

SERVICE MANUAL

ENGLISH

AIR BALANCE ARM

MODEL : DSJ-300



CONTENTS

I . Specification

II . Lay out

III. Drawing of Assembly and parts

IV. Compressed air circuit drawing

V. Operation

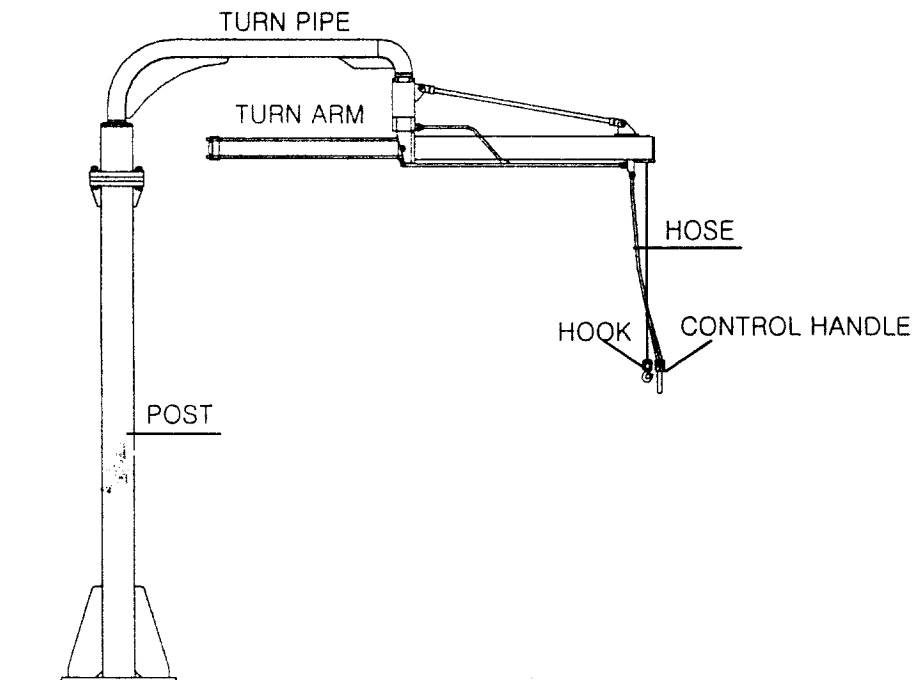
1. GENERAL SPECIFICATION

1-1. AN OUTLINE

The basic principles of air balance is the system which used the air keeps it's balance against outside pressure. Drum type converts air's rectified movement into a rotary motion so that it lifts up the heavy goods.

DSJ-300 is the system which used as it is air's rectified movements. While compressed air is supplied into the piston chamber, the pressure of chamber increases and pushes down the piston and real drum rotates as piston hoes ho_주 and lifts up heavy goods. While chamber pressure is removed the object descends by its weight.

The structure is as follow ;



1-2. SPECIFICATION

CHECK POINT	SPECIFICATION	CHECK POINT	SPECIFICATION
MODEL	DSJ-300	ROTATION ANGLE	360°
MAX. PAY LOAD	120Kg	COLOR	4YR/7.2/13.2(Yellow)
STROKE	1450mm	AIR PRESSURE	6Kgf/cm ²
ARM LENGTH	2336mm	WEIGHT	200Kg

2. LAY-OUT

2-1. LIMITATIONS OF INSTALLATION

- ▶ MINIMUM SPACE & AREA : The minimum area is more than 17.14m because a turning radius of product's arm is R2336 (Refer. Fig. 2-1-1)
The minimum space for from another machine and others is more than 1000mm because it is moved and rotated with weights on the actual working conditions and the minimum height is more than 3030mm

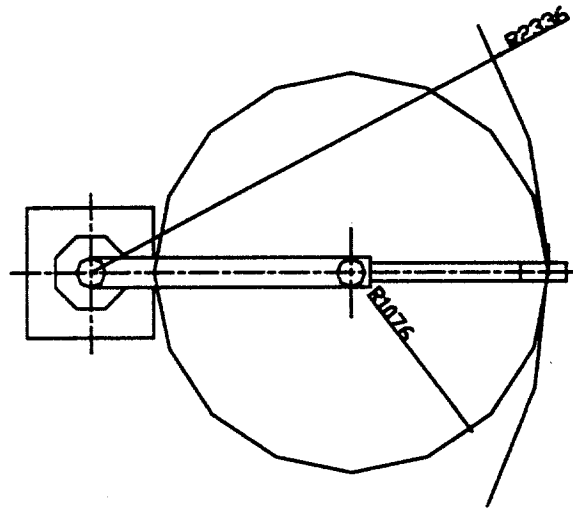
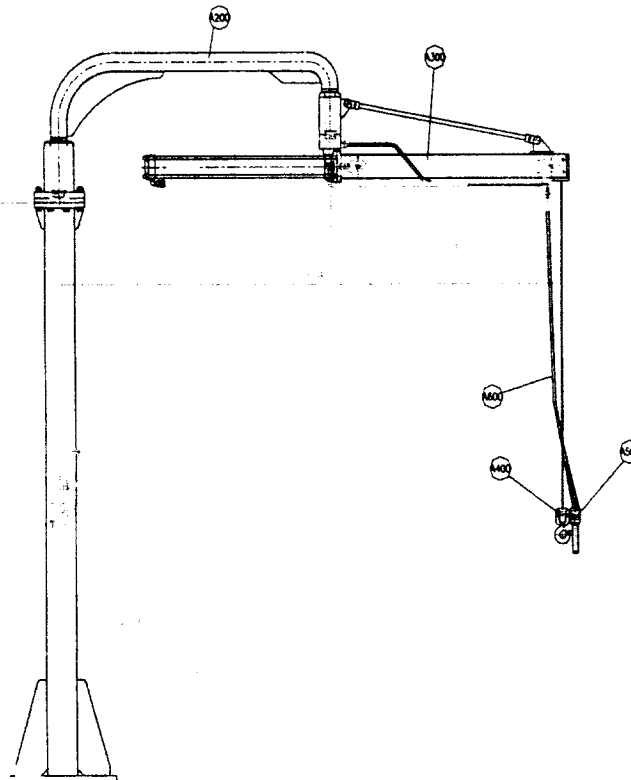


