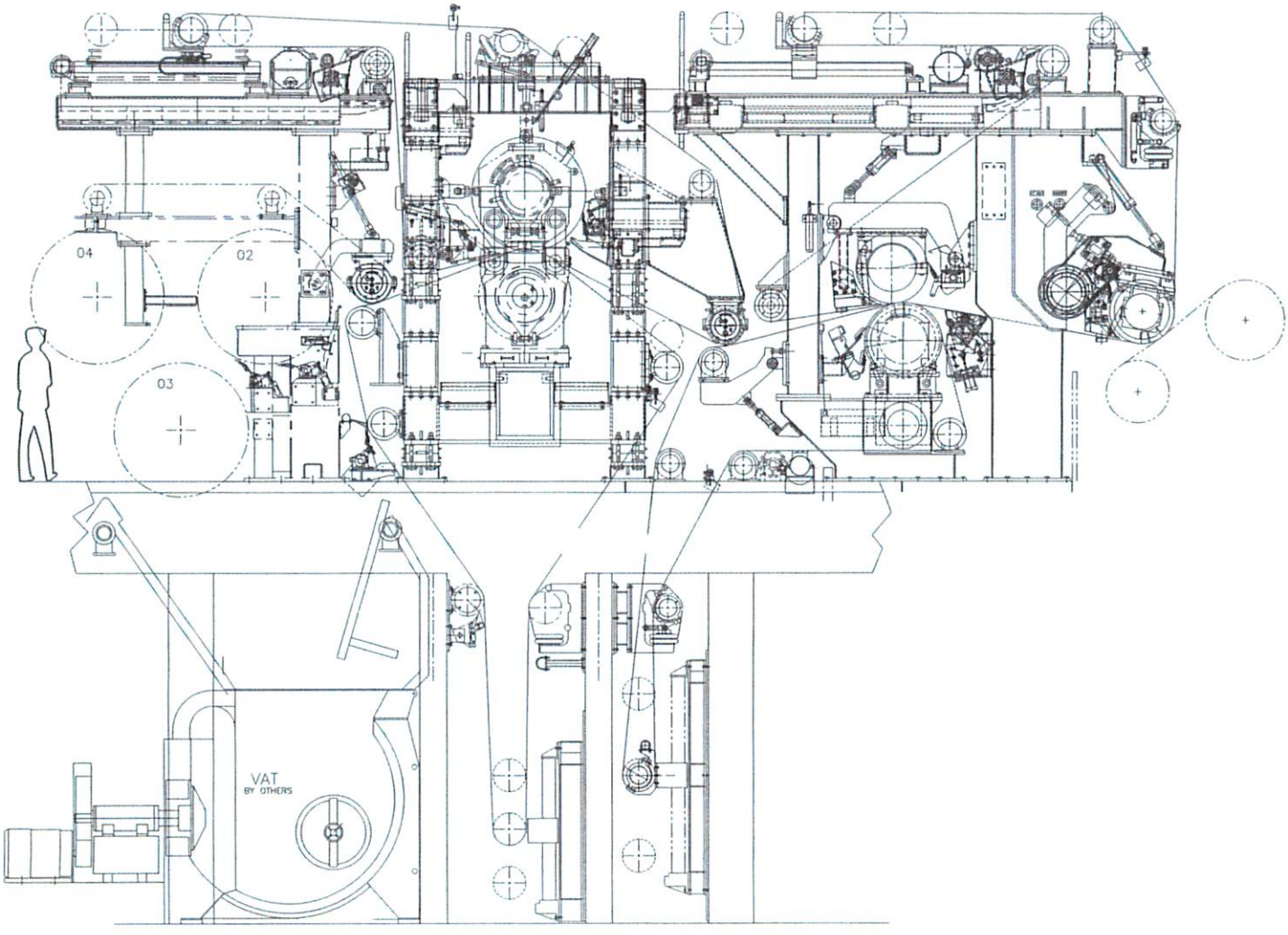
Appleton Paper
West Carrollton, Ohio
Number 92 Paper Machine



Press Instruction Manual

Paperchine

Ref. Number 119791
Ver. 1.05

December 2007

Order Number A1013
Manual Number A1013_PRESS

2 : Introduction

2.1 MH Shoe Press Purpose and Outline

MH Shoe Press is key component of a press section composing paper machine to improve paper quality and also to remove water out of web using heavy roll and high nip pressure. This MH Shoe Press manufactured by Mitsubishi Heavy Industries, Ltd. has following features.

- High efficiency water removal supports to achieve running cost savings
- Easy operation of machine assures steady performance
- Blanket change and other maintenance works are easy
- Adopting MH Shoe Press assures oil splash free and high speed operation
- MH Shoe Press Eliminates the water equally in the both directions of the web and forms the fine internal characteristics by dewatering gently in order for not having a crushing.
- This manual explains each parts in MH Shoe Press and operation procedure of MH Shoe Press. Before you run the machine please read through this manual and also separate manual on maintenance and checking.

2.2 MH Shoe Press Specification

2.2.1 Type

Type : MH Shoe Press

2.2.2 Wire Width

Wire Width : 4,724mm (186 Inches)

2.2.3 Operating Speed and Nip Pressure

Operating speed (Maximum)	975 m/min (3200 fpm)	
Design nip pressure (Maximum)	First press (1P)	Existing
	Second Press (2P)	1,050kN/m(6,000 PLI)

NOTE Regarding other specifications please refer to manufacturing specifications.

2.3 Composition of MH Shoe Press (Refer Fig 2-1)

NOTE Detailed function of the following parts are shown in section 3.

a. MH Shoe Press-C Module

This is top roll of MH Shoe Press.

b. MH Shoe Press Roll

This is bottom roll (hard rubber cover) of MH Shoe Press.

c. MH Shoe Press Load Link

This is connection link between MH Shoe Press-C Module and MH Shoe Press Roll.

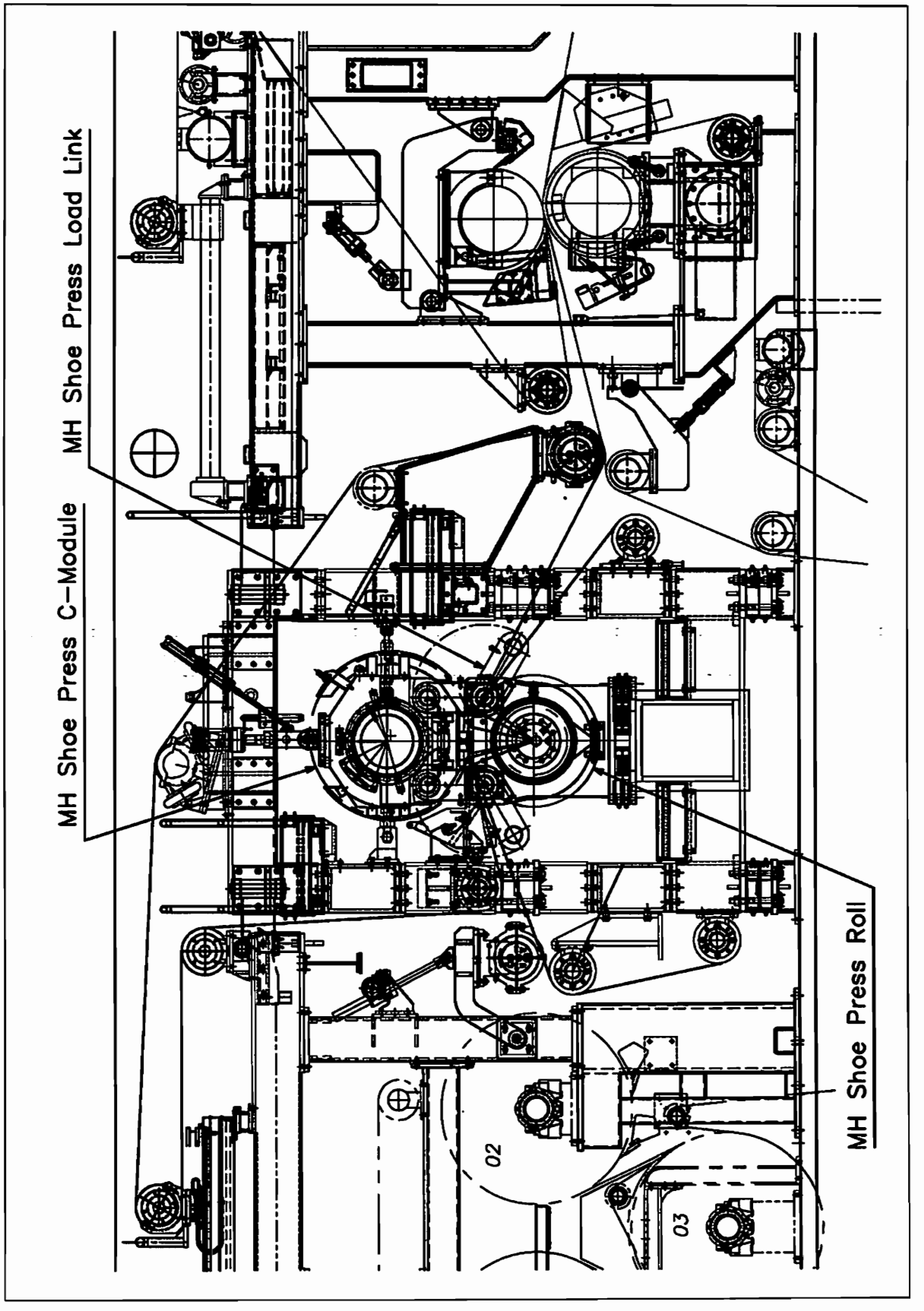


Fig.2-1 Outline and Composition of the MH Shoe Press

3 : Function Description

3.1 MH Shoe Press-C Module

3.1.1 Outline

Top MH Shoe Press-C Module is a complete unit module assembly consisting of a steel-fabricated centershaft. This centershaft is complete with hydraulic shoe, hydraulic shoe piston, blanket tension assembly and lube shower. The MH Shoe Press-C Module is pre-piped and pre-wired to terminals on the press framing for interconnecting piping and wiring.

MH Shoe Press-C Module oil distribution and collection system is designed to maintain the necessary oil films to support high nip loads and speeds with uniform film thickness and temperature.

The MH Shoe Press-C Module heads are designed with mountings on the centershaft accommodating centershaft deflection and reduced thrust load on the bearings. The head assembly uses large bearings with continuous oil lubrication versus grease which will provide longer bearing life.

The blanket is clamped to the rotating head assembly offering a quick blanket change.

MH Shoe Press-C Module is held to bottom roll bearing stand by links both on front and back side, so reaction force due to nip pressure is converted to internal force. Opening and closing of all links are done by oil hydraulic rotary actuator.

