SMART MACHINE TOOL

NX7000

Installation Packet

1. INSTALLATION

1.1 Foundation

WARNING

CUSTOMERS ARE RESPONSIBLE FOR FOUNDATION & GROUTING.

SUCCESSFUL FOUNDATION AND GROUTING WORKS ARE CRITICAL FOR MAINTAINING THE ORIGINAL MACHINE ACCURACY FOR A LONG PERIOD OF TIME.

DETAILS OF FOUNDATION & GROUTING ARE SPECIFIED ON THE NIIGATA FOUNDATION DRAWINGS SUBMITTED TO YOU IN ADVANCE.
IF YOU ARE NOT COMFORTABLE WITH THESE JOBS, CONSULT WITH YOUR LOCAL SPECIALIST OR CONTRACTOR.

FOUNDATION CONCRETE CURES IN A LONG TIME AND FOUNDATION LEVEL CHANGES GRADUALLY.
CHECK MACHINE LEVEL PERIODICALLY AND RELEVEL, IF NECESSARY.

1.2 Ambient Conditions

If you have a freedom of choice for the installation location, please avoid following locations which are unfavorable to make the most of the M/C:

(1) Locations with excessive temperature variation such as direct sun shines, near furnaces / heat exchangers and air blow outlet.
Preferable ambient conditions are as follows.

- Ambient temperature: 5℃ ～ 40℃
  (Average temperature in 24 hours: 35℃ or less)
- Humidity: 50% or less (40℃), 90% or less (20℃)

Note: Refer to JIS B6015 for more detailed information. Please keep in mind that severe ambient conditions affect M/C accuracy and life time.

(2) Dusty area affected by cutting chips, dirty oil or coolant from other machines. M/C slide ways and electrical components are susceptible or damaged and/or their lives shortened.

(3) Soft soil
If bearing capacity of the soil is not enough, drive bearing piles to establish bearing capacity of 68.6kN/m^2 or more. Refer to the “FOUNDATION DRAWING” submitted or filed in the INSTRUCTION MANUAL.

(4) Near vibration source (another M/C or units)
In case you cannot avoid vibration from other sources, apply anti-vibration foundation and /or separation grooving around the M/C foundation to shut out vibration to the M/C.

(5) Other cautions
1) Secure enough room for operator setup jobs around the APC and ATC magazine.
2) Secure door opening space for the main control panel, oil supply and maintenance space for the lubrication unit, pneumatic unit, spindle cooler and hydraulic unit.
3) Secure approx. 500 mm area from the air inlet of the spindle cooler for free airflow.
4) Secure enough space to move out the coolant tank or chip bucket for maintenance and cleaning.

1.3 Ground Fault Circuit Breaker

IN CASE YOU INSTALL A GROUND FAULT CIRCUIT BREAKER ON YOUR POWER SUPPLY LINES TO THE M/C, PLEASE SELECT ONE WITH FUNCTIONING CAPACITY 200 mA OR MORE.

1.3.1 Leakage Current of Machining Centers

HIGH FREQUENCY LEAKAGE CURRENT is flowing from the motor windings, power cables or amplifiers for spindle and axis drive motors because of PWM inverter control on Niigata machining centers, even though power source current is not leaked,
If capacity of the leakage breaker is low, it may trip with high frequency leakage current regardless no actual leakage.
Niigata's M/Cs are equipped with 200mA capacity breaker.
If you are going to install a leakage breaker on the power supply lines to the M/C, please select one with 200mA or more ratings.

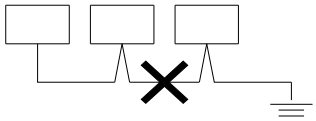
1.3.2 Importance of the Grounding job

Proper grounding connection is critical for safety of operators, maintenance engineers and those who might physically touch the M/C.
If improper grounding connection between the M/C and earth is provided, the ground fault circuit breaker does not trip even though actual leakage current is output. Also high frequency leakage current will not be carried away to the ground.
If an operator or other people touch the M/C with improper grounding, it can leak through human body. It is quite dangerous.

Grounding work is the customer's responsibility at the time of M/C installation.

1.4 Preparations for M/C Installation and Safety

Please refer to the foundation drawings, submitted in advance, to arrange and provide primary electric power and pneumatic sources at timely manner.



(1) To avoid electric shock, connect grounding wires individually to each grounding terminal in the control cabinet and the grounding rod.
(2) Power source connection must be executed by authorized personnel. In power wire connection, electric power from your factory side must be shut OFF.
NEVER CONNECT POWER UNTIL WIRE CONNECTIONS COMPLETION AND SECURING HUMAN BODY SAFETY.
(3) Stand warning board(s) to notify electric wire connections or grounding works in progress to other people.
(4) If you plan to move / reinstall the M/C, contact Niigata for proper procedures to avoid accidents.

WARNING	
	**SERVICE WORK GOING. DO NOT CONNECT POWER.**

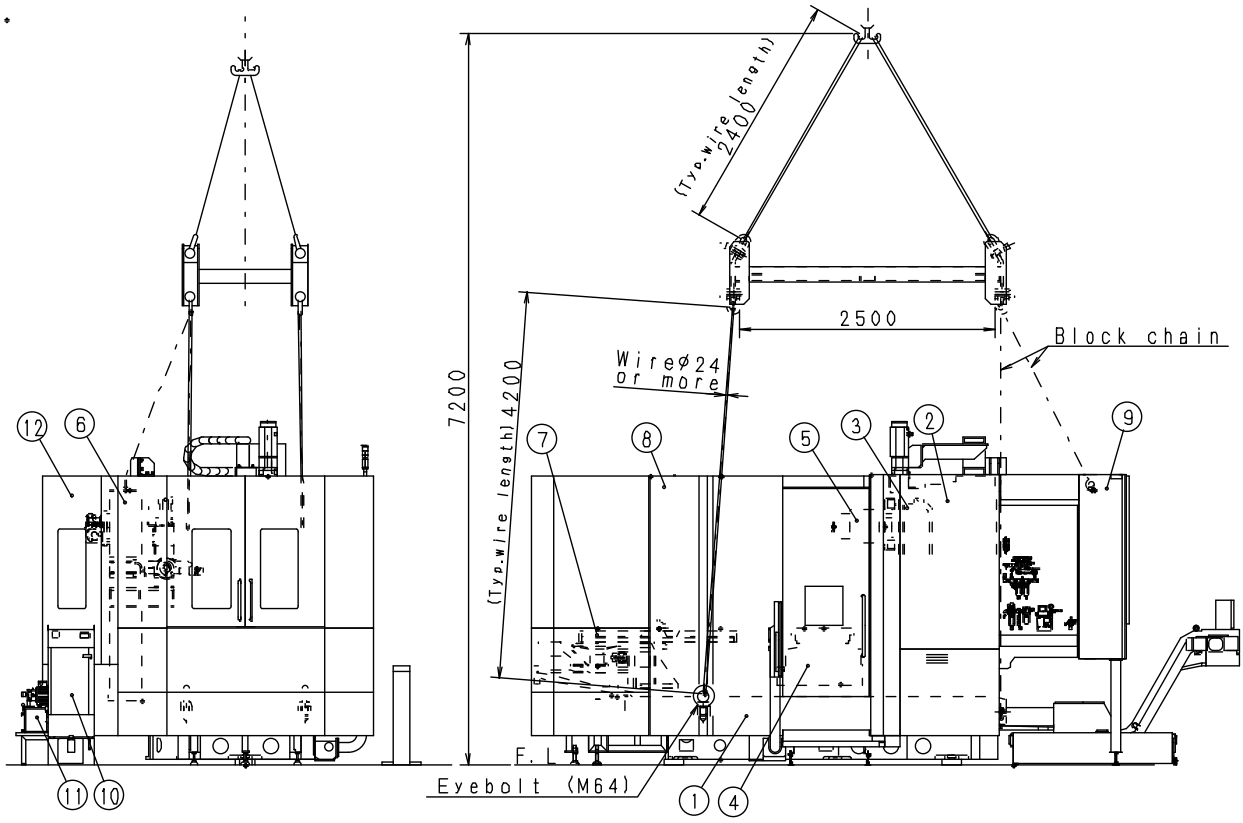
(5) In crane and / or forklift operations and other hoisting, working must be executed by authorized personnel.
(6) Check wire ropes, shackles, and lifting apparatuses before using whether their capacities are suitable for M/C mass.
(7) In M/C lifting, check no other operator or people around the M/C.

