



PRODUCT STANDARD

PULVERIZERS

BA 50051

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ISO/IEC:

IS:

REV. No. 03

SPECIFICATION FOR GIRTH GEAR GREASING SYSTEM

1 - PURPOSE

These rules group the requirements and recommendations concerning the selection and purchase of an automatic grease spray type lubrication system for girth gear-pinion set used in ball tube mills.

The supply shall constitute a complete assembly in working order and ready for installation and connection.

2 - DESCRIPTION OF THE LUBRICATION SYSTEM

It consists of the following sub-assemblies :

- . 1 lubricant drum which acts as a tank
- . 1 pumping station
- . 1 compressed air treatment system
- . 1 spray panel
- . 1 set of rigid and flexible pipes which connect the above sub-assemblies
- . 1 set of control instruments with electric box

3 - ENVIRONMENT

- . Dusty atmosphere
- . Presence of vibrations
- . Lubricant : MOBIL make
Reference : MOBILTAC C or similar.

4 - SUB-ASSEMBLIES OF THE LUBRICATION STATION

4.1 - Pumping System

Pumping can be carried out by an electric Pump.

- . It must be adaptable to the lubricant drum

REVISION: INCLUDED VOLTAGES

ISSUED:
EDC (PULVERIZERS)
HYDERABAD

CONCURRED

STANDARDS

REV. NO.	REV. DATE:	REVISED:	APPROVED:	PREPARED:	APPROVED:	DATE:
01	13.12.94	Prize	Prize	Prize	Prize	26 APR '93



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- Supply a lifting system for replacing the drum (see sketch in appendix F.)
- An electric level controller trips an alarm in case of low level.
- The grease flows which are necessary for running-in and normal operation periods are indicated appendix A.

4.1.1 - System with electric pump

- The electric pump permits sufficiently fine proportioning of grease, in order to meet the daily quantities used
- The greased quantity atomized is adjusted by acting on the pump (cam adjustment)

4.2 - Air treatment system

It is used for

- atomizing the grease on the teeth

The equipment which forms this system is listed appendix C or E.

4.3 - Spray panel

- It consists of a hinged door which is fixed on the girth gear housing (see general arrangement sketch appendix F.)
- It basically includes a lubricant distributing block as well as spray valves.
- The equipment that forms this system is listed appendix C or E.

4.3.1 - Spray valves

- Spray valves position is indicated sketch appendix G.
- The spray valves number depends on the width of the girth gear
- It is usually provided one spray valve for lubricating a girth gear width of 80 to 100 mm

4.3.2 - Distributing block

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY4.3.2 - Distribution block

- It supplies the spray valves with the quantities of proportioned lubricants by displacement of its pistons ; these displacements are generated by the flow of grease discharged by the pump.
- The piston of one of the elements of the distributor includes an index which acts on an electric contact.
- Acting on this contact permits determining the quantity of grease fed within a given time, tripping timers.

4.3.3 - Control equipment on the distributorSystem A with electric pump

- 2 adjustable timers ensure:
 - grease delivery to the spray valves through the distribution group.
 - grease atomizing on the teeth though compressed air injection.
- The first timer controls the duration of atomization (adjustable from 0 to 10s) by opening the solenoid valve mark 8, sketch appendix B and is actuated by switching the electric contact mentioned in 4.3.2.
- The other timer controls the time spent between two atomizations (adjustable from 0 to 2 mn), trips a "lubrication defect" alarm if the time lapsed is longer than the adjusted time. This timer must be reset at each switching of the electric contact.

4.4 - Control instruments and electric box4.4.1 - Control instruments

- The instruments (alarm thresholds, valve opening) shall be shop-adjusted except for the timers and the impulse meter whose setting values are determined on the site.
- All instruments are provided with tight box, protection level IP655 and tropicalized contacts, if necessary.

4.4.2 - Electric box

- The protection of this box is at least IP 55
- It groups the terminal boxes, timers, meters relays.



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For grith gear greasing system with pneumatic pump

5.1 Pumping System

- . Pumping is carried out by a pneumatic pump.
- . It must be adaptable to lubricant drum.
- . Supply a lifting system for replacing the drum (See Sketch in appendix F).
- . An electrical level controller trips an alarm in case of low level.
- . The grease flows which are necessary for running in and normal operation periods are indicated in appendix A. .
- . Pneumatic pump does not permit sufficiently fine proportioning of grease, in order to meet the daily quantities used.
- . Therefore, the lubricating cycle must be periodically interrupted (for a maximum of 10 minutes).

