

RT-300-3

Casing Rotator

SPECIFICATION

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Due to company policy of continuous development and improvement, NIPPON SHARYO reserves the right to change designs and specifications without notice.

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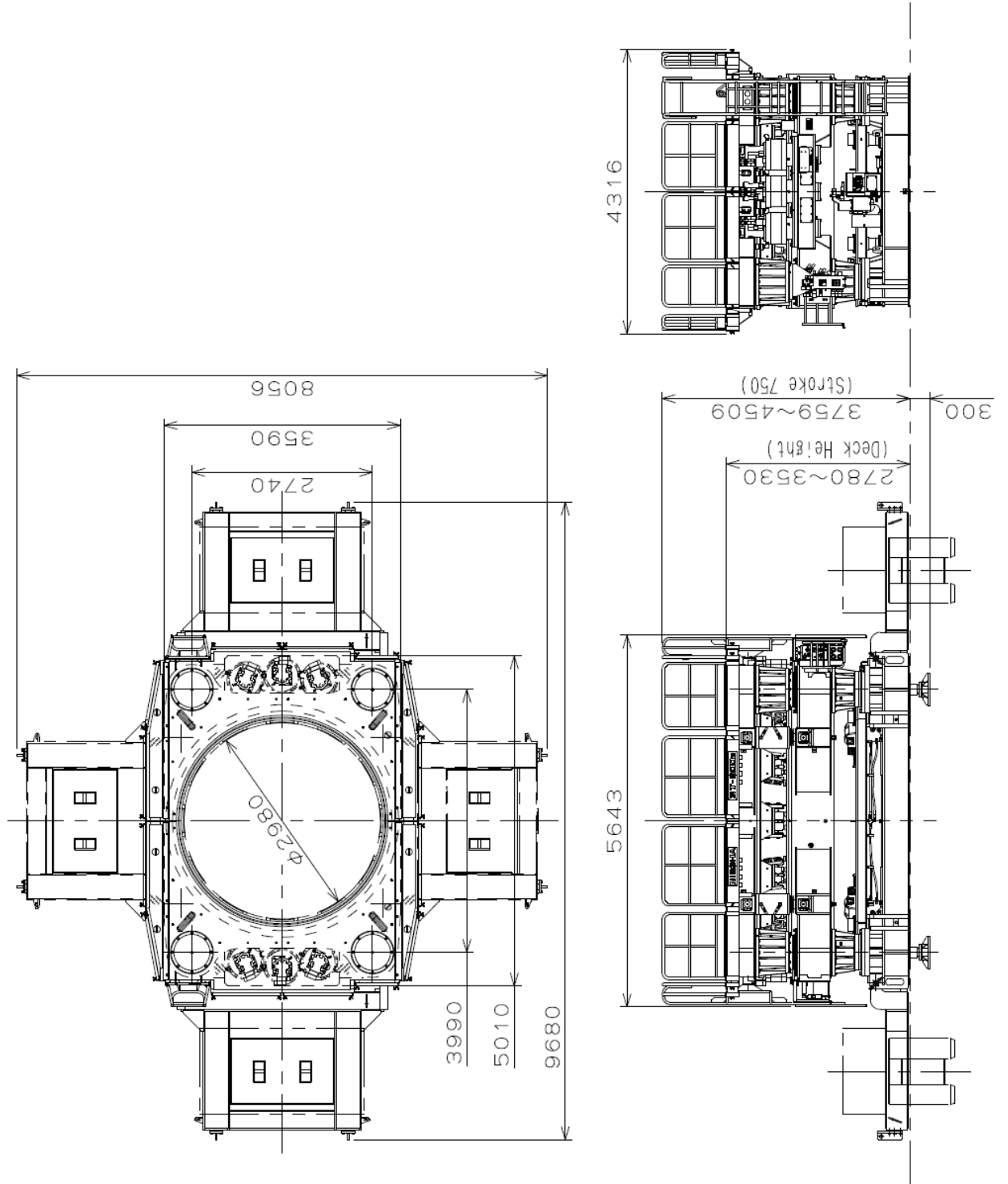
1. SPECIFICATIONS OF ROTATOR