NEVER ACCESS UNDER THE M/C AFTER M/C LIFTED UP.

(8) If you plan to relocate the M/C, please inform to Niigata.

(9) Keep primary power voltage fluctuation equal to or less than ±10 % for rated value.

1.5 Machine Lifting



① Base
② Column
③ Saddle
④ Table
⑤ Spindle head
⑥ ATC magazine
⑦ 2APC
⑧ Splash guard
⑨Control panel
⑩Spindle oil chiller
⑪ Hydraulic unit
⑫ ATC magazine cover

1.5.1 Machine Mass: Approx. 23,000 kg (for 60 ATC magazine)

1.5.2 Precautions in Machine Lifting

- Four (4) wire hooking points are provided on the base. Furthermore, an additional support wire point is provided at ATC magazine rear side. Attach 2-M64 eyebolts on the base front side and 1-M30 eyebolt on the ATC magazine rear side.
  (M64 eyebolts are not included in the machine.)
- Be sure to use four wires each with a diameter of φ24 or more and without damage for each lifting position. Keeping the machine horizontal during lifting is critical. Use block chains at back side wires for length adjustment.
  Watch that there is no contact between the wires and machine in lifting.
- Never lift the Column (2).

1.5.3 Parts to be Dismantled in Machine Lifting

- Spindle cooling unit ⑪ (remove the piping.)
- Hydraulic unit ⑫
- ATC magazine cover ⑫
- Two (2) round top covers of splash guard ⑧

1.5.4 Fixing of Movable Parts

(1) In transportation, prepare wooden supports or fixtures to securely fix the saddle ③, table ④ and spindle head ⑤.
(Because linear motion bearings are adopted on each axis, frictional resistance is minimal and external forces influence stability of fixed axis units.)

(2) Fix the ATC swing arm with ropes or the like.

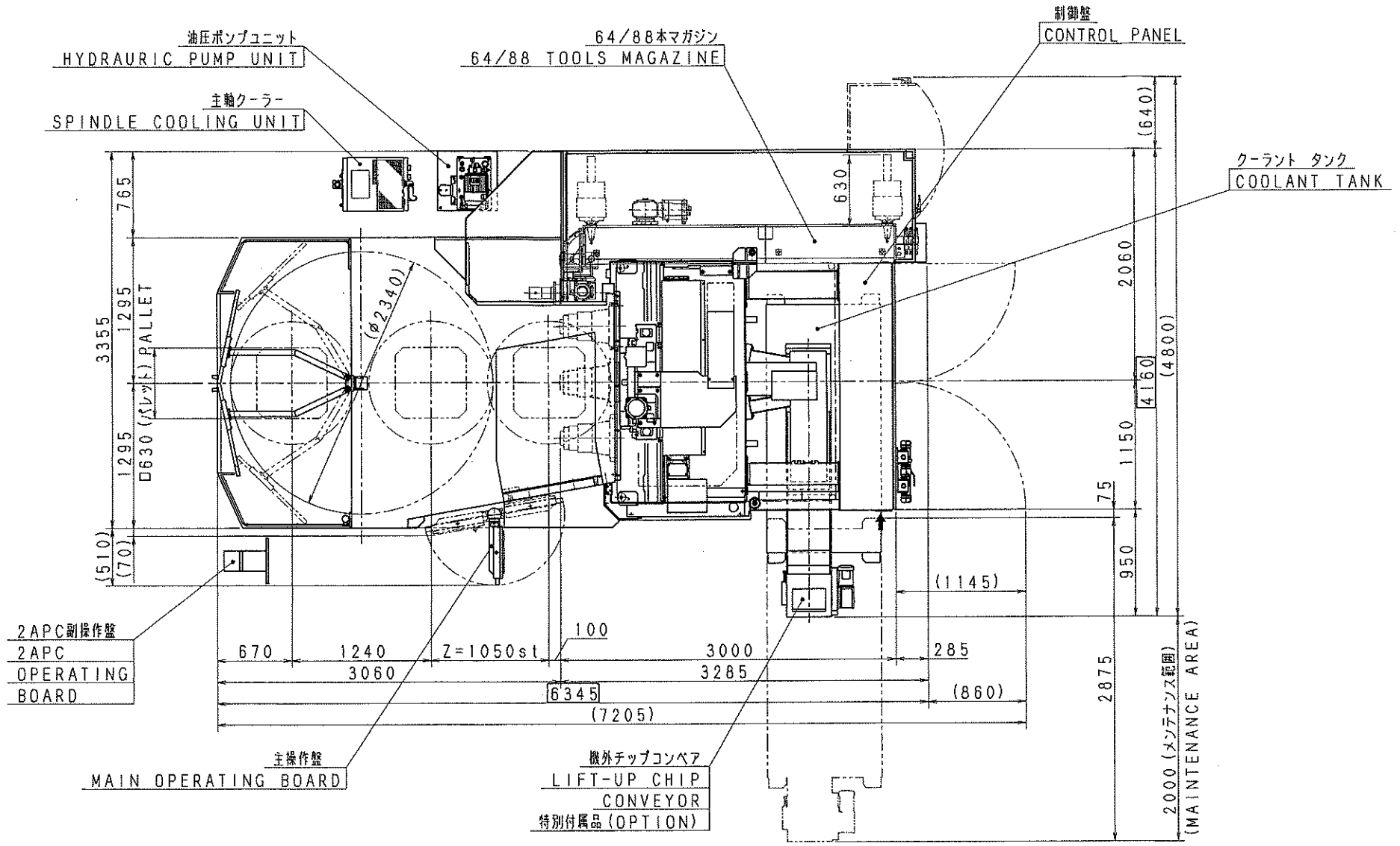
(3) Fix the saddle ③ at the center in the lateral direction, table ④ in the column direction, and spindle head ⑤in the downward direction.