5.2 Air Treatment System

It is used for

- . atomising the grease on the teeth and driving the pneumatic pump.

Distributing block

- . Piston of one of the elements of the distributor includes an index which acts on electrical contact.
- . Acting on this contact, the impulse meter is actuated.

Control Equipment on the Distributor

System with pneumatic pump

- . 2 adjustable timers and an impulse meter ensure:
 - grease delivery to the spray valves through the distribution group
 - grease atomizing on the teeth through compressed air injection
 - periodically stop the operation of the pump
- . The first timer periodically (period adjustable from 0 to 10 mn) cause pump starting and air feeding to the spray valves (opening of solenoid valves mark 7 and 8, sketch appendix D.)

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- The impulse meter controls the number of cycles achieved by the distributor and therefore the grease quantity injected. When the number of impulses displayed is reached, the pump is stopped (closing of solenoid valve mark 7, sketch appendix D.1)
- The second timer controls stopping of the air injection to spray valves (closing of solenoid valve mark 8, sketch appendix D.2)

It also generates an alarm if the number of impulses displayed has not been reached in the time fixed (adjustable from 0 to 20 mn)

This timer is reset by the first timer.

6 DATA TO BE GIVEN ALOGNWITH OFFER

- 6.1 Dimensional drawing of lub oil system should be submitted.
 - 6.2 Instrumentation on lubrication system, lubrication scheme, and details about lubrication pump and motor.
 - 6.3 Inspection procedures, detailed Quality Plan and test procedures.
 - 6.4 Painting and packing details.
 - 6.5 Reference list of lubrication system supplied earlier, with performance details.
 - 6.6 Guarantee certificates.
- 7 Following documents shall be supplied with in 4 months from the placement of purchase order.
- A. O&M Manual- Twenty copies.
 - B. General Arrangement drawing of lubrication and piping system - 20 copies.

VAR.NO.	DESCRIPTION	MATL. CODE.
01	GIRTH GEAR GREASING SYSTEM WITH ELECTRICAL PUMP	BA9750051017
02	GIRTH GEAR GREASING SYSTEM WITH PNEUMATIC PUMP	BA9750051025
03	GIRTH GEAR GREASING SYSTEM WITH ELECTRICAL PUMP - FOR B448 MILL - 3 NO'S SPRAY NOZZLES.	BA9750051033



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APPENDIX - A

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DATA SHEET

REV BY DATE

00

LUBRICATION SYSTEM FOR GIRTH GEAR AND PINION

MILL TYPE :

10 SITE

11 TEMPERATURE MIN. : AVERAGE : MAXI. :

12 ATMOSPHERE (MOISTURE - STEAM - DUST - CHEMICAL)

20 GENERALITIES

21 GIRTH GEAR WIDTH :

22 NUMBER OF SPRAY VALVES :

23 VERSUS WITH ELECTRICAL PUMP : PNEUMATIC PUMP:

30 GREASE

32 QUALITY

32 CONSUMPTION RUNNING IN PERIOD: NORMAL PERIOD:

40 SERVICE AIR

41 AIR FLOW FOR SPRAY VALVES : FOR PNEUMATIC PUMP (1):

42 AIR PRESSURE ON SPRAY VALVES :

50 COMPLEMENTARY INFORMATIONS

(1) For system with pneumatic pump
LINE 22-41-42 are to be completed by the supplier