Fig. 2-1-1. Radius of installation

- ▶ Reference
 - Weight : 200Kg
 - External size : Height 3030mm × Radius 2336mm

3. DRAWINGS OF ASSEMBLY AND PARTS

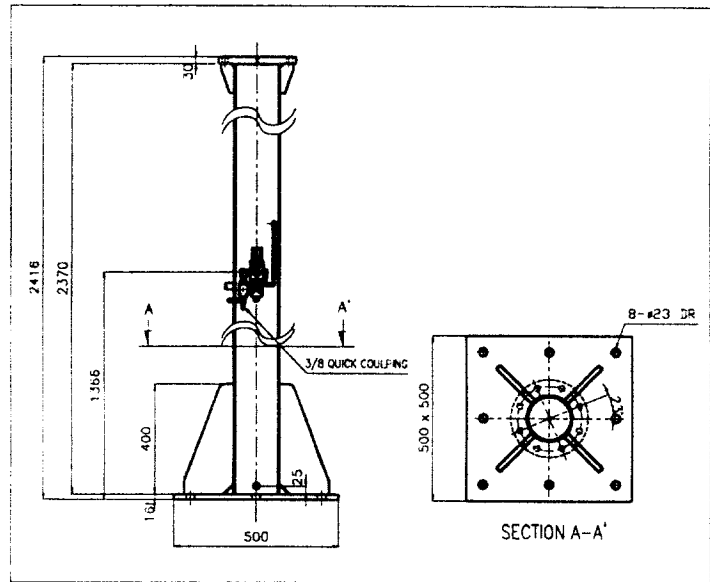
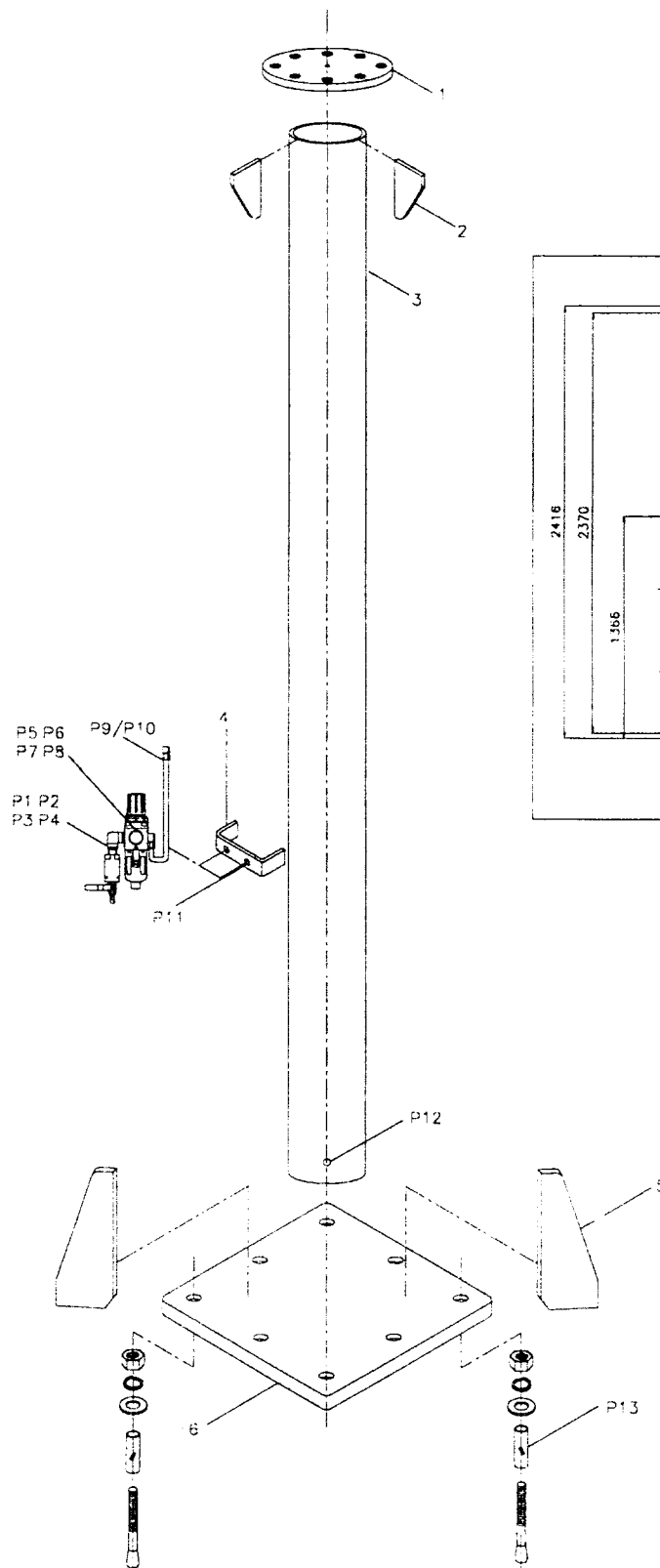
3-1. LAY OUT



NO	REF. NO	DESCRIPTION	REMARKS
1	A120	POST ASS'Y	
2	A200	TURN PIPE ASS'Y	
3	A300	TURN ARM ASS'Y	
4	A400	TURN HOOK	
5	A500	CONTROL HANDLE ASS'Y	
6	A600	HOSE ASS'Y	

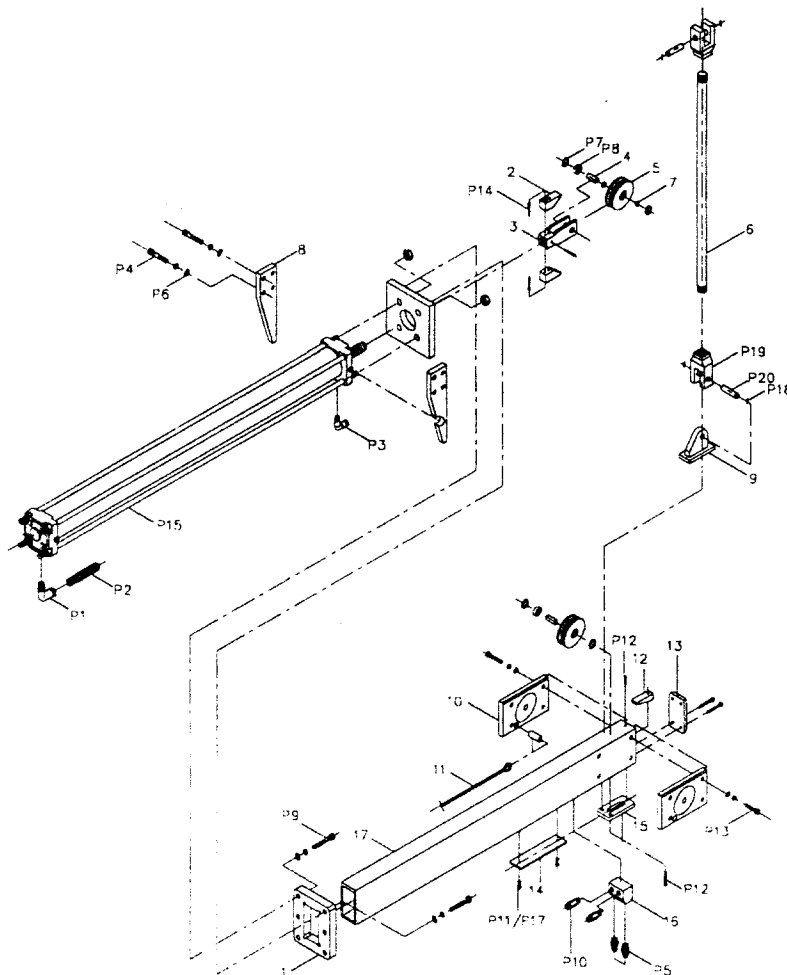
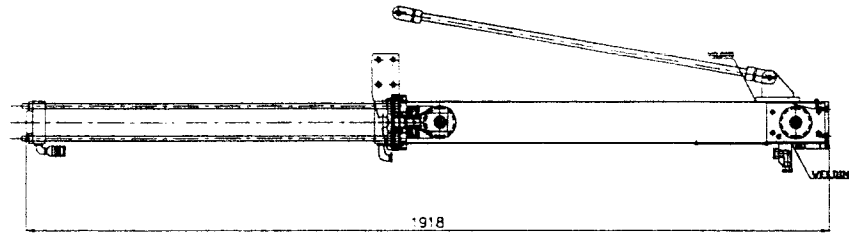
14