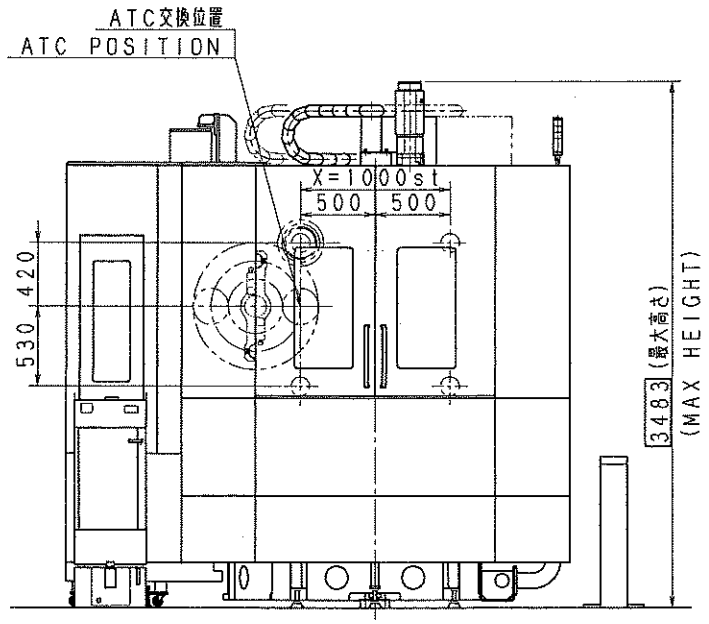
1.5.5 Lifting Condition

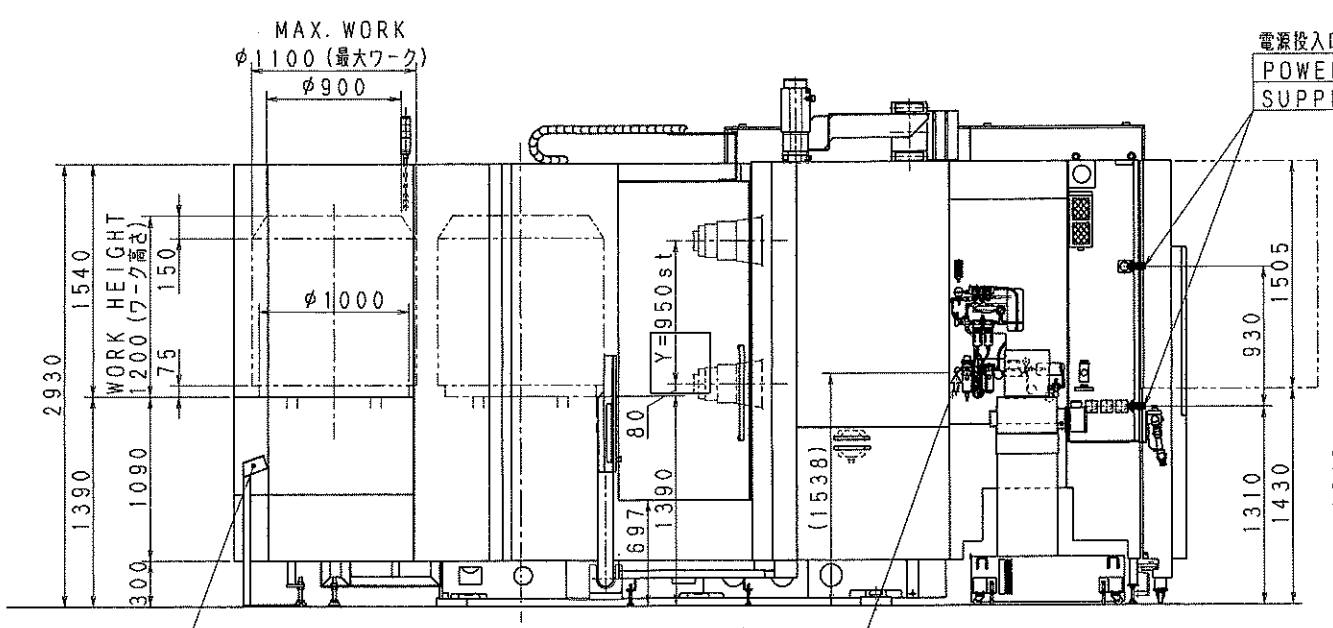
- The ATC magazine ⑥, control panel ⑩, and splash guard ⑧ can be lifted as assembled with the machine body.

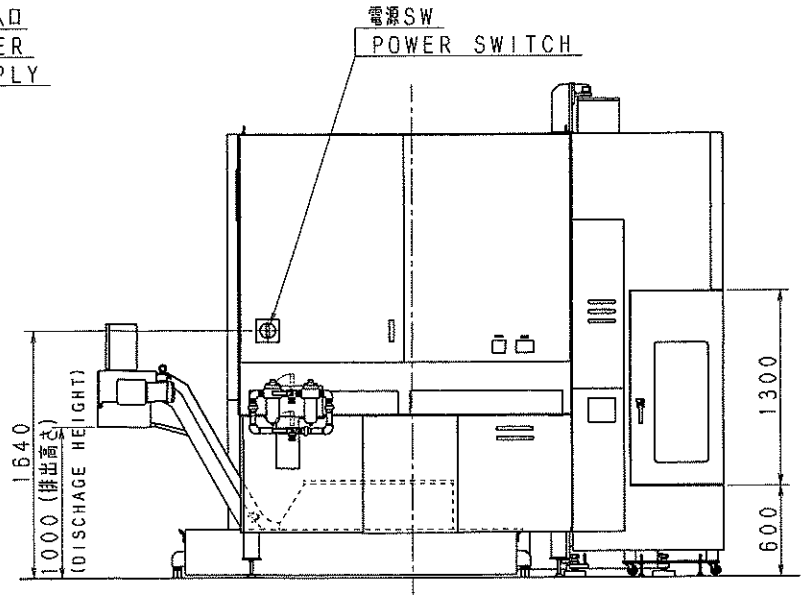
<仕様>
パレット上最大積載質量：1200kg
ツールマガジン：　チェーン式
工具収納本数：　64/88本
工具最大長さ：　630mm
工具最大質量：　30kg
パレットチェンジャ：ダイレクト旋回式
パレット枚数：　2枚
機外チップコンベア（特別付属品）：ヒンジパン（横出し　H=1000）
機械質量：　23000kg

