

DETAIL SPECIFICATIONS

for

QUICK TURN NEXUS 300-II MS
QUICK TURN NEXUS 300-II MSY
QUICK TURN NEXUS 350-II MS
QUICK TURN NEXUS 350-II MSY
650u and 1500u

(NC: MATRIX NEXUS)

Specification No. : C333DA0011E

Revised month : 5, 2010

Published by : Manual Editorial Section
Yamazaki Mazak Corporation, Japan

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1 FEATURES OF THIS MACHINE

1-1 Implementation of High Productivity

The following features ensure great improvements in productivity:

1. Motorized built-in headstock rotating fast with a high torque and high accuracy

The built-in headstock with improvements in spindle rigidity and cooling capabilities implements powerful operation, high torques, high rotational speeds and rapid spindle startup.

- QTN300-II MS, MSY:

26 kW (35 HP), Max. 808 N·m/82.4 kgf·m/595.8 ft·lbs, Max. 4000 min⁻¹ (rpm)*

- QTN350-II MS, MSY:

30 kW (40 HP), Max. 808 N·m/82.4 kgf·m/595.8 ft·lbs, Max. 3300 min⁻¹ (rpm)*

- 2nd spindle (sub spindle) spec.

18.5 kW (35 HP), Max. 47.4 kgf·m (342 ft·lb), Max. 4000 min⁻¹ (rpm)*

*Rotational speed may be limited according to the particular chuck specifications.

2. Dodecagonal non-lift high-speed turret

The dodecagonal drum turret almost free from interference allows machining with a full-mounting capacity of 12 tools and this makes the turret highly flexible to changes in the types of workpieces. Also, a non-lift rotational type of indexing is employed and since tool indexing is accomplished by automatic clamping/unclamping without workpiece-to-interference during the movements of the feed axes. Since the turret rotates via the shortest route to index the selected tool, chip-to-chip time is reduced significantly.

3. VDI clamp method tool holder

Turning tool and milling tool holders, use the VDI clamp method, to ensure quick and simple tool change. Any turret position allows the mounting of a milling tool.

4. MAZATROL MATRIX NEXUS CNC unit mounted

The MAZATROL MATRIX NEXUS is a rapid, highly accurate, and highly reliable CNC unit in which an abundance of technical know-how ever accumulated through the development of the highly reputed MAZATROL M640 series of CNC units is incorporated with even more significant improvements based on the latest hardware and software technology.

5. Fast and highly accurate positioning

An X-axial rapid feed rate of 30 m/min (98.4 ft/min), a Y-axial* rapid feed rate of 30 m/min (98.4 ft/min) and a Z-axial rapid feed rate of 33 m/min (108.2 ft/min) ensure fast positioning and minimize a non-cutting time. Also, smooth high-gain servo control technology that yields smooth acceleration/deceleration and high pulse-tracking performance achieves highly accurate machining.

* The Y-axis only applies to the MY model.

6. 2nd spindle [QTN300-II MS, QTN300-II MSY, QTN350-II MS, or QTN350-II MSY]

Formerly, when machining workpieces without using a face-driver or robot, it was necessary to change preparatory steps or use another type of machine to chuck the workpieces. For this reason, productivity has tended to decrease because of an increased machining lead-time or the necessity for the procurement of an alternative machine.

The 2nd spindle mounted in this machine solves the problems mentioned above. That is, since

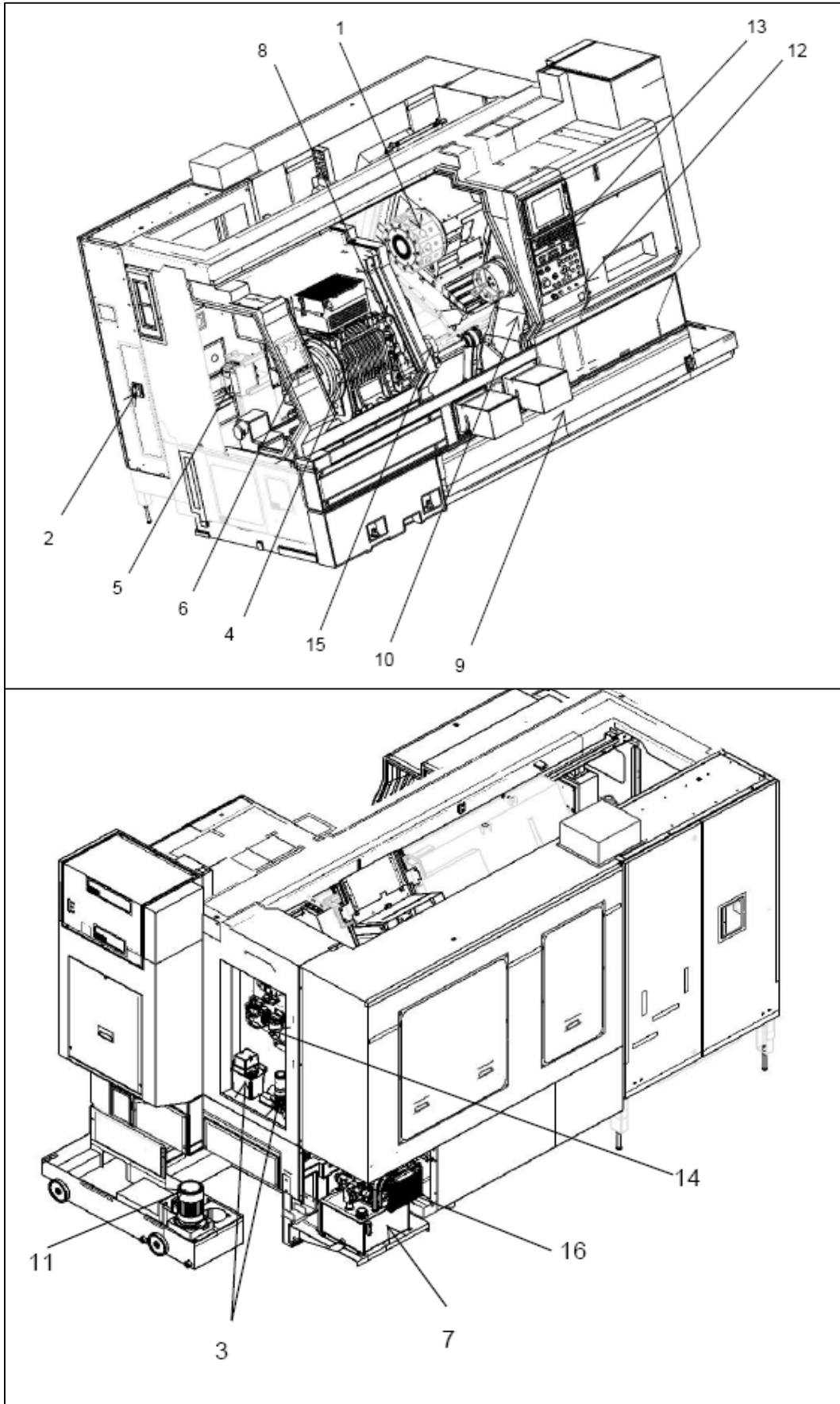
the 2nd spindle has programmable movement, chuck opening/closing, and spindle driving functions, it can also be operated as a tailstock, bar materials can be machined into finished parts.

1-2 Implementation of Highly Accurate Machining

1. The following measures against thermal displacement are incorporated to suppress overheating of the main structural components and improve continuous machining accuracy:
 - Improved headstock cooling capabilities
 - The optimal cooling method and casting pattern that have been selected from thermal expansion analyses relating to the main structural components
 - Coolant tank separated from the main unit for minimum adverse effects of chips and coolants
 - The environment-protection-type thermal displacement correction function "Intelligent Thermal Shield" is provided as standard to conduct CNC-based automatic correction for changes in the attitudes of structures due to temperature changes.
2. Since the built-in spindle is employed, stable roundness and surface roughness can be obtained in any rotational region without vibration from motors or belts.
3. Lost motions

Linear guides are employed to prevent stick-slipping at low feed rate and to reduce sliding resistance. Thus, signal follow-up performance of one micron per pulse can be obtained.

2 STRUCTURE



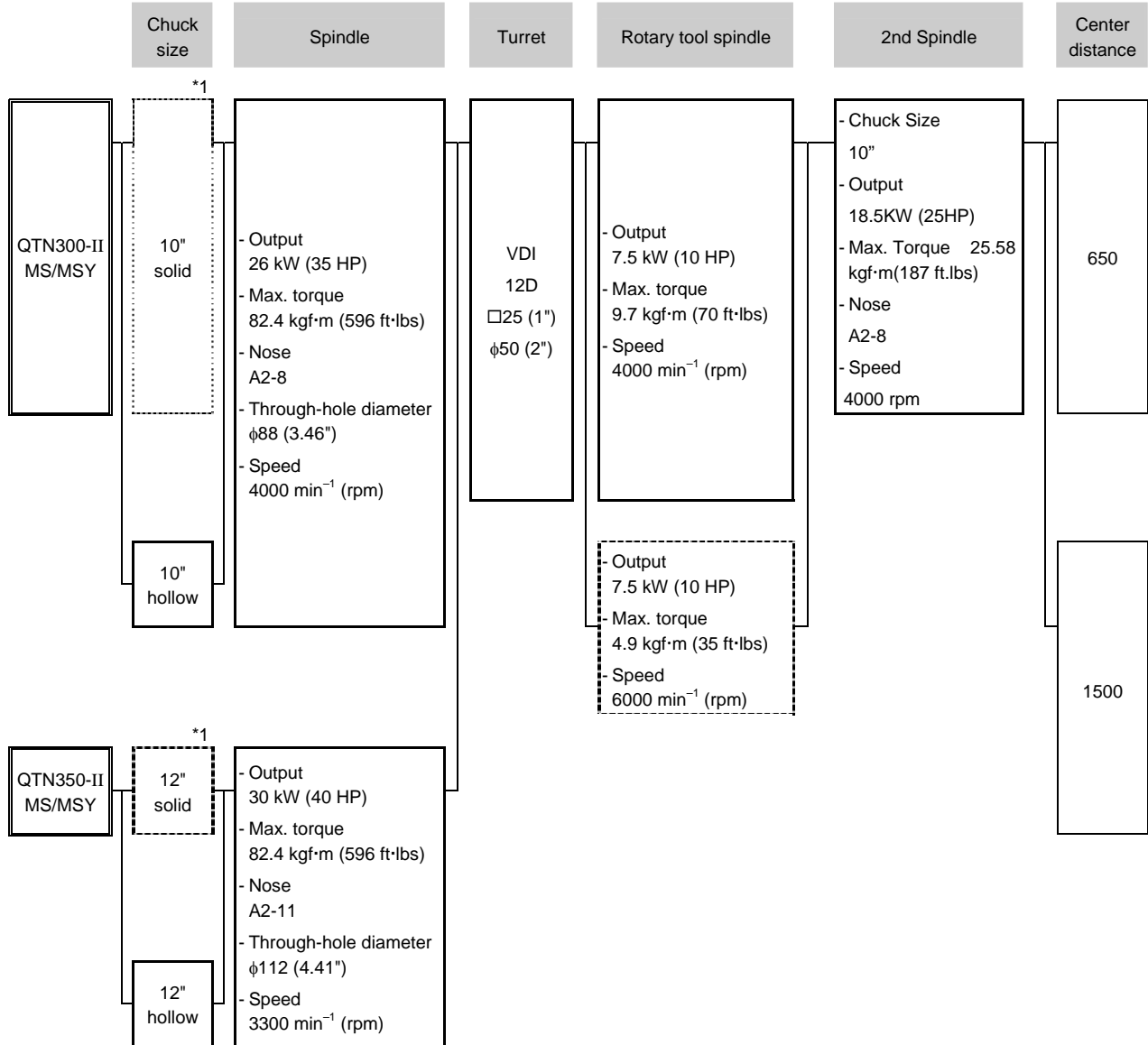
No.	Name	No.	Name
1	Turret	9	Coolant tank
2	Main circuit breaker	10	Subspindle
3	Lubrication unit	11	Coolant pump
4	Spindle	12	USB interface panel
5	Headstock cooling unit	13	Operating panel
6	Chuck pressure setting knob (Chuck pressure)	14	Air unit
7	Hydraulic unit	15	TOOL EYE (Optional) Note
8	Chuck	16	Pressure gauge (Main pressure)

Note: Optional for Japan and Asia.

3 SPECIFICATION

3-1 Specification Variation Chart

3-1-1 QTN300-II/350-II MS/MSY



*1 Standard specification of chuck
For Japan and Asia: solid type, for others: hollow type

- : Standard specifications
- : Optional specifications
- : Selection specifications

3-2 General Specification

3-2-1 QTN300-II/350-II MS/MSY

Item		Unit	QTN300-II MS/MSY 650	QTN300-II MS/MSY 1500	QTN350-II MS/MSY 650	QTN350-II MS/MSY 1500
Capacity	Chuck size	in.	10		12	
	Maximum swing	mm [in.]	φ750 [φ29.5]			
	Standard machining diameter	mm [in.]	φ336 [φ13.2]			
	Maximum machining diameter	mm [in.]	φ420 [φ16.50]			
	Bar work capacity	mm [in.]	φ77 [φ3.03] *1		φ102 [φ4.02] *2	
	Distance between spindle end and turret end face	mm [in.]	162 to 832 [6.369 to 32.744]	162 to 1767 [6.369 to 69.567]	157 to 827 [6.244 to 32.619]	157 to 1762 [6.244 to 69.370]
	Distance between the chuck jaws of both spindles	mm [in.]	55.5 to 645 [2.185 to 25.393]	55.5 to 1580 [2.185 to 62.204]	5 to 650 [0.1875 to 25.685]	5 to 1580 [0.1875 to 62.204]
	Max. support weight *1	kgf [lbs]	1st Spindle 450 [992] (Chuck work) 2nd Spindle 400[881]		1st Spindle 650 [1433] (Chuck work) 2nd Spindle 400[881]	
1st Spindle	Speed range *2	min ⁻¹ (rpm)	4000		35 -3300	
	Spindle nose shape	—	JIS A2-8"		JIS A2-11"	
	Through-hole diameter	mm [in.]	φ91 [φ3.58]		φ112 [φ4.41]	
	Motor output (30-min./cont. rating)	kW [HP]	26/22 [35/30]		30/22 [40/30]	
	Maximum torque	N·m (kgf·m) [ft·lbs]	808 (82.4) [596]			
	Chuck Size	in.	10"			
2nd Spindle	Speed range *2	min ⁻¹ (rpm)	35 to 4000			
	Spindle nose shape		JIS A2-8"			
	Motor output (30-min./cont. rating)	kW [HP]	18.5(25)			
	Maximum torque	N·m (kgf·m) [ft·lbs]	250(25.58)[187]			
Turret	Number of tools	pieces	12			
	Tool size	Outside turning	mm [in.]	□25 [□1]		
		Inside turning		φ50 [φ2]		
		Rotary drill		Max. H: φ23 [φ0.91] / V: φ23 [φ0.91]		
		Rotary end mill		Max. H: φ25 [φ0.98] / V: φ25 [φ0.98]		
		Rotary tap		M24 × 3.0 *5		
	Indexing time (one/full)	sec	0.25/0.8			
	Mill spindle motor output (4-min. rating)	kW [HP]	7.5 (10)			
	Mill spindle rotating speed	min ⁻¹ (rpm)	4000 (optional: 6000)			
Mill spindle maximum torque	N·m (kgf·m) [ft·lbs]	95 (9.7) [70] (optional: 48 (4.9) [35])				

