



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

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/m² 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.

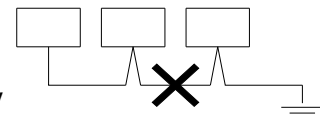
If improper grounding connection between the M/C and earth is provided, the ground fault circuit breaker does not trip even though actual leakage current is output. Also high frequency leakage current will not be carried away to the ground.

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

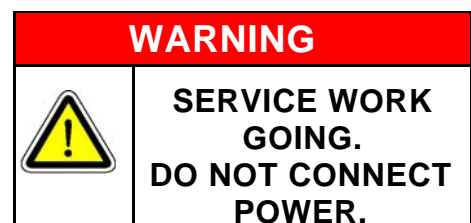
Please refer to the foundation drawings, submitted in advance, to arrange and provide primary electric power and pneumatic sources at timely manner.



- (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.

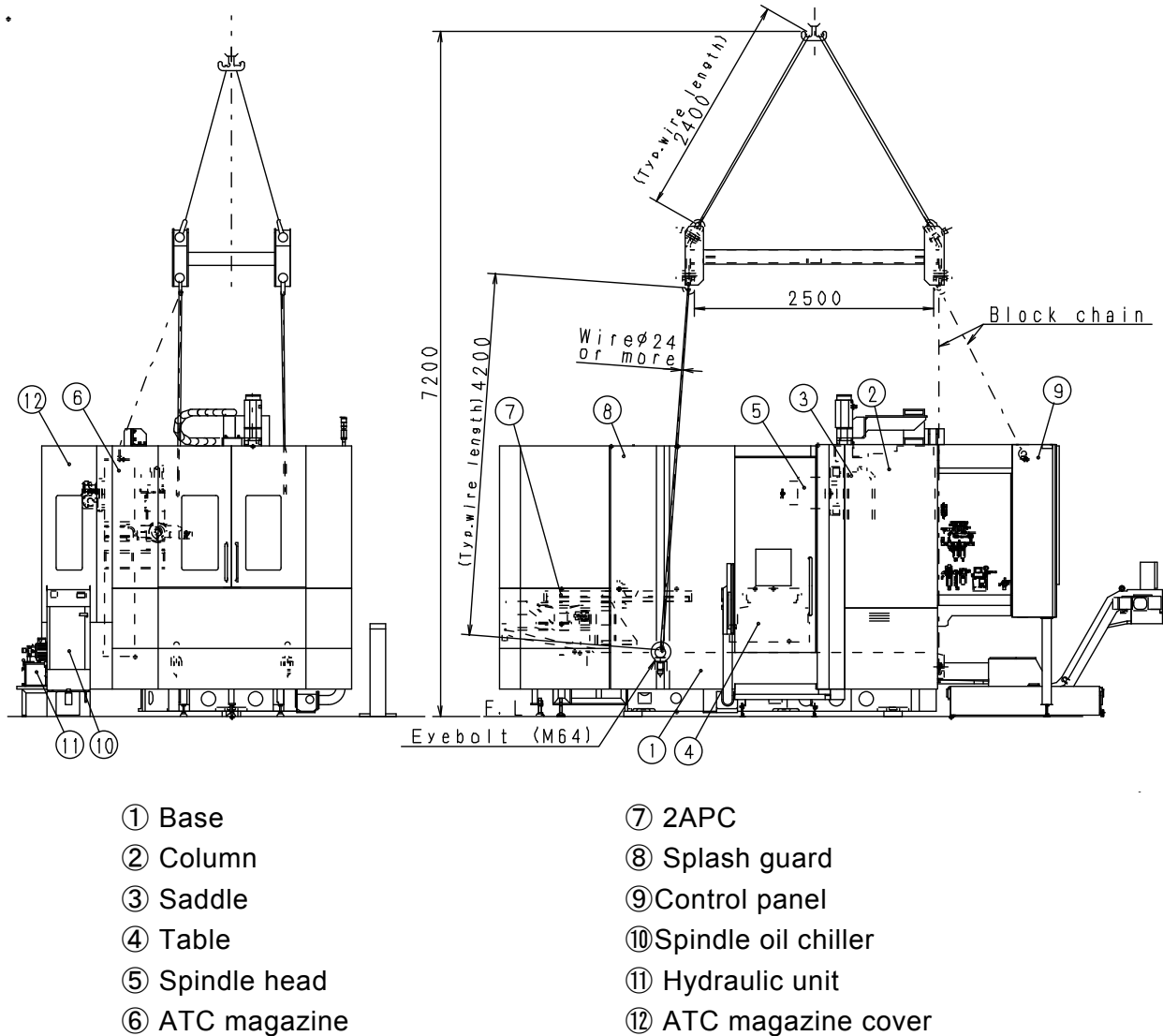
- (3) Stand warning board(s) to notify electric wire connections or grounding works in progress to other people.
- (4) If you plan to move / reinstall the M/C, contact Niigata for proper procedures to avoid accidents.
- (5) In crane and / or forklift operations and other hoisting, working must be executed 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 $\pm 10\%$ for rated value.