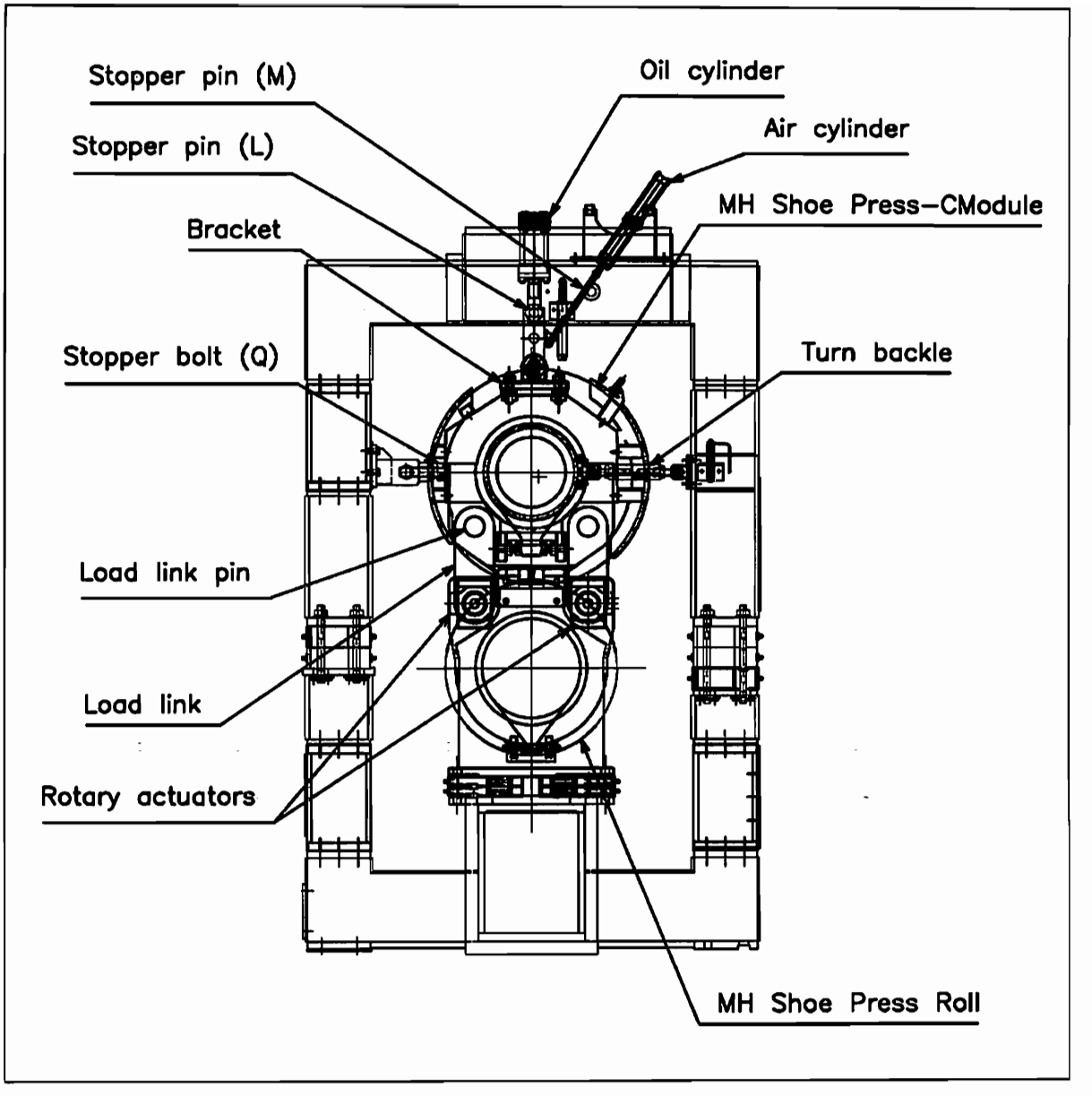


Fig 3-1 MH Shoe Press Front Side View

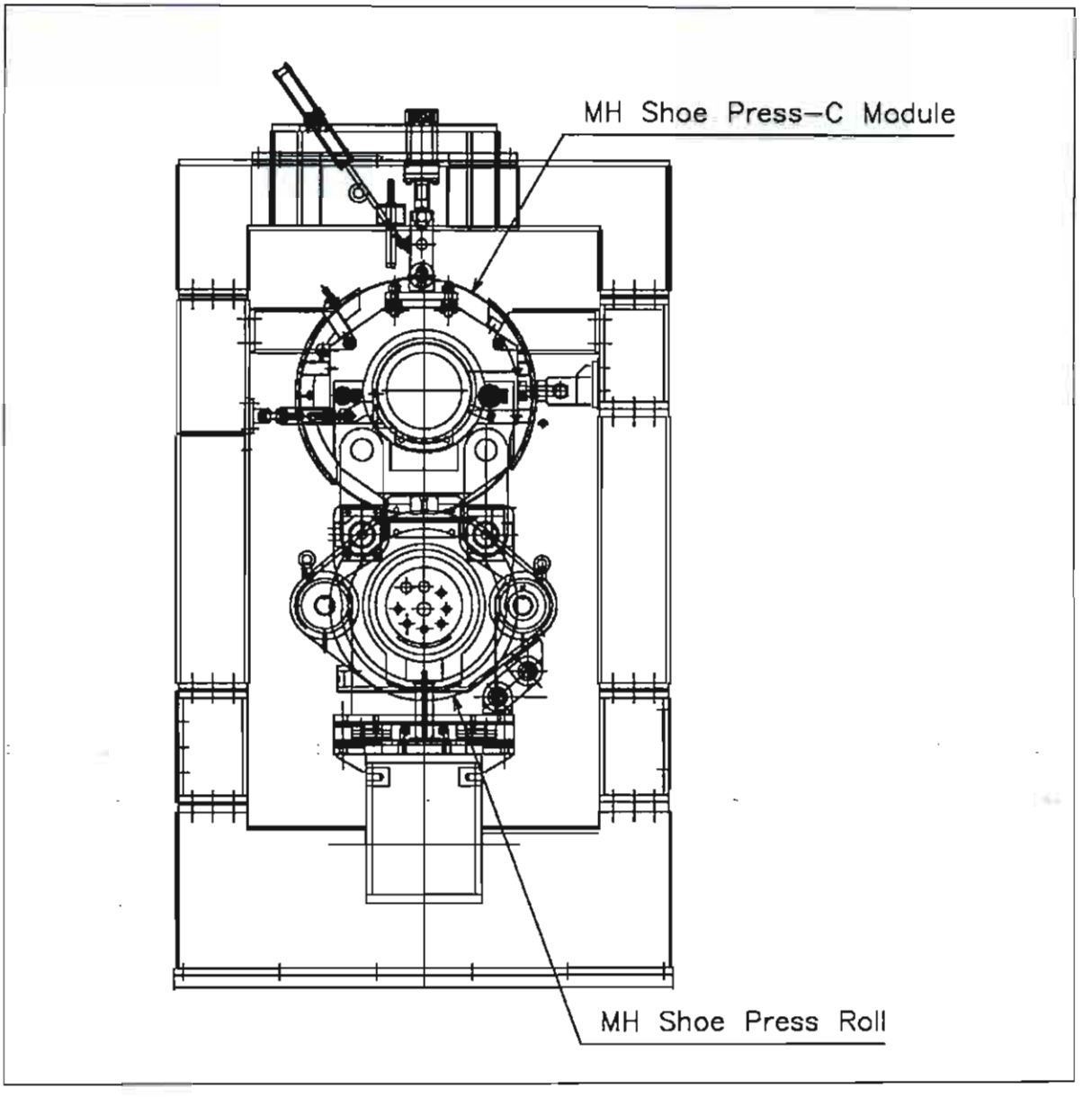


Fig 3-2 MH Shoe Press Back side View

3.1.2 Construction

Piston on the fixed center shaft push shoe to conform nip between blanket and fixed bottom roll.

(a) Shoe and blanket is lubricated by oil from lubrication shower.

(b) Oil which passed through shoe and blanket nip is scraped by wiper and collected into oil pan to return to oil unit through inside piping together with flooded oil at the incoming nip.

(c) Wiper is loaded by air tube.

(d) Recommended air pressure for wiper is about 0.023 MPa. 3.34 psi

(e) Do not drive MH Shoe Press until the wiper is loaded.

(f) When piston is at the highest position, clearance between bottom roll and shoe will be about 19.5 mm (0.77 inches).

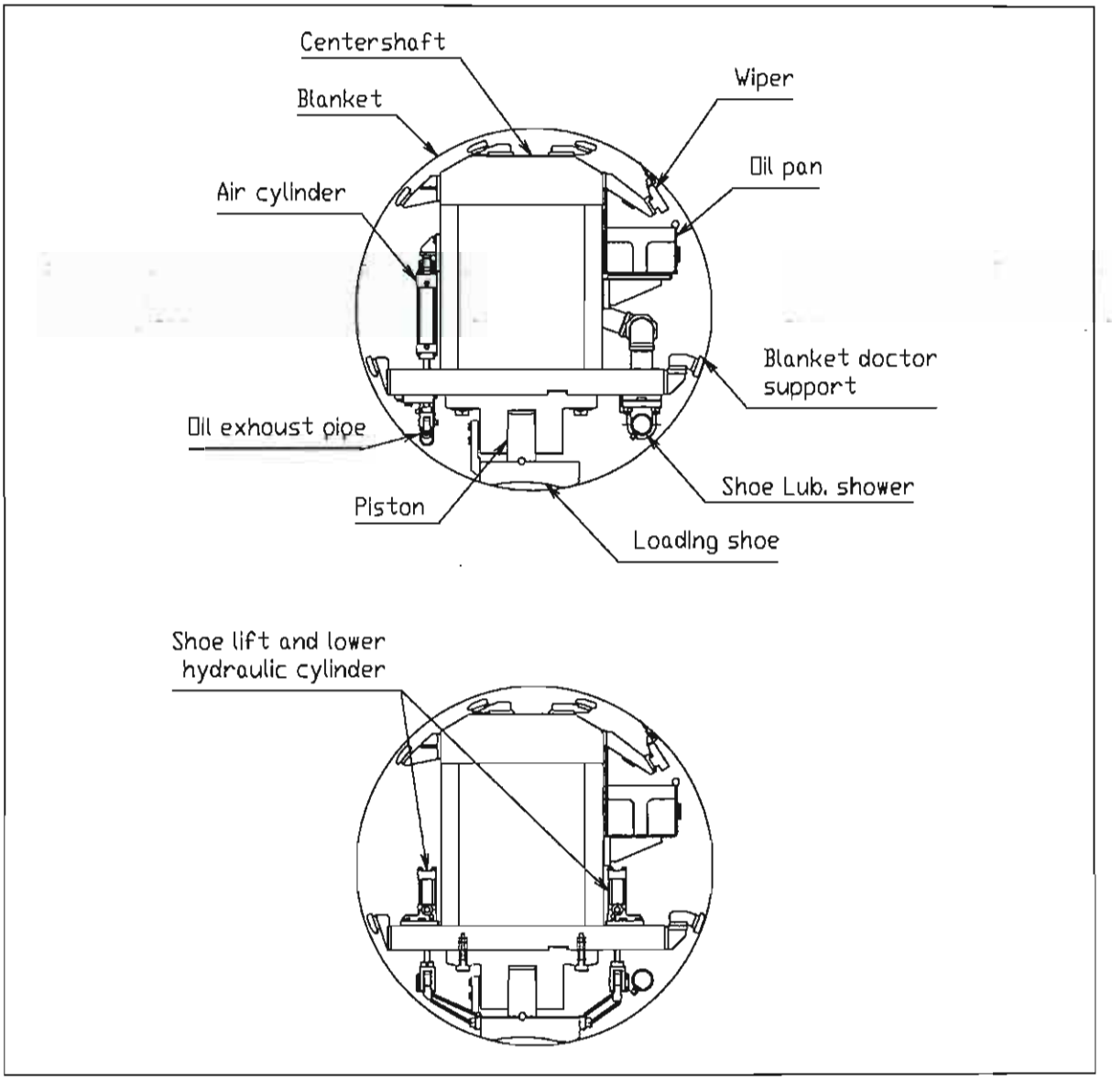


Fig 3-3 MH Shoe Press Cross-Section

3.1.3 Setting Liner Pressure

Using loading diagram Fig 3-4, operation liner pressure setting and superintendence can be done. The pressure difference between MH Shoe Press-C Module and MH Shoe Press Roll within 0.3 - 0.5 MPa (43.5 - 72.5 PSI) will be normal. MH Shoe Press-C Module oil pressure and MH Shoe Press Roll oil pressure is controlled by one hydraulic unit.

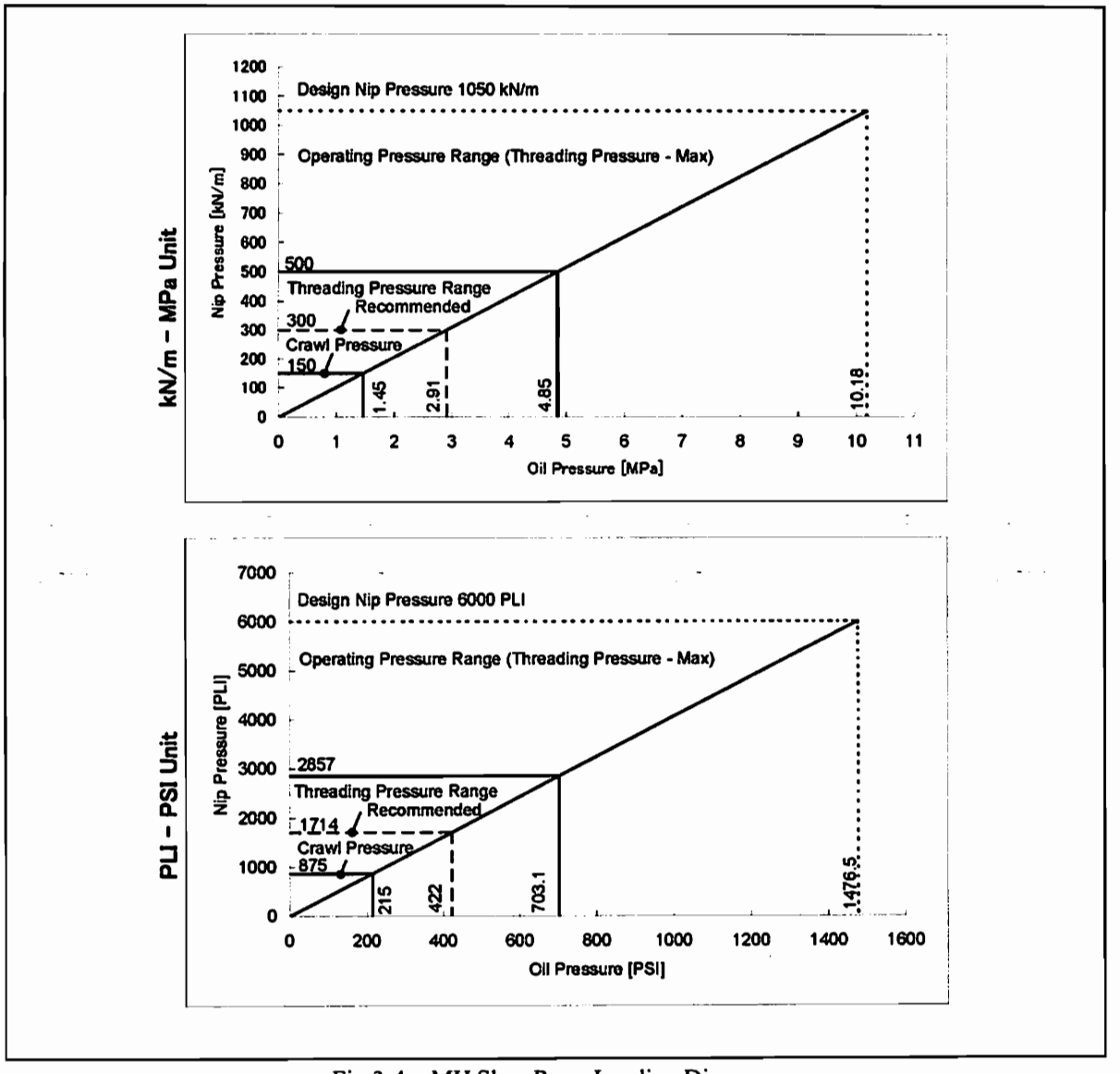


Fig 3-4 MH Shoe Press Loading Diagram

3.1.4 Blanket Installation

NOTE Please refer to Fig 3-6.

Align the head pins on operator and drive sides with the fixed hole of the blanket and set blanket in by using a tool. Then, fix it with the cover.