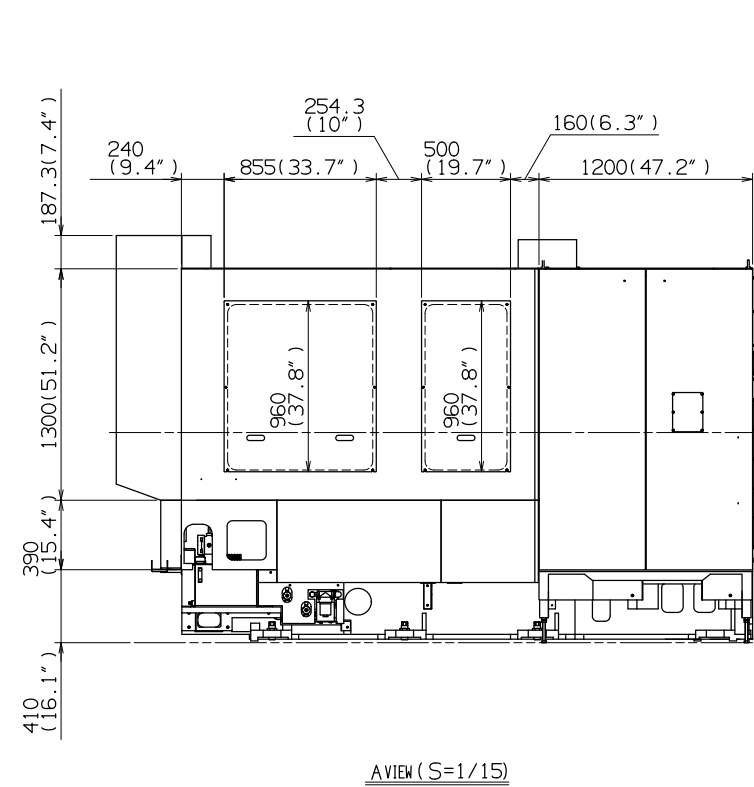
Item			Unit	QTN300/350-II MS/MSY 650	QTN300/350-II MS/MSY 1500
Feed axes	X-axis	Travel	mm [in.]	275 (270+5) [10.75 (10.63+0.1969)]	
		Rapid traverse	m/min [IPM]	30 [1181]	
	Z-axis	Travel	mm [in.]	670 (520+150) [26.25 (20.5+5.75)]	1605 (1455+150) [63.19(57.28+5.75)]
		Rapid traverse	m/min [IPM]	30 [1181]	
	Y-axis	Travel	mm [in.]	100[50+50](4{2+2})	
		Rapid traverse	m/min [IPM]	30 [1181]	
	W-axis	Travel	mm [in.]	650[645+5](25.625[25.5+.1 25])	1585[1580+5](62.402[62.20 4+.125])
		Rapid traverse	m/min [IPM]	30 [1181]	
	C-axis	Travel	mm [in.]	591	
		Rapid traverse	m/min [IPM]	555	
Others	Coolant tank capacity		L [gal (US)]	275 [72.6]	375 [99.2]
	Power requirement (cont./30-min. rating)		kVA	44.1/55.6	
	Air pressure		MPa [PSI]	0.5 [71.2]	
	Total air capacity		L/min (ANR) [ft ³ /min]	250 [8.8]	
Size	Spindle center height			1180 [46.46]	
	Length *2	USA, EU	mm [in.]	3715 [146.3]	5600 [220.5]
	Width			2420 [95.3]	
Size	Height		mm [in.]	2169 [85.4]	
	Floor space required *2	USA, EU	m ² [ft ²]	8.07(86.9)	
	Machine weight		kgf [lbs]	9750 [21500]	TBA

*1 Chuck weight included. The rigidity and holding force of the workpiece support are not allowed for.

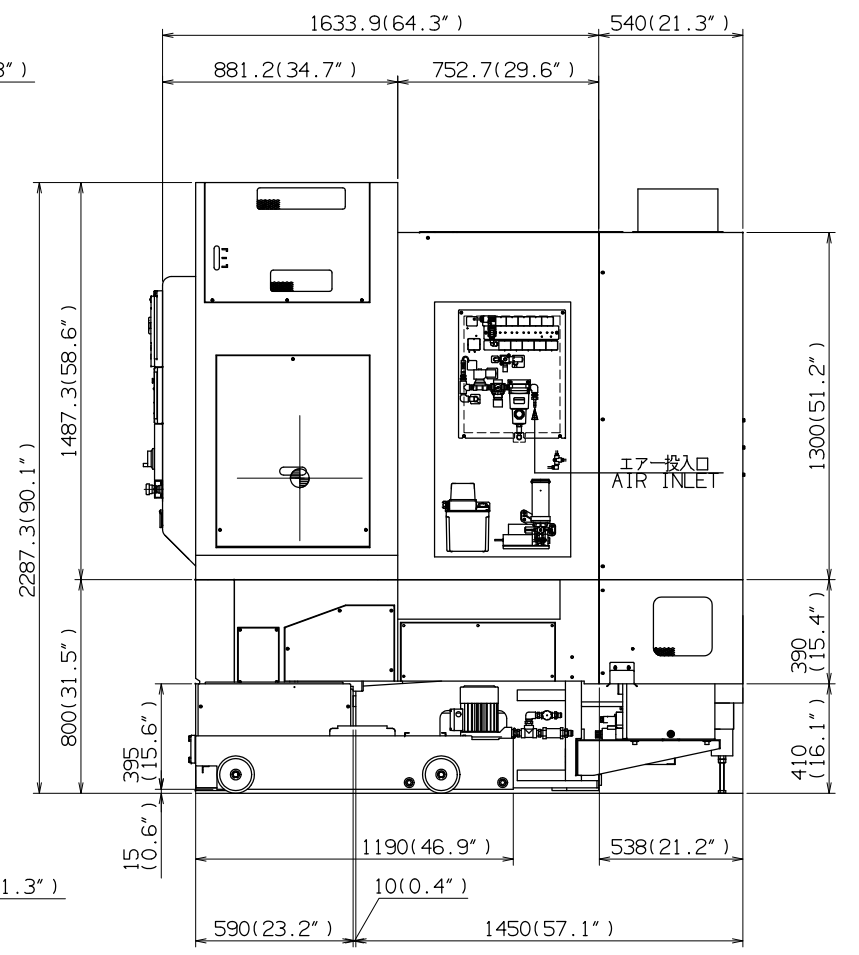
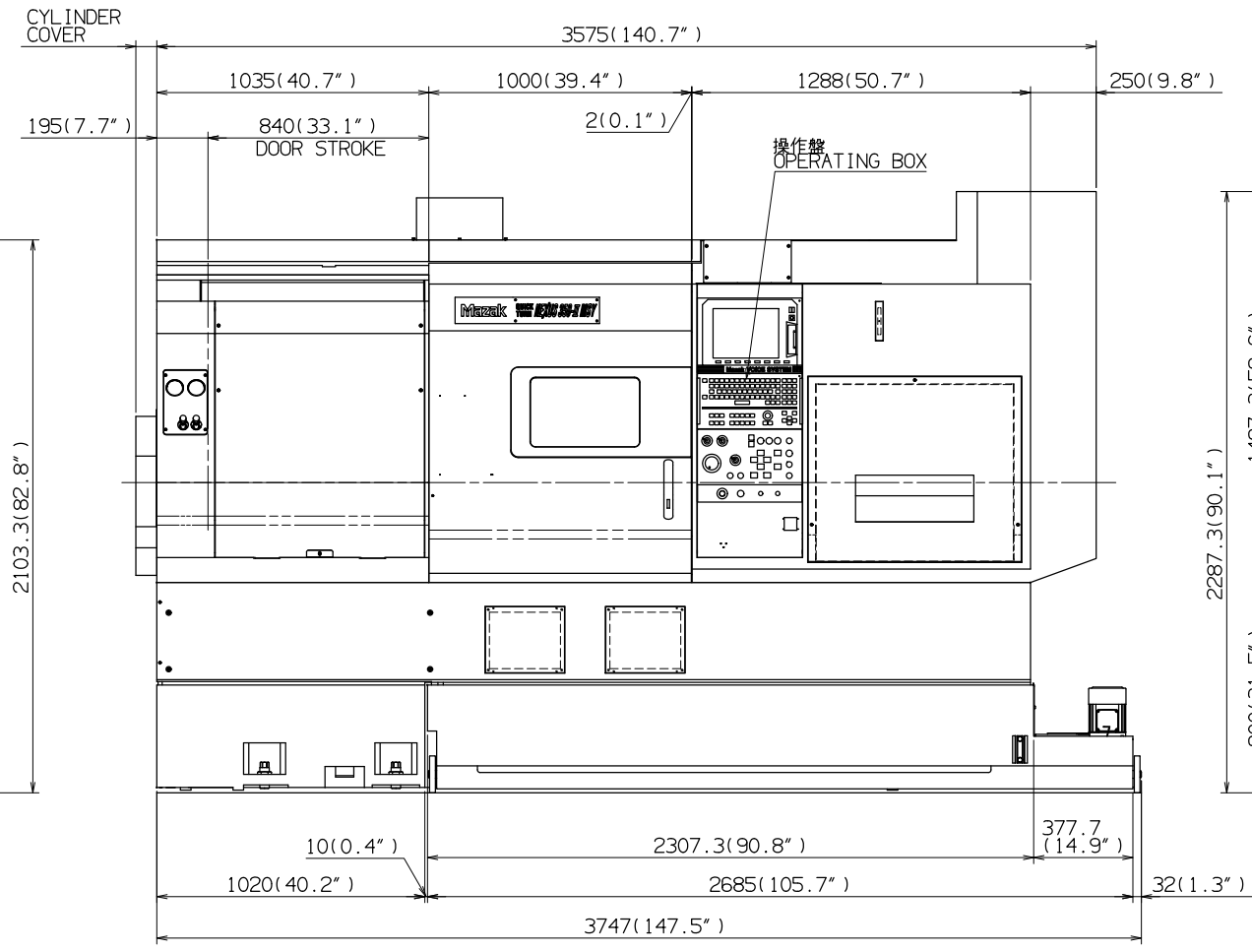
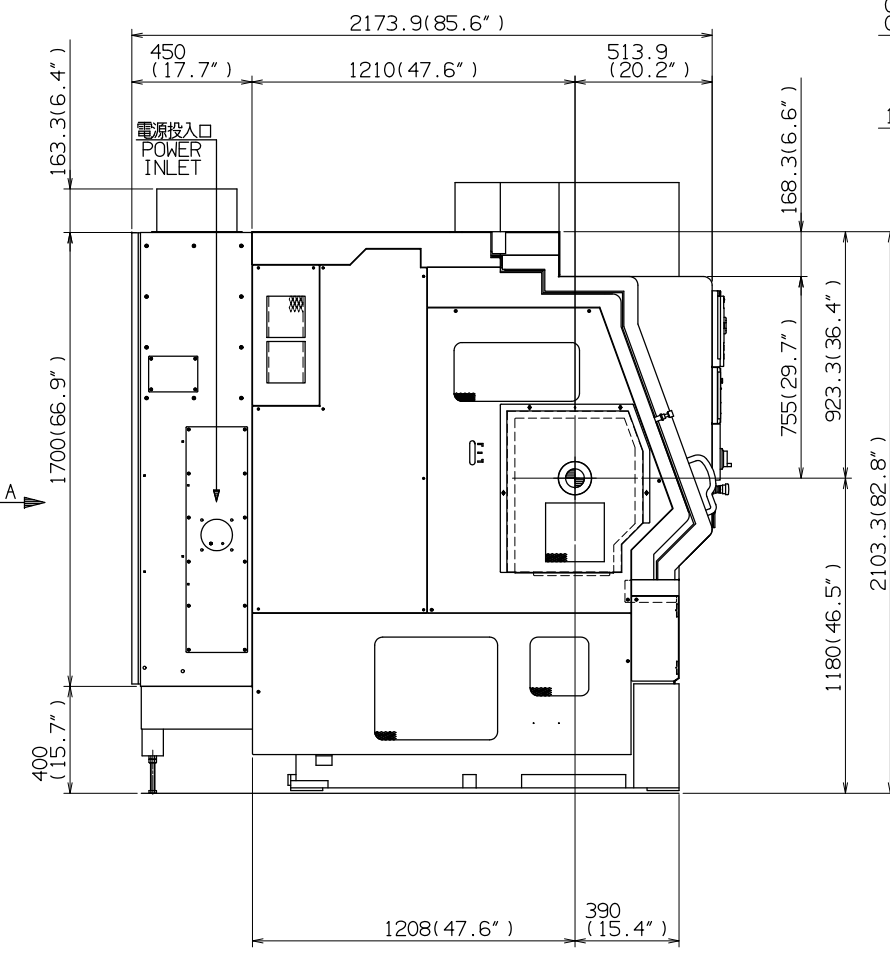
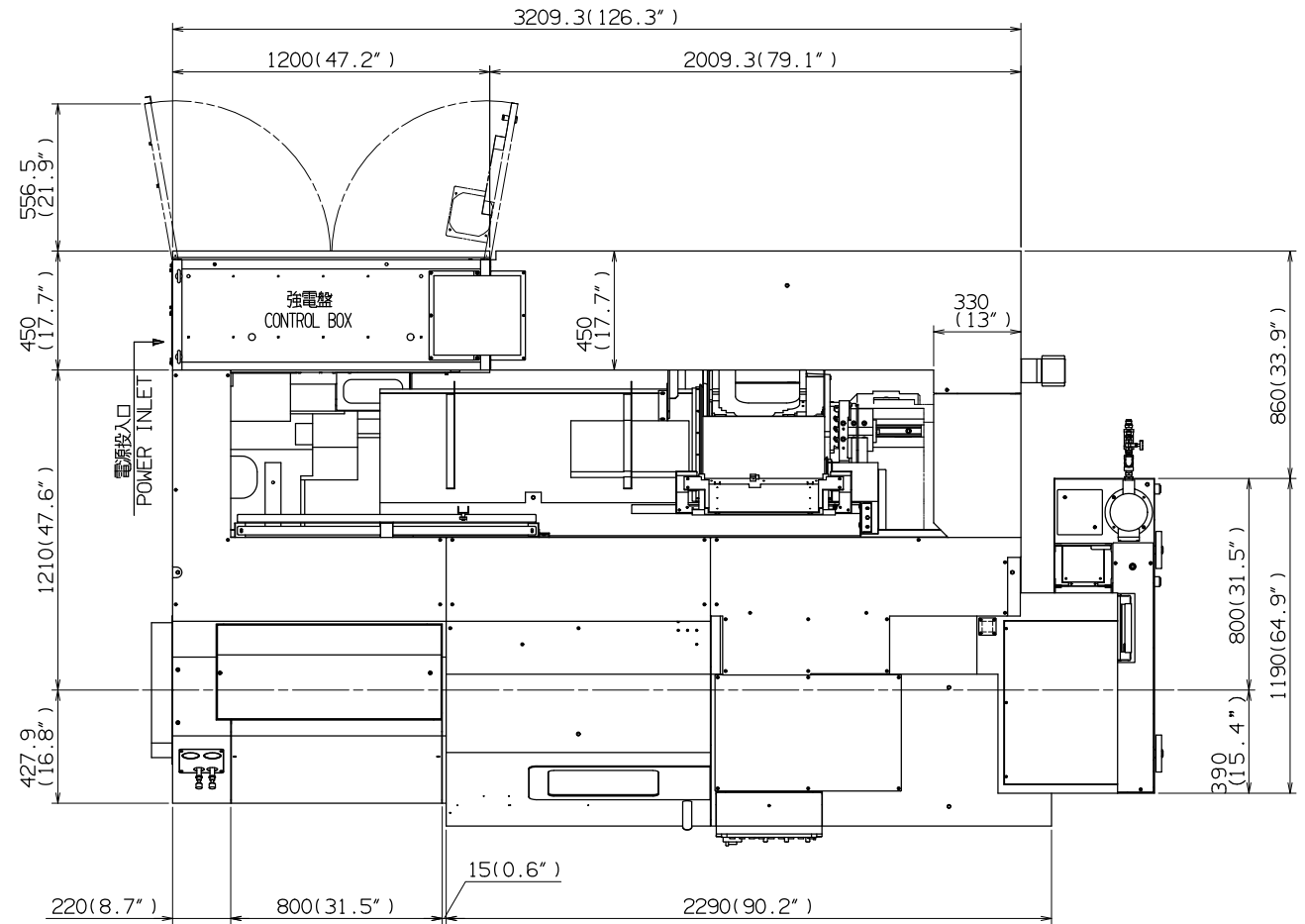
*2 Further limited by the chuck used.