1.5 Machine Lifting



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 $\phi 24$ 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 ⑬
- Two (2) round top covers of splash guard ⑧

1.5.4 Fixing of Movable Parts

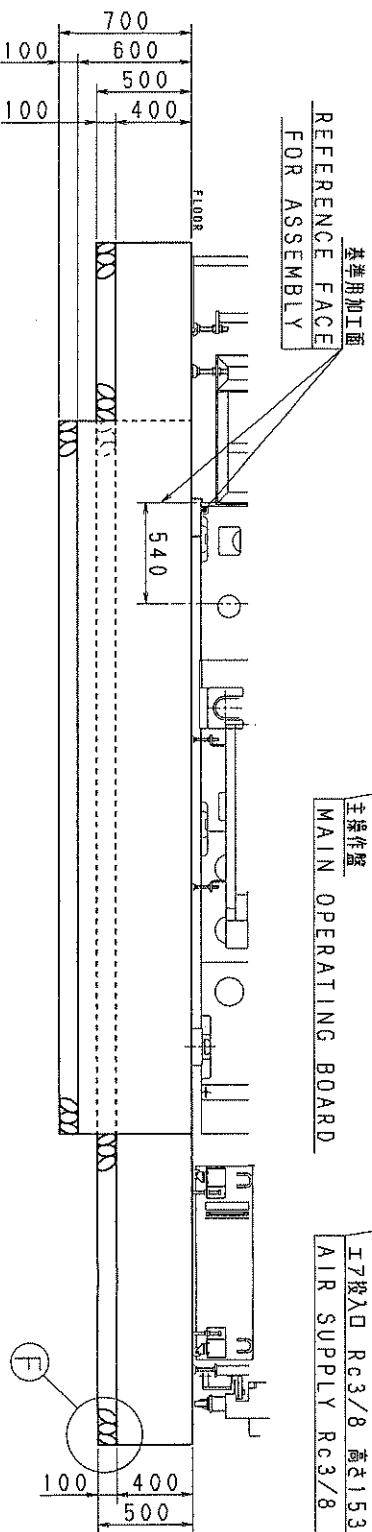
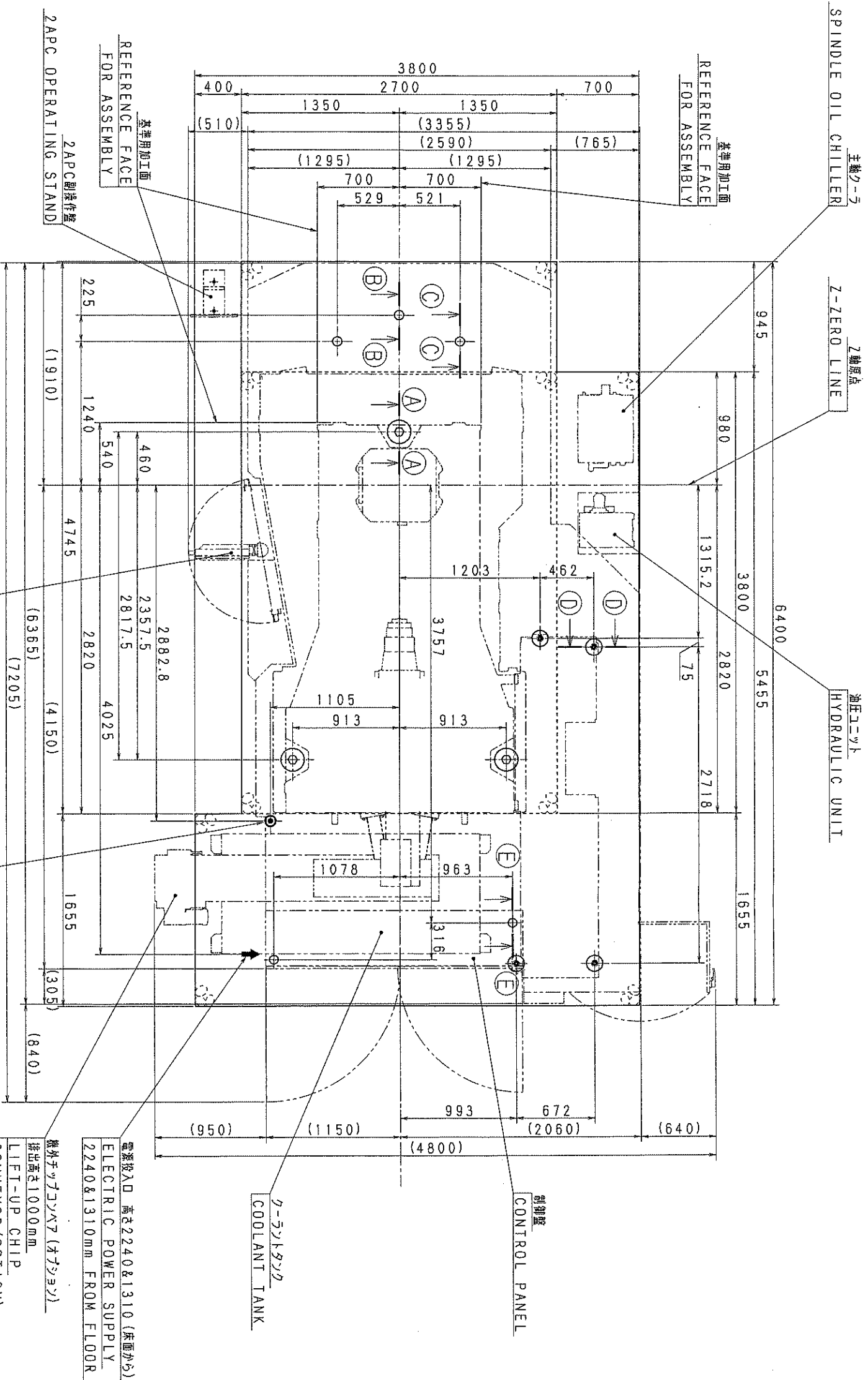
- (1) In transportation, prepare wooden supports or fixtures to securely fix the saddle ③, table ④ and spindle head ⑤.

(Because linear motion bearings are adopted on each axis, frictional resistance is minimal and external forces influence stability of fixed axis units.)

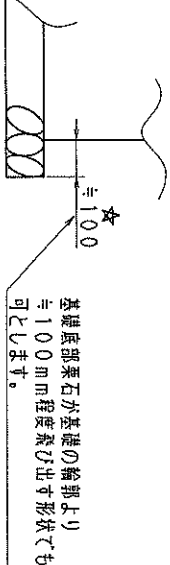
- (2) Fix the ATC swing arm with ropes or the like.
- (3) Fix the saddle ③ at the center in the lateral direction, table ④ in the column direction, and spindle head ⑤ in the downward direction.