3-2. POST ASS'Y



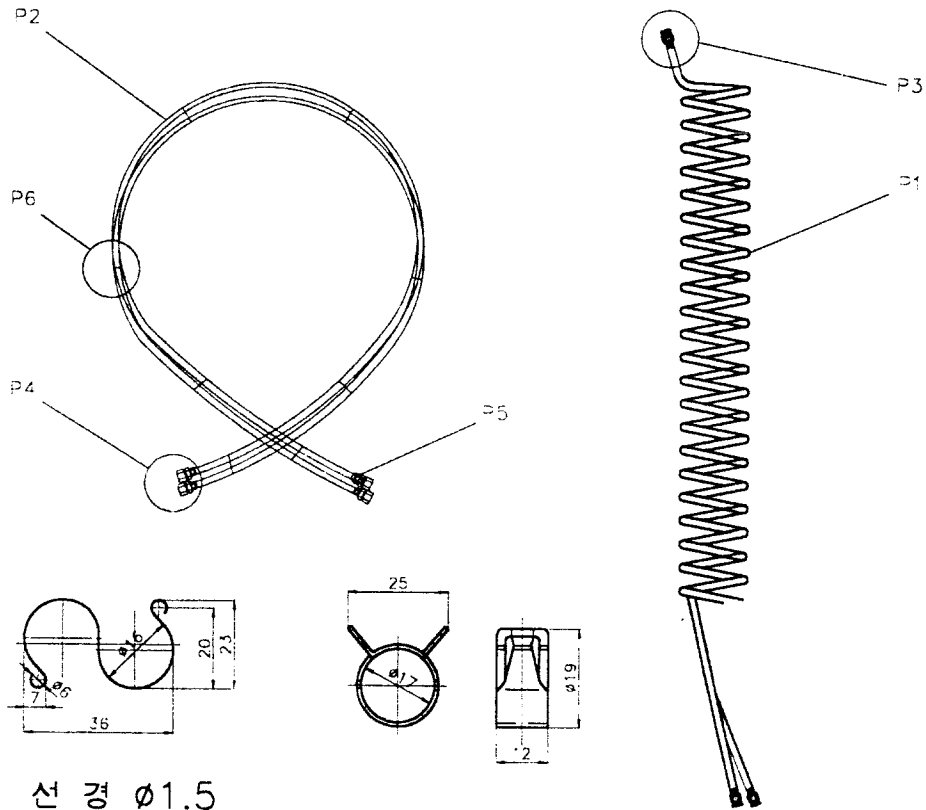
P13	DSJ-B14	SET ANCHOR	M18X125	8
P12	DSJ-B13	SET SCREW	1/4"x10	1
P11	DSJ-B12	SOCKET BOLT	M6X10	2
P10	DSJ-B11	AIR HOSE	#10X500	1
P9	DSJ-B09	AIR FITTING 90°	1/4"x#10	1
P8	DSJ-B08	AIR FITTING 90°	3/8"x#10	1
P7	DSJ-B07	AIR FILTER	3/8"x#10	TWA3000
P6	DSJ-B06	ELBOW	3/8"-SHORT	1
P5	DSJ-B05	SOCKET 1/4"	SPP	2
P4	DSJ-B04	CHECK VALVE	AK4000	1
P3	DSJ-B03	COUPLER	PM30	1
P2	DSJ-B02	NIPPLE	3/8"-SHORT	2
P1	DSJ-B01	BALL VALVE	3/8"x#10	1
6	DSJ-P06	BASE PLATE	SS400	1
5	DSJ-P05	LIB-POST LOW	SS400	4
4	DSJ-P04	FILTER BASE	SCP-1	1
3	DSJ-P03	POST PIPE	SPP(125A)	1
2	DSJ-P02	LIB-POST UP	SS400	4
1	DSJ-P01	FLANGE-1	SS400	1
NO.	REF.NO	DESCRIPTION	MAT.	Q'TY

3-4. CYLINDER ARM ASS'Y



P20	DSJ-CB20	니플용 스핀트 핀	DCP-3	2
P19	DSJ-CB19	Y형 2선 니플 스핀트	Y-05A	2
P18	DSJ-CB18	한편핀	#3X18L	2
P17	DSJ-CB17	PLAIN WASHER	M4	2
P16	DSJ-CB16	PLAIN SPRING WASHER	M8	14
P15	DSJ-CB15	AIR CYLINDER	CA1000-850	1
P14	DSJ-CB14	SOCKET BOLT	M5X15	4
P13	DSJ-CB13	SOCKET BOLT	M8X20	8
P12	DSJ-CB12	SOCKET BOLT	M5X10	5
P11	DSJ-CB11	+SCREW	M4X8	2
P10	DSJ-CB10	AIR FITTING	1/4"X#10	4
P9	DSJ-CB09	SOCKET BOLT	M8X30	8
P8	DSJ-CB08	BALL BEARING	6001ZZ	2
P7	DSJ-CB07	SNAP RING	RTW-28	4
P6	DSJ-CB06	PLAIN SPRING WASHER	M12	4
P5	DSJ-CB05	NIPPLE	1/4"X#10	2
P4	DSJ-CB04	SOCKET BOLT	M10X25	8
P3	DSJ-CB03	AIR FITTING 90°	1/2"X#10	1
P2	DSJ-CB02	SILENCER	ST-04	1
P1	DSJ-CB01	ELBOW	1/2"SHORT	1
17	DSJ-CP17	SQ PIPE	SS400	1
16	DSJ-CP16	AIR BLOCK	SS400	1
15	DSJ-CP15	COVER BLOCK-2	SB41P	1
14	DSJ-CP14	COVER PLATE	SCP-1	1
13	DSJ-CP13	COVER BLOCK-1	M/C NYLON	1
12	DSJ-CP12	STOPPER	M/C NYLON	1
11	DSJ-CP11	WARE	SUS#5	1
10	DSJ-CP10	IN BLOCK	SM45C	2
9	DSJ-CP09	BRACKET-1	SS400	1
8	DSJ-CP08	CYL. FLANGE	SS400	1
7	DSJ-CP07	COLLAR	SGP10A	4
6	DSJ-CP06	TENSION BAR	SM45C	1
5	DSJ-CP05	WHEEL	M/C NYLON	2
4	DSJ-CP04	PIN WHEEL	SM45C	3
3	DSJ-CP03	LOAD BLOCK	SM45C	1
2	DSJ-CP02	WHEEL COVER	M/C NYLON	2
1	DSJ-CP01	SQ FLANGE	SS41	1
NO.	REF.NO	DESCRIPTION	MAT.	Q'TY