4 TOTAL VIEW

Machine model	Specification		Drawing No.	Page
QTN350-II MSY	650	Without chip conveyor	0333GVAC020	4-2
		With chip conveyor	0333GVAC011	4-3
	1500	With chip conveyor	0333GVC0030	4-4
		Without chip conveyor	0333GVC0040	4-5



AVIEW (S=1/15)

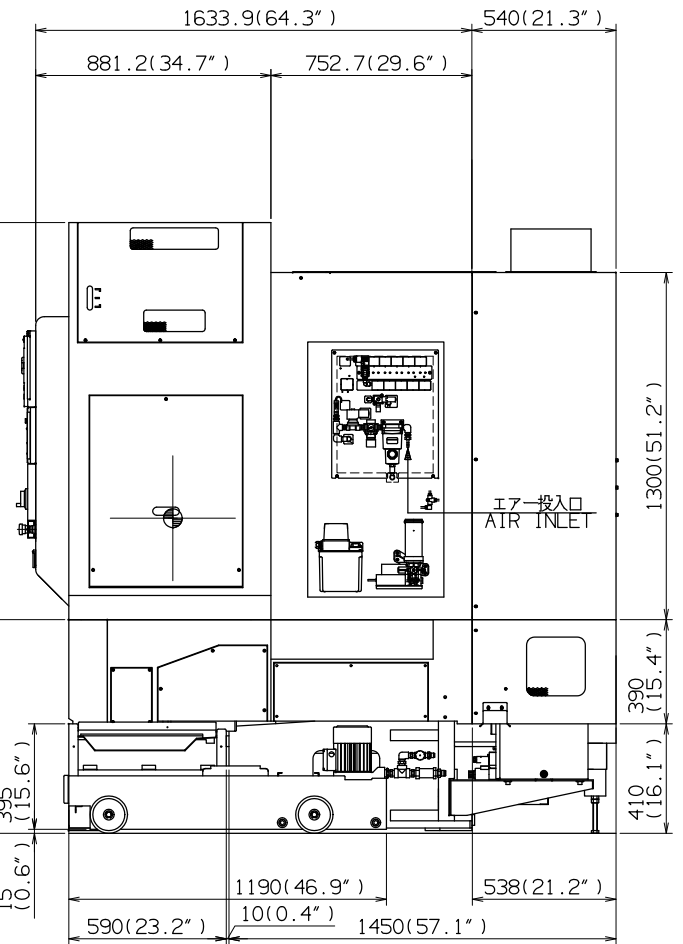
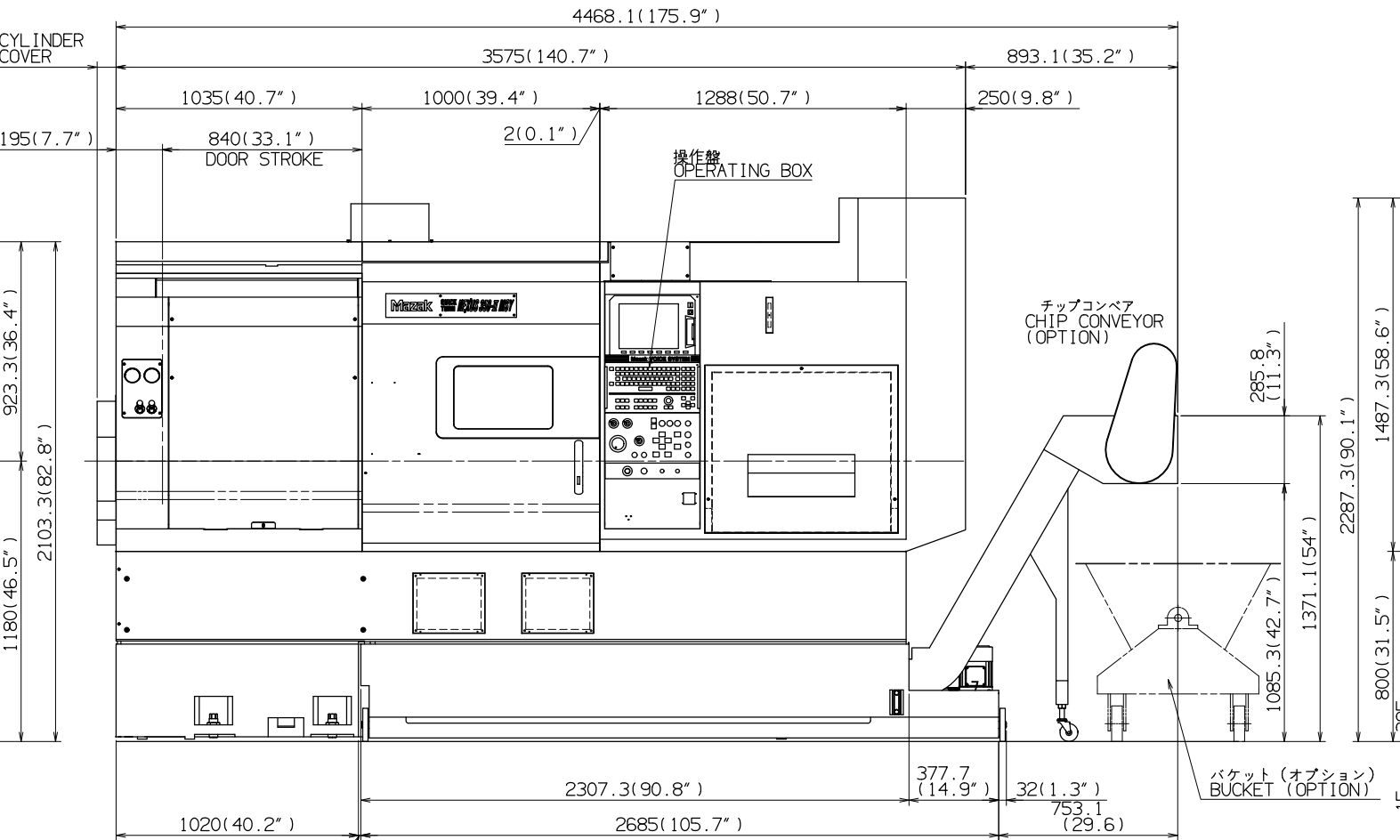
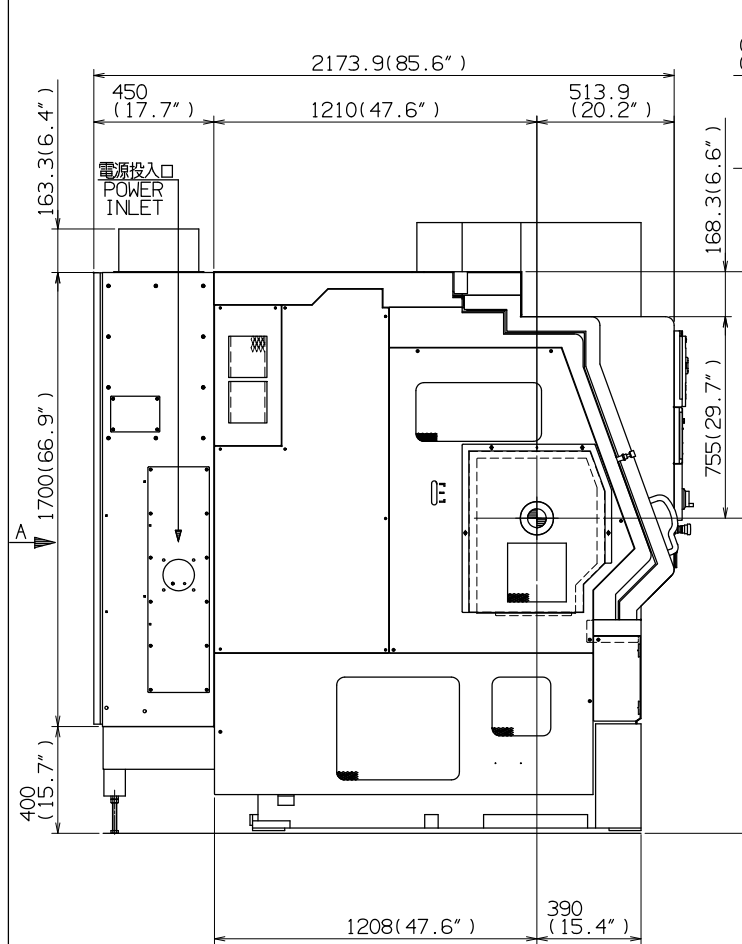
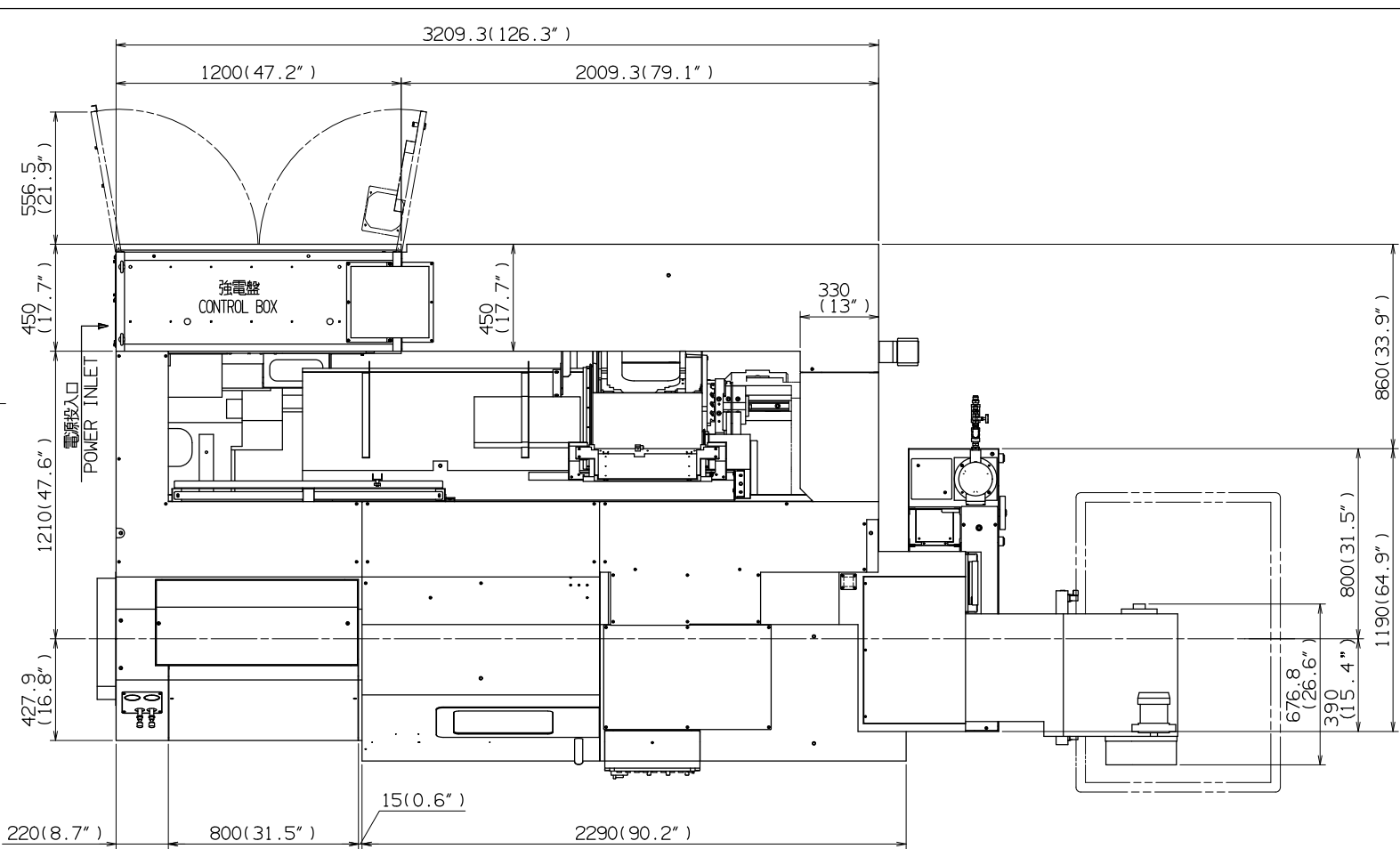
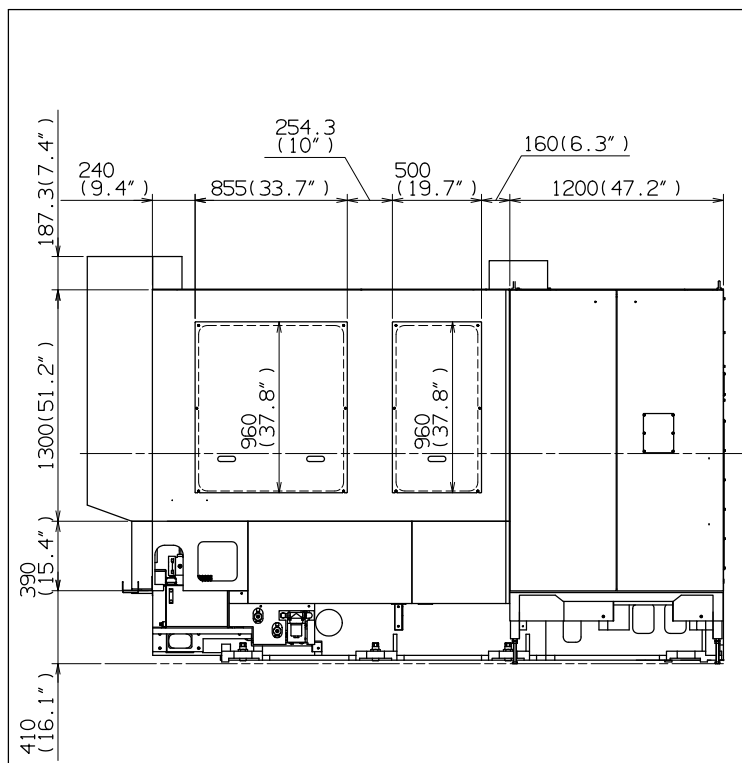


QTN300/350□MSY 650U (YMC) WITHOUT CHIP CV. チップコンベア無し mm(inch)

	THROUGH HOLE	CYLINDER TYPE	CYLINDER COVER	TOTAL LENGTH
QTN-300□MSY 650U		B-210A815D + S1877-15Y YMC STD	80(3.1")	3827(150.6")
QTN-350□MSY 650U		BB212A115 + SS2110C15Y YMC STD	80(3.1")	3827(150.6")
		B-15A115B + SS2110C15Y OPTION	80(3.1")	3827(150.6")

THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
111809 H.N	111809 H.N	111809 G.Y	111809 TL.K.K
SCALE		NAME	
1/10 (1/15)		全体図(QTN-300/350□MSY)	
TOTAL VIEW			
DRAWING NO.		0 333 GV AC02 0	
QTY	DATE	DC NO.	SIGN