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.



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



電気投入 高さ2240&1310 (床面から)
ELECTRIC POWER SUPPLY
2240&1310mm FROM FLOOR

機外チップペヤ (オプショ)
排出高さ1000mm
LIFT-UP CHIP
CONVEYOR (OPTION)
DISCHARGE HEIGHT 1000mm

Specification
-Machine height : 3483 mm
-Tool magazine : Chain type 64/88 tools
-Pallet changer : Lift & turn type 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).

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ー: リフト&ターンス2APC

記事
1. 下記工事をお願いいたします。
(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. コアリット容量: 約12.9 m³
3. 地耐力が49 kN/m²以下の場合は杭打ちを行ってください
4. 機体質量: 23000 kg
5. 主軸冷却装置の直射日光や熱気を受けやすい場所にて設置 (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ください)
6. 本図は基礎及びパレット搬送方法を示すのを目的として弊社標準仕様で描いており、貴社仕様は盛り込まれて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要図を御参照下さい

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.

No.	(参) 4116A05830	変更内容	REVISION	承認	APPRO.	図面	REV.	担当	CNO.	日付	DATE

機外チップペヤ搬出し、ヒソパペヤ排出高さ1000mm

材質	MATERIAL	質量	MASS (kg)	図名	TITLE	図番	DWG. No.
熱処理	HEAT TREATMENT	硬度	HARDNESS	図名	TITLE	図番	DWG. No.
承認	APPRO.	監査	REV.	担当	CNO.	製図	DWG.
10/13	10/13	10/13	10/13	10/13	10/13	10/13	10/13
(株) ニカヤマシナリ				MILGATA MACHINE TECHNO. CO., LTD.			
4116A07460				1/2			

4.1.11 Lubricant Chart

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	
						ESSO	MOBIL
Spindle cooling unit	50L	Automatic circulation	ISO VG10	FC10	SUPER MULPAS DX 10	SPINESSTIC 10	MOBIL VELOCITE OIL No.6
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
XYZ-axes ball screws and Linear motion bearings ☆	180cm ³	Grease nipple		XBCEB2	EPINOC GREASE AP(N)2	BEACON EP2	MOBILUX EP2
1° table	10.0L	Oil bath	ISO VG150	CKC150	BONNOC M150	SPARTAN EP150	MOBIL GEAR 629
NC table	6.0L						
DD table bearing	90 cm ³	Grease nipple					
Cam changer	11.0L	Oil bath			GEAR GRAND GL-5 80W-90	MOBILUBE HD80W-90	
Tool magazine Swing guide rail	20cm ³	Grease application		XBCEB2	EPINOC GREASE AP(N)2	BEACON EP2	MOBILUX EP2
Sprocket wheel and tool pot chains on tool magazine	100cm ³	Grease application					
Pneumatic lubricator (Oiler)	0.13L	Auto supply (Non-collect)					
Hydraulic pump unit	20L	Tank	ISO VG32	HM32	SUPER MULPAS DX 32	NUTO HP32	MOBIL DTE 24

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*

☆ 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.