3-7. HOSE ASS'Y



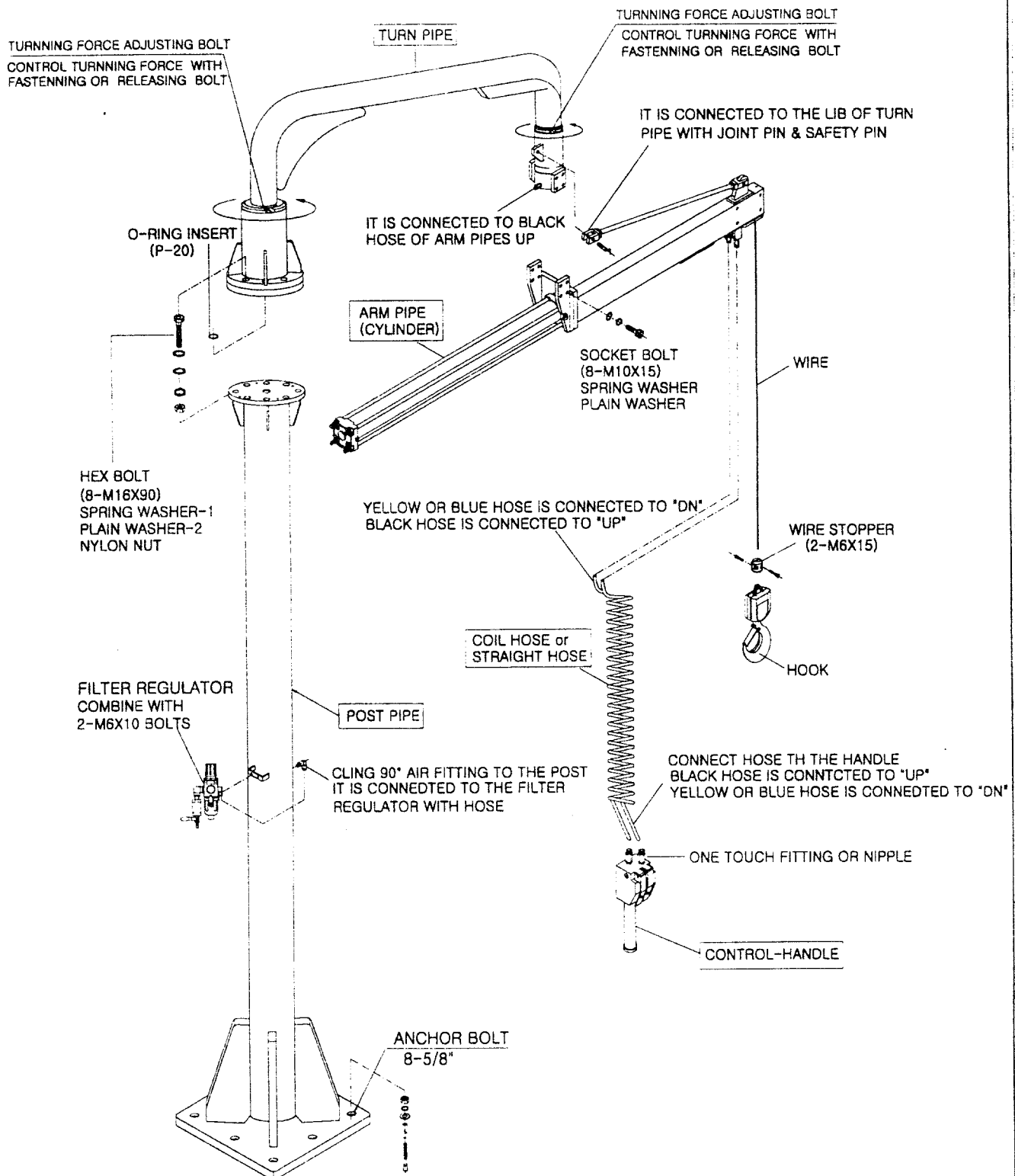
선 경 $\phi 1.5$

DETAIL P6

DETAIL P5

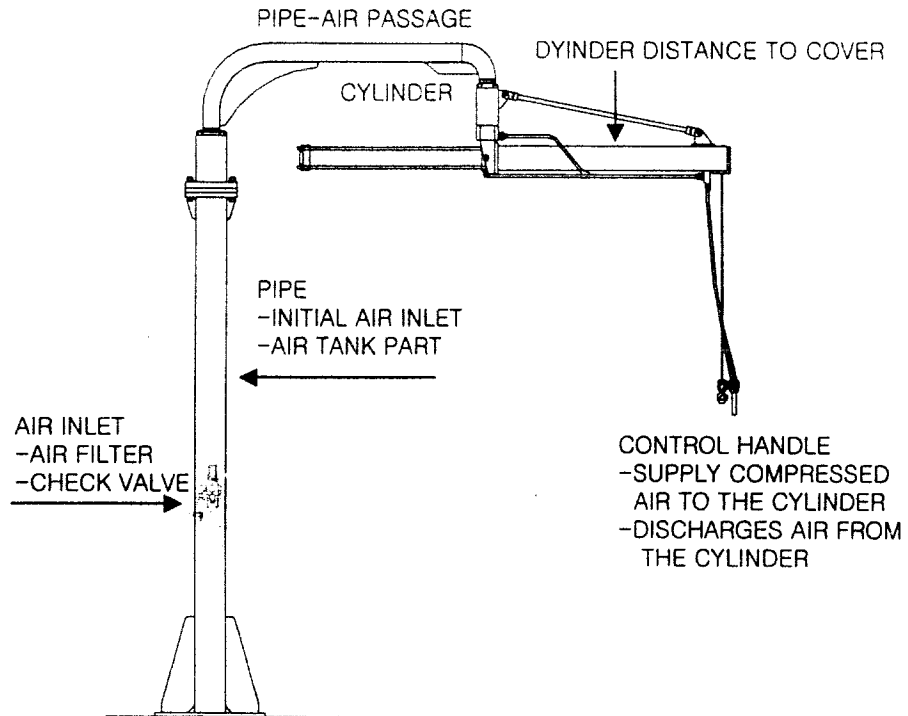
P6	11E06-B	HOSE BAND	$\phi 10$	5
P5	11E05-B	HOSE CLIP	$\phi 17$	4
P4	11E04-B	NIPPLE	요코하마 1/4"	4
P3	11E03-B	AIR FITTING	PC10-02	4
P2	11E02-B	STRAIGHT HOSE	R-09	1
P1	11E01-B	AIR COIL HOSE	U-10	1
NO.	REF. NO.	DISCRIPTION	MAT.	Q'TY

< DSJ-300 INSTALLATION SIMULATION >

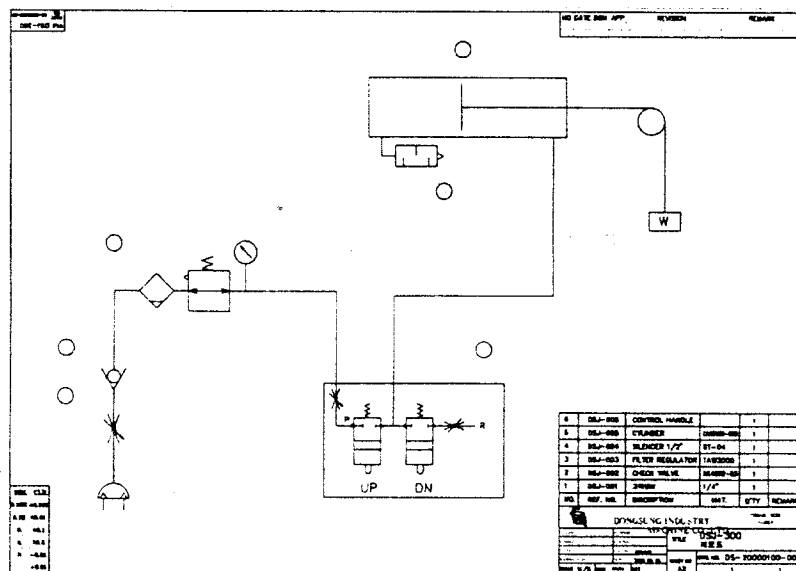


4. COMPRESSED AIR CIRCUIT DRAWINGS

4-1. LAY-OUT



4-2. CIRCUIT DRAWING



1) AIR FILTER REGULATOR

The filter regulator makes unstabilizing compressed air to proper air pressure and supplies it to the equipment.