3.1.5 Blanket Tension

During the normal operation, blanket needs circumferential tension (MD) and cross-machine directional tension (CD). Circumferential tension is controlled by the very low air pressure inside the blanket loop. (Refer Table 3-1) Cross-machine directional tension is controlled by the pressure for hydraulic cylinder installed at front inside, which pressure is related to the inside air pressure. (Refer to Fig 3-5)

Table 3-1 Circumferential Tension

Air Pressure		Tension (MD)	
kPa	PSI	kN/m	PLI
6.0	0.87	3.9	22.8
7.0	1.02	4.55	26.0
8.0	1.16	5.25	30.0

Recommended Value

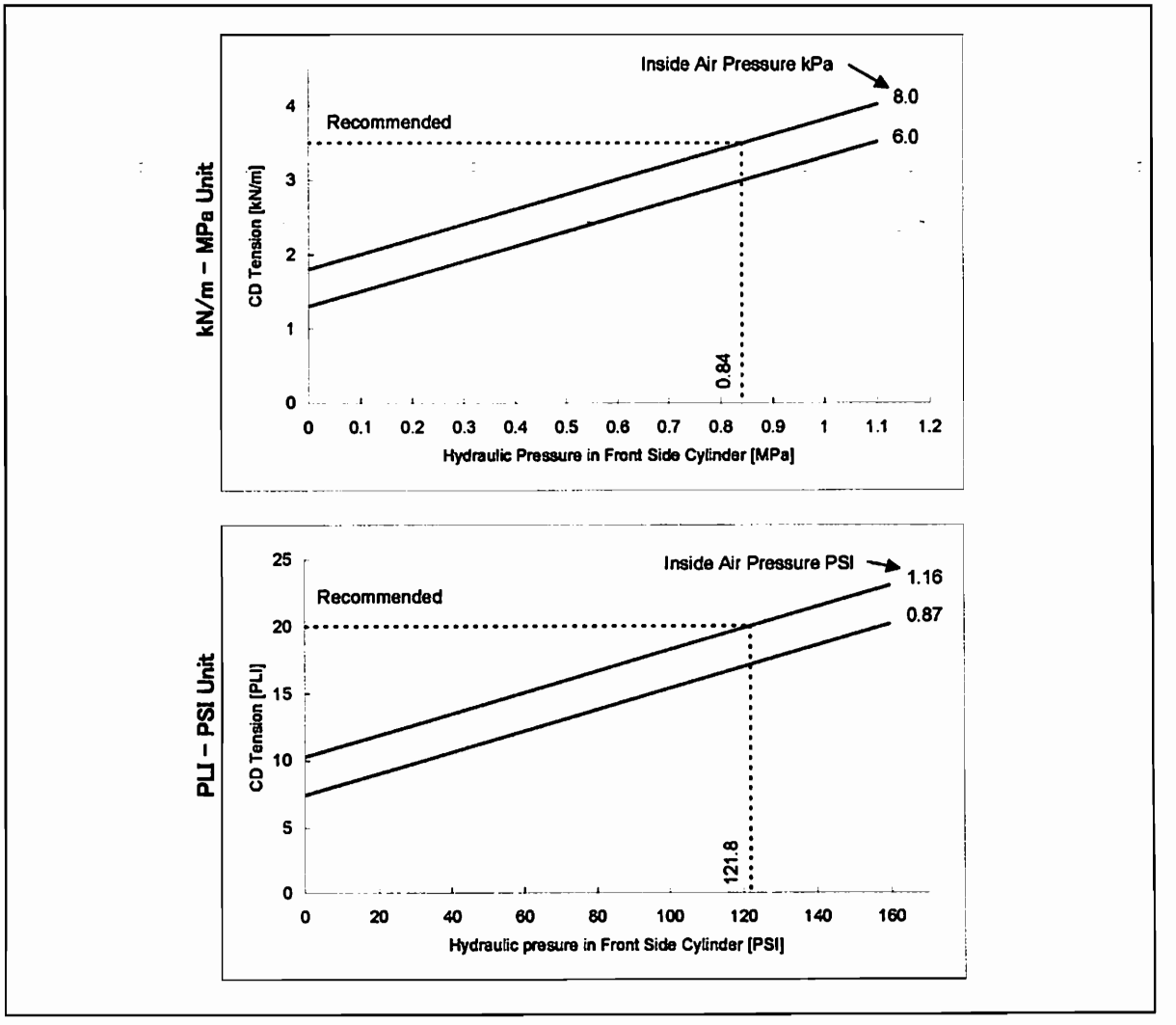


Fig 3-5 CD Tension

Fig 3-6 MH Shoe Press Inside Details

On front side and back side, 8 hydraulic cylinders in total are equipped to absorb cross-directional elongation of blanket.

4 hydraulic cylinders at back side are used to fix the blanket position. Hydraulic cylinders at front side are used to control tension and also to absorb blanket elongation.

At the initial stage after blanket is installed, back side cylinder is stretched till stroke end against the stopper and front side cylinder is stretching to absorb blanket elongation as shown in Fig 3-7.

When the blanket elongation takes place and front side cylinder is not possible to absorb this, change back side stopper position and pull the blanket towards back side. Then front side cylinder will absorb the further elongation of blanket same way as for new blanket.

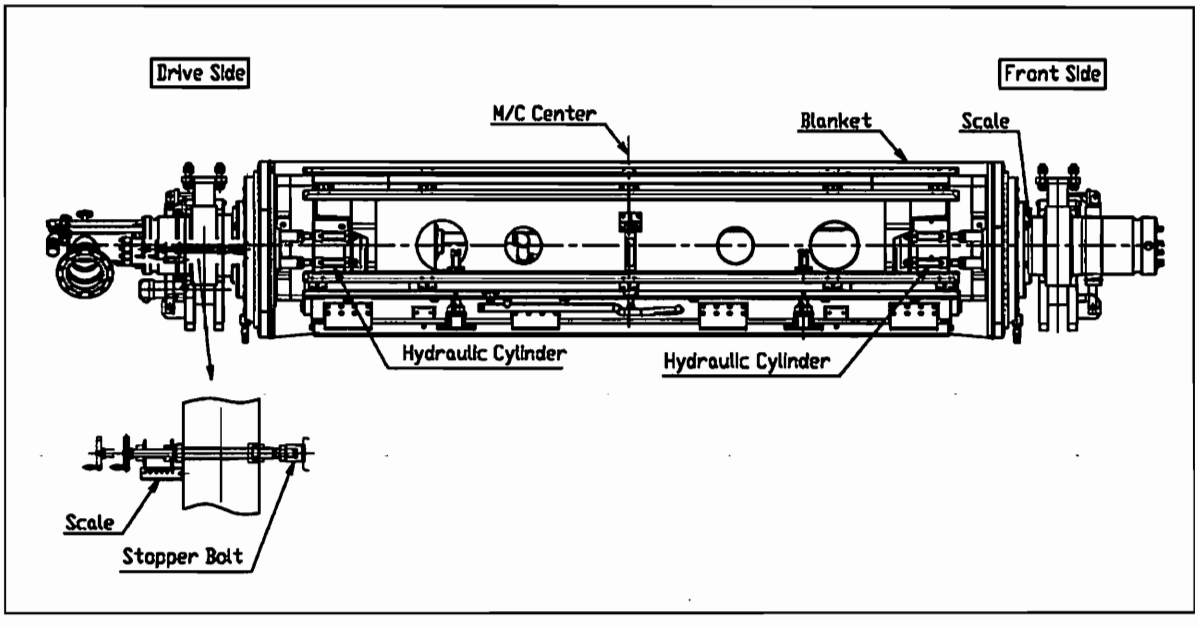


Fig 3-7 MH Shoe Press Blanket Tightening Device

3.1.6 Remaining Oil Evacuation

At the middle of MH Shoe Press-C Module, remaining oil evacuation device is installed. This device is to return remaining oil within blanket loop to oil tank to avoid problem at blanket change or at start-up.

This device is lifted by air cylinder during normal operation and discharge pipe is to be lowered for scavenging remaining oil.

Diaphragm type pump is located on the back side for this device.

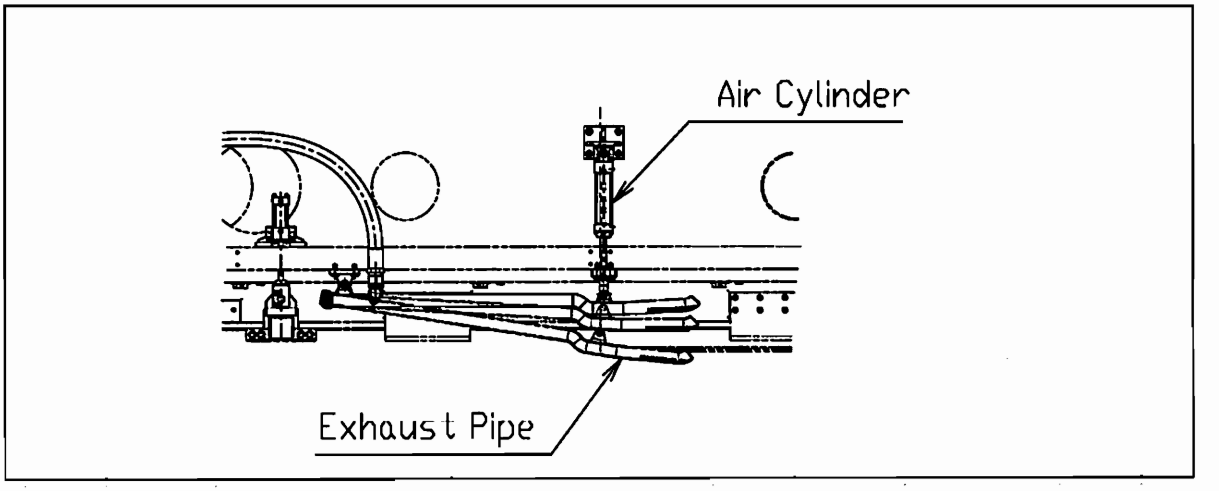


Fig 3-8 MH Shoe Press Oil Evacuation Device

3.1.7 Doctor Support

The blanket doctor support is installed at lead-in side of the shoe. The bracket of this support has slotted holes that can allow to adjust the support position as shown

Fig 3-9.

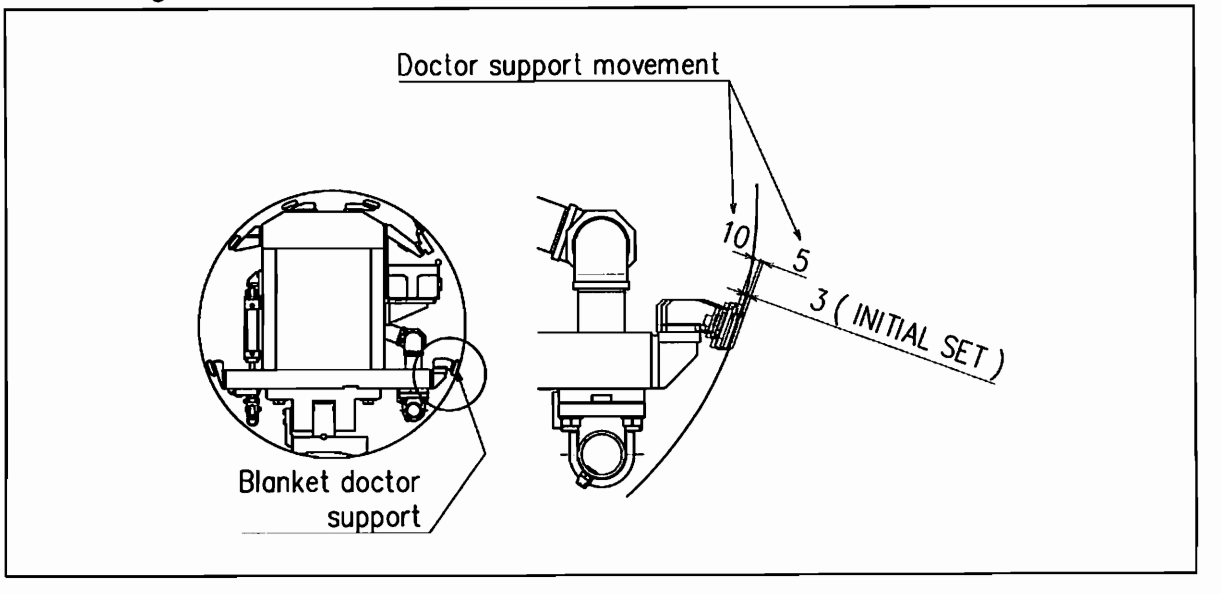


Fig 3-9 Blanket Doctor Support.

3.2 MH Shoe Press Roll (Old name : CC-Roll)

3.2.1 Outline

MH Shoe Press Roll can be used for all sections which require crown adjustment. During machine operation, the quantity of crown can be controlled freely and promptly for any nip pressure.

The MH Shoe Press Roll of paper making machine manufactured by Mitsubishi Heavy Industries, Ltd. has the following features.

(a) It is effective to prevent burring.

(b) It is easy to adjust the crown during operation.

(c) The roll surface temperature is controlled uniform as oil is circulating in the roll. In addition, because of cooling effect, even a rubber covered roll can be used at high speed under high nip pressure.

3.2.2 Construction

The MH Shoe Press Roll is a solid roll with forged steel shell, inside and outside diameters machined finished, rubber covering, bolted-on heads, anti-friction bearing assemblies designed for continuous oil lubrication. MH Shoe Press Roll is newly designed to incorporate multi-type shoes into the conventional Mitsubishi CC-Roll which has a long experience.(Fig 3-10, Fig3-11) For arrangement of the MH Shoe Press Roll, refer to the attached drawings.