1. Machine specifications		Standard	Options	A	E	Q
1. 6 Automatic pallet changer 1) Direct rotary type(Front center)		<input checked="" type="checkbox"/> 2APC (Manual Idle pallet rotation)	<input type="checkbox"/> 6APM <input type="checkbox"/> 8APM <input type="checkbox"/> 10APM <input type="checkbox"/> 12APM <input type="checkbox"/> Load/unload station Manual indexing, R-2 pos. <input type="checkbox"/> 2APC for FMS			
1. 7 Controlled axes	XYZaxis Baxis	<input type="checkbox"/> Pulse coder <input type="checkbox"/> Pulse coder	<input checked="" type="checkbox"/> Scale feedback <input checked="" type="checkbox"/> Scale feedback			
1. 8 Motors 1) Spindle drive motor 2) Feed motors X / Z axis Y axis B axis 3) Hydraulic pump motor 4) ATC Tool changer drive Magazine drive 5) Internal chip conveyor drive motor ※ On other motor, refer Item 3 (special machine accessories).		<input checked="" type="checkbox"/> AC30kW /25kW (12000rpm) (30 min) / (continuous rating) <input checked="" type="checkbox"/> AC7.0kW (α iF30/4000) <input checked="" type="checkbox"/> AC9.0kW (α iF40/3000FAN) <input type="checkbox"/> AC1.8kW (1°) (β iS12/3000) <input checked="" type="checkbox"/> AC2.2kW <input checked="" type="checkbox"/> AC1.8kW (β iS12/3000) <input type="checkbox"/> AC3.0kW (60chain type) (β iS22/3000) <input checked="" type="checkbox"/> AC0.2kW×2	<input checked="" type="checkbox"/> AC4.0kW (NC table) (α iF22/3000) <input checked="" type="checkbox"/> AC2.5kW (64chain type) (β iS22/2000) <input type="checkbox"/> AC2.5kW(88chain type) (β iS22/2000) <input type="checkbox"/> AC3.0kW (126chain type) (β iS30/2000)			
1. 9 Power sources 1) Electrical power supply $\pm 10\%$ 2) Frequency 3) Power supply required(Apparent Power) •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.		<input type="checkbox"/> AC 200V <input type="checkbox"/> 50Hz / <input checked="" type="checkbox"/> 60Hz <input checked="" type="checkbox"/> 67 kVA <input checked="" type="checkbox"/> 0.5MPa or more	<input type="checkbox"/> 380V <input checked="" type="checkbox"/> 220V <input type="checkbox"/>			
1. 10 Tank capacity 1) Hydraulic oil tank capacity 2) Lubricant tank capacity for spindle bearing 3) Spindle cooler tank capacity 4) Coolant tank capacity		<input checked="" type="checkbox"/> 20 liters <input checked="" type="checkbox"/> 1.8 liters <input checked="" type="checkbox"/> 50 liters <input type="checkbox"/> 450 liters (In case of External chip conveyor w/ Discharge direction; Back)	<input checked="" type="checkbox"/> 540 liters (In case of External chip conveyor w/ Discharge direction; Side)			

PACKING LIST

DATE :

PAGE: 1/1

REF. NO.

N7-P2-NCCT64-F31i-B

(SERIAL NO.)

PACKAGE NO. NOS. & STYLE	NET WEIGHT (KGS)	GROSS WEIGHT (KGS)	DIMENSION (LxWxH cm)		MEASUREMENT (M3)
			x	x	
ITEM NO.	DESCRIPTION				QUANTITY

Shipping Mark


P/O NO. :

N7

C/NO. : NIIGATA- 1 - 5

G/W : KGS

MADE IN JAPAN

NIIGATA— 1 (STEEL CASE)	21,570	23,720	673	x	323	x	382	83.039
		L × W × H cm						
 1-1	MACHINE BODY	650	300	343	機械本体 (ハ°レット1枚付)		1 set	
	MODEL : N7	(SERIAL NO.)						
1-2	NUMERICAL CONTROL				NC装置		1 set	
	MODEL : FANUC F31i-B	(AK53172)						
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 (WOODEN CASE)	1,200	1,450	325	x	147	x	217	10.367
2-1	COVER				カバー		1 set	
3	INSTRUCTION MANUAL				取扱説明書		1 set	
5-1	CHIP CONVEYER & COOLANT TANK (540L)				機外コンベア&クーラントタンク		1 set	
4-3	PALLET				ハ°レット		1 set	
NIIGATA— 3 (WOODEN CASE)	200	320	147	x	89	x	172	2.250
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 (WOODEN CASE)	400	570	325	x	189	x	142	8.722
2-2	ATC COVER				ATCカバー		1 set	
NIIGATA— 5 (WOODEN CASE)	390	560	325	x	189	x	142	8.722
2-2	ATC COVER				ATCカバー		1 set	
TOTAL	23,760	26,620						113.100