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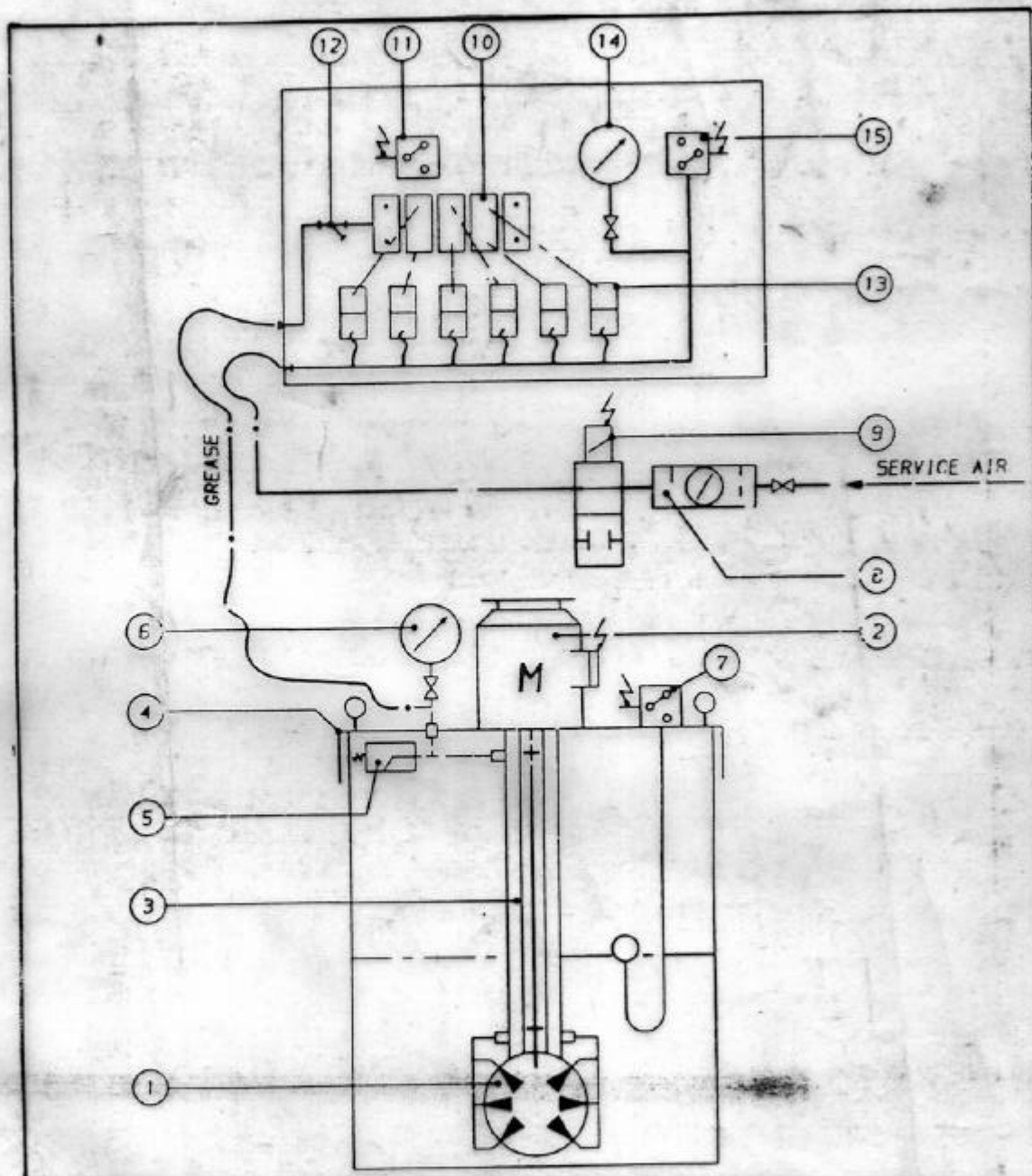
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APPENDIX-B

TYPICAL LUBRECACTION DIAGRAM FOR GIRTH GEAR WITH ELECTRICAL PUMP



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APPENDIX - C

LUBRICATION OF THE PINION-WHEEL ASSEMBLY
WITH ELECTRIC PUMP

LIST OF EQUIPMENT

Mark	Quantity	Description	Observations						
1	1	Electric control pump	Pressure : 10 MPA						
2	1	Electric motor 0.55 KW	1500 RPM - 415V, 3 ϕ , 50Hz						
3	1	Mechanical and hydraulic connecting device							
4	1	Cover for open drum	. Provided with 3 lifting rings.						
5	1	Safety valve	. for pump protection . calibration pressure: 10 MPA						
6	1	Pressure gauge with 1/4 turn shut-off valve	. box dia 100mm filled with glycerine . Scale 0-16 MPA						
7	1	Electric level controller							
		<u>Air treatment assembly</u>							
8	1	Pressure reducer lubricating filter with shut-off valve	. filtration : 50 micron . automatic drain						
9	1	Supply solenoid valve	<table border="1"><tr><td>VAR NO</td><td></td></tr><tr><td>01</td><td>110 VAC</td></tr><tr><td>02</td><td>240 VAC</td></tr></table>	VAR NO		01	110 VAC	02	240 VAC
VAR NO									
01	110 VAC								
02	240 VAC								
		<u>Spray panel</u>							
10	1	distributor block (n outlets)							
11	1	Control equipment on the distributor	. according to description chapt 4.2.3						
12	1	Filter strainer	. mesh 8/10						
13	n	Spray valves							
14	1	Pressure gauge equipped with 1/4 turn shut-off valve	. box dia 100mm filled with glycerine . scale 0 - 1 MPA						
15	1	Pressure switch	. adjusting range : 0 - 1 MPA						