1.1 Model	RT-300-3
1.2 Bore hole diameter	2000 to 3000 mm (Additional collar sets (optional extra) are necessary for boring smaller diameter than 3000 mm)
1.3 Casing extracting force (Normal)	4020 kN (410 tf)
(Emergency use)	4470 kN (456 tf)
1.4 Casing driving (push-down) force	820kN(Hydraulic)+390kN(Dead weight) (84 tf + 40 tf)
1.5 Trust cylinder stroke	750 mm
1.6 Torque (Normal)	5280/3100/1780 kN·m (539/316/182 tf·m)
(Emergency use)	6040 kN·m (616 tf·m)
1.7 Rotation speed	0.6/1.0/1.7 min ⁻¹ (0.6/1.0/1.7 rpm)
1.8 Weight (Excluding collar set and sub chuck (optional extra))	53.0 ton
(Equipped sub chuck (optional extra) excluding collar set)	57.5 ton

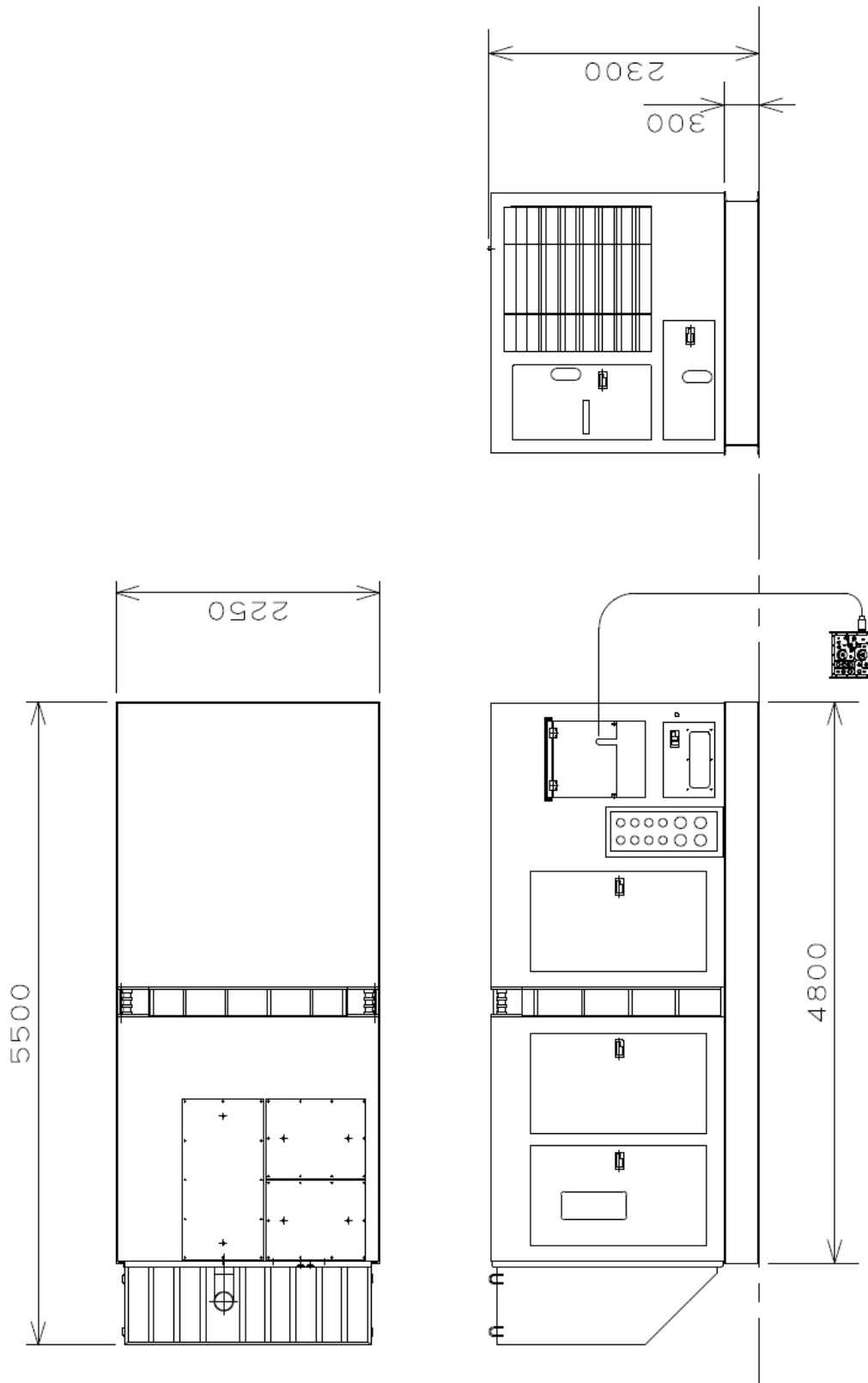
2. SPECIFICATIONS OF HYDRAULIC POWER PACK