2) POST PIPE

Post pipe is installed to the ground with anchor bolts to support the equipment as column and is also air passage as air tank.

3) TURN PIPE

Turn pipe connects post pipe with turn arm as joint. It can be rotated in 360-degree arc on each joint part so that it secures work space.

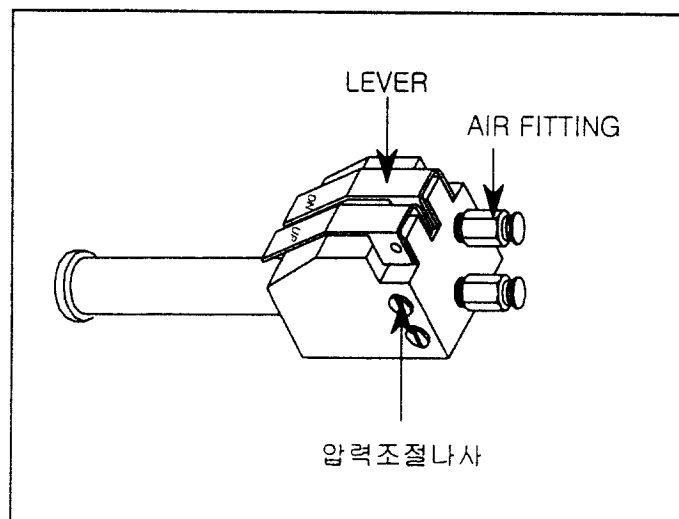
4) TURN ARM

The cylinder rod is combined with wheel in the inside of turn arm and moves within a fixed section. The wire is moved up or down by cylinder's move.

5) CONTROL HANDLE

Function of control handle

Control handle supplies compressed air to the air cylinder or discharges air from it and lifts up and lowers the workpiece.



Main Function

1. Two levers engraved as "UP" and "DN" perform up and down function respectively. UP lever supplies compressed air to air cylinder and hence lifts up workpiece. DN lever discharges compressed air from air cylinder and lowers down the workpiece by its weight.

2. Sp-con-pin adjusts the air quantity of the outside so that it can prevent jumping phenomena which may be occurred by excessive pressure or light weight.

5-1-4. OPERATION

This equipment is operated (up & down) by levers of control kit. The worker rotates arm pipe with minimum man power so that he can move heavy goods very easily within a fixed space.

1) Check list before operation

- Air fitting part might be closely contacted.
- Switch off the electric current of equipment.
- The weight might be hanged on the hook.
- The hook might be touched on the ground.
- Don't press the levers of control handle and check objects push the levers

2) Operation and control

- Open the valve and control the air pressure becomes 6kgf/cm^2
- Hold control handle with right or left hand and operate the levers slowly with watching for hook's move.
- Hang the goods on the hook.



Do not lift up more than the specified max weight.

- Hook moves up while up lever of control handle is pressed
- Hook moves down while DN lever of control handle is pressed.
- The speed of hook's up & down is controlled by rotating speed-control-pin on the side of control handle.
- The most important function which distinguishes between air balance hoist and electric one's is "FLOWING". The worker can move heavy goods up and down very easily in any height with floating function.

5. OPERATION

5-1. HOW TO OPERATE

5-1-1. PURPOSE

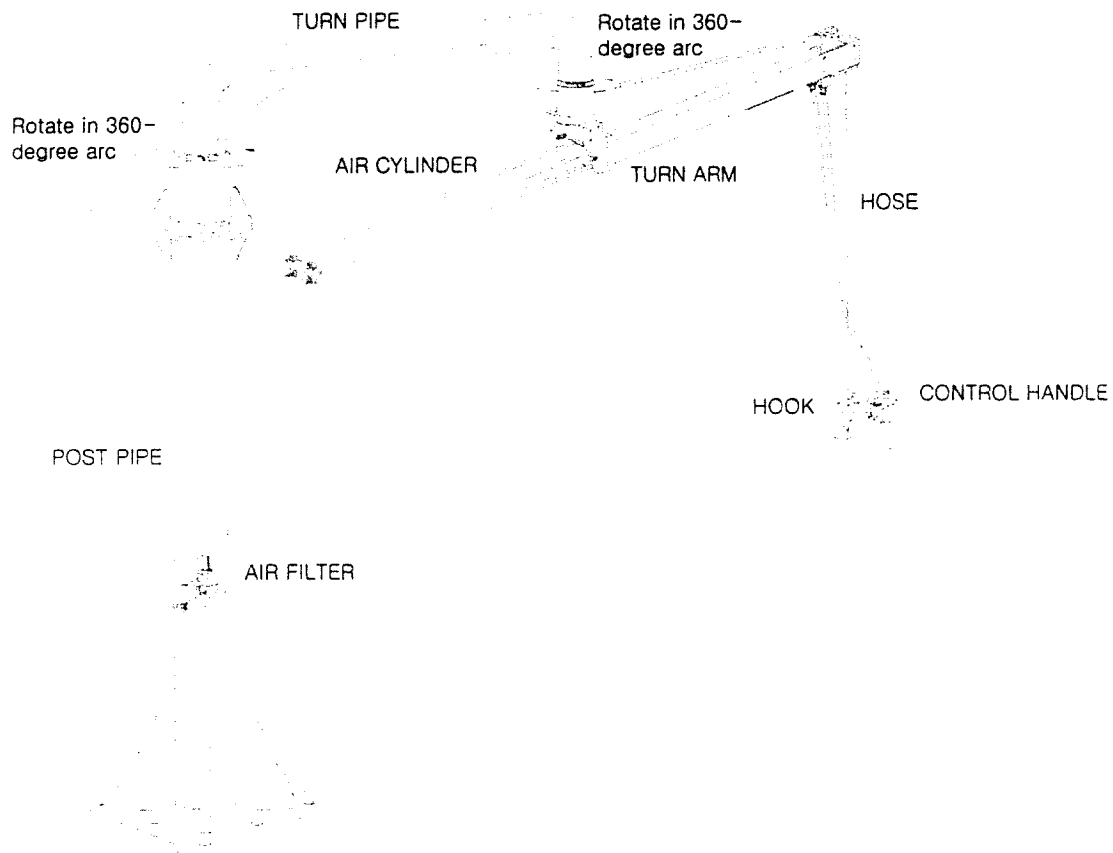
Air Balance arm DSJ-300 with using compressed air is useful to more heavy goods very easily and quickly with minimum man power.

DSJ-300 is new conceptual hoist to use individually without rail system.