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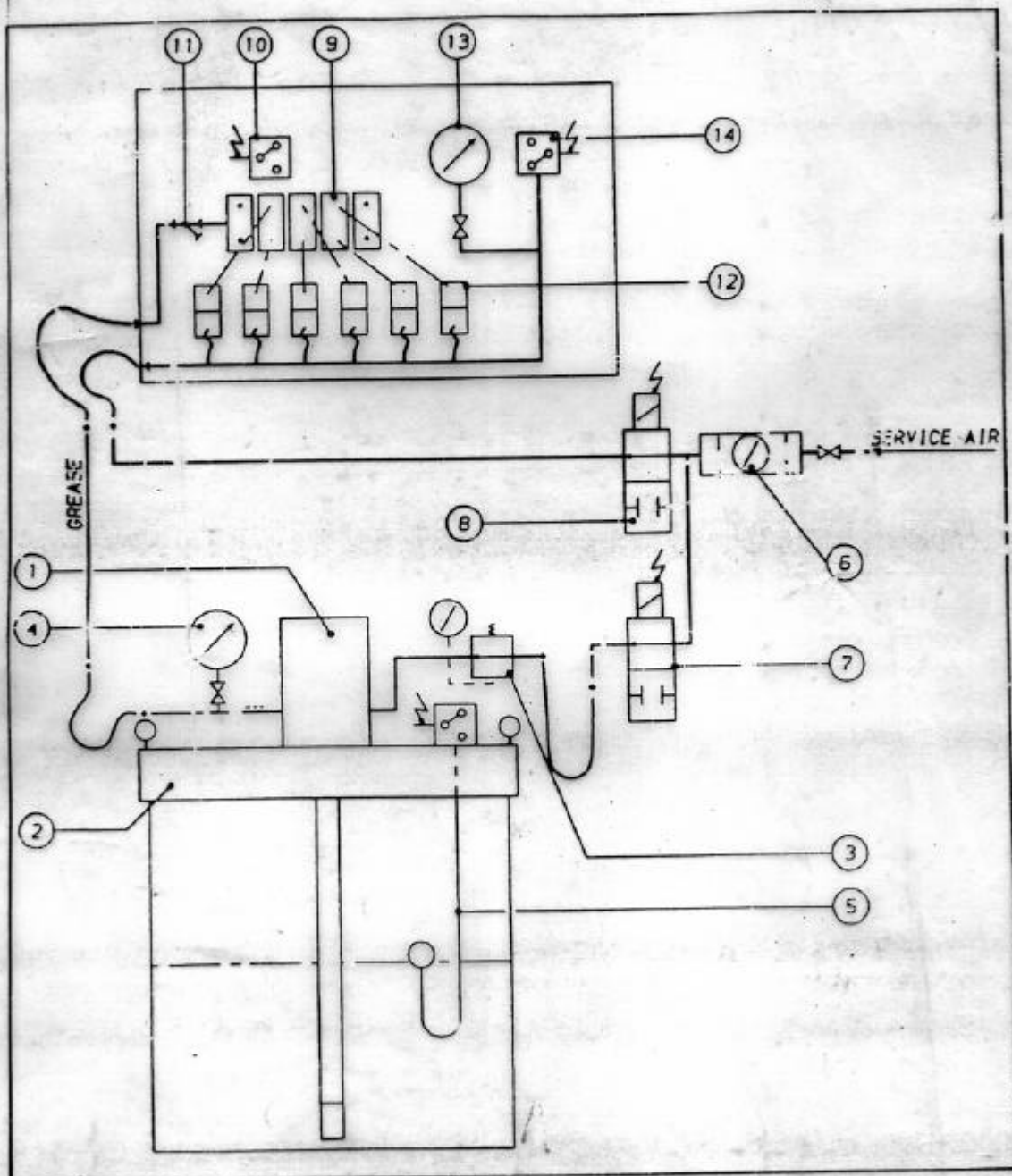
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APPENDIX-D

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TYPICAL LUBRICATION DIAGRAM FOR GIRTH GEAR ALTERNATIVE WITH PNEUMATIC PUMP