<SPECIFICATION>
PALLET LOADING CAPACITY : 1200 kg
TOOL MAGAZINE :　CHAIN TYPE
TOOL STRAGE CAPACITY :　64 / 88 TOOLS
MAX. TOOL LENGTH :　630 mm
MAX. TOOL MASS :　30 kg
PALLET CHANGER :
DIRECT ROTARY TYPE
NUMBER OF PALLET :　2
LIFT-UP CHIP CONVEYOR (OPTION) :
HINGE-PAN(SIDE H=1000)
MACHINE MASS : 23000 kg







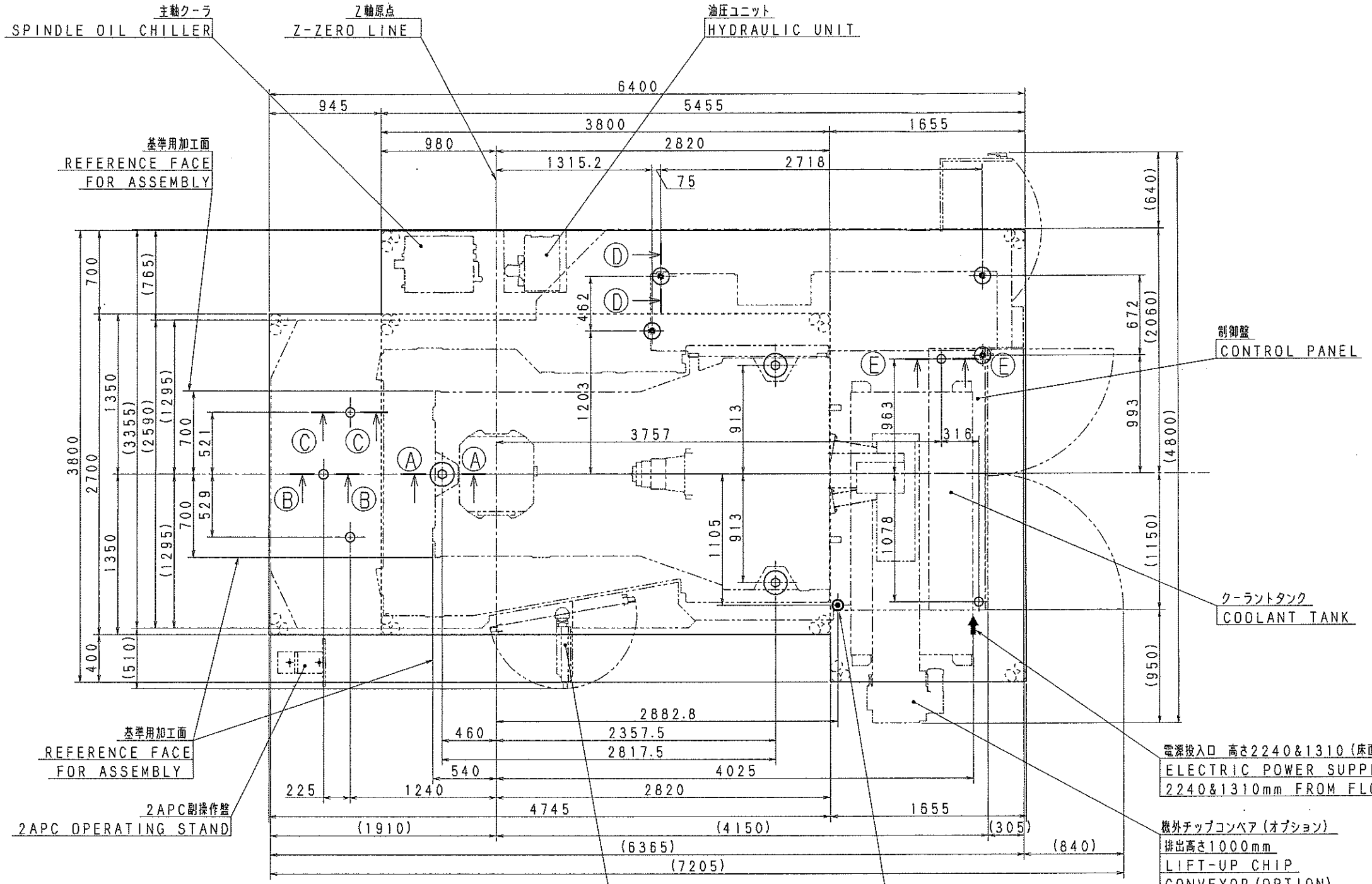


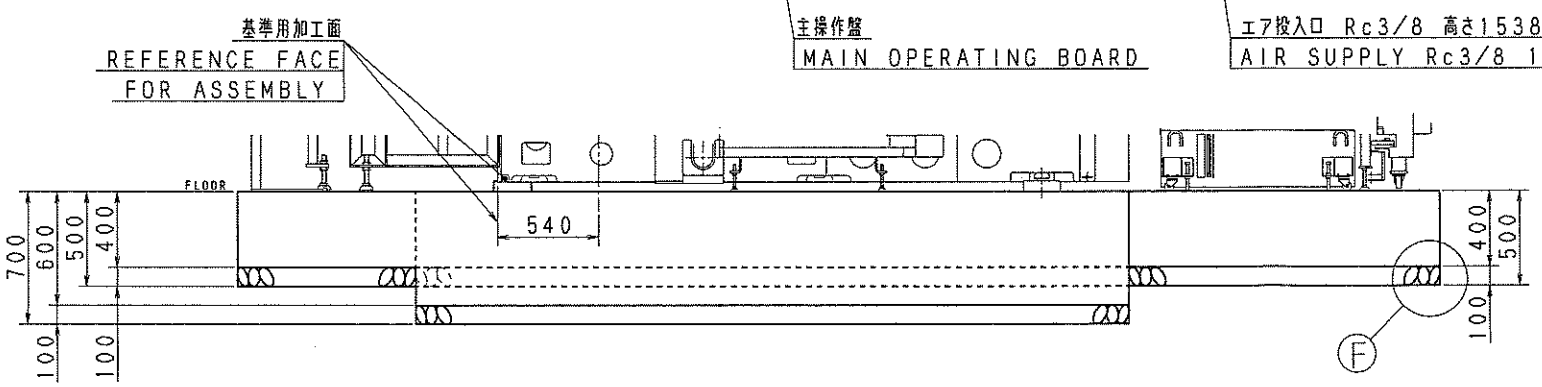
(参) 4116A05820						
No.	変更内容 REVISION	指示書No. SHEET No.	承認 APPD.	照査 REV.	担当 CHD.	日付 DATE

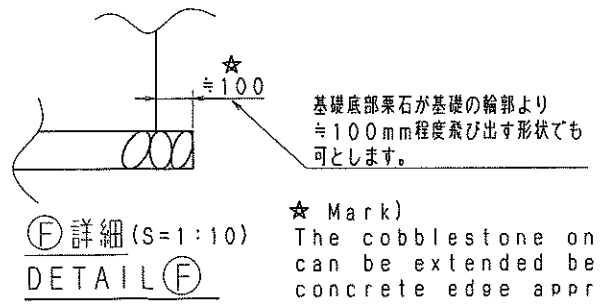
材質 MATERIAL	質量 MASS (kg)		MACHINE N7	UNIT	
熱処理 HEAT TREATMENT	硬度 HARDNESS	尺度 SCALE 1:25	図名 TITLE N7 スガタズ (P2-T64/88) N7 GENERAL VIEW (P2-T64/88)		
承認 APPD. 阿部B	照査 REV. 吉田	担当 CHD. 小野	製図 DWG. 間	日付 DATE 18/07/19	図番 DWG. No. 4116A07450.	1/1

(株) ニイガタマシンテクノ NIIGATA MACHINE TECHNO CO., LTD.