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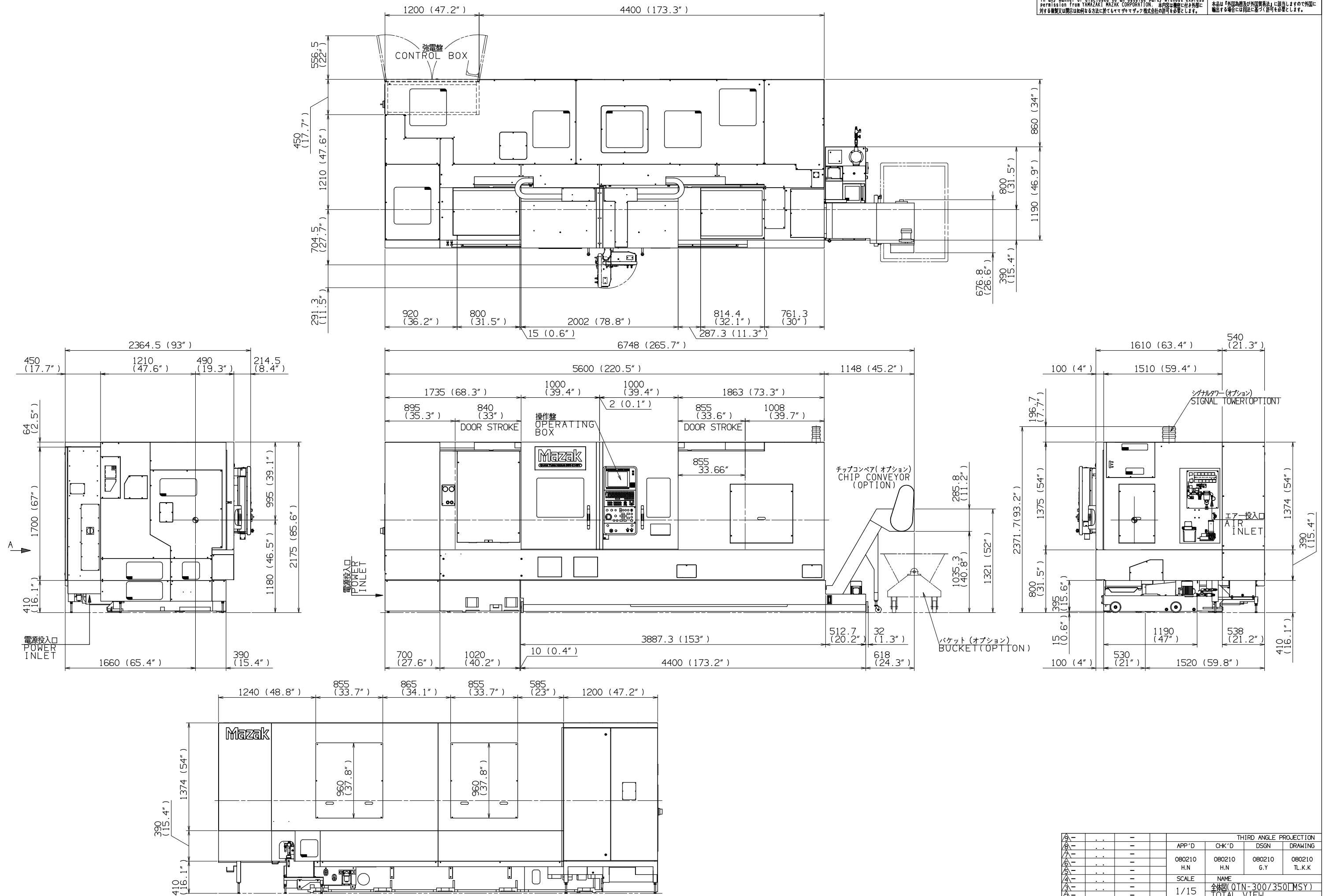


△ 図面書換 THIS IS REDRAWN

QTN300/350□MSY 650U (YMC) WITH SIDE DISCHARGE CV. チップコンベア横出し mm(inch)				
	THROUGH HOLE	CYLINDER TYPE	CYLINDER COVER	TOTAL LENGTH
QTN-300□MSY 650U		B-210A815D + S1877-15Y YMC STD	80(3.1")	4548.1(179")
QTN-350□MSY 650U		BB212A115 + SS2110C15Y YMC STD	80(3.1")	4548.1(179")
	THROUGH HOLE	B-15A115B + SS2110C15Y OPTION	80(3.1")	4548.1(179")

THIRD ANGLE PROJECTION					
APP'D	CHK'D	DSGN	DRAWING		
080709 H.N	080709 H.N	080709 G.Y	080709 TL.K.K		
SCALE		NAME			
1/10 (1/15)		全体図(QTN-300/350□MSY)			
TOTAL VIEW					
1	11.18.09	4007-	TL.K.K	DRAWING NO.	
QTY	DATE	DC NO.	SIGN	0	333
				GV	ACO1
					1

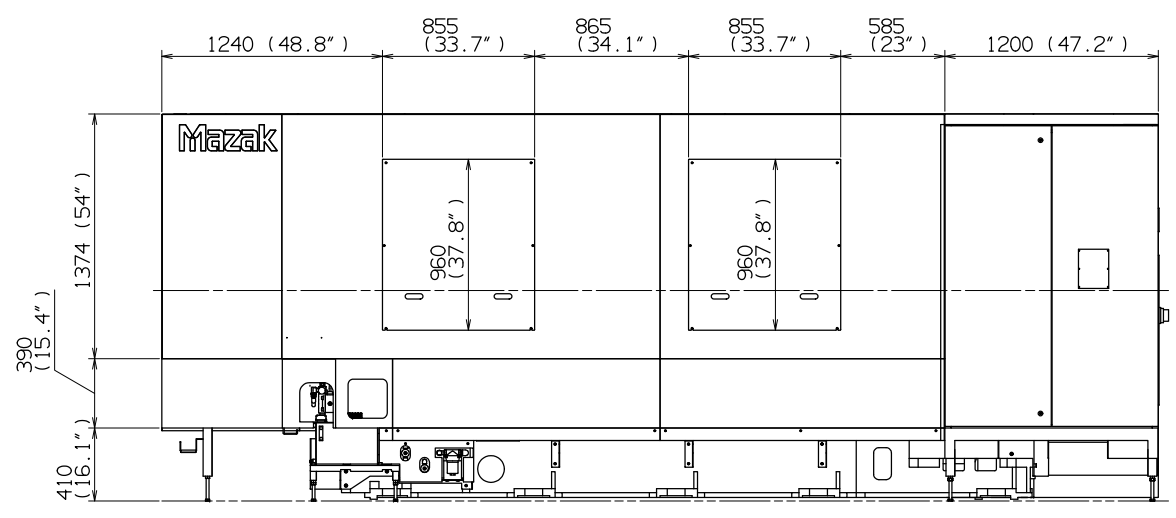
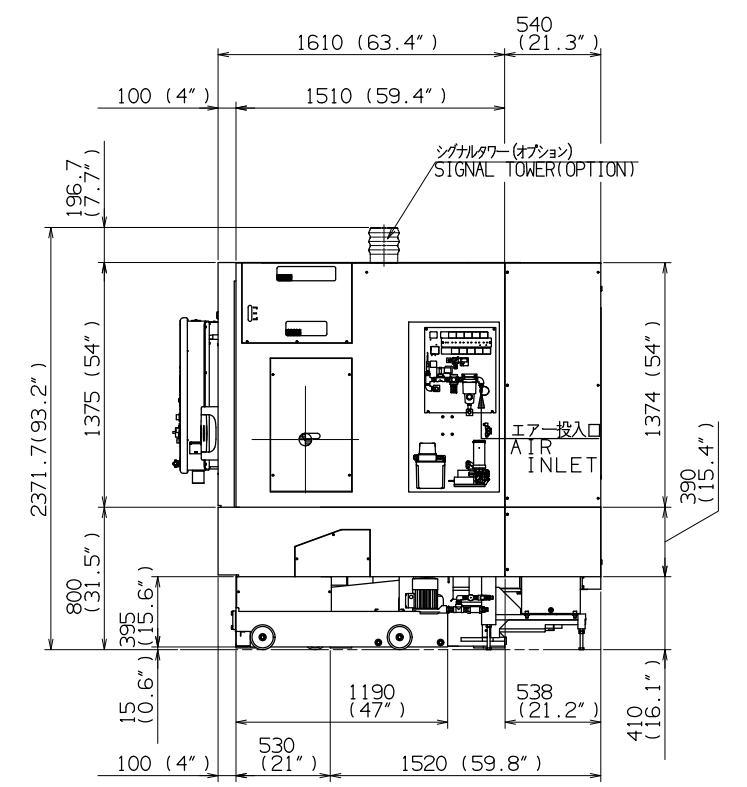
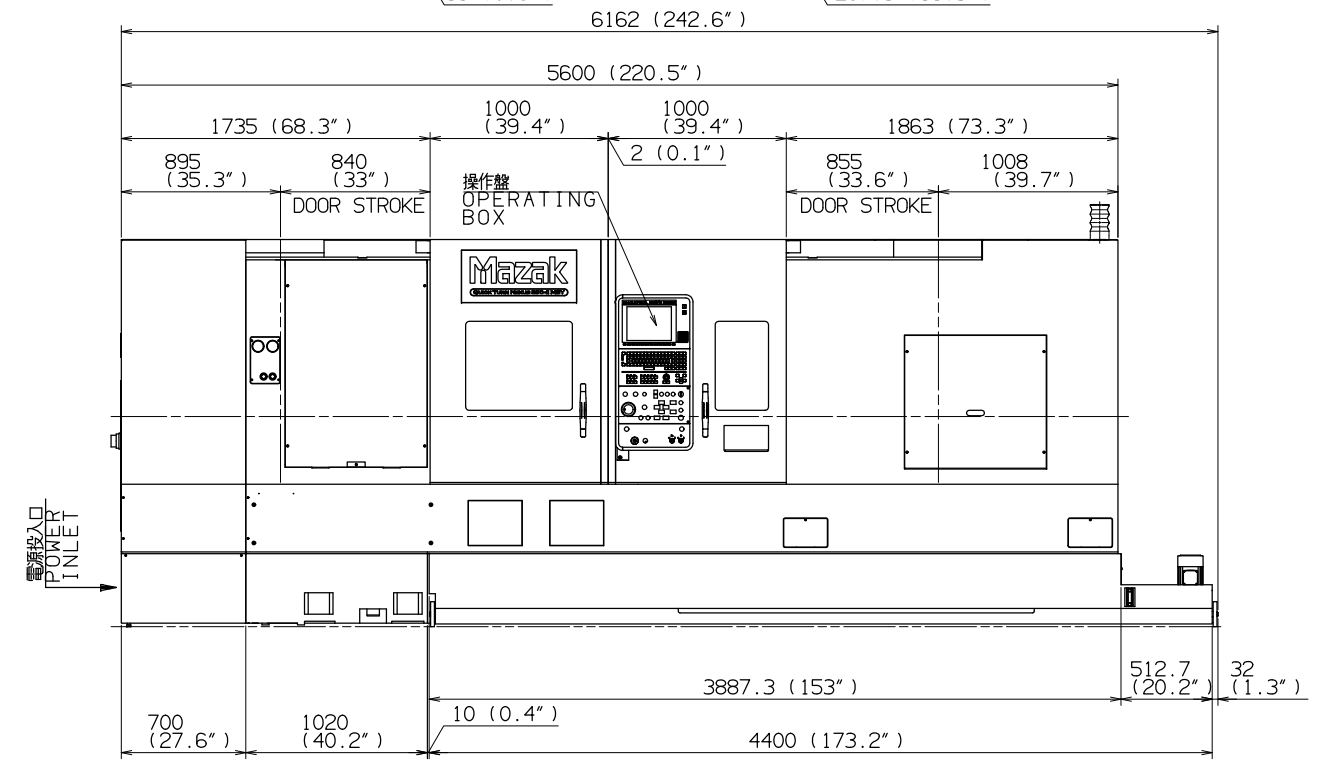
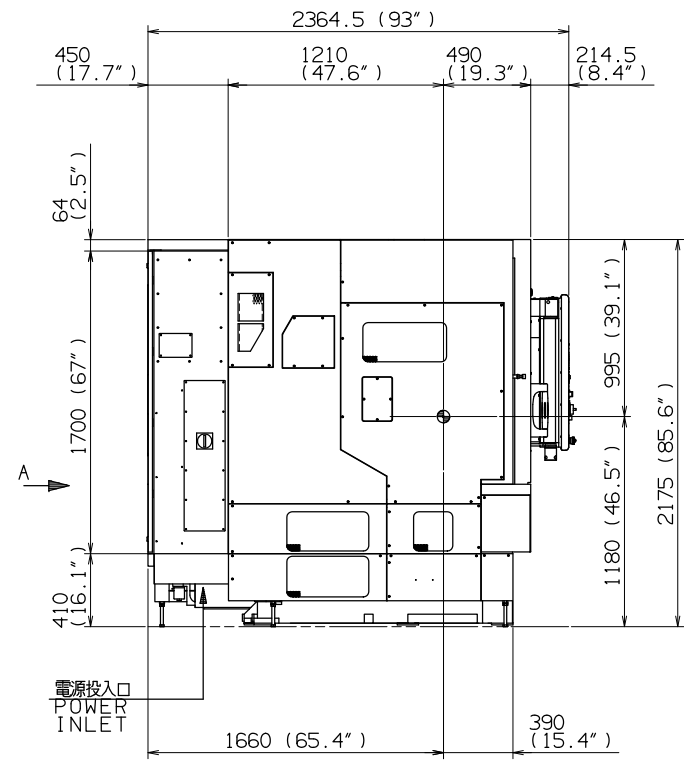
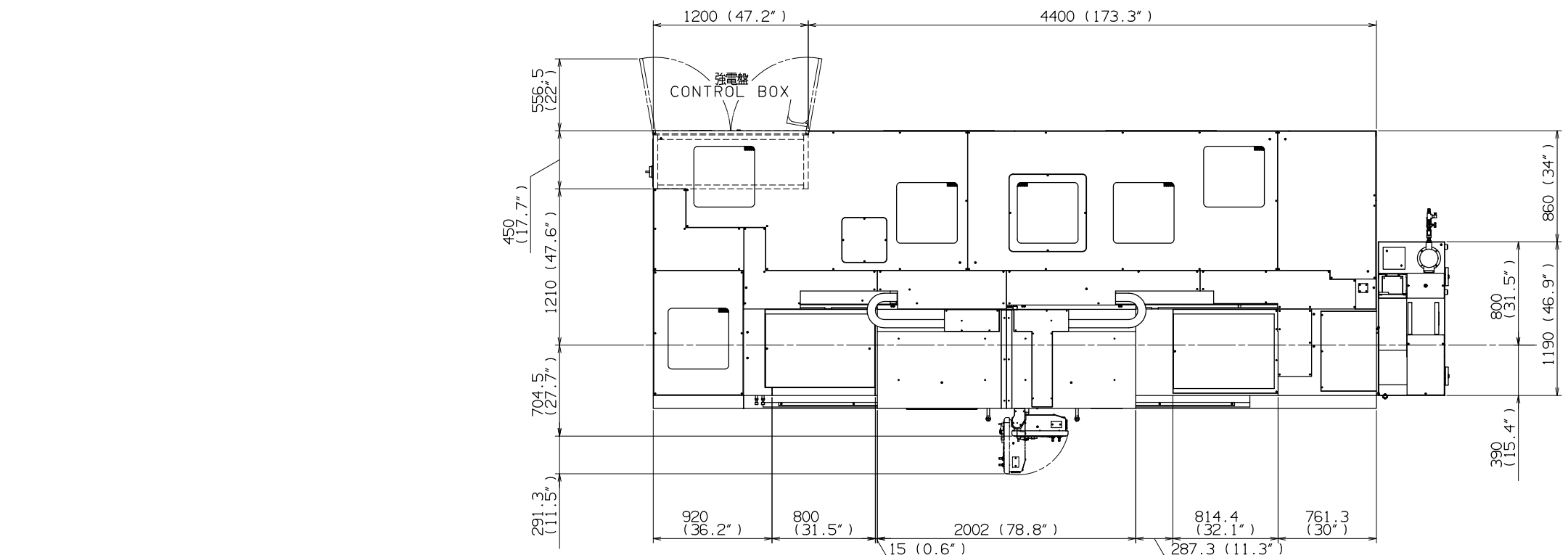
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QTN300/350MSY 1500U (YMC) WITH SIDE DISCHARGE CV. チップコンベア横出し mm(inch)