- blank hereunder -

(CAT50·P50T-2) (1/2)
(BIG PLUS)

(inch)
Unit: mm
S=1/1.5

Mark ※ for BIG PLUS

(inc
Unit: mm
S=1/1.5

Retention knob
Modified P50T-2
Refer to next page
for details

Hole: $\phi 26.187^{+0.381}_{-0}$
1.000-8UNC
Taper 7/24
Tool shank
ASME B5.50-1994
Size 50

$(\phi 0.906 - 0.004)$
 $\phi 23 - 0.1$
 30°
 30°
 (0.197)
 $(1.386 - 0.004)$
 $35.2 - 0.1$
 $(1.780 - 0.004)$
 $45.2 - 0.1$
 (0.250 ± 0.010)
 6.35 ± 0.254
 $(\min. 1.75)$
 $\min. 44.45$
 (4.000 ± 0.005)
 101.6 ± 0.127
 $(\phi 2.75)$
 $\phi 69.85$
 $\phi 2.75$
 $\phi 69.85$
 60°
 (0.750 ± 0.002)
 19.05 ± 0.051
 $\times 1.5$
 (0.625 ± 0.002)
 15.875 ± 0.051
 $\times (0.691)$
 $\times 17.5$
 (0.151 ± 0.005)
 3.835 ± 0.127
 $(\phi 2.750 \pm 0.005)$
 $\phi 69.85 \pm 0.127$
 $(\phi 3.594 \pm 0.010)$
 $\phi 91.288 \pm 0.254$
 $(\phi 3.875 \pm 0.002)$
 $\phi 98.425 \pm 0.051$
 $(\phi 4.238)$
 $\phi 107.645$
 (1.02 ± 0.010)
 25.908 ± 0.254
 $(\phi 0.375 \times 0.015)$
 $\phi 9.525 \times 0.381$
 $(1.390 - 0.015)$
 $(1.485 - 0.015)$
 $35.306 - 0.381$
 $37.719 - 0.381$
Gauge plane
 $(\phi 0.2813)$ pin
 $\phi 7.145$ pin

作成: 2019/11/14 承認: 阿部 照査: 吉田 作成: 伊庭

(CAT50 · P50T-2) (2/2)
(BIG PLUS)

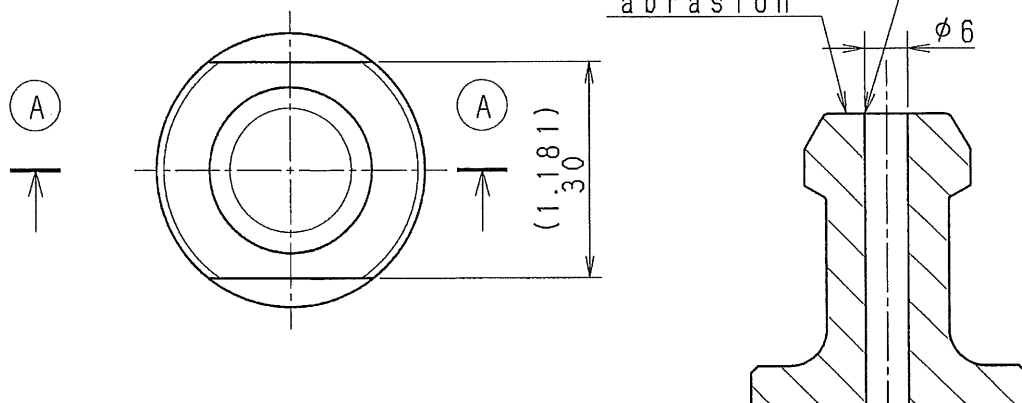
Retention knob : Modified P50T-2 (P50T-2 is based on JMTBA' s
Technical sheet 21-1988 (same as abolished MAS 403))