A1 (594×841)







☆ Mark)
The cobblestone on the soil can be extended beyond the concrete edge approx 100mm.

記事
1. 下記工事を貴社で行って下さい。
(1) 基礎工事
(2) 電源から制御盤までの配線及びつなぎ込み
(3) 空圧源から機械本体までの配管及びつなぎ込み
2. コンクリート容量: 約12.9m³
3. 地耐力が49kN/m²以下の場合は杭打ちを行って下さい。
4. 機械質量: 23000 kg
5. 主軸冷却装置が直射日光や熱気を受けない様にして下さい。
(主軸冷却装置のみを自由に動かすことは出来ませんので
ご注意願います。)
6. 本図は基礎及びレベリング部寸法を示すのを目的として
弊社標準仕様で描いており、貴社仕様は盛り込んでいない
場合があります。 貴社仕様を加味した寸法につきましては
別途提出の平面図もしくは姿図を御参照下さい。

仕様
・機械高さ: 3483mm
・ツールマガジン :チェーン式 64/88本
・パレットチェンジャ:リフト&ターン式2APC

Notes
1. The following works should be provided by the customer.
(1) Foundation works.
(2) Electrical wiring and connection from the customer's power supply to the machine or the transformer.
(3) Air piping and connection from the customer's source to the machine.
2. Volume of concrete is approximately 12.9 m³.
3. Bearing piles should be driven into soils if ground bearing capacity is 49 kN/m² or less.
4. Mass of machine is approximately 23000 kg.
5. Direct sunshine and heating up locations must be avoided for the machine and especially spindle cooling unit.
6. The purpose in this drawing is to show dimensions of foundation and leveling parts. This drawing is in standard specification and includes a few options, but might not include the customer's specification(s) nor option(s).

Specification
・Machine height : 3483 mm
・Tool magazine : Chain type 64/88 tools
・Pallet changer : Lift & turn type 2APC

詳細設計により寸法が変更になる場合があります。
The size might be changed by a detailed design.

機外チップコンベヤ横出し、ヒンジパン排出高さ1000mm

No.	変更内容 REVISION	指示票No. SHEET No.	承認 APPD.	照査 REV.	担当 CHD.	日付 DATE
	(参) 4116A05830					

材質 MATERIAL	質量 MASS(kg)		MACHINE N7	UNIT
熱処理 HEAT TREATMENT	硬度 HARDNESS	尺度 SCALE 1:20	図名 TITLE スエツケズ(P2-T64/88) FOUNDATION DWG. (P2-T64/88)	
承認 APPD. 阿部	照査 REV. 吉田	担当 CHD. 小野 / 製図 DWG. 間 / 日付 DATE 18/07/21	図番 DWG. No. 4116A07460	1/2

(株) ニイガタマシンテクノ NIIGATA MACHINE TECHNO CO., LTD.

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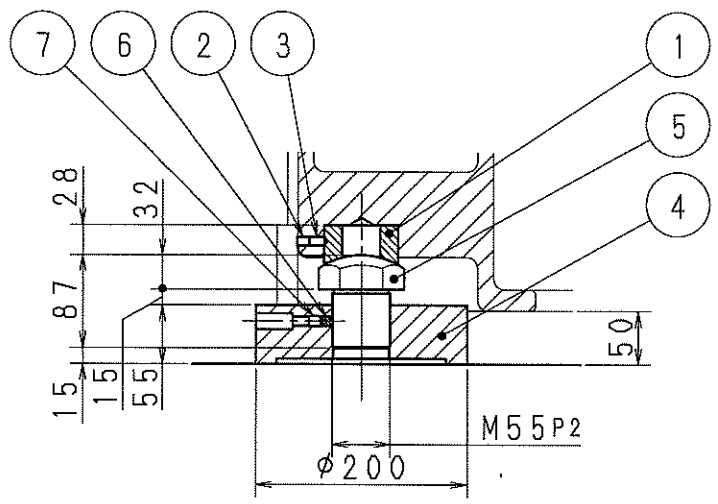
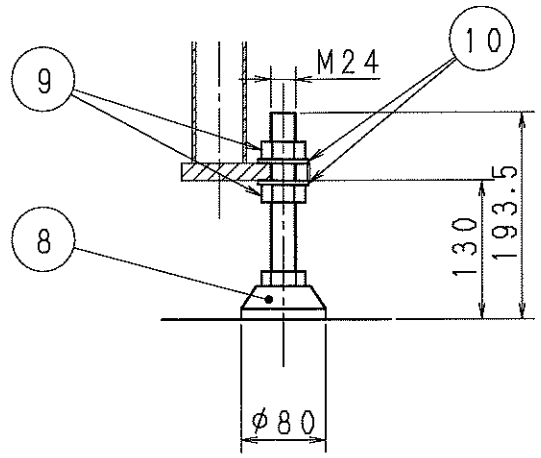