Press part assembly	(See attached drawing; DHB7180)
MH nip roll arrangement	(See attached drawing; 4TB0102)

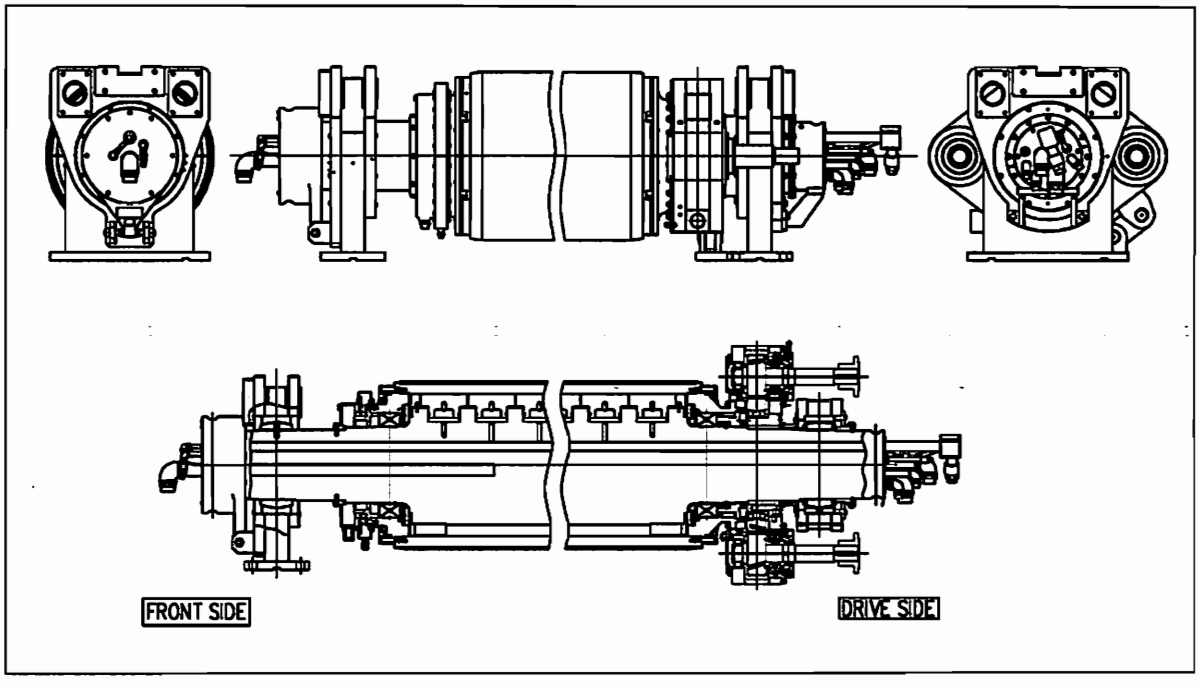


Fig 3-10 MH Shoe Press Roll

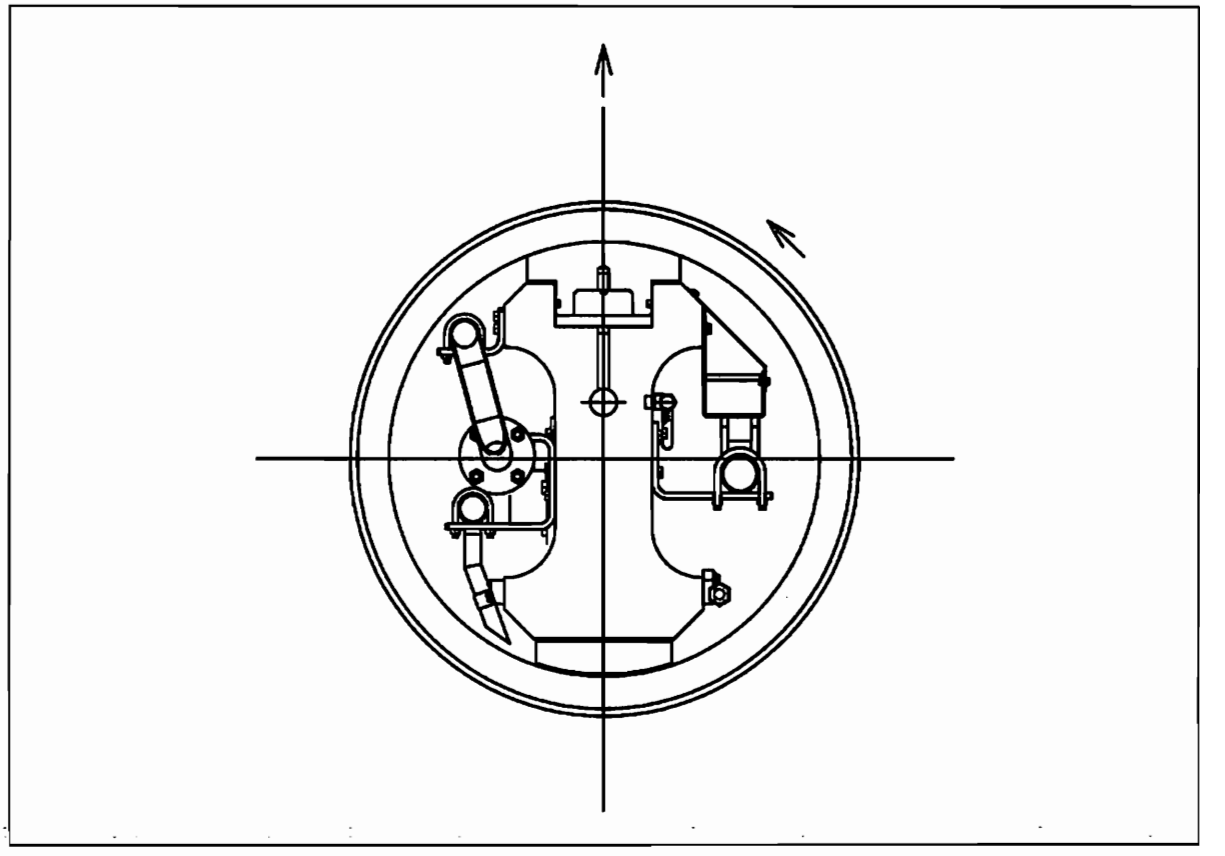


Fig 3-11 Cross section of MH Shoe Press Roll

3.2.3 Features

- Compared to the conventional single shoe type CC-Roll, MH Shoe Press Roll can form stabile oil film by incorporating multi-type shoes.
- In order to minimize damage to inside surface of the shell and shoes in case that bearing is damaged, main bearing oil scavenge (front side and back side) and shoe lubrication oil scavenge is separated.

3.3 MH Shoe Press Load Links

MH Shoe Press is fixed supported by links from bottom roll housing.

All the nip load during operation will be absorbed by the links. Opening and closing of links are done by rotary actuators installed with the supporting pin which are operated manually. (The rotary actuators are operated by push button on the machine frame normally.)

(Regarding operation of load links, refer to the operation manual for blanket change.)

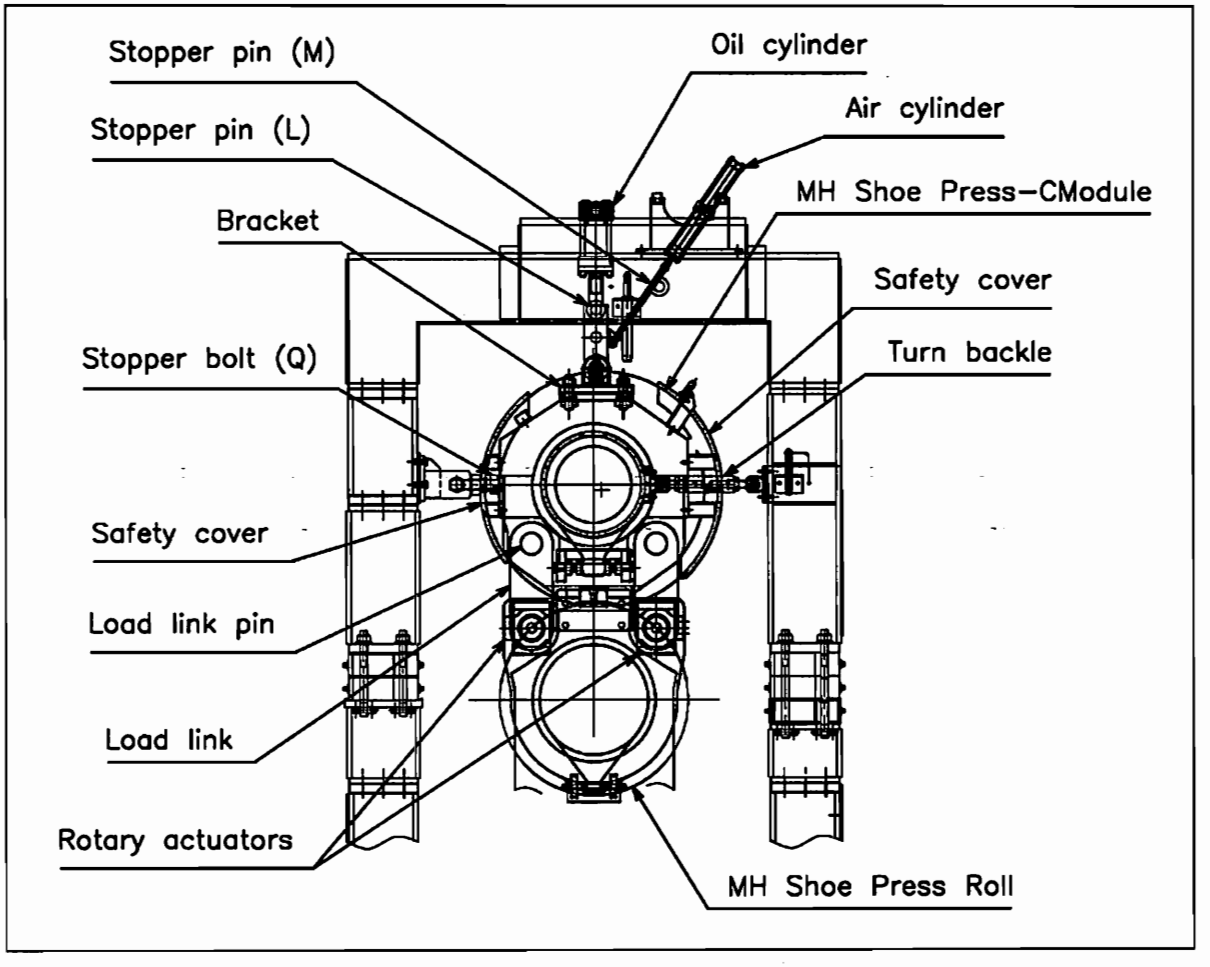


Fig 3-12 MH Shoe Press Load Links

4 : Preparation

4.1 Check and Confirmation Items before Operation (Electric Power-off)

Please check and confirm following items before machine operation.

NOTE The check and confirmation items listed below are reference that based on the similar paper machine of Mitsubishi Heavy Industries, Ltd. in the past. Therefore, it includes not only the MH Shoe Press but also other equipment on the press part. The proper check and confirmation items will be prepared by the buyer.

4.1.1 Initial State

(1) Confirm electric power off.

(2) Confirm felts are slack.

(3) Confirm suction pick-up roll is at the top position and safety pin is inserted.

(4) Confirm links between MH Shoe Press-C Module and MH Shoe Press Roll are open and safety pin is inserted for MH Shoe Press-C Module. (The MH Shoe Press-C Module is lifted position.)

(5) Confirm air pressure is zero MPa in air load tube for suction roll.

(6) Confirm doctor blades are off from roll surface.

(7) Confirm showers are off.

(8) Confirm vacuums are off.

(9) Confirm blanket is set on MH Shoe Press-C Module.

4.1.2 Confirmation Items

(1) Confirm there is no any foreign materials in the machine and around the machine.

⚠ATTENTION Foreign materials, tools and small screws coming into roll nip can cause damage and poor quality products which necessitate roll change, so maximum attention should be paid.

(2) Confirm all bolts and nuts are firmly fastened.

(3) Confirm air supply to auto-guide, positioner, roll doctor loading cylinder, etc.

(4) Confirm shower water supply.

(5) Check auto-guide smooth movement by manual push and pull of palm. (Set air pressure.)

(6) Confirm air supply to valve stand.

(7) Confirm oil unit for MH Shoe Press is ready to start.

(8) Confirm auxiliary oil units for MH Shoe Press is ready to start.

4.2 Preparation for Operation (Electric Power-on)

NOTE The operating procedure listed below are reference that based on the similar paper machine of Mitsubishi Heavy Industries, Ltd. in the past. Therefore, it includes not only the MH Shoe Press but also other equipment on the press part. The proper operating procedure will be prepared by the buyer.

(1) Put electric power ON.

(2) Put oil unit heater and auxiliary oil unit heater ON for MH Shoe Press.

(3) Start auxiliary oil unit for MH Shoe Press.

1) MH Shoe Press-C Module shoe will be lifted automatically.

(4) Stretch all the press felts.
Screw shafts must be cleaned and lubricated before stretchers are operated.

(5) Check and adjust felt suction box lip height in relation to felt run.

(6) Lower MH Shoe Press-C Module down to operating position by removing safety pins for hydraulic cylinder and set at operating position by links and link pins.

(7) Apply tension to MH Shoe Press-C Module blanket

1) Turn back side CD tension selector switch to "TIHGTEN" first. After back side head stopped by stopper bolt, turn front side CD tension selector also switch to "TIHGTEN".

2) Supply internal air pressure. (6kPa-8kPa ;0.87PSI-1.16PSI)

(8) Start oil unit for MH Shoe Press.

(9) Start auxiliary oil unit for MH Shoe Press.

(10) MH Shoe Press shoe loading, oil scavenge, filtering and cooling pump will be started.

(11) Set blanket scraper to auto mode.

(12) Push " MH Shoe Press Hydraulic Unit Group Run P.B. " on operation desk.
(Refer to 2P Shoe Press Operation Flow Chart : NTG6888)

1) Lubrication pump and bearing oil scavenge pump will be started.

(13) Push " MH Shoe Press Close P.B. " on operation desk.

1) MH Shoe Press lubrication pump will start and after about 200-liter is fed into MH Shoe Press-C Module inside, valve will be closed.
2) Shoe lifting cylinder work to lower shoe.
3) MH Shoe Press-C Module piston and MH Shoe Press Roll Shoe will be slightly loaded at contact pressure
4) Blanket scraper will be loaded.

(14) Close the first press.

(15) All the doctors are to be loaded against rolls.

(16) MH Shoe Press is "Closed" and press section can be driven, but in case these rolls are not started within 60 minutes, pumps for MH Shoe Press will be stopped. Oil in the MH Shoe Press-C Module must be returned to oil tank by remaining oil discharge pump after stop running.