(inch)

Unit: mm
S=1/1

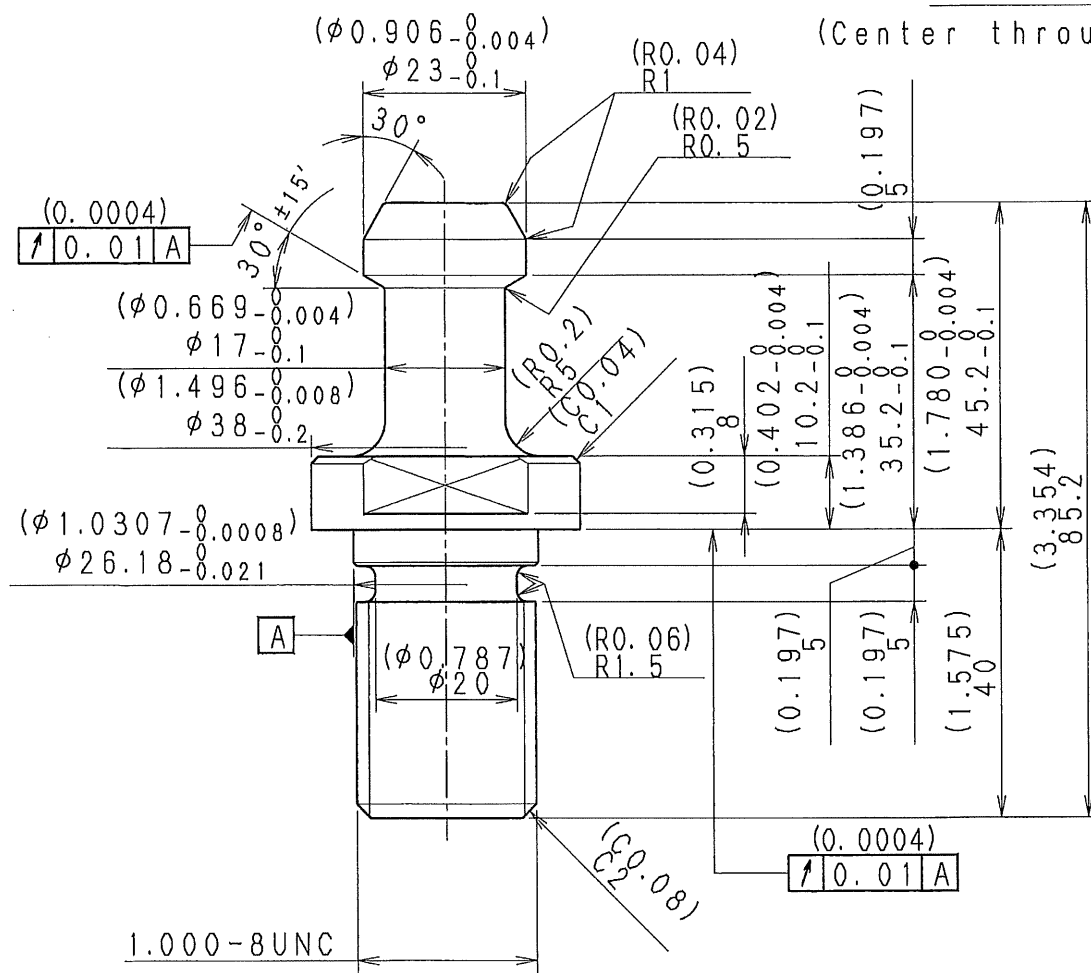
Must not
chamfer

End face
abrasion



①—① 断面

(Center through type)



作成：伊庭

田吉
照査

承認：阿部

作成: 2019/11/14 承
4665S41516 (2/2)