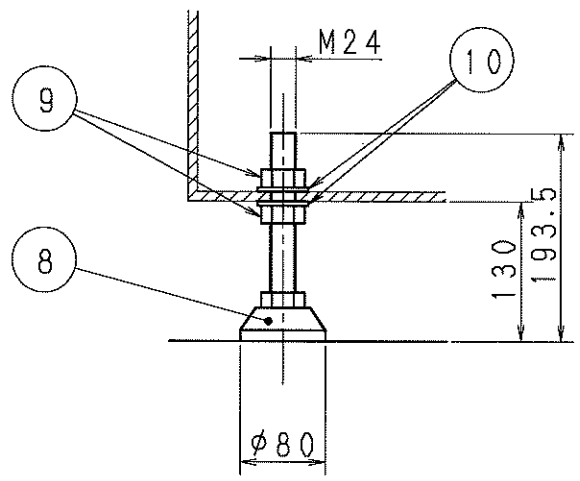
Ⓐ－Ⓐ断面　3ケ所

SECTION Ⓐ-Ⓐ 3pts



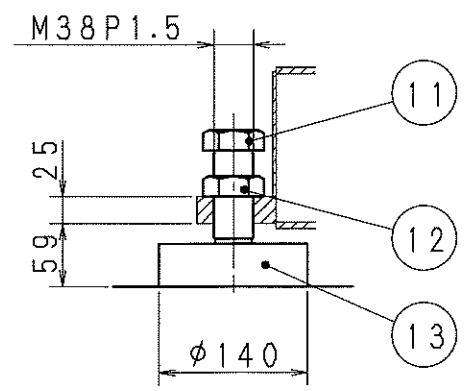
Ⓑ－Ⓑ断面　1ケ所

SECTION Ⓑ-Ⓑ 1pts



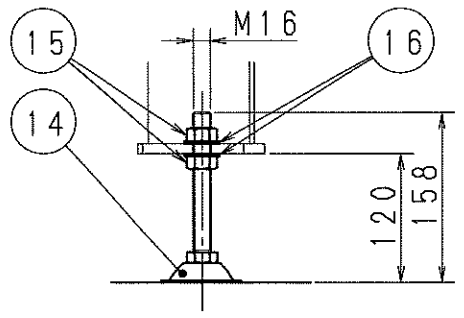
Ⓒ－Ⓒ断面　2ケ所

SECTION Ⓒ-Ⓒ 2pts



Ⓓ－Ⓓ断面　4ケ所（T64/88ATC）

SECTION Ⓓ-Ⓓ 4pts



Ⓔ－Ⓔ断面　2ケ所

SECTION Ⓔ-Ⓔ 2pts

据付用部品（Installation parts）

No.	部品名（Part name）	個数（Q'ty） 本体用 for M/C	ATC用 for ATC	APC用 for APC	部品コード（Code No.）
1	カラ（Collar） φ70×35	3			4650670325A
2	トメネジヒラ（Hex. socket set screw with flat point） M8×12	3			51208012
3	トメネジトガリ（Hex. socket set screw with cone point） M8×16	3			51268016
4	レベリングシート（Leveling sheet） φ200×55	3			4676A00880
5	レベリングボルト（Leveling bolt） M55P2×55	3			4650670117
6	シュ M10ヨウ（Shoe for M10） (φ8×10)	3			4650672321
7	トメネジヒラ（Hex. socket set screw with flat point） M10×12	3			51210012
8	レベルアジャスタ（Level adjuster）KC-275-B-12			3	4985010139
9	ナット（Hex. nut） M24			6	52130240
10	ザガネ（Plain washer） M24			6	57022240
11	レベリングボルト（Leveling bolt）S38		4		4046414217
12	レベリングナット（Leveling nut）S38		4		4046414531
13	レベリングシート（Leveling sheet）38		4		4046415112A
14	レベルアジャスタ（Level adjuster）KC-275-A-2	2			4985010529
15	ナット（Hex. nut） M16	4			52130850
16	ザガネ（Plain washer） M16	4			57022160

No.	変更内容 REVISION	指示書No. SHEET No.	承認 APPD.	照査 REV.	担当 CHD.	日付 DATE
	(参) 4116A05830					

材質 MATERIAL	質量 MASS (kg)		MACHINE N7	UNIT	
熱処理 HEAT TREATMENT	硬度 HARDNESS	尺度 SCALE 1:5	図名 TITLE スエツケズ（P2-T64/88） FOUNDATION DWG. (P2-T64/88)		
承認 APPD. 阿部	照査 REV. 吉田	担当 CHD. 小野	製図 DWG. 間	日付 DATE 18/07/21	
(株) ニイガタマシンテクノ NIIGATA MACHINE TECHNO CO., LTD.			図番 DWG. No. 4116A074600		2/2

作成:2017/ 02/08 承認:池田 照査:藤田 作成:藤田

N7 OIL TABLE(P2-T60&T64&T88, 12000 or 8000 min^{-1} SPINDLE)

Units or locations for oil supply	Q'ty	Supply method	ISO 3448 Viscosity Grade	JIS B6016 Mark of oils and lubricants	JX Nippon Oil & Energy	EXXON MOBIL		SHELL	Schaeffle
						ESSO	MOBIL		
Spindle cooling unit	50L	Automatic circulation	ISO VG10	FC10	SUPER MULPAS DX 10	SPINESSTIC 10	MOBIL VELOCITE OIL No.6	SHELL TETRA OIL 10 SP	
DD table cooling unit	15L								
Spindle oil-air lubricating unit	1.8L	Auto supply (Non-collect)	ISO VG32	FC32	FBK OIL RO32	TERESSO 32	MOBIL DTE OIL LIGHT	SHELL TELLUS S2 M 32	
XYZ-axes ball screws and Linear motion bearings ☆	150cm^3	Grease nipple		XBCEB2	EPINOC GREASE AP(N)2	BEACON EP2	MOBILUX EP2	SHELL ALVANIA EP GREASE 2	
1° table	10.0L	Oil bath	ISO VG150	CKC150	BONNOC M150	SPARTAN EP150	MOBIL GEAR 629	SHELL OMALA S2 G 150	
NC table	6.0L								
DD table bearing	90cm^3	Grease nipple							ARCANO LOAD15(
CAM changer	11.0L	Oil bath			GEAR GRAND GL-5 80W-90	MOBILUBE HD80W-90		SHELL GELCO MULTI GEAR	
Tool magazine Swing guide rail	20cm^3	Grease application		XBCEB2	EPINOC GREASE AP(N)2	BEACON EP2	MOBILUX EP2	SHELL ALVANIA EP GREASE 2	
Sprocket wheel and tool pot chains on tool magazine	100cm^3	Grease application							
Pneumatic lubricator (Oiler)	0.13L	Auto supply (Non-collect)	ISO VG32	HM32	SUPER MULPAS DX 32	NUTO HP32	MOBIL DTE 24	SHELL TELLUS S2 M 32	
Hydraulic pump unit	20L	Tank							

☆Lithium-base grease with extreme pressure additive is used for XYZ-axes ball screws and Linear motion bearings. Never apply grease different from lithium-base.

Niigata Horizontal Machining Center NX7000

K2D4***

1. Machine specifications		Standard	Options	A	E	Q
1. 6 Automatic pallet changer						
1) Direct rotary type(Front center)		■ 2APC (Manual Idle pallet rotation)	□ 6APM □ 8APM □ 10APM □ 12APM □ Load/unload station Manual indexing, R-2 pos. □ 2APC for FMS			
1. 7 Controlled axes	XYZaxis	□ Pulse coder	■ Scale feedback			
	Baxis	□ Pulse coder	■ Scale feedback			
1. 8 Motors						
1) Spindle drive motor		■ AC30kW /25kW (12000rpm) (30 min) / (continuous rating)				
2) Feed motors	X / Z axis	■ AC7.0kW (αiF30/4000)				
	Y axis	■ AC9.0kW (αiF40/3000FAN)				
	B axis	□ AC1.8kW (1°) (βiS12/3000)	■ AC4.0kW (NC table) (αiF22/3000)			
3) Hydraulic pump motor		■ AC2.2kW				
4) ATC	Tool changer drive	■ AC1.8kW (βiS12/3000)				
	Magazine drive	□ AC3.0kW (60chain type) (βiS22/3000)	■ AC2.5kW (64chain type) (βiS22/2000) □ AC2.5kW(88chain type) (βiS22/2000) □ AC3.0kW (126chain type) (βiS30/2000)			
5) Internal chip conveyor drive motor		■ AC0.2kW×2				
※ On other motor, refer Item 3 (special machine accessories).						
1. 9 Power sources						
1) Electrical power supply ±10%		□ AC 200V	□ 380V ■220V			
2) Frequency		□ 50Hz / ■60Hz				
3) Power supply required(Apparent Power)		■ 67 kVA	□			
・Wire for power supply 80mm^2×3 wires ・Ground(earth) wire 38mm^2 or more×1 wire ※ Wiring from customer's power supply to control cabinet/transformer of the machine is required to be prepared by customer.						
4) Compressed air supply ・Required air volume 500L/min (at atmospheric pressure) shall be supplied consecutively.		■ 0.5MPa or more				
1. 10 Tank capacity						
1) Hydraulic oil tank capacity		■ 20 liters				
2) Lubricant tank capacity for spindle bearing		■ 1.8 liters				
3) Spindle cooler tank capacity		■ 50 liters				
4) Coolant tank capacity		□ 450 liters (In case of External chip conveyor w/ Discharge direction; Back)	■ 540 liters (In case of External chip conveyor w/ Discharge direction; Side)			