2.1 Model	RTP-480EA
2.2 Diesel engine	
1) Maker	Komatsu Ltd.
2) Model	SA6D140E-3-A
3) Type	Water cooled, 4-cycle, overhead valve, in-line, 6-cylinder, direct fuel injection, turbo-charged
4) Rated output	353 kW / 1800 min ⁻¹ (481 PS / 1800 rpm)
2.3 Hydraulic pump	
1) Variable displacement plunger pump for rotation	
Flow	404 lit./min x 2 pcs.
Pressure	31.4 MPa (320 kgf/cm ²)
2) Variable displacement plunger pump for drive/extraction, chucking	
Flow	222 lit./min
Pressure	29.4 MPa (300 kgf/cm ²)
3) Gear pump for leveling	
Flow	80 lit./min
Pressure	20.6 MPa (210 kgf/cm ²)
2.4 Dimensions (L x W x H)	5,500 mm x 2,250 mm x 2,300 mm
2.5 Operating weight	10.0 ton

3. GENERAL DIMENSIONS OF RT-300-3 ROTATOR



4. GENERAL DIMENSIONS OF RTP-480EA HYDRAULIC POWER PACK



5. STRUCTURE AND FUNCTIONS

5.1 Outline

The casing rotator is separated into two main components, which are a rotator, model RT-300-3, and a hydraulic power pack, model RTP-480EA, for facilitating their installation work at restricted sites.

5.2 Rotator

1) Separate/stationary type

The rotator and hydraulic power pack are connected with hydraulic hoses equipped quick-release couplings and controlled through a remote control box or a radio control box (Optional extra) as desired.

The rotator can be lifted with 4 sling ropes and shackles, which are supplied as standard accessories, and place it to the point where the pile to be constructed by a crawler crane of 120 tons and larger lifting capacity.

2) Leveling

The rotator can be maintained at horizontal position by extending and retracting four leveling jacks located on its lower frame.

3) Chucking

The rotator can secure and release the casing of $\phi 3000$ (Nominal size) by twelve (12) pieces of wedge-type chucks installed around the casing and eight chuck cylinders, with no regard for the location of the chucking mechanism.

The chucks are mounted between upper and lower ball-raced bearings, which eliminates connection and disconnection work of their hydraulic hoses when opening and closing the chucks.

The chuck can also secure the casings ranging from 2000 to 2800 mm in diameter by adding respective sizes of clamp collar sets.

4) Rotation

The casing secured by the chucks can be rotated both clockwise and counter-clockwise directions through six drive motors.

The rotation speed can be adjusted from 0 to 1.7 min^{-1} by a speed control dial and high/low range by a speed change-over switch. The maximum torque is 5280 kN-m (539 tf-m).

5) Driving/extraction

The casing can be driven and extracted by four thrust cylinders with the stroke of 750 mm. The maximum driving force is 1210 kN (124tf) including the dead weight of 390 kN (40tf) and the extraction force is 4020 kN (410tf).

6) Torque/extraction force booster

In case that the casing is hard to be extracted in order to high skin friction force generated around the casing so called as “Casing stuck”, its extraction force can be increased approximately 10 percent and also its torque can be approximately 14 more than their ratings for approximately 3 seconds by pressing an emergency button on the control box.

7) B-CON: Automatic bit load control

The bit load can be constantly controlled at the desired value by a built-in microcomputer.

8) Automatic up and down function

The casing can be move up/down with the desired set up timing while using the B-CON.

9) Automatic oscillation

The casing can be oscillated with the desired change-over timing by the timers, the oscillation direction is automatically changed over at the set up timing.

10) Sub chuck (Optional extra)

In case that the drilling depth is comparatively deep, the weight of the casing may exceed the lifting capacity of the assistant crane when the casing is extracted. The sub chuck holds the casing while the main chuck is released and fills the gap of overload of the assistant crane.

The maximum allowable holding force: 1470 kN (150 ton)

5.3 Hydraulic power pack

1) Enclosure

The hydraulic power pack is provided with thick steel plate enclosure, lined by sound-absorbing materials for noise prevention.

The hydraulic power pack can be lifted with a lifting device on the top of the enclosure by sling ropes.

2) Diesel engine

The hydraulic power pack is powered by a diesel engine of model Komatsu SA6D140E-3-A, water cooled, 4-cycles, turbo-charged and direct fuel injection type.