(17) Following showers are to be put on:

1) Suction box lip lubricating shower.
2) Felt roll doctor shower.
3) Suction roll fog shower and seal water.
4) Blanket edge shower.

(18) Check felt condition, auto-guide function etc, at crawling drive.
(Crawling speed is 100m/min.)

(19) Check auto guide palm position, felt tension etc, at crawling speed and readjust them if necessary.
Also wet all felts by water hose.

(20) Trial Run
After confirming that there is nothing abnormal, perform break-in operation.
Continue operation for about 30~60 minutes and check felt condition, MH Shoe Press-C Module blanket condition, supply and exhaust oil condition for MH Shoe Press-C Module etc.

(21) Stop press and trim felt edge if necessary.

(22) Clean felt and suction roll holes if necessary.
Run felt, oscillate high pressure felt cleaning shower and suction roll hole cleaning shower and open shower valve.

4.3 MH Shoe Press Test Run Procedure (Plan)

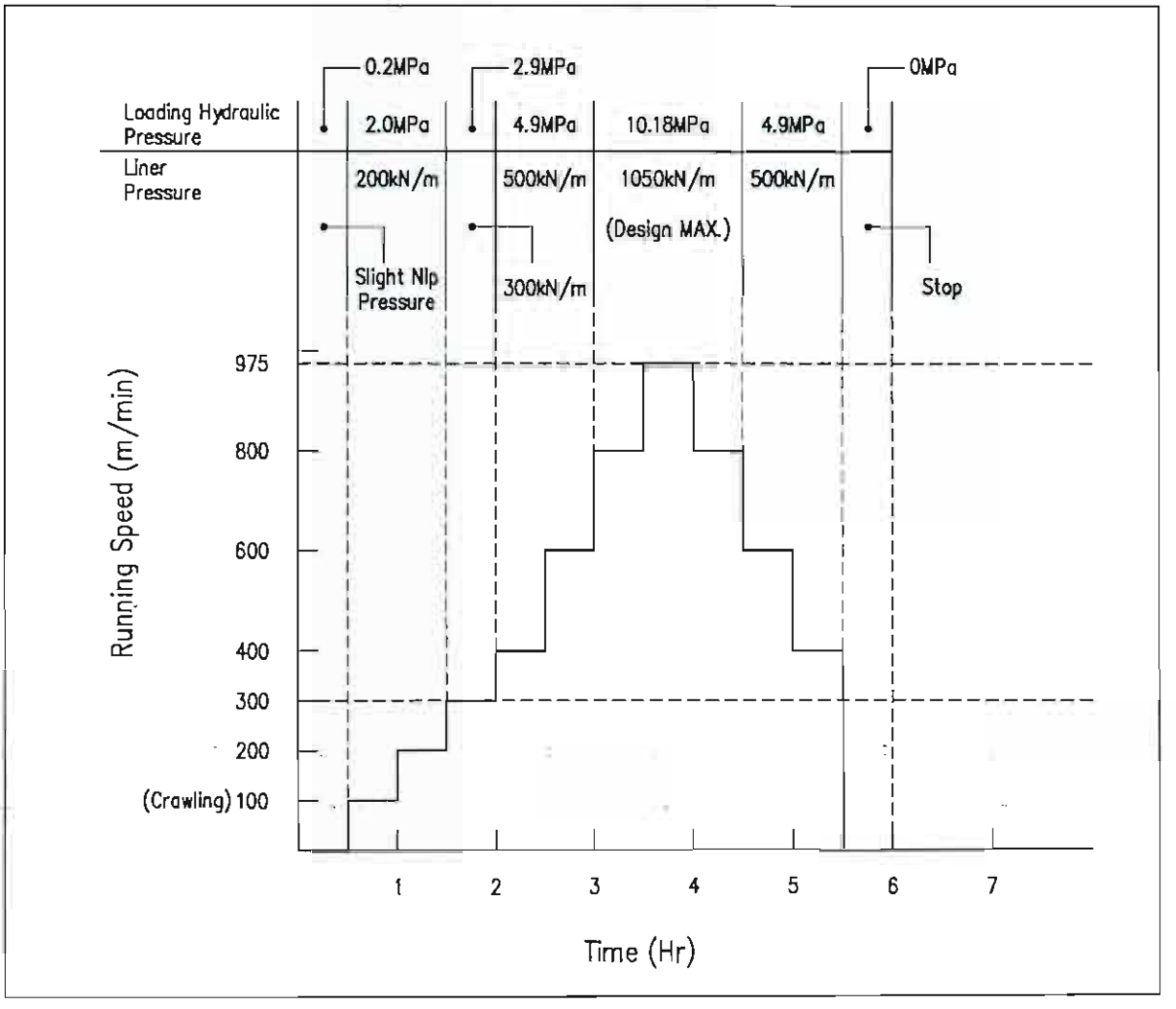


Fig 4-1

MPa to PSI

MPa x 145 = PSI

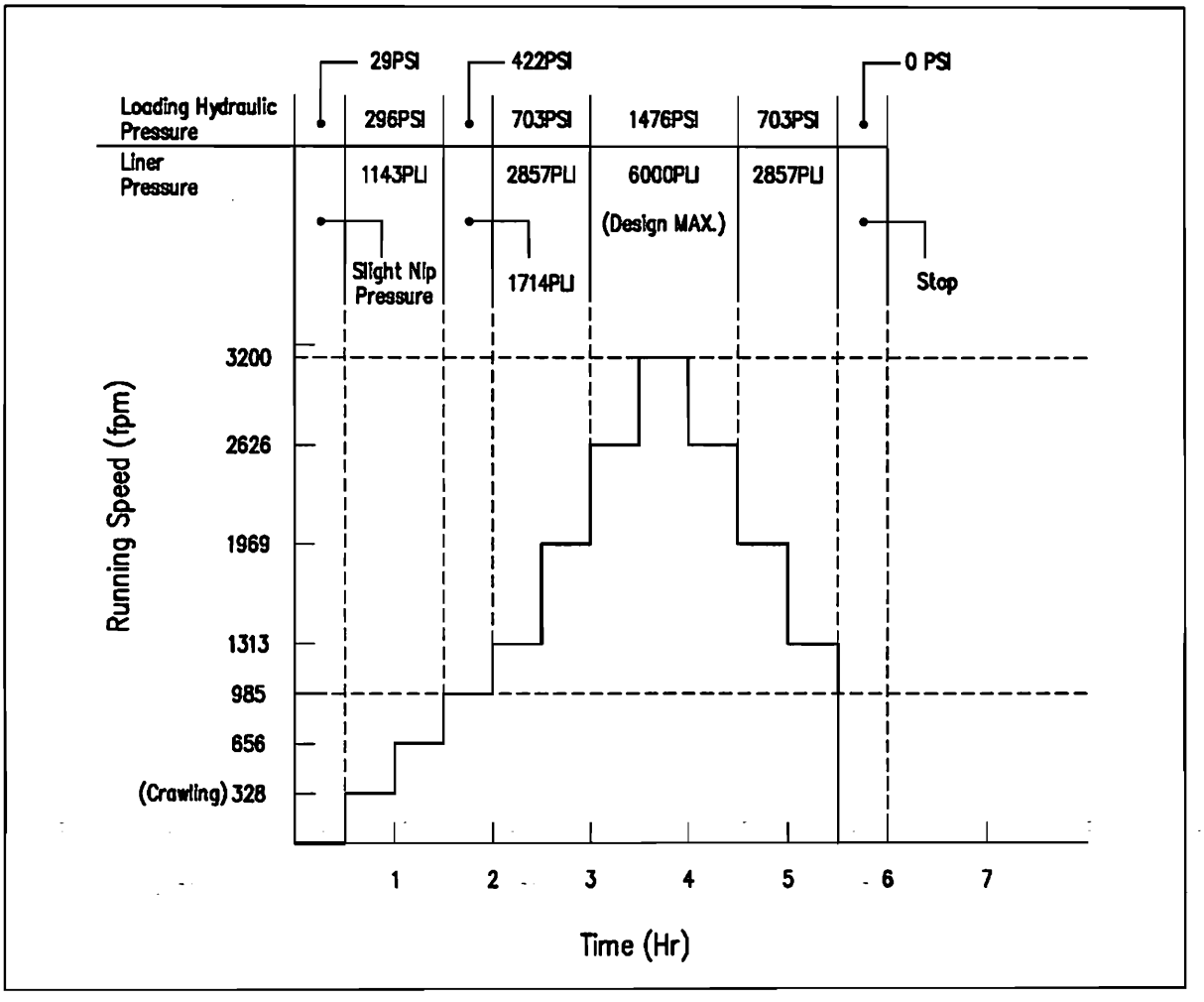


Fig 4-2

Items to be Confirmed During Test Run

(1) Set oil temperature at about 40°C for start up

(2) Lubricating oil flow and discharge oil flow

(3) Oil piping leakage

(4) Motor load for lubrication, filtering and cooling pump.

(5) Tank oil level

(6) Stability of blanket and felt

(7) Actuation of auto guide and air guide

(8) Roll drive load

(9) Air pressure inside blanket loop

(10) Blanket CD tension oil pressure

(11) Wiper air pressure

NOTE

- If not stared press section in 60min., that hydraulic pump is automatically stopped.
- Every time you stopped MH Shoe Press-C Module, you must be operate that for exhaust lubrication oil.
  (At a normal operation, after stopping the roll, it structured for the lubrication oil to be exhausted automatically.)

4.4 MH Shoe Press Maintenance Check List

This data sheet is one example to check measurement value and set value every day by recording normal operation of MH Shoe Press to find out anything abnormal, so please add your check points and promote your maintenance and checking.

- Oil ---------- Cleanness of filter
- Motor --------- Ampere at start and during normal run, temperature etc.
- Blanket ------- Elongation, tension, etc.
- Felt ---------- Elongation, tension, guiding etc.

Each oil hydraulic line utilizes many filters. Sometimes paper machine is stopped by trouble due to low oil flow, or due to not satisfactory condition caused by feeding oil not through filter, so filter must be changed or switched to another one based on differential pressure across the filter.

Operating Condition

Operating Speed _____ m/min Basis Weight _____ g/m^2

MH Shoe Press

Liner Pressure = _____ kN/m

Main Motor (kw) Ampere		A
Helper Motor (kw) Ampere		A
MH Shoe Press-C Module Piston Loading		MPa
MH Shoe Press-C Module VS. Roll Differential Pressure	±	MPa
Blanket Loop Air Pressure		KPa
Blanket Wiper Loading Air Pressure		MPa

MH Shoe Press Oil Unit Check List (Oil Grade _____)

	Check Item		Measurement	Standard
1	Piston	Inlet	MPa	Pressure Difference
	Loading Filter Pressure	Outlet	MPa	0.24or less
2	Shoe Lubricating Filter Pressure	Inlet	MPa	Pressure Difference
		Outlet	MPa	0.15 or less
3	Return Oil Filter	Inlet	MPa	Pressure Difference
		Outlet	MPa	0.15 or less
4	Shoe Lubricating Flow Rate		L/min	
5	Oil Temperature in Tank		°C	40～50
6	Lubricating Oil Temperature		°C	40～50
7	Loading Pump Motor Ampere		A	Rated A
8	Lubricating Pump Motor Ampere		A	Rated A
9	Return Oil Temperature		°C	
10	Piston Control Valve Opening		%	
11	Tank Level (Oil Quantity)		L	
12	Bearing Lubrication (C Module)		L/min	3～4
13	Bearing Lubricating	Inlet	MPa	Pressure Difference
	Filter Pressure	Outlet	MPa	0.2 or less
14	Front Bearing Lubricating Flow Rate (Roll)		L/min	15 or more
15	Back Bearing Lubricating Flow Rate (Roll)		L/min	15 or more
16	Reducer Lubricating Flow Rate (Roll)		L/min	15 or more
17	Bearing Lubricating Oil Temp.		°C	40～50
18	Lubricating Pump Motor Ampere		( ) A	Rated A
19	MH Shoe Press Roll Return Oil Temp.		°C	65°C or less

5 : Operation

⚠ DANGER Confirm anybody is not staying inside the machine before you start the machine.

⚠ DANGER Never change any setting of switches or whatsoever while electric power "Off" or "Emergency Stop". There might be a case that machine parts start unexpected motion by putting electric power "On" or by releasing "Emergency Stop".

⚠ WARNING Before starting the operation stated in the followings, chapter 4 preparation and electric power "ON" should be confirmed already finished.

NOTE The operating procedure listed in this section are reference that based on the similar paper machine of Mitsubishi Heavy Industries, Ltd. in the past. Therefore, it includes not only the MH Shoe Press but also other equipment on the press part. The proper operating procedure will be prepared by the buyer.

5.1 Operation Start

(1) Wet all the felts by water hose.

(2) Set MH Shoe Press nip at contact pressure (Slight nip pressure).

(3) Start crawling drive.
Confirm electric currents are within the rated value and there is no abnormal movement at any parts. If anything is found abnormal, it is to be adjusted.
Auto guide palm positions are to be checked and adjusted.
Check there is not any wrinkle on any felt and adjust felt tension if necessary.
Keep crawling speed operation for about 15~20 minutes and check and adjust so that there is not anything abnormal.

(4) After confirming that there is not anything abnormal during crawling speed, run into no load operation. Keep no load operation for about 30~60 minutes, check whether there is anything abnormal and if anything is abnormal adjust it.

(5) Clean felts by cleaning showers according to requirements.

1) Felt cleaning shower (chemical)

2) High pressure felt cleaning shower

⚠ATTENTION High pressure felt cleaning shower valve should be opened only after starting crawling operation.

(6) Suction roll holes are to be cleaned if required. Run press section at operating speed. Start oscillator for suction roll shower. Then open shower valve.

(7) Put air pressure in air load tube of suction roll.

(8) Set nip pressure of MH Shoe Press at operating level when press running speed reaches to over 250m/min (821fpm).

(9) Check all the drive motor amperes. After amperes are settled at stable level, close suction roll main shower valve.

(10) Start vacuum pump for uhle boxes and suction rolls. Check vacuum level in each device and adjust them.