THIRD ANGLE PROJECTION				
APP'D	CHK'D	DSGN	DRAWING	
080210	080210	080210	080210	
H.N	H.N	G.Y	TL.K.K	
SCALE			NAME	
1/15			全体図(QTN-300/350MSY)	
TOTAL VIEW				
DRAWING NO.	0	333	GV	C003
QTY	DATE	DC NO.	SIGN	





QTN300/350□MSY 1500U (YMC) WITHOUT CHIP CV. チップコンベア無し mm(inch)

THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
080210	080210	080210	080210
H.N	H.N	G.Y	TL.K.K
SCALE	NAME		
1/15	全体図 (QTN-300/350□MSY)		
TOTAL VIEW			
DRAWING NO.	0	333	GV C004 0
QTY	DATE	DC NO.	SIGN



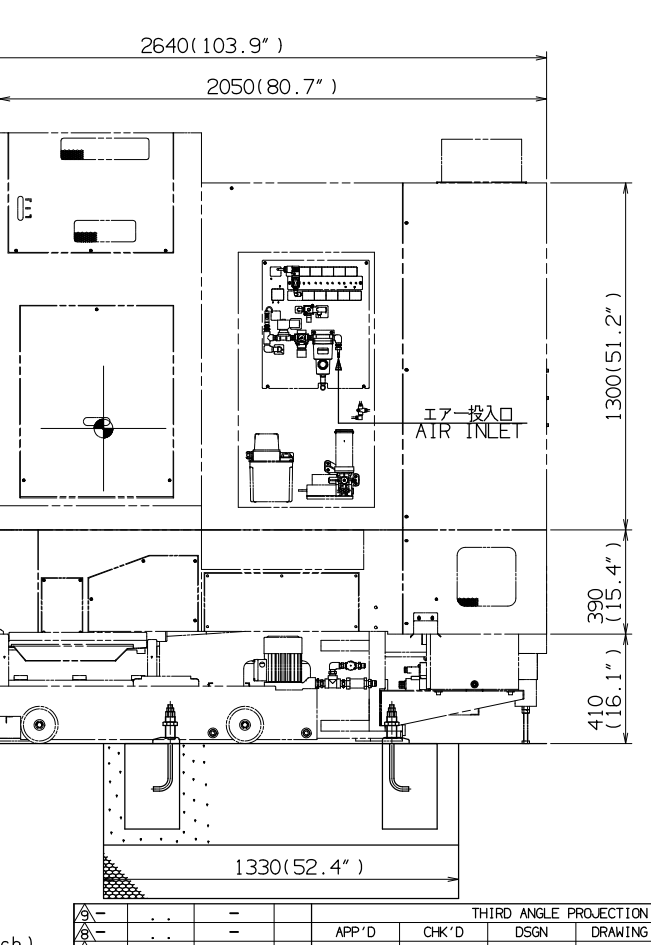
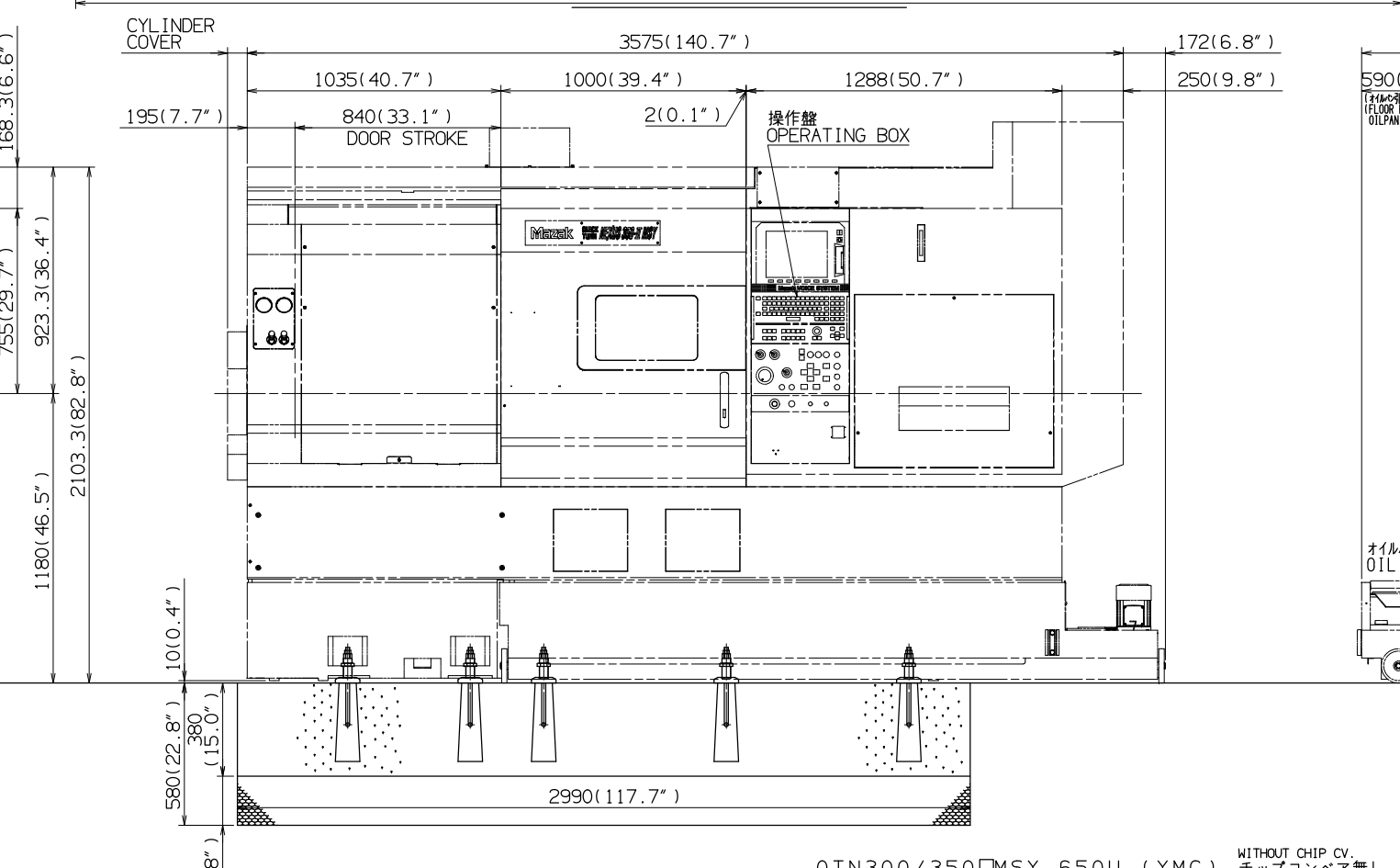
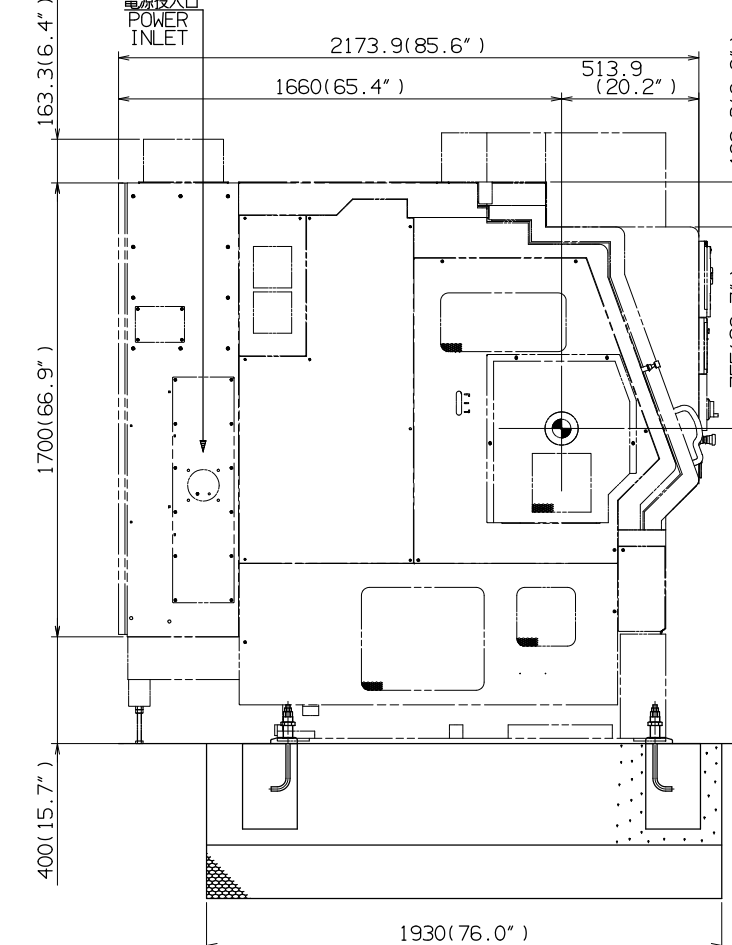
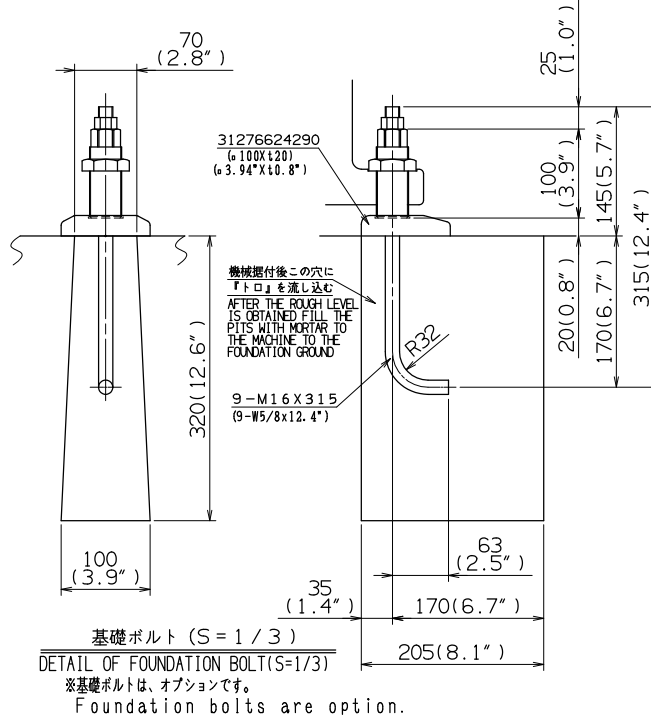
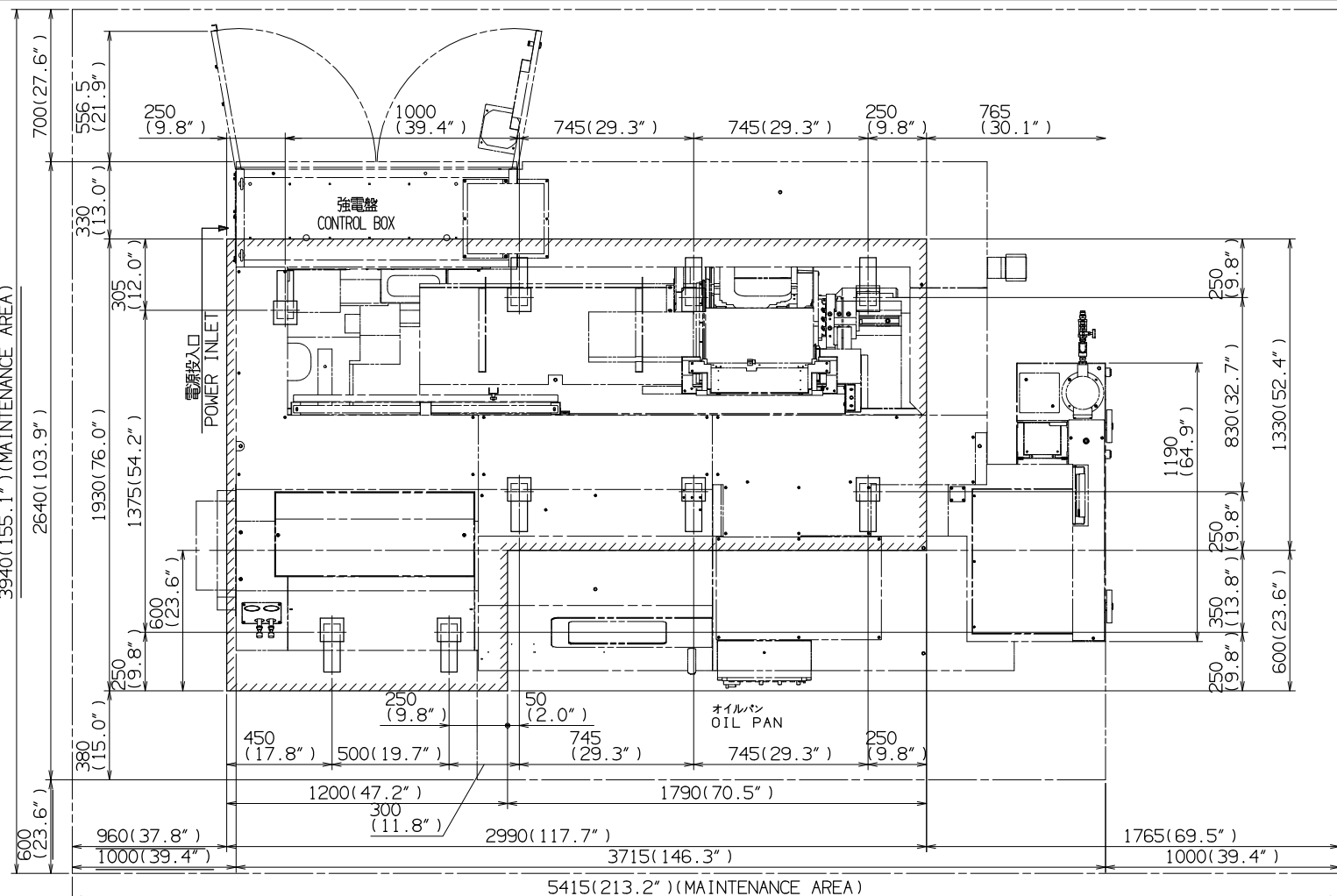
5 FOUNDATION DRAWING

Machine model	Specification		Drawing No.	Page
QTN/350-II MSY	650	Without chip conveyor	0333FLAC020	5-2
		With chip conveyor	0333FLAC011	5-3
	1500	With chip conveyor	0333FLC0030	5-4
		Without chip conveyor	0333FCL0040	5-5

CONFIDENTIAL DOCUMENT
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- 設置条件
 本装置は、一般の半導体用として、基礎工事を行う時は機械番号に応じて用い、確認して行うこと。
 1. 接地工事
 1.1 接地地（接地抵抗 10Ω以下、接地容量14mm²以上）の接地工事を行って下さい。
 2. 床面処理
 2.1 床面処理により地耐力8t/f/m²以上の事。
 2.2 コンクリート圧縮強度 $\geq 180\text{kgf/cm}^2$ (18MPa)以上、引張り強度 18kgf/cm^2 (1.8MPa)以上の事。
 3. コンクリート亀裂を防止するための措置
 3.1 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 3.2 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 4. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 5. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 6. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 7. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 8. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 9. 基礎の隅部等に亀裂防止剤を塗布し、コンクリートと充分密着するように設置すること。
 10. コンクリート総体積 約1.78m³