PACKING LIST

DATE :

REF.NO.

N7-P2-NCCT64-F31i-B (SERIAL NO.)

PACKAGE NO. / NOS. & STYLE	ITEM NO.	NET WEIGHT (KGS)	GROSS WEIGHT (KGS)	DIMENSION (LxWxH cm)	DESCRIPTION	QUANTITY	MEASUREMENT (M3)
				x x			
NIIGATA— 1		21,570	23,720	673 x 323 x 382			83.039
(STEEL CASE)				L × W × H cm			
	1-1			650 300 343	MACHINE BODY MODEL : N7 (SERIAL NO.)	機械本体(ﾊﾟﾚｯﾄ1枚付)	1 set
	1-2				NUMERICAL CONTROL MODEL : FANUC F31i-B (AK53172)	NC装置	1 set
	1-3				STANDARD ACCESSORIES	標準付属品	1 set
	1-4				OPTIONAL ACCESSORIES	特別付属品	1 set
	1-5				INSTALLATION KIT	据付部品	1 set
NIIGATA— 2		1,200	1,450	325 x 147 x 217			10.367
(WOODEN CASE)							
	2-1				COVER	ｶﾊﾞｰ	1 set
	3				INSTRUCTION MANUAL	取扱説明書	1 set
	5-1				CHIP CONVEYER & COOLANT TANK(540L)	機外ｺﾝﾍﾞｱ&ｸｰﾗﾝﾄﾀﾝｸ	1 set
	4-3				PALLET	ﾊﾟﾚｯﾄ	1 set
NIIGATA— 3		200	320	147 x 89 x 172			2.250
(WOODEN CASE)							
	4-1				SPINDLE COOLING DEVICE	主軸ｸｰﾗｰ	1 set
	4-2				HYDRAULIC UNIT	油圧ﾕﾆｯﾄ	1 set
NIIGATA— 4		400	570	325 x 189 x 142			8.722
(WOODEN CASE)							
	2-2				ATC COVER	ATCｶﾊﾞｰ	1 set
NIIGATA— 5		390	560	325 x 189 x 142			8.722
(WOODEN CASE)							
	2-2				ATC COVER	ATCｶﾊﾞｰ	1 set
TOTAL		23,760	26,620				113.100

Shipping Mark

P/O NO. :

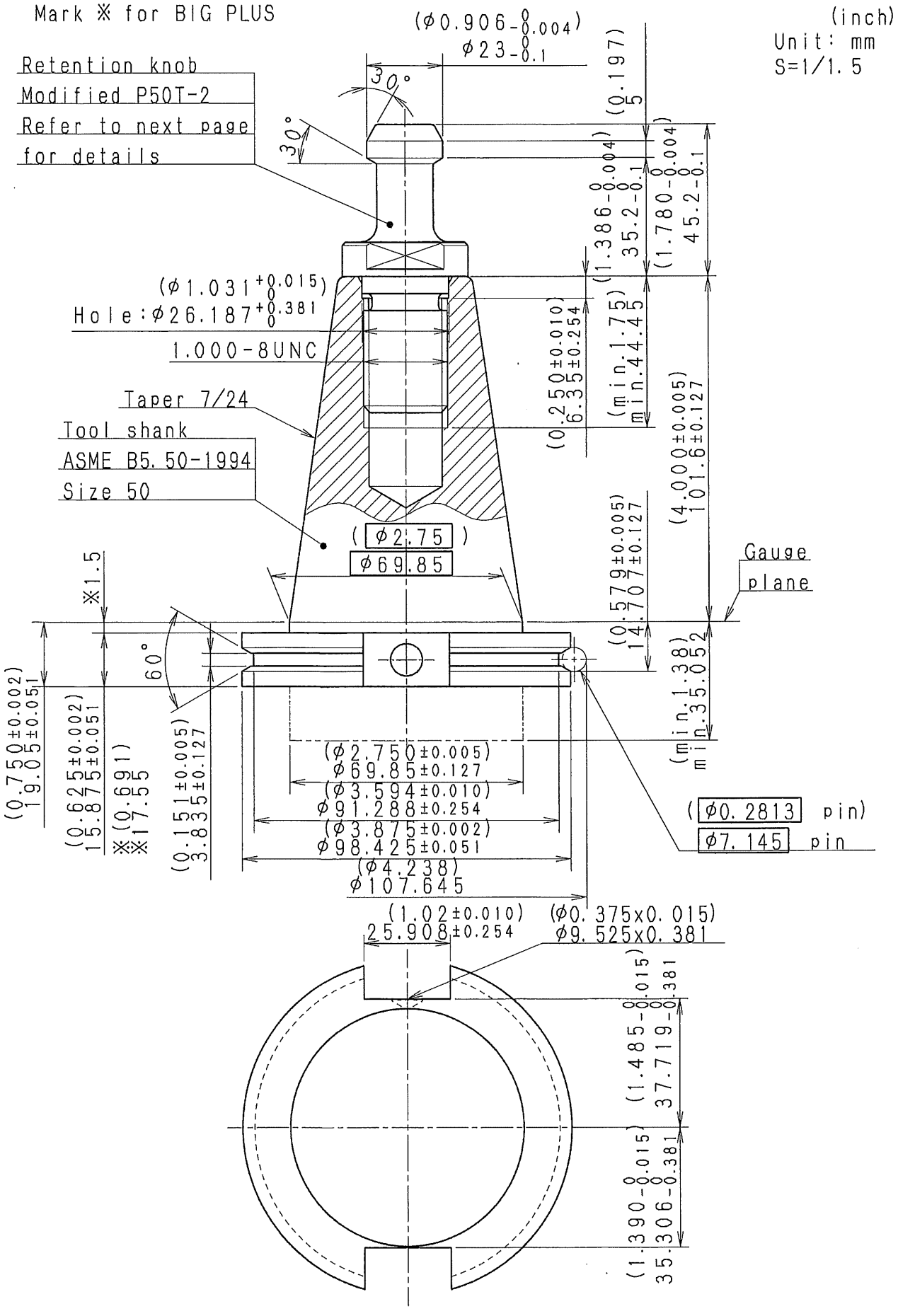
N7
C/NO. : NIIGATA- 1 - 5
G/W : KGS
MADE IN JAPAN