(11) Check and adjust amperes, auto guides, showers and doctors.
Thread web according to the following procedures.

5.2 Threading Procedure (Example)

Threading procedure through press section is shown as follows starting by web receiving from the former by suction pick up roll and finish by transferring web to dryer section. The most critical two places is open draw after 2P. Other than these places, web is held by felts or press rolls.

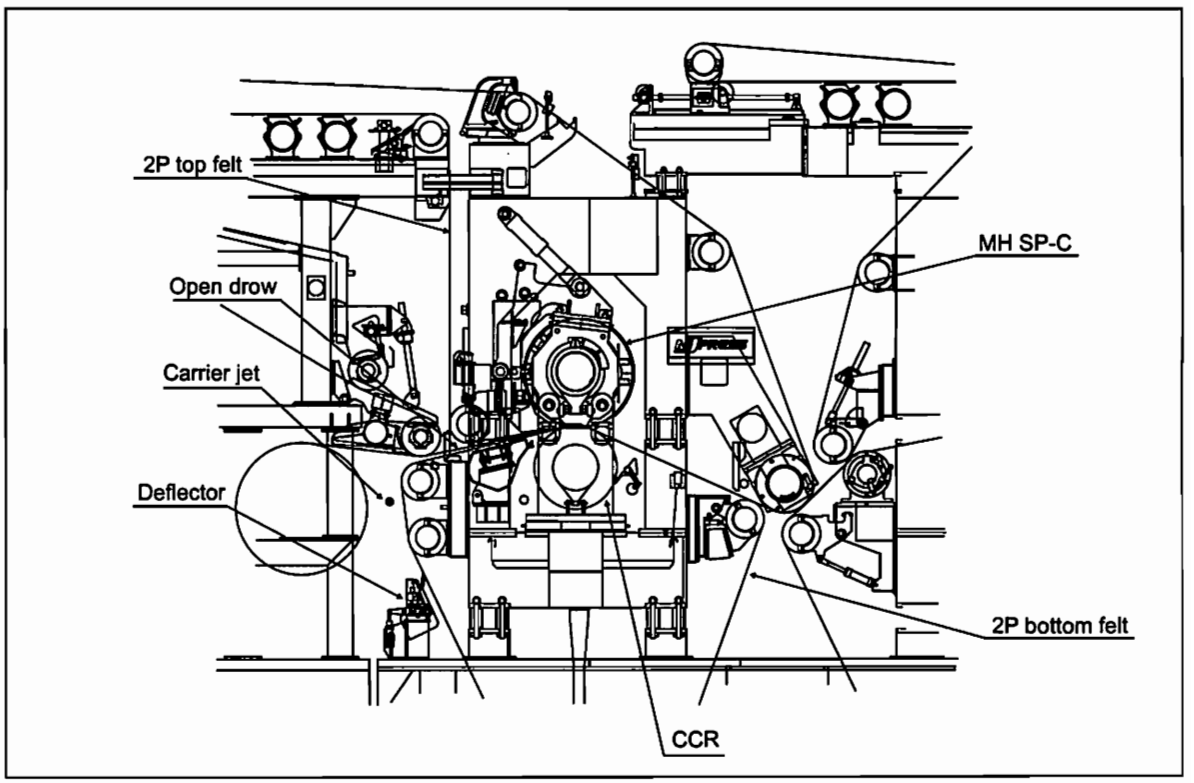


Fig 5-1 Example of Open Draw at 2P - #1D

(1) After confirming "Wire-Press Synchronization Lamp" is "On", lower suction pick up roll to contract forming wire.

(2) Full width of web will be picked up from wire cloth and transferred to 1P.

(3) After the web goes through 1P, it is transferred to 2P by 2P top felt. Up until this point there is not any open draw in this press. After 2P, full width web will be scraped off from 2P bottom felt into press pit.

Suction transfer roll is installed to make threading easy and web run stable.

(4) After this stage, web is to be threaded manually by the operator to #1 dryer. Thread tail from 2P bottom felt to #1 dryer by using air nozzle.

(5) The tail width shall be approximately 150mm, and the tail is threaded into the dryer by the carrier rope. When the threading into the dryer is completed, the web width is enlarged.

5.3 Operation after Felt Change

(1) After the felt change, proceed a break-in operation at crawling speed.

(2) Clean felt using water hose. Use chemical cleaning shower as required.

(3) Load tension on the felt by using a stretcher.

(4) Operate MH Shoe Press unit and proceed a crawling operation on all the felt on slight nip pressure mode.

5.4 Operation Stop

(1) Lift suction pick up roll until web feeding from former to press is interrupted.

(2) Decrease press nips and clean felts using high pressure cleaning showers and cleaning hose.
Use chemical cleaning shower if required.

(3) Stop vacuum pump.

(4) Stop press section and open roll nips.

(5) Make all the felts slack.

(6) Stop MH Shoe Press oil unit and auxiliary oil unit.

(7) Stop shower pumps.

(8) Open doctor blade nips.

(9) Clean up press section thoroughly using water hose.
Don't miss underside of save-all and cross members of the machine.

(10) Check felt wear and damages.

(11) Check roll cover wear and damages.

(12) Check uhle box lips and clean them up.

(13) Check and adjust doctor blades and change to new ones if necessary.

(14) Retract MH Shoe Press-C Module CD tensioner. Release air inside blanket loop to 0MPa.

(15) MH Shoe Press-C Module inside oil should be returned to oil tank by remaining oil scavenging pump.

5.5 Operation of MH Shoe Press

MH Shoe Press (Fig 5-2) is composed of bottom MH Shoe Press Roll (1045mm diameter) with grooved rubber cover and MH Shoe Press-C Module.

Operating nip pressure of 1050kN/m (6000PLI) is possible at maximum.

MH Shoe Press-C Module and bottom MH Shoe Press Roll are fixed mounted by links (on frond and back side) and "Loading" or "Releasing" will be done by lowering of lifting of MH Shoe Press-C Module inside shoe.

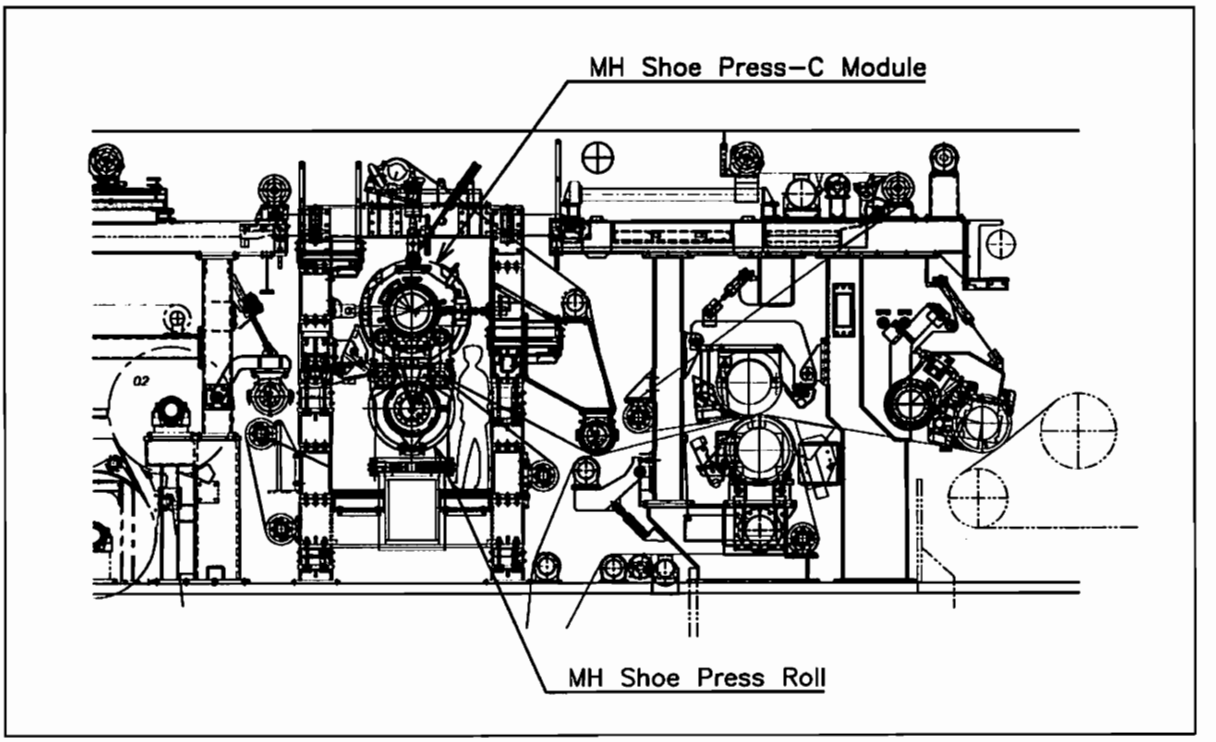


Fig 5-2 MH Shoe Press Composition Sketch

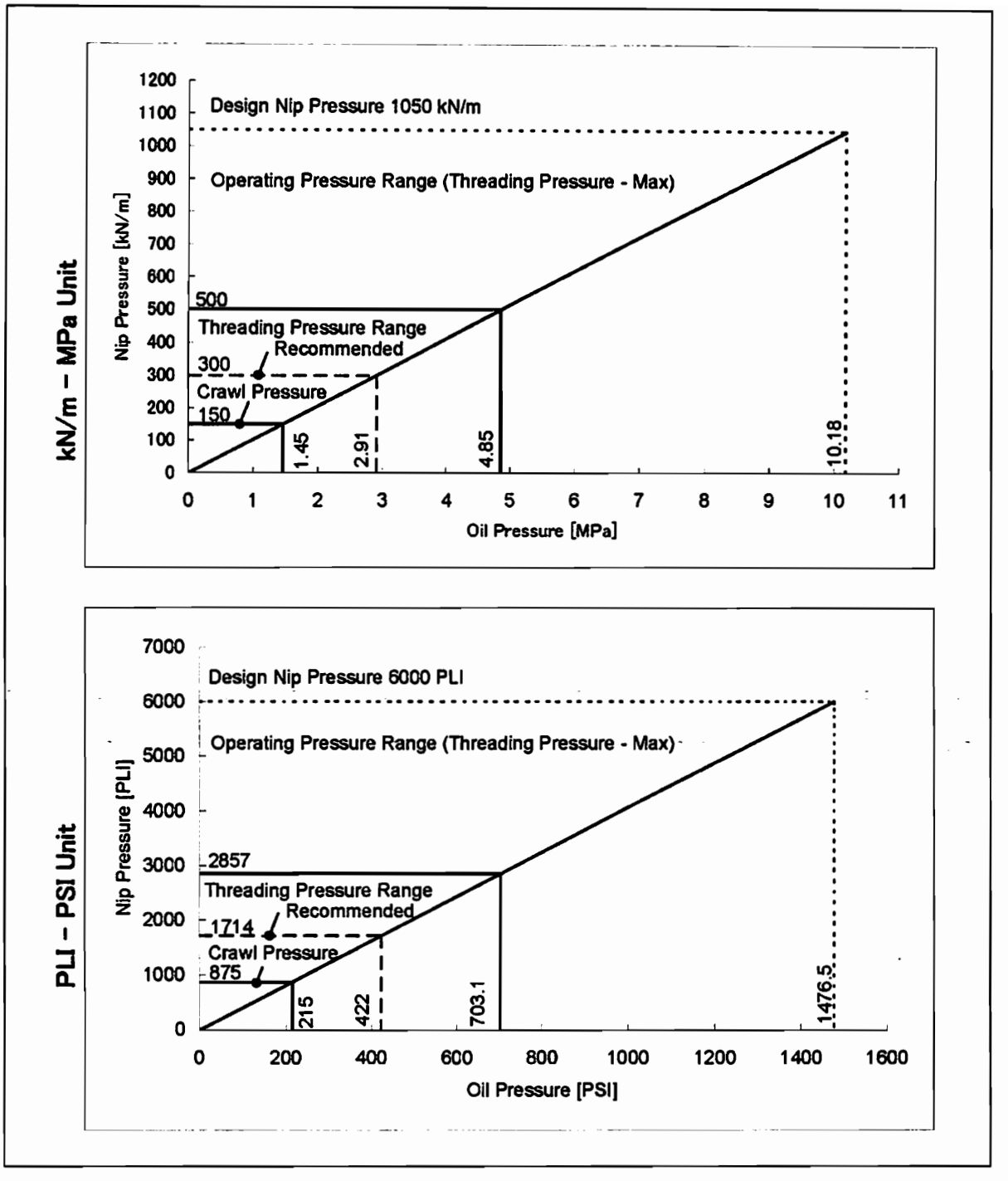


Fig 5-3 MH Shoe Press Loading Diagram

5.6 Important Precautions for Operation

It must be well recognized that the oil film between the shoe and the internal surface of blanket and shell cannot be obtained and the shoe, the blanket and the shell will be seriously damaged, if the following condition is not satisfied.