- CONDITION OF INSTALLATION
 The foundation drawings in this volume of specifications are for more reference. Before construction the foundation please consult us referring the model and the machine number and get the correct drawing.
 1. Grounding
 1. Provide Class C grounding (ground resistance 10 Ω or less, grounding cable 14 mm² or more).
 2. Notice
 1. Use gravel stones, to obtain a minimum soil bearing pressure of 8 tonf/m² (11.38 PSI).
 2. Use concrete with minimum compressive strength of 180 kgf/cm² (2560 PSI) and tensile strength of 18 kgf/cm² (256 PSI).
 3. Use cautions not to have the concrete cracked.
 4. Be certain that the inner walls of the foundation bolt pits must be jagged rough and uneven to facilitate the secondary poured concrete to adhere fast with the initial poured concrete.
 5. In the first step, pour the concrete with the holes prepared for foundation bolts. After the etc has been cured enough, install the foundation bolts, leveling blocks and other fittings and establish the rough level of the machine with 5 mm (0.2 in.) in the second step, pour the concrete into the foundation bolt holes to secure the foundation bolts in the floor.
 6. When pouring the secondary concrete into the foundation bolt pits, level the machine and secure the leveling block to the machine by tightening the nuts after the concrete has been cured.
 7. It is advisable to mix the proper inflating agent (such as Denka CSA) in the concrete used to fill the anchor bolt pits so as to prevent the concrete from contracting after it has cured.
 8. The surface of concrete for the foundation pits should be finished smoothly with the water-proof mortar.
 9. When complete water-proof on the floor is needed, ditches for collecting coolant should be made around the machine.
 10. Total volume of concrete 1.78m³(62.9ft³)



QTN300/350□MSY 650U (YMC) WITHOUT CHIP CV. チップコンベア無し mm (inch)

TYPE	THROUGH HOLE	CYLINDER TYPE	CYLINDER COVER	TOTAL LENGTH
QTN-300□MSY 650U	B-210A815D + S1877-15Y	YMC STD	80(3.1")	3827(150.6")
QTN-350□MSY 650U	BB212A115 + SS2110C15Y	YMC STD	80(3.1")	3827(150.6")
	B-15A115B + SS2110C15Y	OPTION	80(3.1")	3827(150.6")

APP'D	CHK'D	DSGN	DRAWING
111809 H.N	111809 H.N	111809 G.Y	111809 TL.K.K

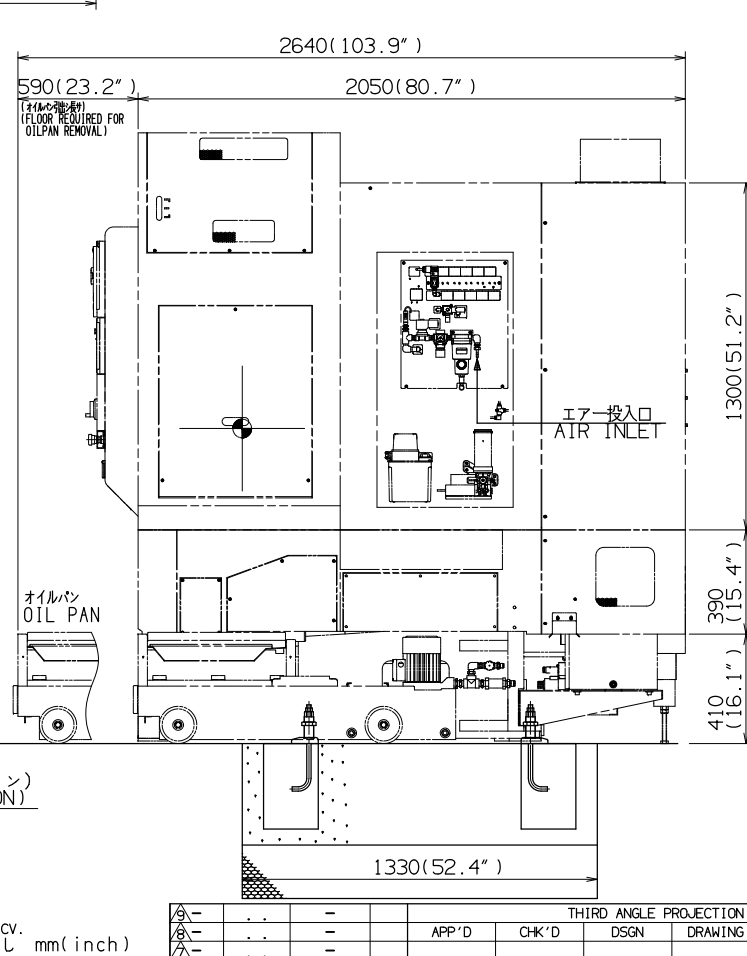
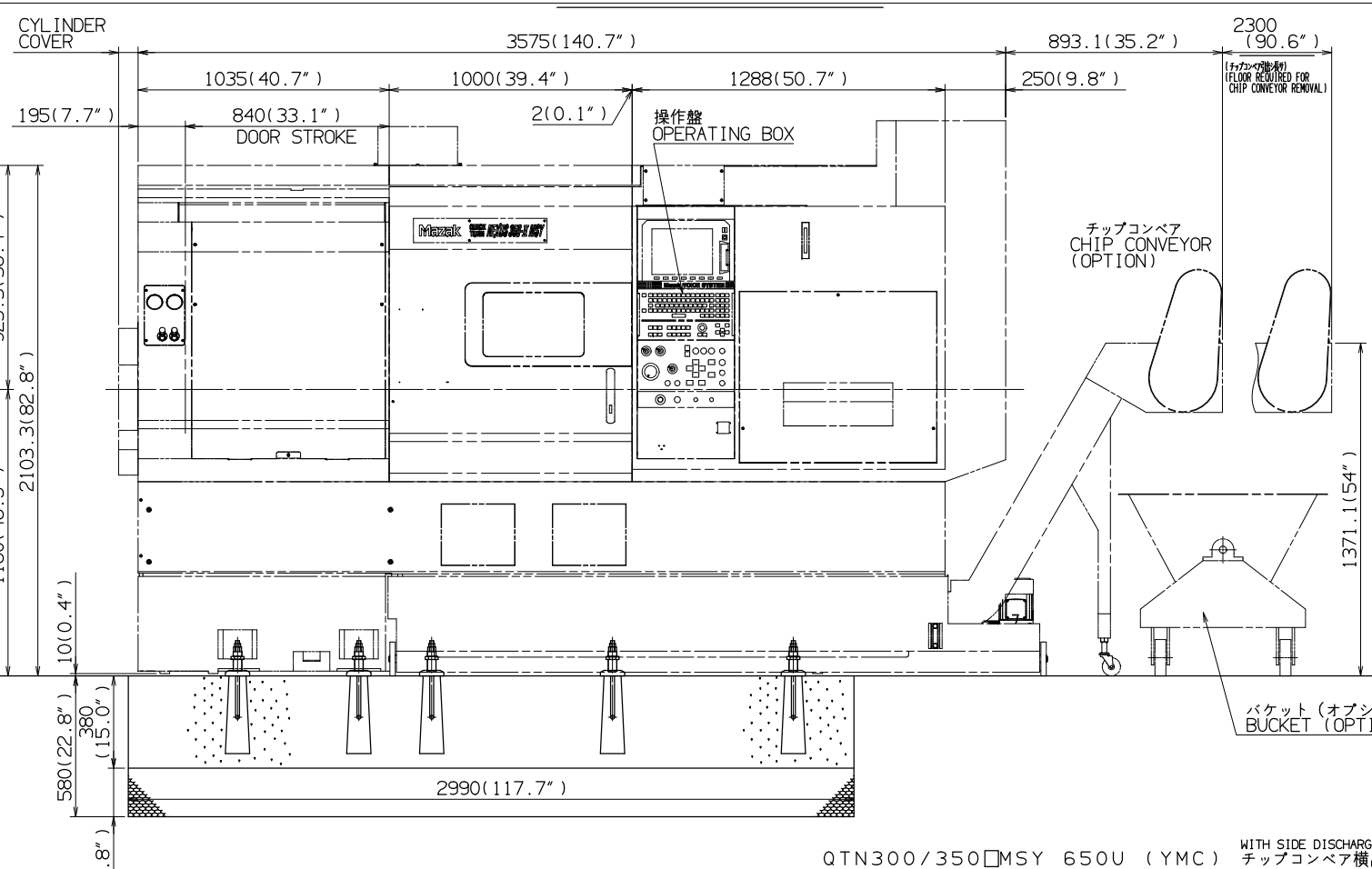
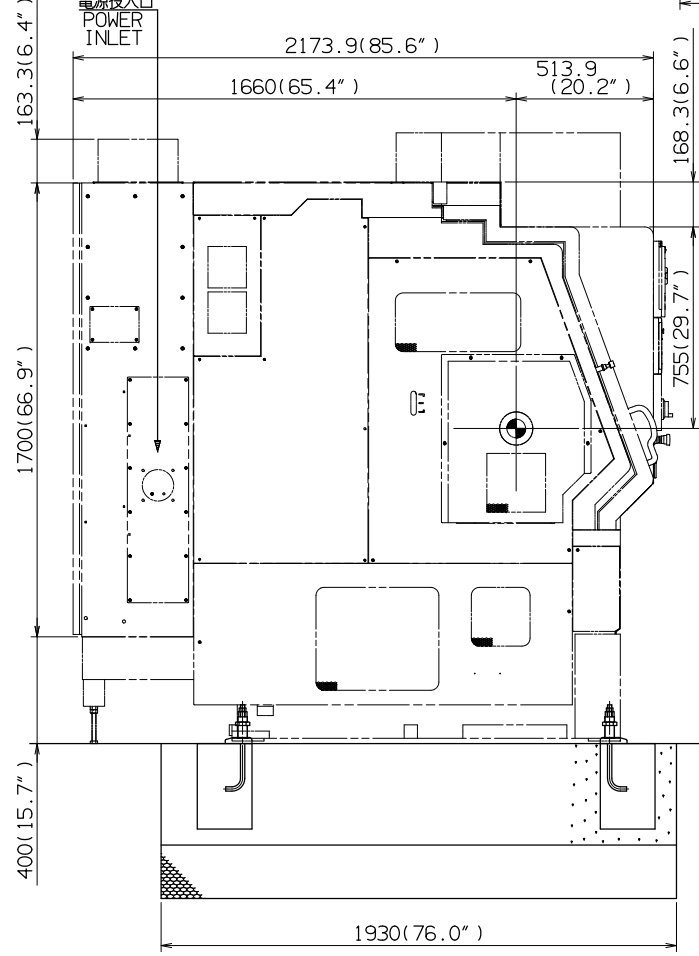
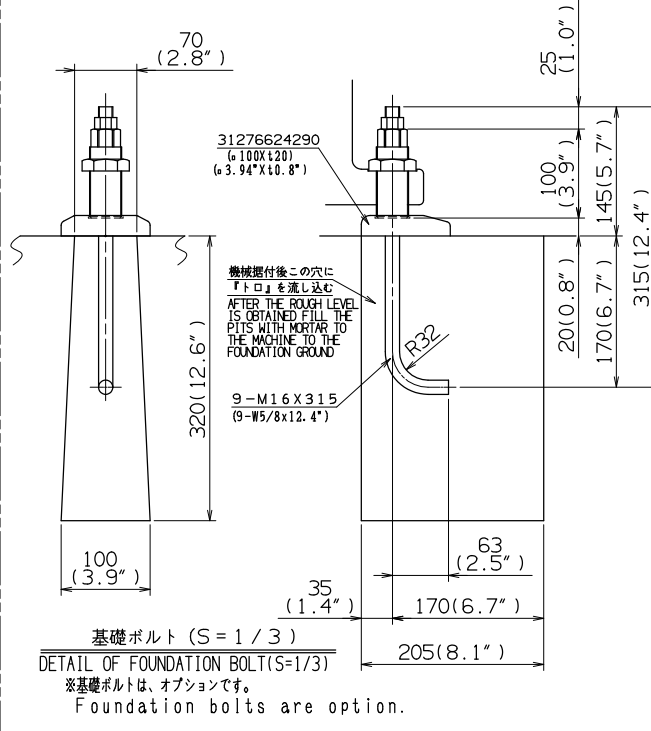
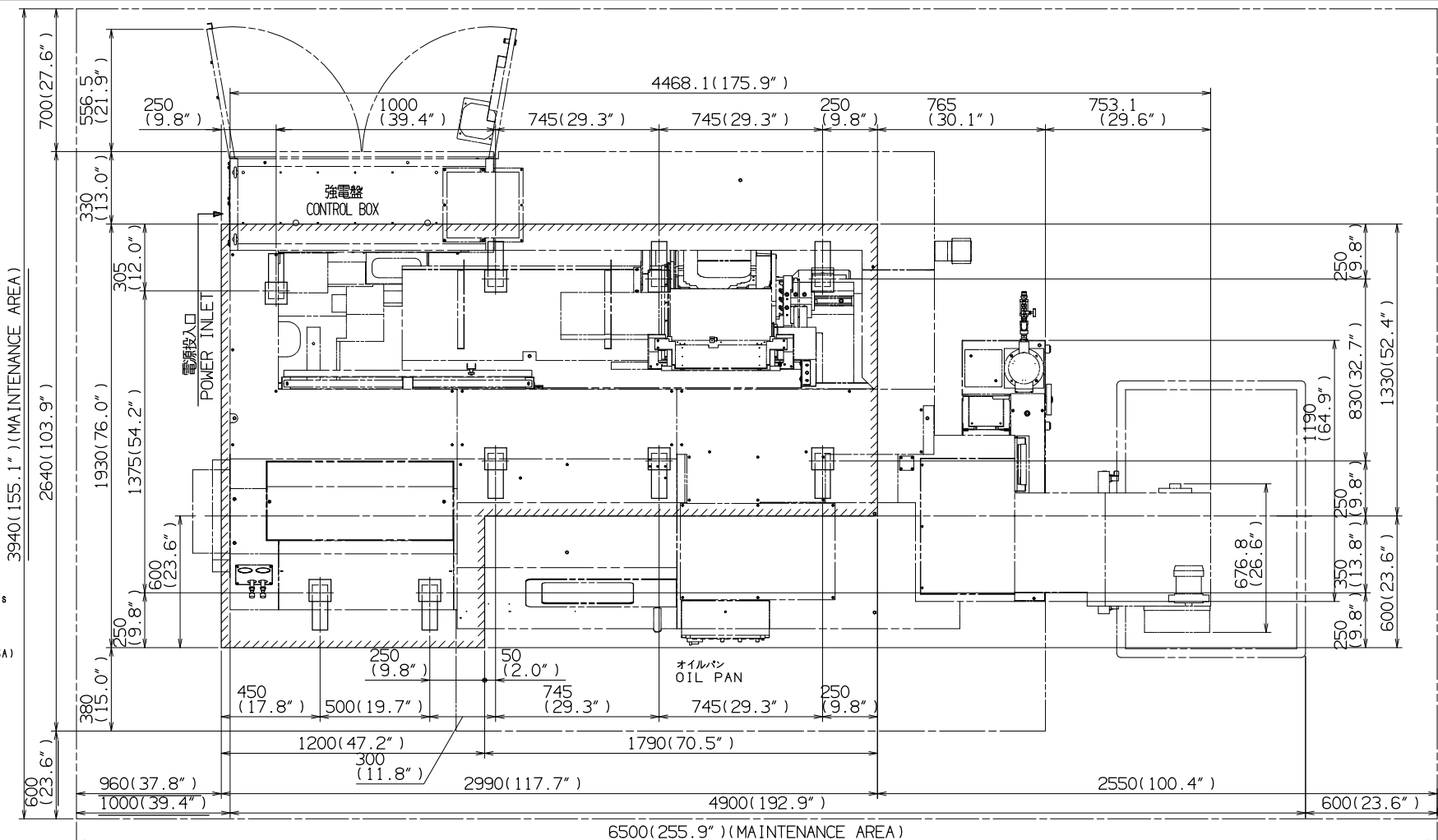
SCALE: 1/10 (1/3) 基礎(QTN-300/350□MSY) FOUNDATION DRAWING
 DRAWING NO. 0 333 FL ACO2 0

取組方針
 本取組は、一般的な手順で行って、基礎工事を行うのは機械師が行って、確認しあがり行って下さい。

1. 接地工事
 1.1 接地抵抗 (接地抵抗 10Ω以下、接地容量 14mm²以上) の接地工事を行って下さい。
2. 注漿工事
 2.1 砕石層などにより地耐力が 8 t/f m² 以上の事。
 2.2 コンクリート圧縮強度 = 180 kgf/cm² (18MPa) 以上、引張強度が 18 kgf/cm² (1.8MPa) 以上の事。
 2.3 コアブロー機を使用して確認すること。
 2.4 基礎が完成した後に、基礎コンクリートと充分密着するように設置すること。
 2.5 基礎が完成した後に、基礎コンクリート打ちを行い、充分乾燥したら、底レベル用鋼線 6mm 以内にレベルが出来るように敷き、機械本体の基礎ボルト、調整等を組み込んで基礎の穴にコンクリートを入れて完成させる。
3. 基礎コンクリート打ちの後、コンクリートが完全に固まったら本レベルを出して、ナットを締め付けるところまで基礎を調整する。
4. 基礎ボルトを埋めるコンクリートは、乾燥収縮しないよう膨張剤 (テッカCSA など) を入れること。
5. 基礎に防水モルタルを塗り、溝から仕上げること。
6. 基礎の完全乾燥が必要な場合は、機械廻りに初期水取用の排水を施工してください。
7. コンクリート総体積 約 1.78 m³

CONDITION OF INSTALLATION
 The foundation drawings in this volume of specifications are for more reference. Before construction the foundation please consult us referring the model and the machine number and get the correct drawing.