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APPENDIX - E

REV. NO. 03

LUBRICATION OF THE PINION-WHEEL ASSEMBLY
ALTERNATIVE WITH PNEUMATIC PUMP
LIST OF EQUIPMENT

Mark	Quantity	DESIGNATION	OBSERVATIONS
1	1	Pneumatic control pump	. ratio : 45/1
2	1	Cover for open drum	. provided with 3 lifting rings
3	1	Air pressure reducer	. adjusting range 0 - 1,2 MPA
4	1	Pressure gauge equipped with a 1/4 turn shut-off valve	. box dia 100 mm filled with glycerin . scale : 0- 16 MPA
5	1	Electric level controller	
		<u>Air treatment system</u>	
6	1	Pressure reducer lubricating filter with shut-off valve	. filtration : 50 micr
7/8	2	Solenoid valves	
		<u>Spray panel</u>	
9	1	Distributor block (n outlets)	
10	1	Control equipment on the distributor	. according to description ch 4.2.3
11	1	Filter-strainer	. mesh 8/10
12	0	Spray valves	
13	1	Pressure gauge equipped with a 1/4 turn shut-off valve	. box dia 100 mm filled glycerin . scale 0 - 1 MPA
14	1	Pressure switch	. adjusting range 0 - MPA.

VAR	NO
01	110 VAC
02	240 VAC



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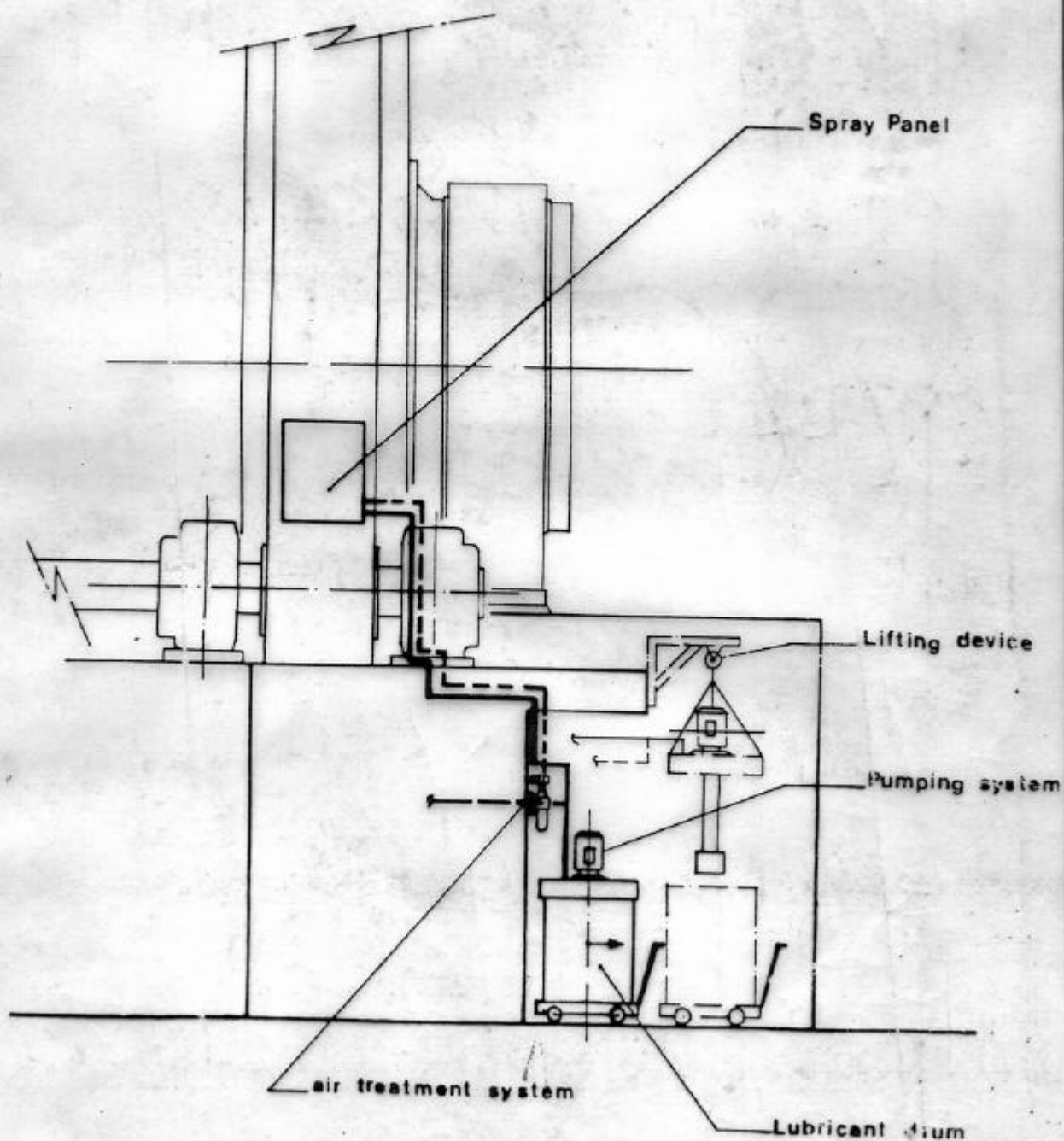
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TYPICAL GIRTH GEAR LUBRICATION SYSTEM