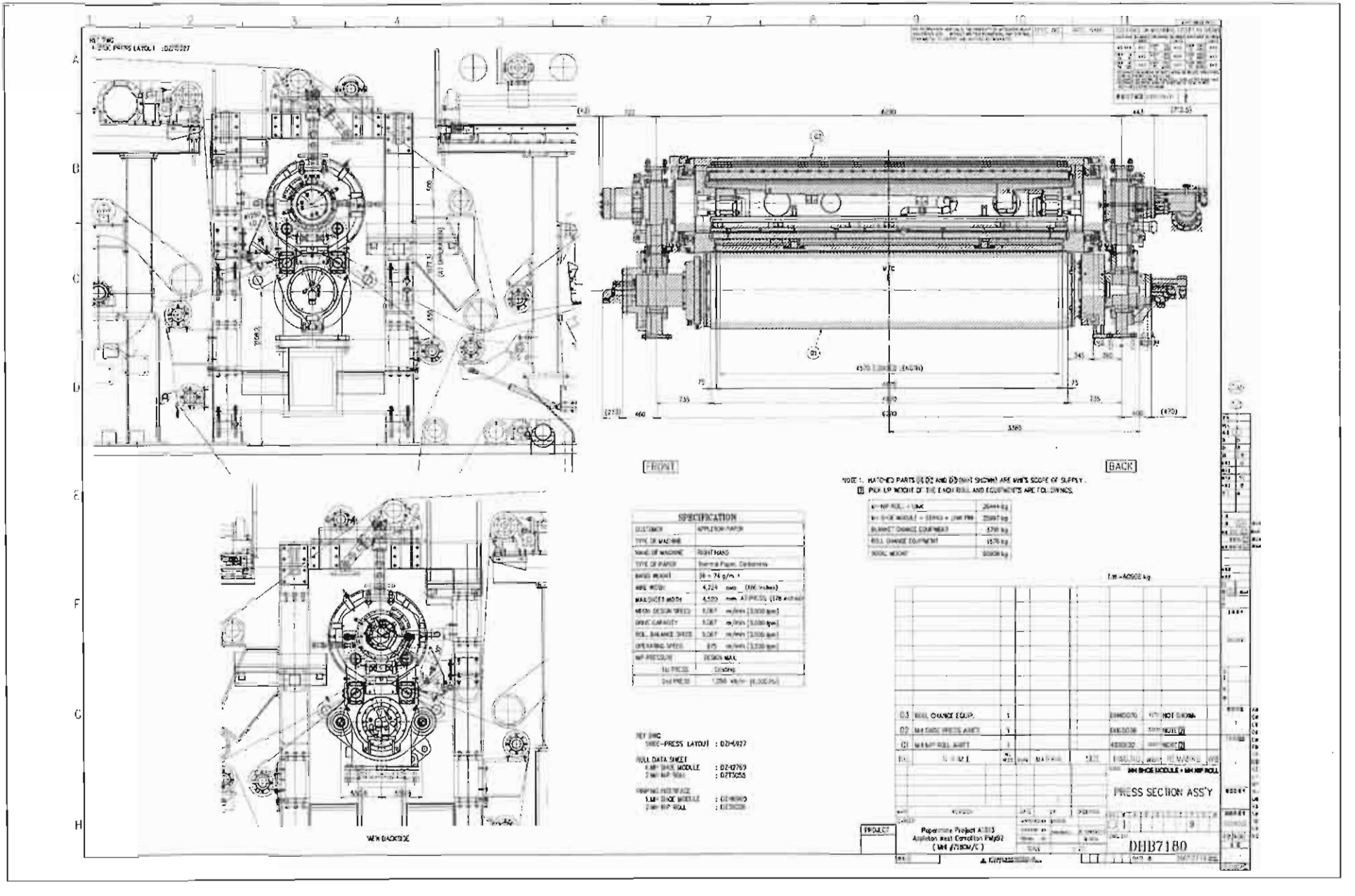
1. The temperature of the oil which is supplied to the shoe, must be controlled in the range of 40 - 50°C.

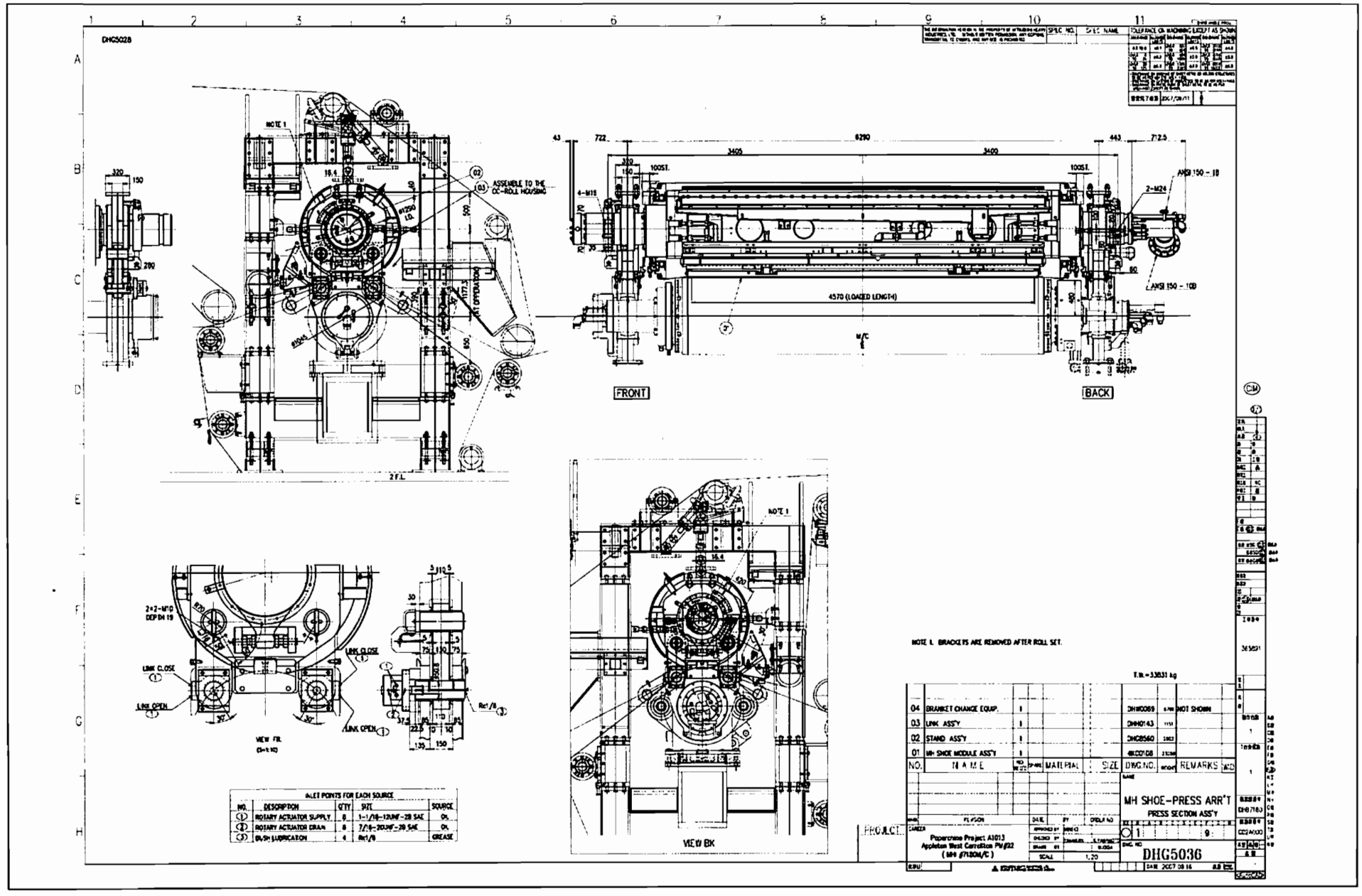
2. Crawling speed must be greater than 100m/min.

3. During this starting procedure, the hydraulic pressure of MH Shoe Press-C Module side should be kept at around 0.2MPa by setting the check valve in the hydraulic line. Because the hydrodynamic shoe is used for MH Shoe Press-C Module, which requires low hydraulic (static) pressure before rotating the roll. If the hydraulic pressure of MH Shoe Press-C Module side is higher than 0.3MPa, the drive motor sometimes overloads due to higher friction resistance between MH Shoe Press-C Module shoe and blanket.

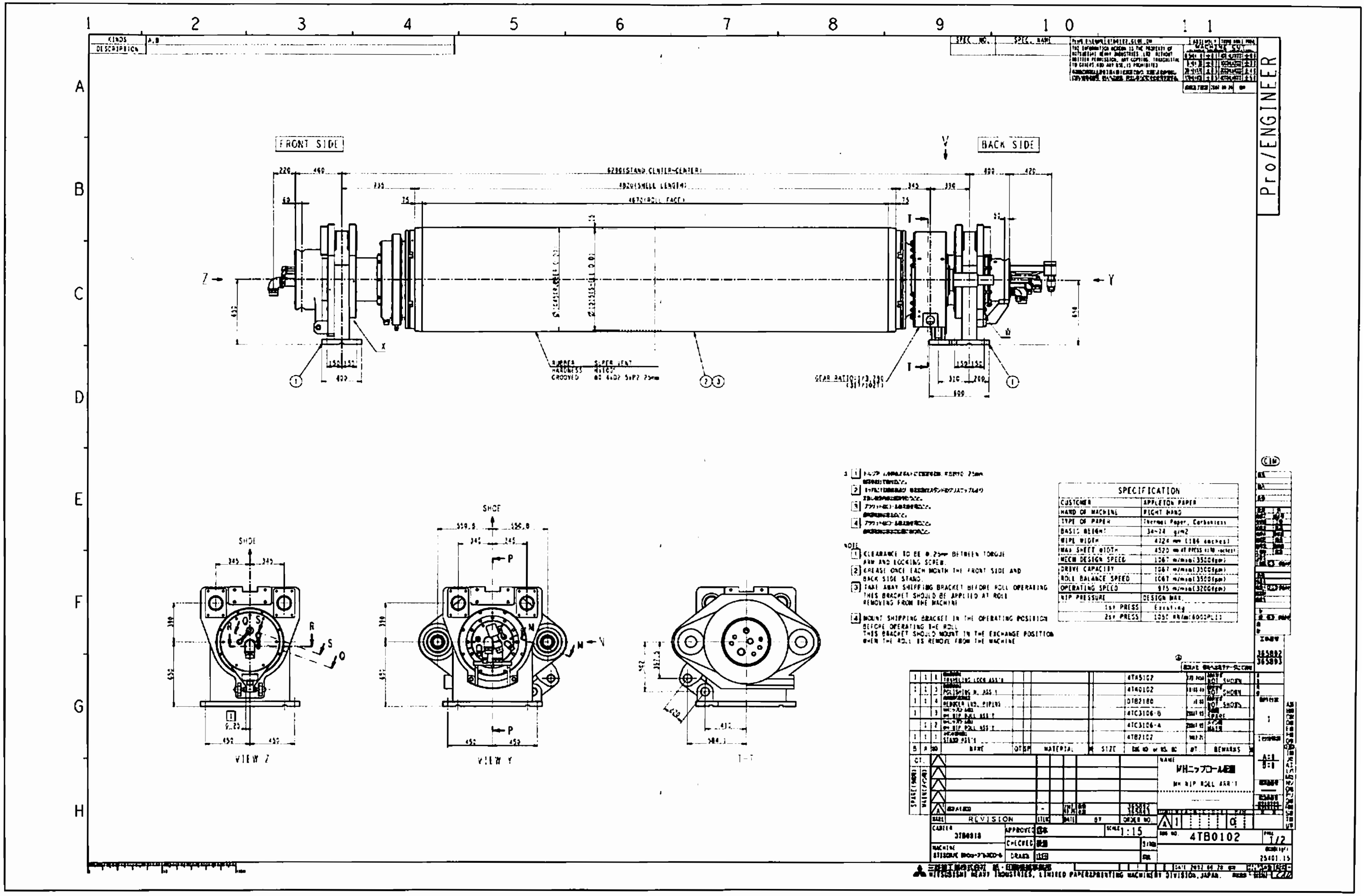
4. MH Shoe Press Roll is not allowed to rotate before the above preparation has been completed. The drive speed must be controlled to increase the roll speed up to 100m/min (328fpm) and hydraulic pressure of MH Shoe Press increase from 0.2MPa to 1.45MPa for crawling condition.

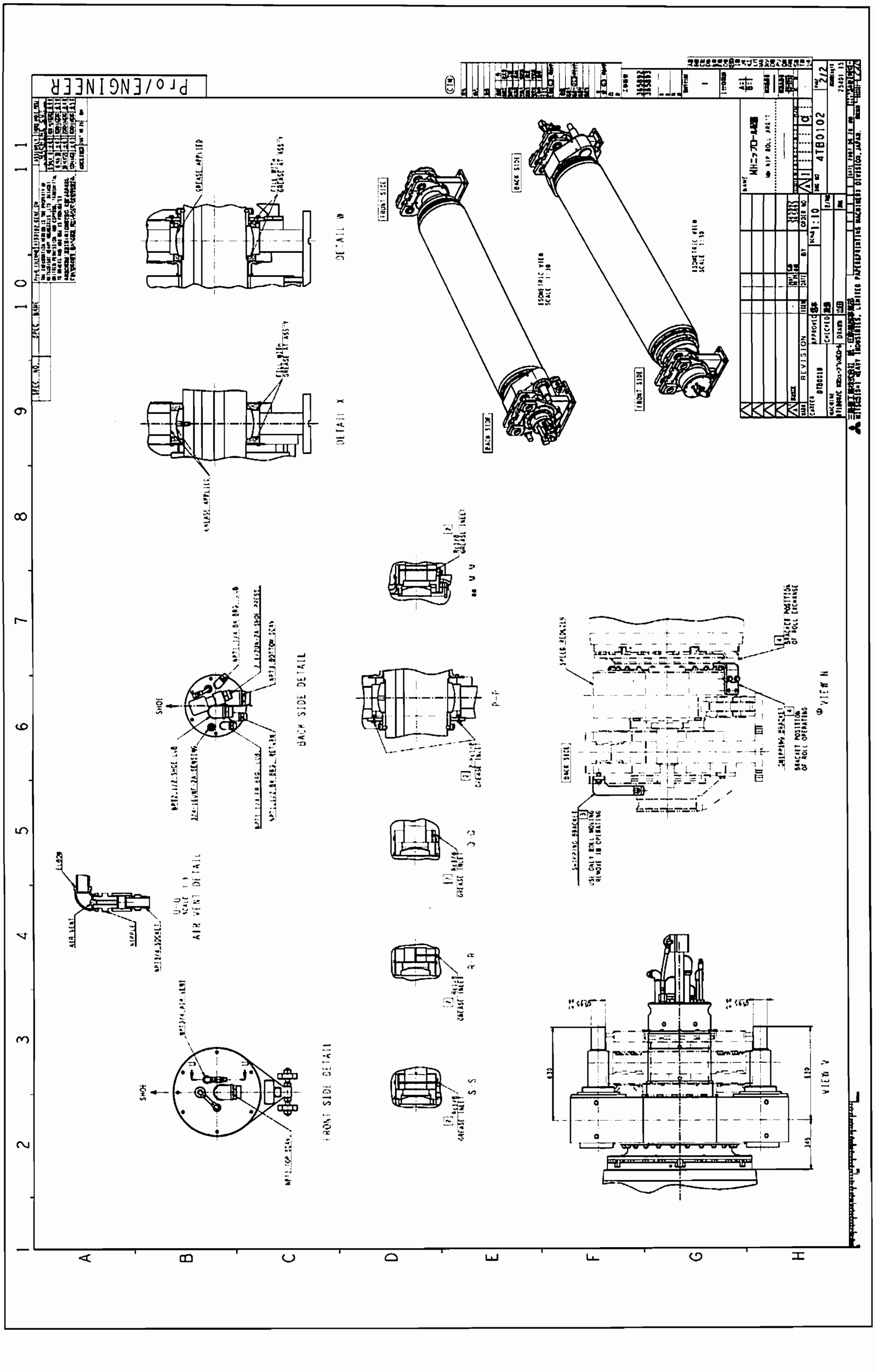
5. When stopping or halting the machine, hydraulic pressure of the MH Shoe Press Roll shoe must be maintained to 0.2MPa until the roll is completely stopped.