The rated output is 353 kW/1800 min⁻¹ (481 PS/1800 rpm).

3) Hydraulic pump

2-variable displacement plunger pump of 404 lit./min at 31.4 MPa (320kgf/cm²) for rotation.

1-variable displacement plunger pump of 222 lit./min at 29.4 MPa (300kgf/cm²) for drive/extraction and chucking.

1-gear pump of 80 lit./min at 20.6 MPa (210kgf/cm²) for leveling.

5.4 Remote control box

1) Remote control button

2) Radio control button

3) Emergency lamp

4) Chuck open button

5) Chuck open/close switch

6) Engine stop button

7) Engine speed control switch

8) Jack power button

9) Torque meter

10) Extraction/chuck force meter

11) Rotation direction change-over switch

12) Drive/extraction change-over switch

13) Rotation/oscillation change-over switch

14) Oscillation timer

15) Rotation speed high/low change-over switch.

16) Rotation speed adjuster

17) B-con switch

The desired bit load or torque can be constantly controlled for avoiding overload.

18) Automatic up/down switch

The casing can be automatically moved up and down at the desired timing.

6. STANDARD SCOPE OF SUPPLY

6.1 Rotator model: RT-300-3	1 unit
equipped with the following accessories;	
1) Sling rope and shackles	4 sets
2) Reaction bracket	2 pcs.
3) Spike	2 pcs.
4) Step \varnothing 2500, 2000	1 set
5) Guard pipe	4 pcs.
6) Remote control box with cable of 20 meters long and plugs/receptacles	1 set

6.2 Hydraulic power pack model: RTP-480EA	1 unit
provided with hydraulic hoses of 20m long with quick-release couplings.	

6.3 Others

1) B-con: Automatic bit load control	1 set
2) Inclinometer	1 set
3) Torque/extraction force booster	1 set
4) Automatic up/down function	1 set
5) Automatic oscillation	1 set

7. OPTIONAL EXTRA

1) Clamp collar for main chuck	
\varnothing 2800, 2500, 2300, 2200, 2000	Each set - 12 pcs.
2) Clamp collar for sub chuck	
\varnothing 2800, 2500, 2300, 2200, 2000	Each set - 4 pcs.
3) Sub chuck set	1 set
4) Radio control	1 unit
5) Operator's room	1 unit
6) Installation frame	1 set

8. GENERAL CONDITIONS

This specifications shall cover the standard specification of model RT-300-3 Casing Rotator and RTP-480EA Hydraulic Power Pack (here-in-after called "The machine") manufactured by NIPPON SHARYO, LTD.

The general arrangement and principal dimensions of the machine are shown in the drawing attached.

1) Design and workmanship

The machine shall be designed to perform the maximum efficiency with the least fuel consumption and the lowest maintenance costs.

The workmanship shall be of the first class in all respects.

The machine shall be built for simple mechanical arrangement and easy in inspection and maintenance.

2) Materials

The materials used in the manufacture of the machine shall be of the highest quality, free from defects and imperfections.

Principal materials such as bolts, nuts, seals and steel plates used in the machine confirm to the Japanese Industrial Standards. (Almost equal to ISO)

3) Test and inspection

Routine test and inspection in our factory shall be final.

4) Painting and lettering

Under-coating by anti-rust paint and enamel finishing shall be performed in accordance with manufacturer's standard practice.

Main parts of the equipment shall be painted in NISSHA Green and other equipment in manufacturer's standard.

5) Service conditions

The equipment shall meet the following service conditions.

Ambient temperature: -10 deg. C or higher and 40 deg. C or lower.

6) Warranty

All the machine specified herein shall be warranted by us for a period of twelve (12) calendar months after the date of being put into operation, or fourteen (14) months after the date of shipment at a Japanese port, or one thousand engine operation hours according to the service hour meter, whichever is soonest.

The warranty shall cover defects in design, materials and workmanship only, shall not applicable to damage sustained mishandling of the machine or normal wear and tear.

The warranty shall not be applicable to the parts and materials mentioned below.

- ① Cutting bits
- ② Wear plates
- ③ Wire ropes
- ④ Rubber made parts
- ⑤ Seals as o-rings, seal rings, back-up rings, etc.
- ⑥ Gaskets and sheet packings
- ⑦ Filter elements
- ⑧ Batteries
- ⑨ Electric wiring
- ⑩ Glasses
- ⑪ Other quick moving parts
- ⑫ Lubricants

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