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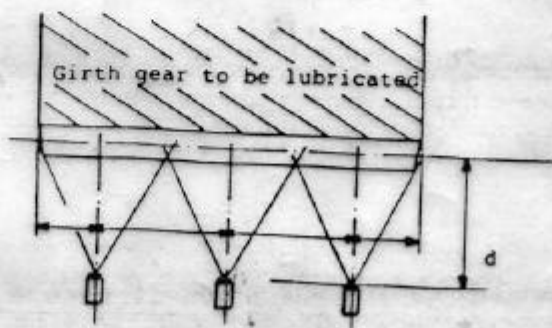
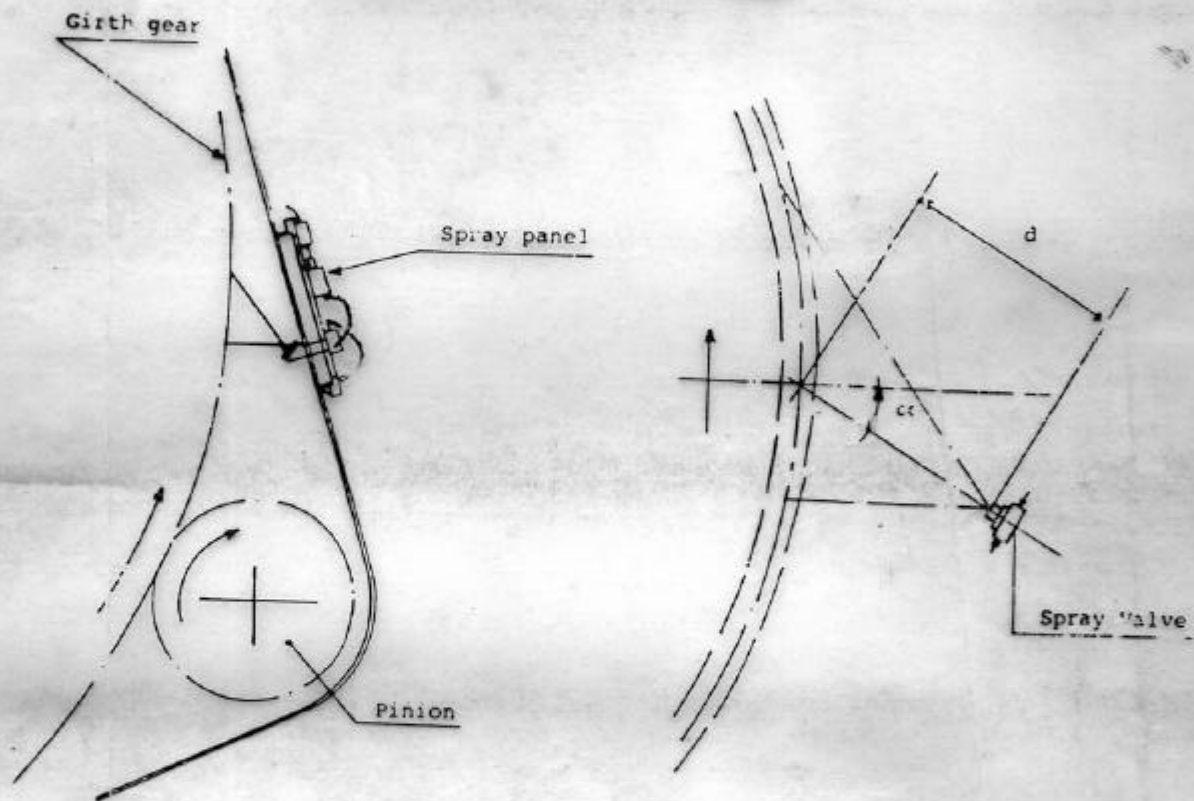
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APPENDIX-G

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LAY OUT DIAGRAM OF SPRAY PANEL



Spray Valves

$d - e$: The value depends on the spray valve conception
 It will be determined by experiments
 As typical value d : 150 mm

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