1. Grounding
 1. Provide Class C grounding (ground resistance 10 Ω or less, grounding cable 14 mm² or more).
2. Notice
 2.1 Use gravel stones, to obtain a minimum soil bearing pressure of 8 tonf/m² (11.38 PSI).
 2.2 Use concrete with minimum compressive strength of 180 kgf/cm² (2560 PSI) and tensile strength of 18 kgf/cm² (256 PSI).
 2.3 Use cautions not to have the concrete cracked.
3. Be certain that the inner walls of the foundation bolt pits must be jagged rough and uneven to facilitate the secondary poured concrete to adhere fast with the initial poured concrete.
4. In the first step, pour the concrete with the holes prepared for foundation bolts. After the etc has been cured enough, install the foundation bolts, leveling blocks and other fittings and establish the rough level of the machine with 5 mm (0.2 in.) in the second step, pour the concrete into the foundation bolt holes to secure the foundation bolts in the floor.
5. When pouring the secondary concrete into the foundation bolt pits, level the machine and secure the leveling block to the machine by tightening the nuts after the concrete has been cured.
6. It is advisable to mix the proper inflating agent (such as Denka CSA) in the concrete used to fill the anchor bolt pits so as to prevent the concrete from contracting after it has cured.
7. The surface of concrete for the foundation pits should be finished smoothly with the water-proof mortar.
8. When complete water-proof on the floor is needed, ditches for collecting coolant should be made around the machine.
9. Total volume of concrete 1.78m³(62.9FIP)



QTN300/350□MSY 650U (YMC) WITH SIDE DISCHARGE CV. チップコンベア横出し mm (inch)

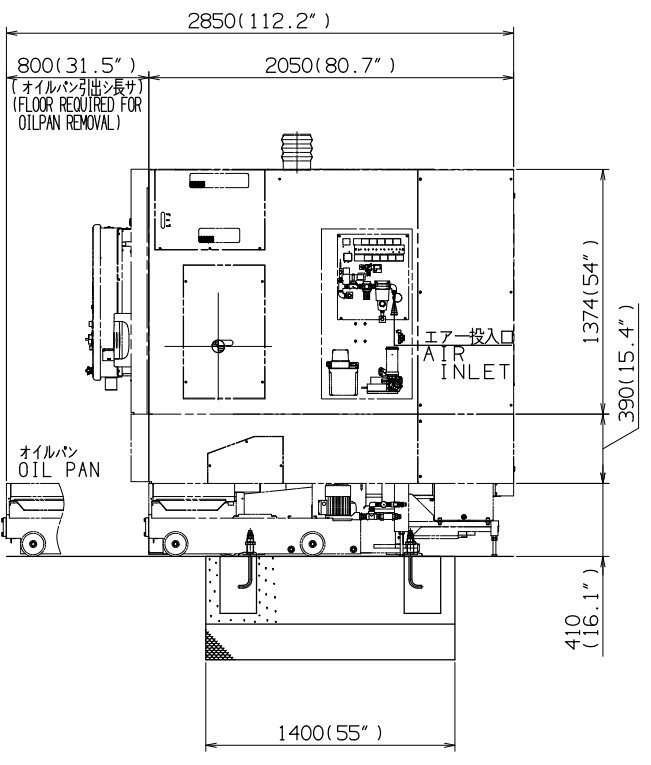
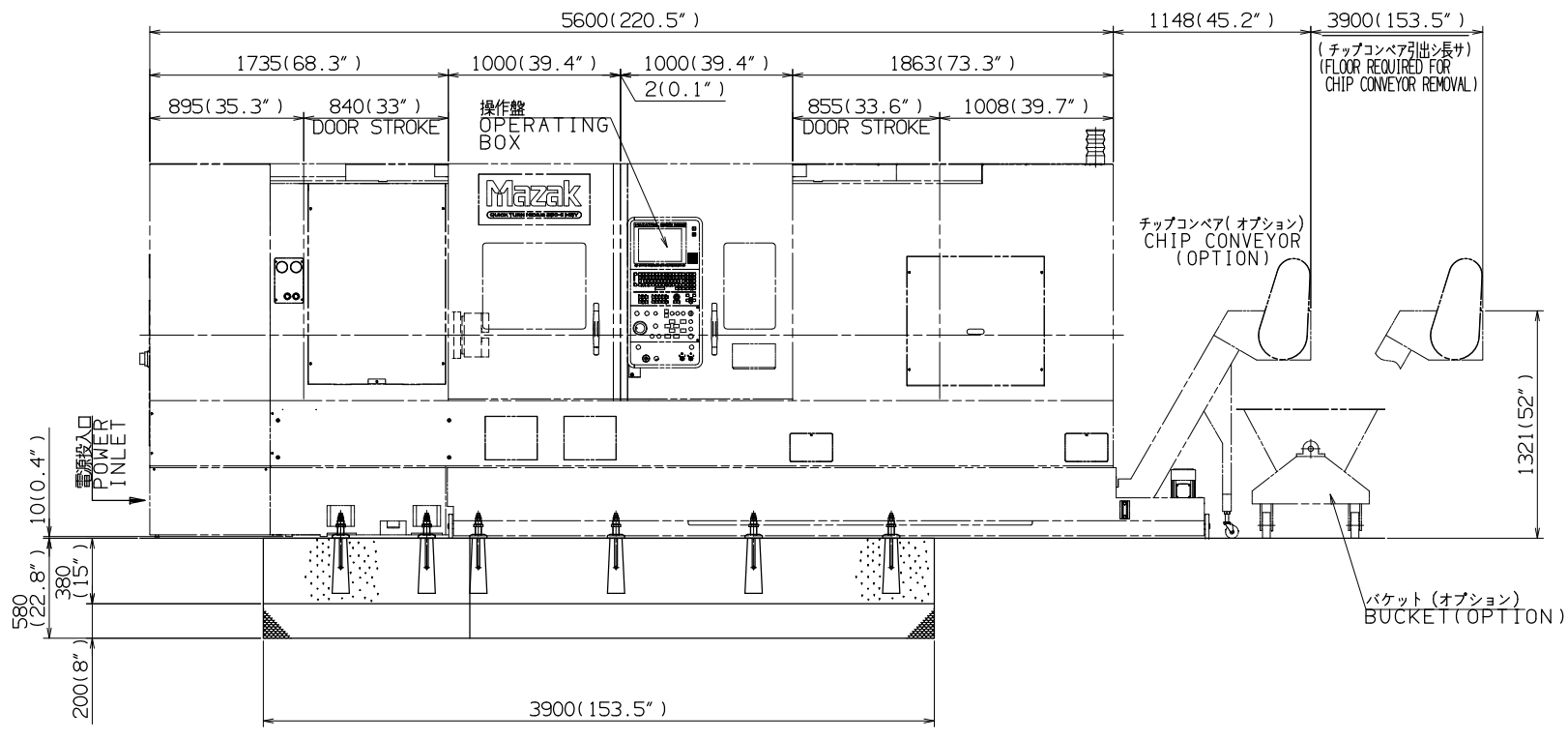
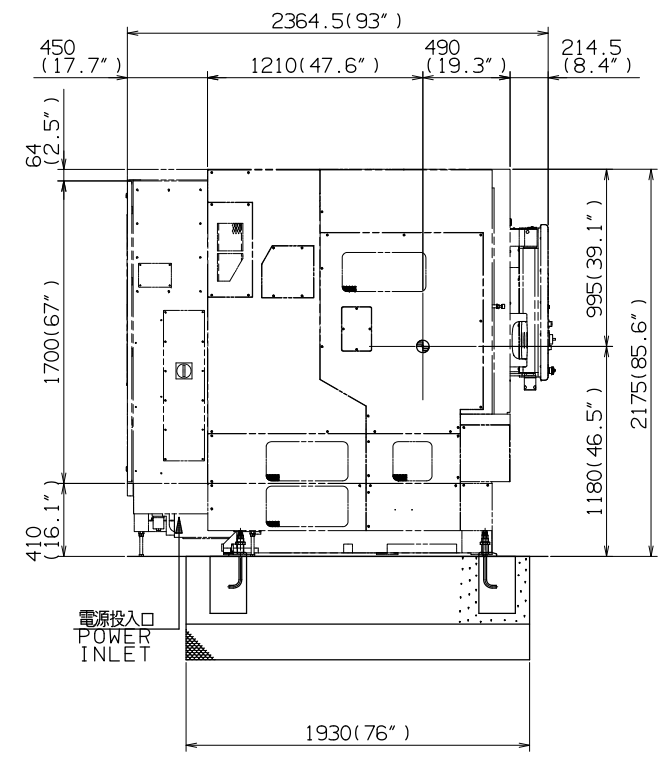
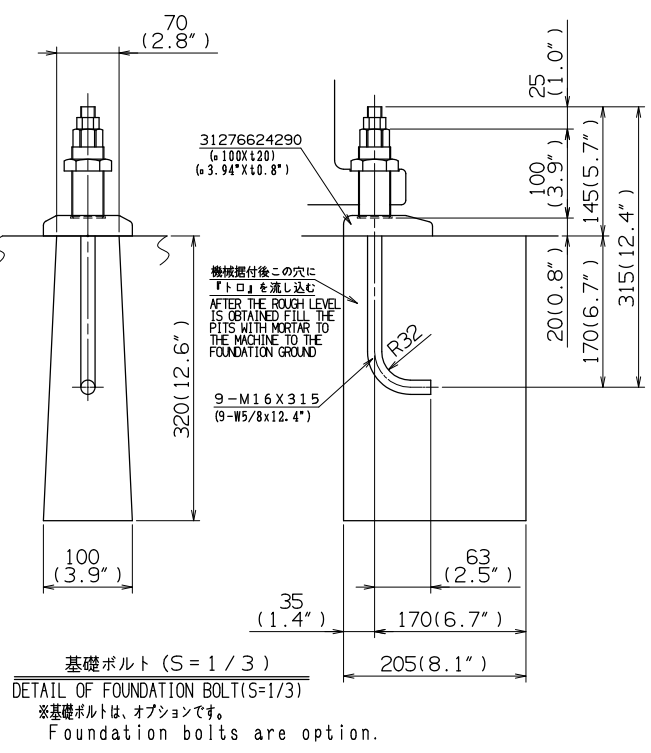
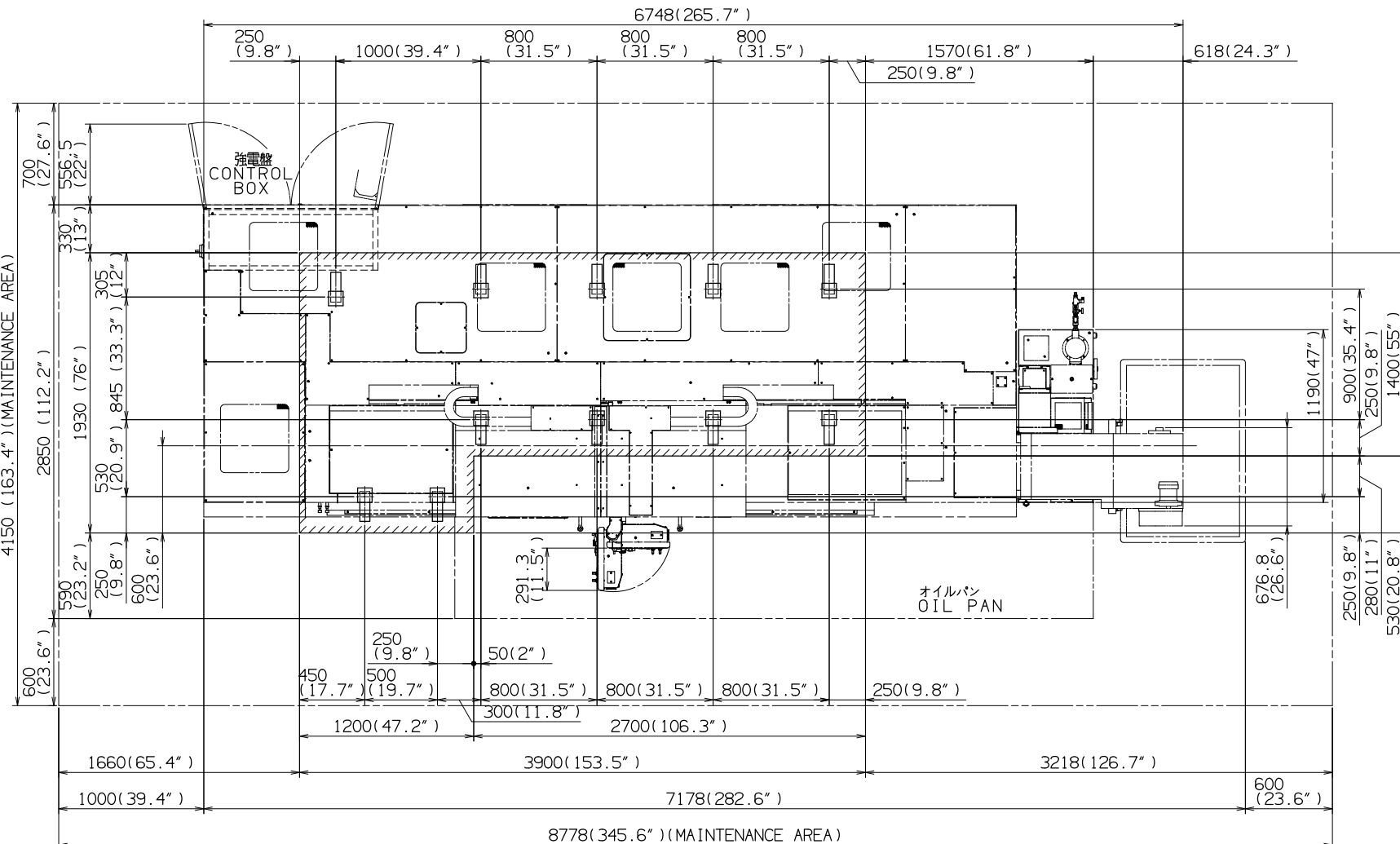
QTN-300□MSY 650U	THROUGH HOLE	CYLINDER TYPE	CYLINDER COVER	TOTAL LENGTH
		B-210A815D + S1877-15Y	YMC STD 80 (3.1")	4548.1 (179")
		BB212A115 + SS2110C15Y	YMC STD 80 (3.1")	4548.1 (179")
		B-15A115B + SS2110C15Y	OPTION 80 (3.1")	4548.1 (179")

THIRD ANGLE PROJECTION
 APP'D: 080709 H.N. CHK'D: 080709 H.N. DSGN: 080709 G.Y. DRAWING: 080709 T.L.L.F.
 SCALE: 1/10 (1/3)
 NAME: 基礎 (QTN-300/350□MSY) FOUNDATION DRAWING
 QTY: 1 DATE: 11.18.09 DC NO.: 4007- TL.K.K SIGN: DRAWING NO.: 0 333 FL ACO1 1
 METRIC/INCH

- 設置条件
 本基礎は、一般の半導体用で、基礎工事を行う時は機械番号に応じて用い、確認して行なって下さい。
1. 接地工事
 1. C 種接地 (接地抵抗 10Ω 以下、接地容量 14mm² 以上) の接地工事を行って下さい。
 2. 注釈事項
 1. フリ石層などにより地耐力 8 t/f/m² 以上の事。
 2. コンクリート圧縮強度 f_c = 180 kgf/cm² (18MPa) 以上、引張り強度 18 kgf/cm² (1.8MPa) 以上の事。
 3. コンクリート亀裂を生じないようとする事。
 4. 基礎の内部に配管がある場合は、事前に第 1 次コンクリートと充分養生するように配慮すること。
 5. 基礎の内部に配管がある場合は、事前に第 1 次コンクリート打ちを行い、充分養生した後に、仮設の土留め 5mm 以内のレベルが出来るように用い、基礎本体をのり、基礎ボルト、鉄線等を組み込んで基礎の穴にコンクリートを流し込んで固める。
 6. 基礎コンクリート打ちの後、コンクリートが完全に固まったら本レベルを出して、ナットを締め付けることにより基礎と機械を固定する。
 7. 基礎ボルト穴を埋めるコンクリートは、乾燥収縮しないよう膨張剤 (テカCSA など) を入れること。
 8. 表面に防水モルタルを塗り、溝をかに仕上げること。
 9. 基礎の完成後が出来る場合は、機械廻りに初期床取用の彫削を施工してください。
 10. コンクリート総体積 約 1.78m³

CONDITION OF INSTALLATION
 The foundation drawings in this volume of specifications are for mere reference. Before construction of the foundation please consult us referring the model and the machine number and get the correct drawing.