5-1-2. SPECIFICATION

CHECK POINT	SPECIFICATION	CHECK POINT	SPECIFICATION
MODEL	DSJ-300	ROTATION ANGLE	360°
MAX. PAY LOAD	120Kg	COLOR	4YR/7.2/13.2(Yellow)
STROKE	1450mm	AIR PRESSURE	6Kgf/cm ²
ARM LENGTH	2336mm	WEIGHT	200Kg

5-1-3. STRUCTURE AND NAME OF EACH PART



5-2. FOR MAINTENANCES & REPAIR

5-2-1. DISASSEMBLY & ASSEMBLY

- Disassembly and assembly might be safely done by order.
- Do not use it for another purposes and change the structure of equipment at user's pleasure.

5-2-2. BEFORE USING COMPRESSED AIR

- The minimum pressure which is necessary
- Make sure that hose nozzles in safe before you put compressed air. If the hose would be shaken by air leakage due to the nozzle is burst or OFF, this is very dangerous.

5-2-3. CAUTION

- Do not operate the equipment during maintenance & repair work.
- Put on safety shoes to prevent injury which may be occurred by sliding or falling during the weight in being moved.
- Do not stand below the weight hanging on the hook and within the limits of falling.
- The weight must be not connected directly to the hook.

5-2-4. REPLACEMENT OF WIRE.

- Watch for the exterior of wire. In case that it is burst, loosen or twisted, replace it with new one.
- Switch OFF air compressor.
- Release the air of cylinder with using control-handle.
- Remove plate on the downside of turn arm(Refer drawing)
- Remove plastic cover which is combined with the end part of turn arm.
- Pull fully wire so that the wheel can be seen through hole.
- Remove socket bolt which is connected to the cover block of turn arm and take out wheel with wire from pipe.
- Separate wire from hinge-pin and remove wire from pipe.
- Replace wire with using plate's hole & wheel and reassemble it in the revers order of disassembly.
- Replacement period of wire is normally 1-1 1/2 years for safety.

5-2-5. SPECIFICATION

- KS A 0401 - WIRE ROPE FOR MECHANICAL CONTROL

- STAINLESS STEEL (SUS304) : 7 × 19 : $\phi 5$

5-2-6. INSPECTION TERM

1) Weekly check point

- Control-Handle
 - Leakage : Test the leakage with soap bubbles.
 - Damage : Watch for the piston pin pressed owing to the lever part damaged or adjustment screw of control pin is damaged.
 - Foreign substance : Watch for the foreign substance is stuck into the lever piston parts or hose connection parts.
- Filter Regulator
 - Damage : Check to case is damaged or not.
 - Water : In case that the water is filled a case, press valve and drain water from case.

2) Monthly check point

- Wire
 - watch for wear, twisted, burst of wire.
- Filter Regulator
 - Filter : In case that it is dirty or the foreign substance is stuck, replace it with new one.

5-3. INSTALLATION & TRANSPORTATION

5-3-1. HOW TO INSTALL

1) Post pipe

- Stand post pipe on the firm and flat ground.
- Make holes to the base plate's bolt holes with hammer drill.
- After fixing anchor bolts to the holes with hammering, insert washers & nuts to the screw parts and fasten it tightly.



In case of fixing pipe to the ground with anchor bolts, use a level and let the pipe make level to the ground

2) How to combine turn arm

- Insert O-ring to the groove which is down side of flange
- Put on turn-arm to the post's flange and fit position of libs each other.
- Insert Hexa bolt(m16x90) with plain washer to the flange and fasten tightly plain washer & spring
- Turn it and test turn-arm works good or not in user's need. The turning force can be controlled by user's wit adjusting bolt(M8x15) on the beside of boss-cap

3) Cylinder arm's combination

- Put on cylinder body to the arm's boss and fit position of bracket each other, with adjusting bolt (M10x25)
- The length of tension bar can be controlled by fastening or releasing of knuckle joint
- Assemble tension-bar to the connect(joint pin) part of boll and combine them with safety pin after insert joint pin
- Cut hose properly and connect if to one-touch nipple of the downside of boss.
- Turn if and test cylinder arm works good or not in your need. The turning force can be controlled by adjusting bolt (M8x15) on the beside of boss-cap.

4) Control part's combination.

- Connect straight hose which is connected with control-handle to the nipple of cylinder-arm. Connect black hose to the "UP" and yellow(or blue) to the "DN"
- Check the black hose is connected to the nipple on the downside of control-handle.

5-3-2. SUPPLY AIR & TEST

- Connect the hose to the compressed air inlet which is fixed to the side of post.
- Open the valve and control the air pressure becomes 7kgf/cm^2
- Hold control handle with hand and operate the levers slowly with watching for hook's move.
- While the hook is being operated from upper to lower limit, fix the length of wire rope properly and fasten tightly wire-clip which is combined with wire.
- In case that the mice of hook is too fast or slow, control the speed of hook with rotating speed-control pin on the beside off control-handle.
- Control the speed of hook with rotating speed-control pin on the beside of control-handle.

5-3-3. TROUBLESHOOTING

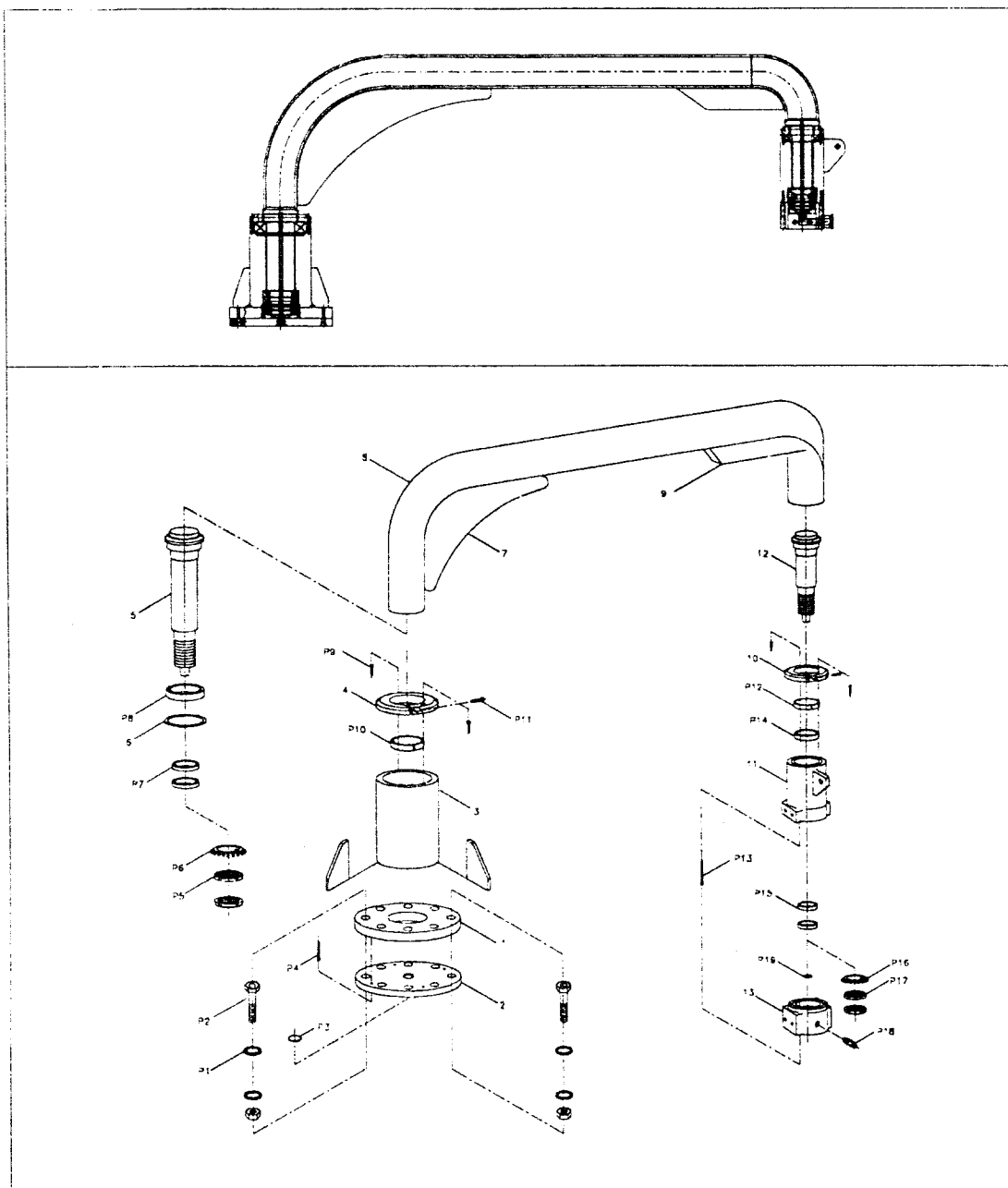
This equipment is manufactured under strict quality control system. Therefore no troubles are expected during its operation. But, owing to installation and control problem by user, slight troubles may be occurred as follow;

