```