- blank hereunder -

TOOL SHANK AND RETENTION KNOB (CAT50・P50T-2) (BIG PLUS) (1/2)

Mark ※ for BIG PLUS

(inch)
Unit: mm
S=1/1.5

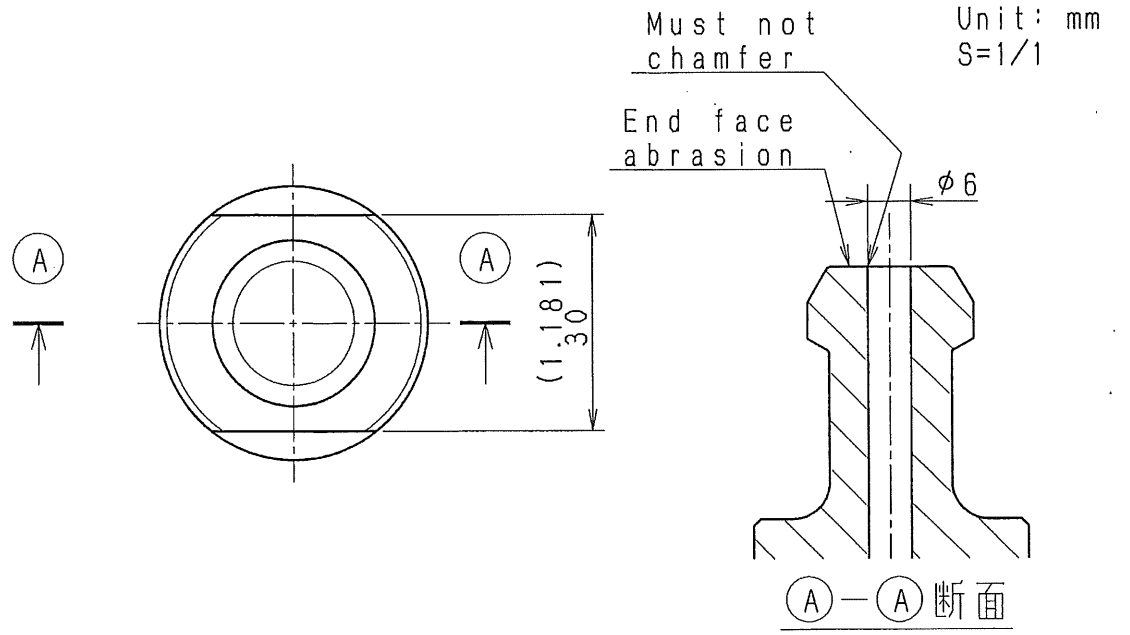


作成:2019/11/14 承認:阿部 照査:吉田 作成:伊庭
46655341516(1/2)

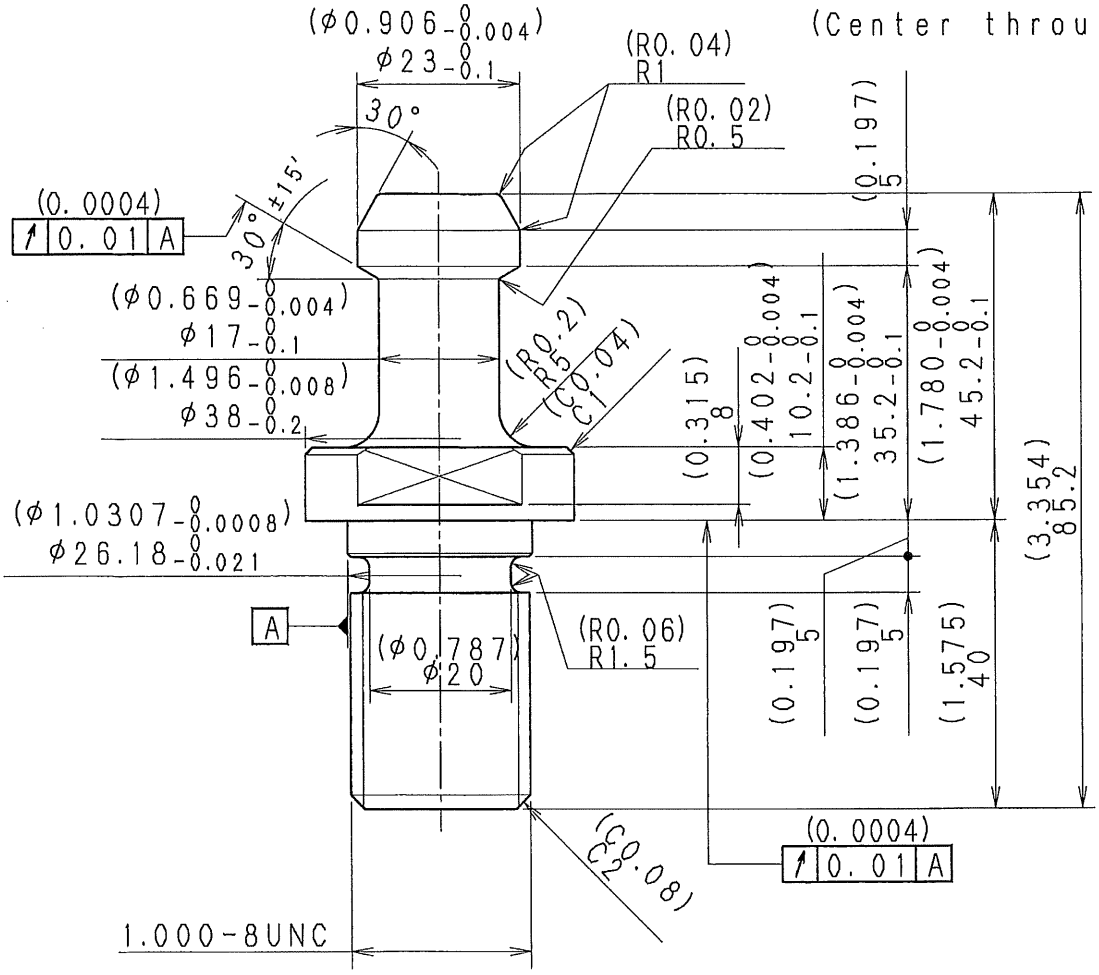
TOOL SHANK AND RETENTION KNOB (CAT50・P50T-2) (BIG PLUS) (2/2)

Retention knob : Modified P50T-2 (P50T-2 is based on JMTBA's Technical sheet 21-1988 (same as abolished MAS 403))

(inch)
Unit: mm
S=1/1



(Center through type)



作成：2019/11/14 承認：阿部 照査：吉田 作成：伊庭
4665S41516(2/2)