- 1) In spite of pressing levers of control handle, the hook is not moved.
 - No compressed air → Supply compressed air.
 - Connection of air hose is wrong → Change connection.
- 2) Hook's moving speed is not normal
 - The speed-control-pin of control handle is not normal controlled → Readjust.
 - The pressure of compressed air is of normal
 - Set the pressure of compressed air to 100psi
- 3) Moving of turn-arm is not normal.
 - Connection part of arm has not properly controlled during assembly
 - Readjust.

5-4. CAUTION

- Only the worker who is well educated in safety and operation for this equipment should operate it.
- The worker should operate it with good condition.
- In case that the hook-clip is bended or damaged, never use this equipment.
- Check the hook is bended or damaged before using equipment
- Check the equipment is damaged or worn at any time. In case that the equipment is found damaged or worn never use it.
- It is prohibited to use more than one hook to the owe line of wire.
- Never use wire rope as normal rope.
- In case that the wire rope should be perfectly vertical to the weight, the equipment might be operate.
- Never operate the equipment with twisted or matted wire.
- Do not use hook or tool which can not safely fix the weight.
- Do not weld or cut directly the weight which is hanging on the hook.
- Do not lift up more than the specified max weight.
- Do not stand within the limits of weight's falling.
- Air filter should be clinged to the post pipe focus.
- Never use this equipment for the purpose of moving human being and it is prohibited for men to stand below the weight.
- Nobody must be on the passage way of the weight's move.
- Do not move the weight overhead.
- Do not lift up the weigh during it's moving is not favorable.
- Do not shake the weight which is being hang on the hook.
- Never let the weight hang on the hook during no use of equipment.
- Do not operate the equipment during the wire rope makes seriously noise ad is jammed or tied.
- Stop air supply before repair work.
- Regularly check wire rope and hook and replace them if they are damaged.
- Be well informed of how to operate the equipment before use.

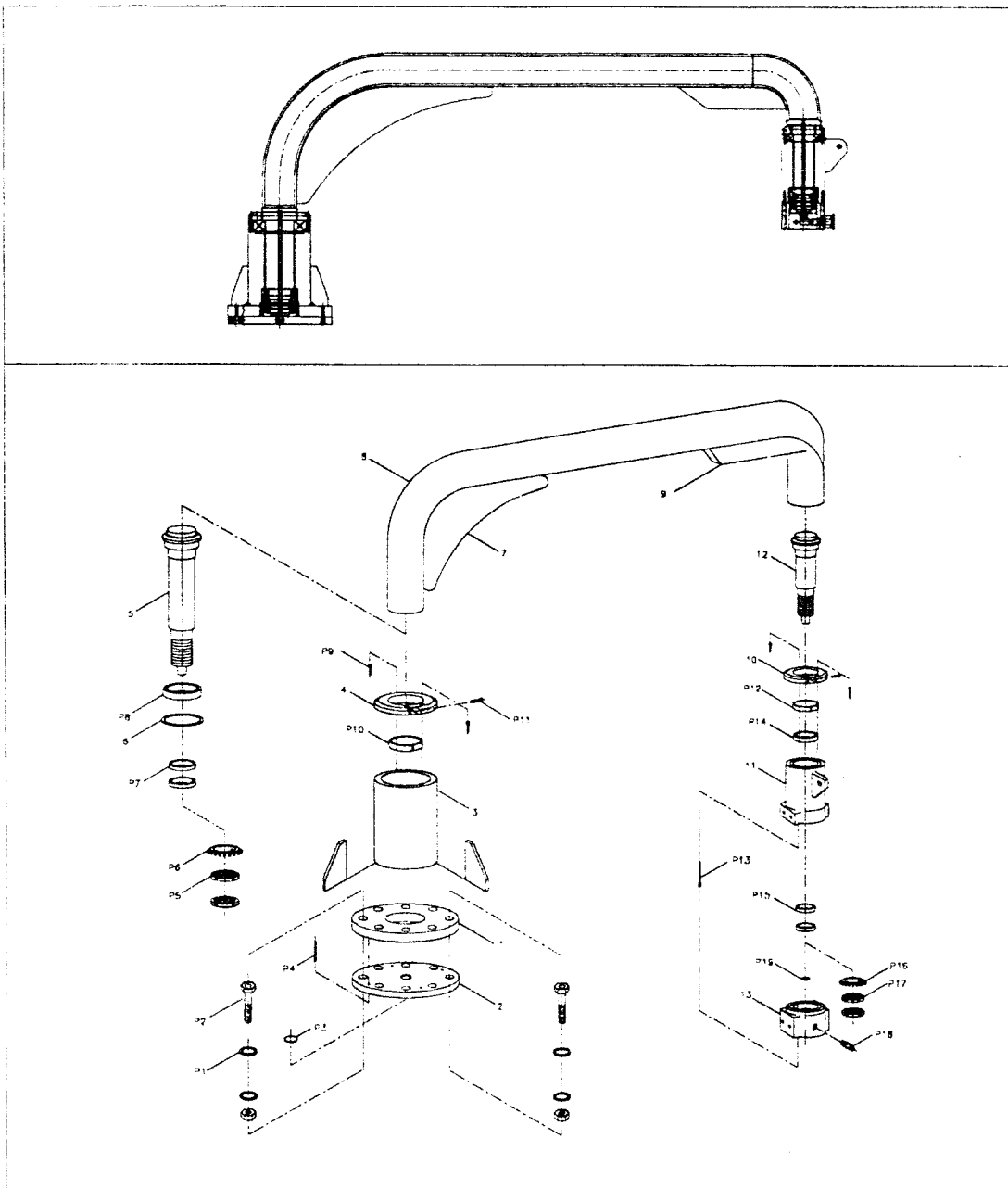
3-3. TURN PIPE ASSY



P3	DSJ-PB03	O-RING	P20	1
P2	DSJ-PB02	SOCKET BOLT	M16X80	8
P1	DSJ-PB01	SPRING WASHER	M18	16
13	DSJ-TP13	CAP	SS400	1
12	DSJ-TP12	SHAFT-2	SM45C	1
11	DSJ-TP11	BOSS-2	SM45C	1
10	DSJ-TP10	END CAP-2	SM45C	1
9	DSJ-TP09	PIPE LJB-2	SS400	1
8	DSJ-TP08	ARM PIPE	SS400	1
7	DSJ-TP07	PIPE LJB-1	SPP(6SA)	1
6	DSJ-TP06	RING	SM45C	1
5	DSJ-TP05	SHAFT-1	SS400	1
4	DSJ-TP04	SHAFT CAP-1	SM45C	1
3	DSJ-TP03	BOSS-1	SM45C	1
2	DSJ-TP02	FLANGE-2	SS41	1
1	DSJ-TP01	FLANGE-3	SS41	1
NO.	REF. NO	DESCRIPTION	MAT.	Q'TY