FRONT
BACK
SPECIFICATION
PRESS SECTION ASS'Y
DHB7180



ALL POINTS FOR EACH SOURCE				
NO.	DESCRIPTION	QTY	SIZE	SOURCE
①	ROTARY ACTUATOR SUPPLY	8	1-1/16-12UNF-2B SAE	OIL
②	ROTARY ACTUATOR DRAIN	8	7/16-20UNF-2B SAE	OIL
③	BUSH LUBRICATION	4	Rc1/8	GREASE


FRONT SIDE
BACK SIDE
Pro/ENGINEER
VIEW Z
VIEW Y
SHOE
SPECIFICATION
CUSTOMER
APPLETON PAPER
HAND OF MACHINE
RIGHT HAND
TYPE OF PAPER
Thermal Paper, Carbonless
MECH DESIGN SPEED
DRIVE CAPACITY
ROLL BALANCE SPEED
OPERATING SPEED
NIP PRESSURE
DESIGN MAX.
1st PRESS
2nd PRESS
NOTE
1 CLEARANCE TO BE 0.25mm BETWEEN TORQUE ARM AND LOCKING SCREW.
2 GREASE ONCE EACH MONTH THE FRONT SIDE AND BACK SIDE STAND.
3 TAKE AWAY SHIPPING BRACKET BEFORE ROLL OPERATING THIS BRACKET SHOULD BE APPLIED AT ROLL REMOVING FROM THE MACHINE
4 MOUNT SHIPPING BRACKET IN THE OPERATING POSITION BEFORE OPERATING THE ROLL THIS BRACKET SHOULD MOUNT IN THE EXCHANGE POSITION WHEN THE ROLL IS REMOVE FROM THE MACHINE
MH NIP ROLL ASS'Y
4TB0102
MITSUBISHI HEAVY INDUSTRIES, LIMITED PAPER&PRINTING MACHINERY DIVISION, JAPAN.



Pro/ENGINEER
DETAIL W
DETAIL X
GREASE APPLIED
BACK SIDE DETAIL
FRONT SIDE DETAIL
AIR VENT DETAIL
ISOMETRIC VIEW
SCALE 1:10
FRONT SIDE
BACK SIDE
VIEW N
VIEW V
GREASE INLET
P-P
4TB0102

TM051-7180	Paperchine Project A1013 Appleton W.C. PM#92 (MHI #7180)	APPR'D	CHECKED	DRAWN
DATE: 2007.07.06		M.Tsuji	S.Mineoi	K.Yamamuro
SPECIFICATION OF SLEEVE FOR MH SP-C		MITSUBISHI HEAVY INDUSTRIES, LTD JAPAN		

1. SPECIFICATION

(1) SLEEVE DIMENSIONS ····· See attached sheet

(2) OPERATING CONDITION : SPEED 975 (m/min.) ,

SLEEVE MUST BE WATER AND OIL PROOF AT 4～6 MPa(Pe)

[SLEEVE HARDNESS TO BE UNIFORM]

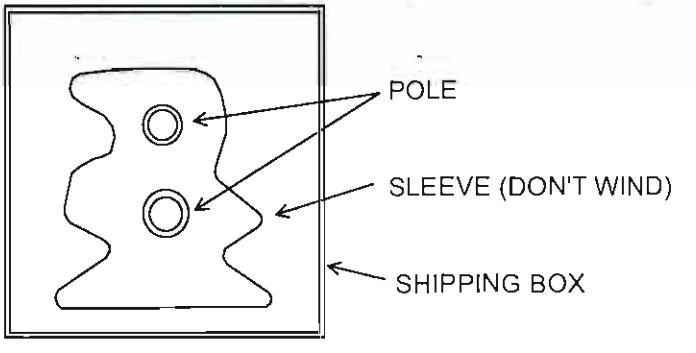
(3) CD SLEEVE TENSION RANGE : 1 ～ 4.5 kN/m

(4) MD SLEEVE TENSION RANGE : 2.7 ～10.7 kN/m

NOTE : KEEP SMOOTH SURFACE AND FLATNESS AT MANUFACTURING

(INCLUDE SURFACE COATING)

2. SLEEVE SUPPLIER TO FURNISH 2 STRINGING POLES. (DO NOT WRAP SLEEVE)



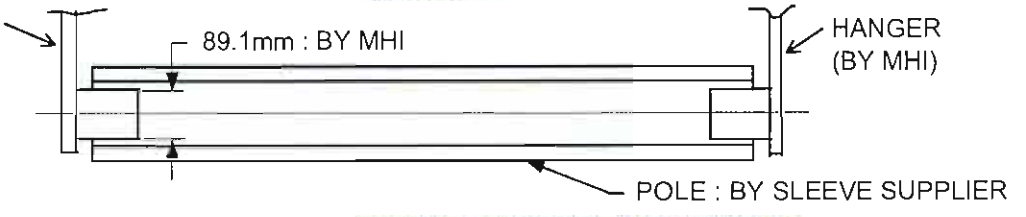
SIZE OF POLE O.D : (mm) } THESE FIGURES TO BE DECIDED BY SLEEVE SUPPLIER

THICKNESS : (mm) }

LENGTH : (5,600 mm)

MATERIAL : ALUMINUM

HANGER (BY MHI)



3. RECOMMENDED SUPPLIERS : ALBANY , ICHIKAWA , YAMAUCHI etc

4. No. REQ'D (RECOMMENDED) : (2) FOR SPARE

配布先：客先⑥、紙設II①、E製紙① ／合計8
(PAPERCHINE)

GROOVED SLEEVE SIZE

1. SLEEVE WIDTH ····· 5,504 $^{+0}_{-2.5}$ mm

(INCLUDE TAB, MARGIN)

SUPPLIER MUST SUBMIT USABLE MAX. EXTENSION.

2. SIZE OF BOTH EDGE

	INSIDE DIAMETER (E.I.D)	CIRCUMFERENTIAL LENGTH (E.C.L)
TARGET ·····	1,290 mm	4,052.7 mm
MAX. ·····	1,291 mm	4,055.8 mm
MIN. ·····	1,289 mm	4,049.5 mm

STATION TO STATION SLEEVE LENGTH (E.C.L) VARIATION MUST BE WITHIN ±3 mm AND WITHIN MIN/MAX LENGTHS LISTED ABOVE. THE RECORD SHOULD BE SUBMITTED.

3. THICKNESS OF THE EDGE ····· 3.5 ±0.25 mm

MAX. ALLOWABLE THICKNESS VARIATION ACROSS AND AROUND SLEEVE TO BE WITHIN 0.05 mm.

4. SIZE OF THE CENTER

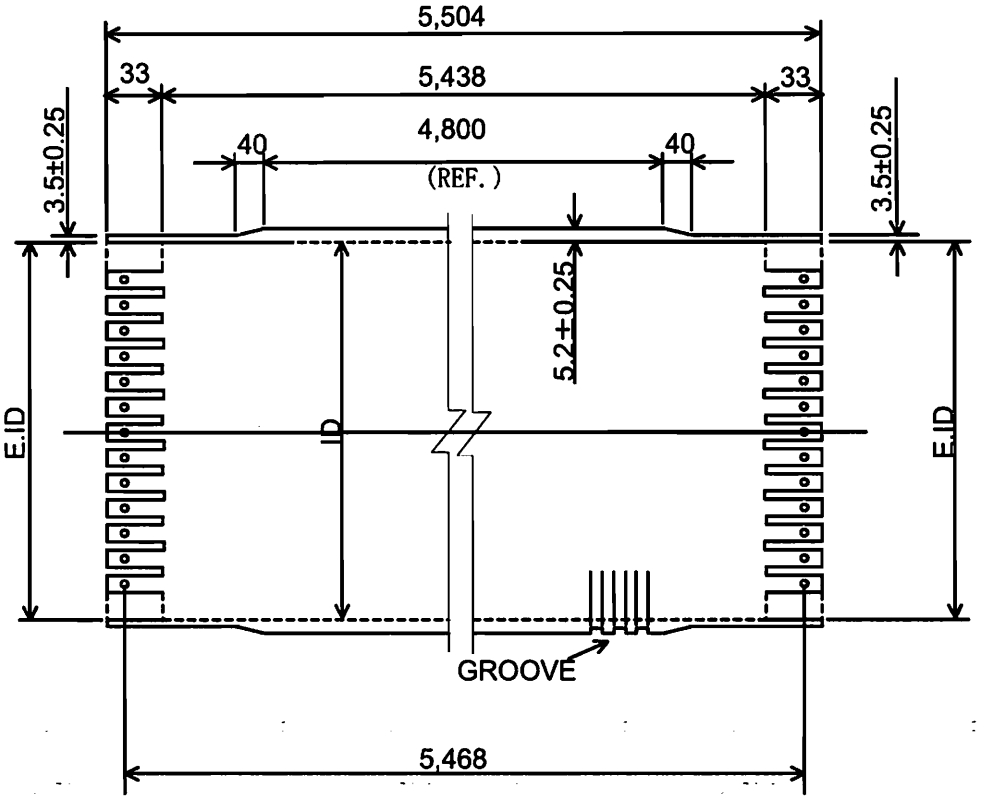
	INSIDE DIAMETER (I.D)	CIRCUMFERENTIAL LENGTH (C.L)
TARGET ·····	1,290 mm	4,052.7 mm
MAX. ·····	1,291 mm	4,055.8 mm
MIN. ·····	1,289 mm	4,049.5 mm

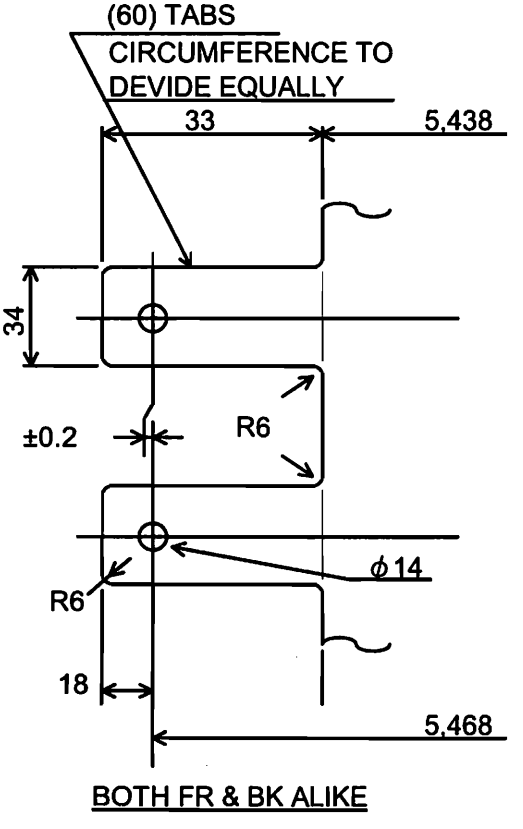
STATION TO STATION SLEEVE LENGTH (C.L) VARIATION MUST BE WITHIN ±3 mm AND WITHIN MIN/MAX LENGTHS LISTED ABOVE. THE EQUALLY SPACED CD STATIONS SHOULD BE MEASURED/RECORDED BY THE SLEEVE MANUFACTURER.

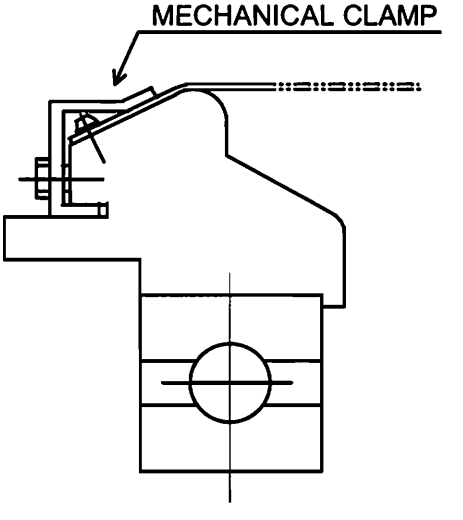
5. THICKNESS OF THE CENTER ····· 5.2 ±0.25 mm

MAX. ALLOWABLE THICKNESS VARIATION ACROSS AND AROUND SLEEVE TO BE WITHIN 0.05 mm.

6. GROOVE SIZE SUPPLIER SHOULD BE SUBMITTED RECOMMENDATION DATA.


5,504
33
5,438
33
4,800
(REF.)
40
40
3.5±0.25
3.5±0.25
5.2±0.25
E.ID
ID
E.ID
GROOVE
5,468


(60) TABS
CIRCUMFERENCE TO
DEVIDE EQUALLY
33
5,438
34
±0.2
R6
R6
ϕ14
18
5,468
BOTH FR & BK ALIKE


MECHANICAL CLAMP