P20	DSJ-PB20	L-65A GO LONG	SPP	1
P19	DSJ-PB19	U-PACKING	NYA-16	1
P18	DSJ-PB18	AIR FITTING	3/8"X#10	1
P17	DSJ-PB17	BEARING NUT	AN-08	2
P16	DSJ-PB16	BEARING WASHER	AW-08	1
P15	DSJ-PB15	BALL BEARING	6008	2
P14	DSJ-PB14	BALL BEARING	6009	1
P13	DSJ-PB13	SOCKET BOLT	M10X25	4
P12	DSJ-PB12	DU BUSH	#50	1
P11	DSJ-PB11	SOCKET BOLT	M8X20	2
P10	DSJ-PB10	DU BUSH	#75	1
P9	DSJ-PB09	SOCKET BOLT	M6X25	4
P8	DSJ-PB08	THRUST BEARING	30213	1
P7	DSJ-PB07	BALL BEARING	60010	1
P6	DSJ-PB06	BEARING WASHER	AW-10	1
P5	DSJ-PB05	BEARING NUT	AN-10	4
P4	DSJ-PB04	SOCKET BOLT	M6X50	1
NO.	REF. NO	DESCRIPTION	MAT.	Q'TY

3-3. TURN PIPE ASSY



P3	DSJ-PB03	O-RING	P20	1
P2	DSJ-PB02	SOCKET BOLT	M16X80	8
P1	DSJ-PB01	SPRING WASHER	M18	16
13	DSJ-TP13	CAP	SS400	1
12	DSJ-TP12	SHAFT-2	SM45C	1
11	DSJ-TP11	BOSS-2	SM45C	1
10	DSJ-TP10	END CAP-2	SM45C	1
9	DSJ-TP09	PIPE UB-2	SS400	1
8	DSJ-TP08	ARM PIPE	SS400	1
7	DSJ-TP07	PIPE UB-1	SPR(6SA)	1
6	DSJ-TP06	RING	SM45C	1
5	DSJ-TP05	SHAFT-1	SS400	1
4	DSJ-TP04	SHAFT CAP-1	SM45C	1
3	DSJ-TP03	BOSS-1	SM45C	1
2	DSJ-TP02	FLANGE-2	SS41	1
1	DSJ-TP01	FLANGE-3	SS41	1
NO.	REF.NO	DESCRIPTION	MAT.	Q'TY

P20	DSJ-PB20	L-65A GO LONG	SPP	1
P19	DSJ-PB19	U-PACKING	NYA-18	1
P18	DSJ-PB18	AIR FITTING	3/8"X#10	1
P17	DSJ-PB17	BEARING NUT	AN-08	2
P16	DSJ-PB16	BEARING WASHER	AW-08	1
P15	DSJ-PB15	BALL BEARING	6008	2
P14	DSJ-PB14	BALL BEARING	6009	1
P13	DSJ-PB13	SOCKET BOLT	M10X25	4
P12	DSJ-PB12	DU BUSH	#50	1
P11	DSJ-PB11	SOCKET BOLT	M8X20	2
P10	DSJ-PB10	DU BUSH	#75	1
P9	DSJ-PB09	SOCKET BOLT	M6X25	4
P8	DSJ-PB08	THRUST BEARING	30213	1
P7	DSJ-PB07	BALL BEARING	60010	1
P6	DSJ-PB06	BEARING WASHER	AW-10	1
P5	DSJ-PB05	BEARING NUT	AN-10	4
P4	DSJ-PB04	SOCKET BOLT	M6X50	1
NO.	REF.NO	DESCRIPTION	MAT.	Q'TY

LIMITED WARRANTY

Vestil Manufacturing Corporation ("Vestil") warrants this product to be free of defects in material and workmanship during the warranty period. *Our warranty obligation is to provide a replacement for a defective original part if the part is covered by the warranty, after we receive a proper request from the warrantee (you) for warranty service.*

Who may request service?

Only a warrantee may request service. *You are a warrantee if* you purchased the product from Vestil or from an authorized distributor AND Vestil has been fully paid.

What is an "original part"?

An original part is a part used to make the product as shipped to the warrantee.

What is a "proper request"?

A request for warranty service is proper if Vestil receives: 1) a photocopy of the Customer Invoice that displays the shipping date; AND 2) a written request for warranty service including your name and phone number. Send requests by any of the following methods:

Mail
Vestil Manufacturing Corporation
2999 North Wayne Street, PO Box 507
Angola, IN 46703

Fax
(260) 665-1339
Phone
(260) 665-7586

Email
sales@vestil.com

In the written request, list the parts believed to be defective and include the address where replacements should be delivered.

What is covered under the warranty?

After Vestil receives your request for warranty service, an authorized representative will contact you to determine whether your claim is covered by the warranty. Before providing warranty service, Vestil may require you to send the entire product, or just the defective part or parts, to its facility in Angola, IN. The warranty covers defects in the following *original* dynamic components: motors, hydraulic pumps, electronic controllers, switches and cylinders. It also covers defects in *original* parts that wear under normal usage conditions ("wearing parts"): bearings, hoses, wheels, seals, brushes, batteries, and the battery charger.

How long is the warranty period?

The warranty period for original components is 30 days. The warranty period begins on the date when Vestil ships the product to the warrantee. If the product was purchased from an authorized distributor, the period begins when the distributor ships the product. Vestil may extend the warranty period for products shipped from authorized distributors by *up to* 30 days to account for shipping time.

If a defective part is covered by the warranty, what will Vestil do to correct the problem?

Vestil will provide an appropriate replacement for any *covered* part. An authorized representative of Vestil will contact you to discuss your claim.

What is not covered by the warranty?

1. Labor;
2. Freight;
3. Occurrence of any of the following, which automatically voids the warranty:
 - Product misuse;
 - Negligent operation or repair;
 - Corrosion or use in corrosive environments;
 - Inadequate or improper maintenance;
 - Damage sustained during shipping;
 - Collisions or other incidental contacts causing damage to the product;
 - Unauthorized modifications: DO NOT modify the product IN ANY WAY without first receiving written authorization from Vestil. Modification(s) might make the product unsafe to use or might cause excessive and/or abnormal wear.

Do any other warranties apply to the product?

Vestil Manufacturing Corp. makes no other express warranties. All implied warranties are disclaimed to the extent allowed by law. Any implied warranty not disclaimed is limited in scope to the terms of this Limited Warranty.