1. Grounding
 1. Provide Class C grounding (ground resistance 10 Ω or less, grounding cable 14 mm² or more).
2. Notice
 1. Use gravel stones, to obtain a minimum soil bearing pressure of 8 tonf/m² (11.38 PSI).
 2. Use concrete with minimum compressive strength of 180 kgf/cm² (2560 PSI) and tensile strength of 18 kgf/cm² (256 PSI).
 3. Use cautions not to have the concrete cracked.
 4. Be certain that the inner walls of the foundation bolt pits must be jagged rough and uneven to facilitate the secondary poured concrete to adhere fast with the initial poured concrete.
 5. In the first step, pour the concrete with the holes prepared for foundation bolts. After the etc has been cured enough, install the foundation bolts, leveling blocks and other fittings and establish the rough level of the machine with 5 mm (0.2 in.) in the second step, pour the concrete into the foundation bolt holes to secure the foundation bolts in the floor.
 6. When pouring the secondary concrete into the foundation bolt pits, level the machine and secure the leveling block to the machine by tightening the nuts after the concrete has been cured.
 7. It is advisable to mix the proper inflating agent (such as Denka CSA) in the concrete used to fill the anchor bolt pits so as to prevent the concrete from contracting after it has cured.
 8. The surface of concrete for the foundation pits should be finished smoothly with the water-proof mortar.
 9. When complete water-proof on the floor is needed, ditches for collecting coolants should be made around the machine.
 10. Total volume of concrete 1.78m³(62.9ft³)

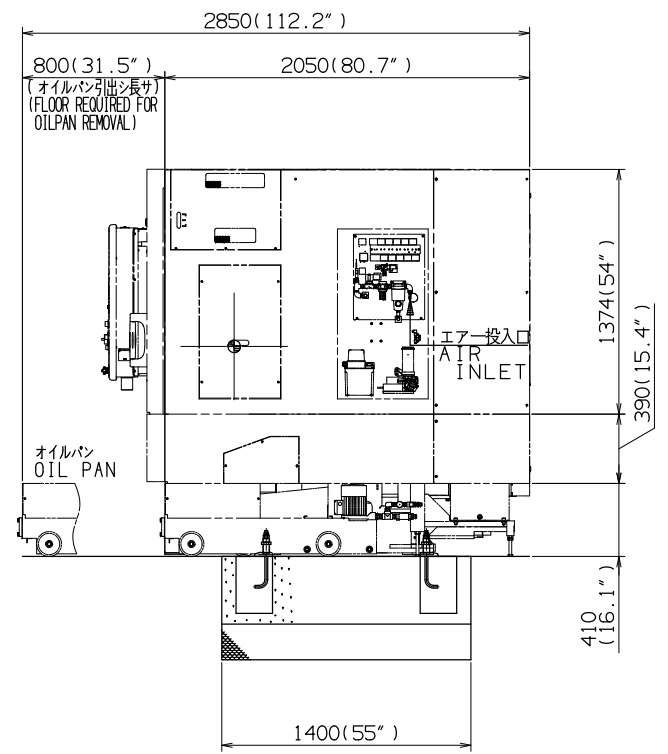
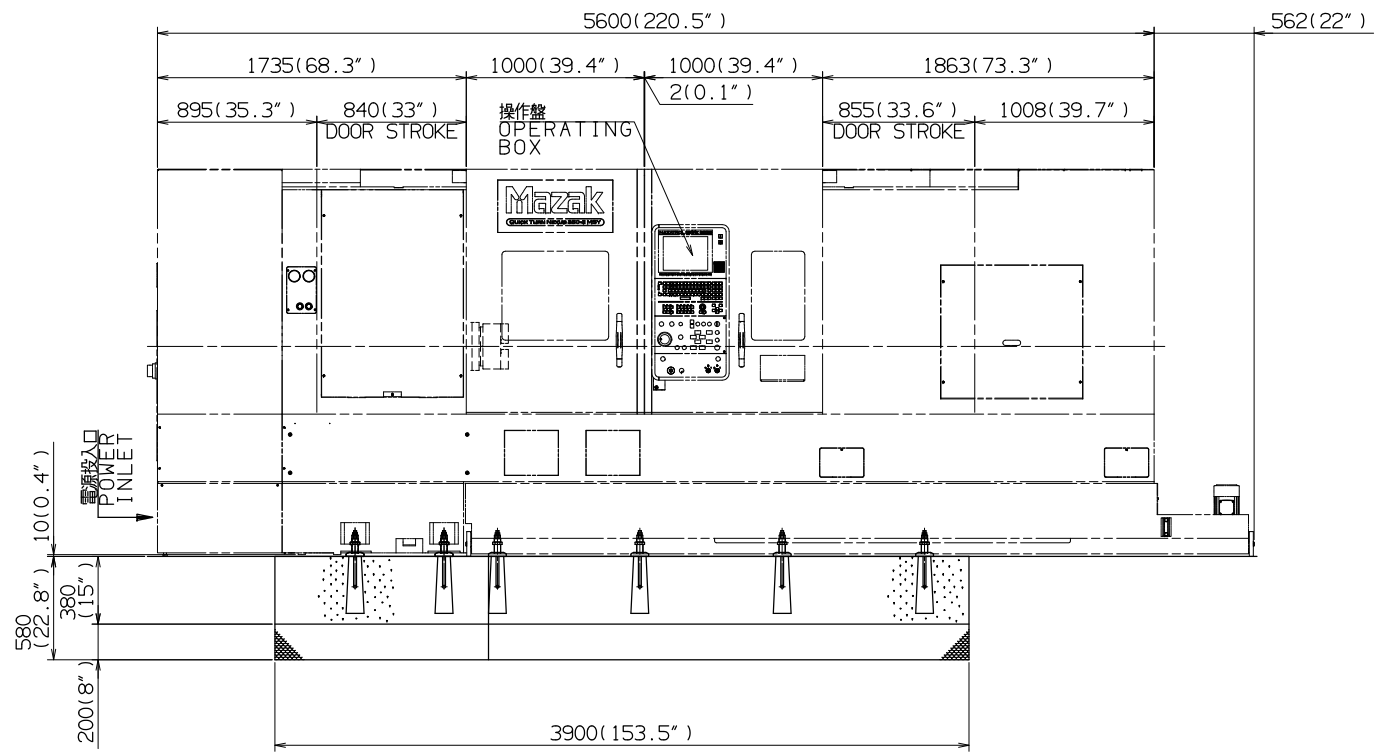
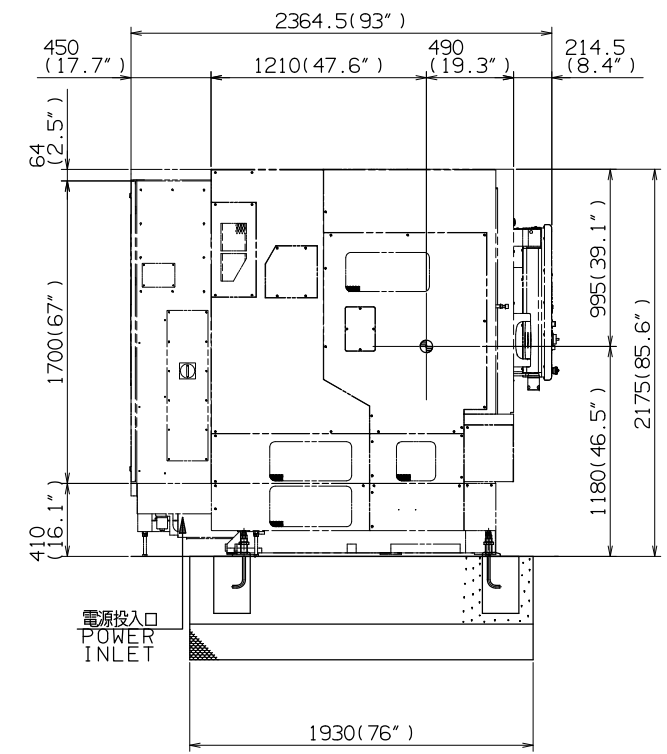
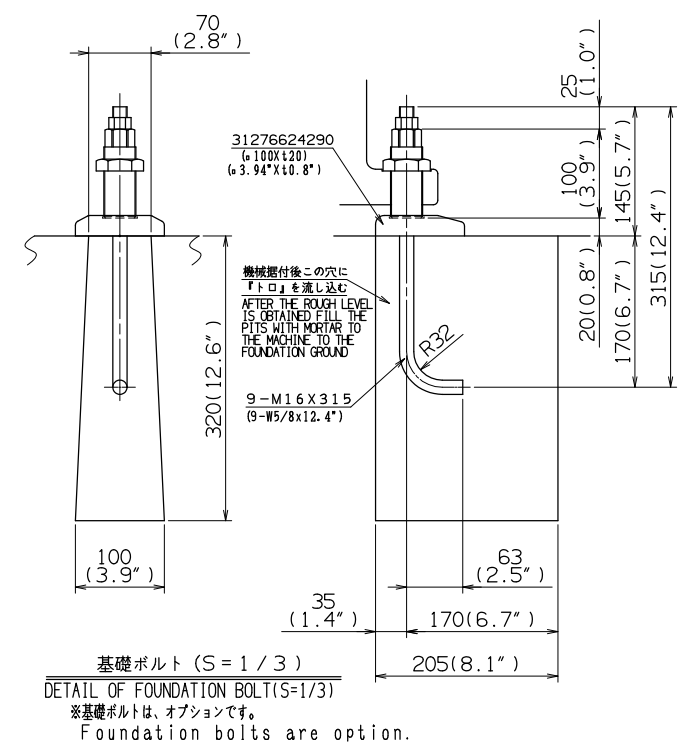
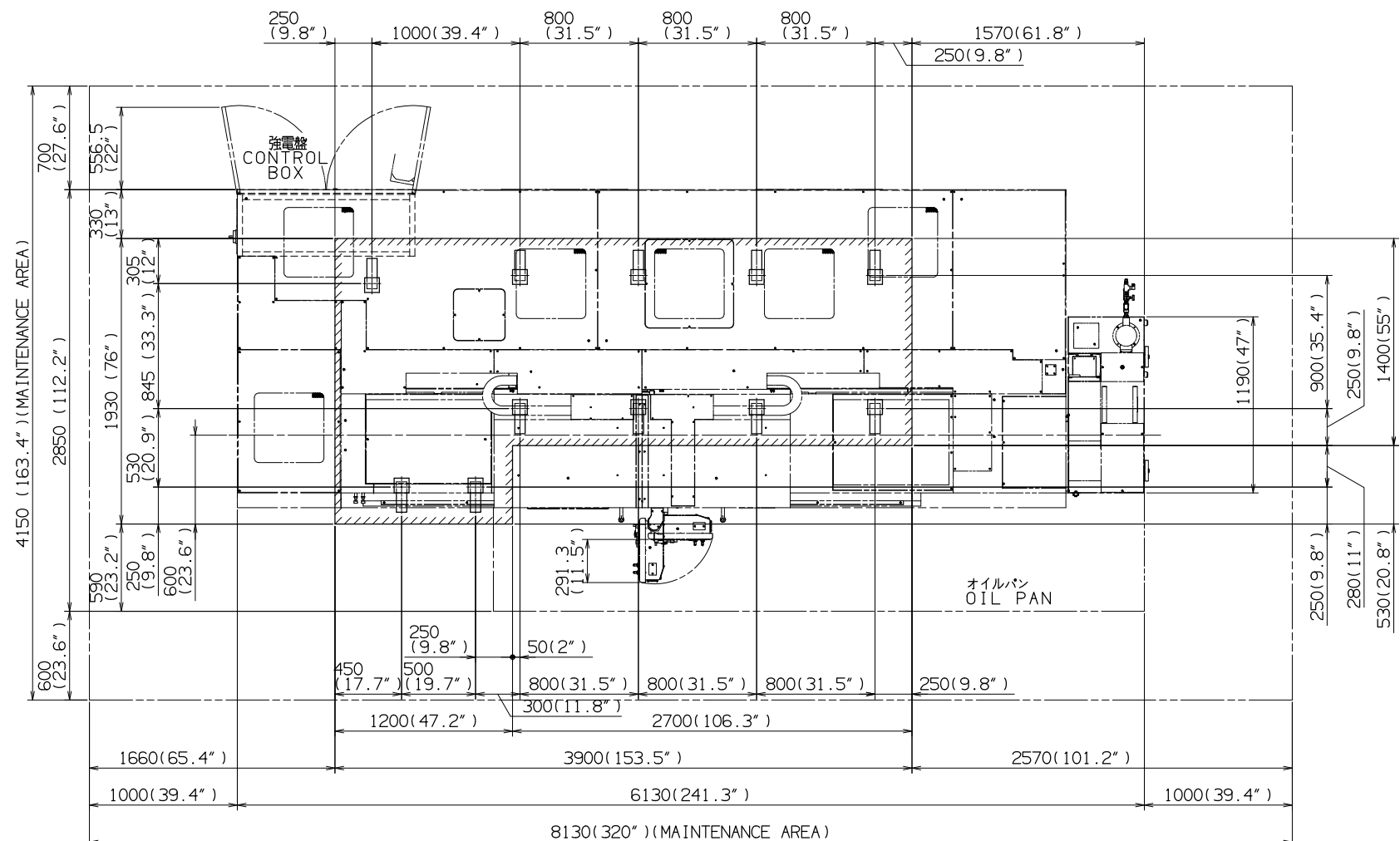


THIRD ANGLE PROJECTION				
APP'D	CHK'D	DSGN	DRAWING	
080310	080310	080310	080310	080310
H.N	H.N	G.Y	TL.K.K	
SCALE			NAME	
1/15			基礎 (QTN-300/350) MSY	
(1/3)			FOUNDATION DRAWING	
DRAWING NO. 0 333 FL C003 0				

QTN300/350□MSY 1500U (YMC) WITH SIDE DISCHARGE CV. チップコンベア横出し mm(inch)

- 設置条件
 本基礎図は、一般的な条件での基礎工事を行う際の機械等に対しての図であり、確認して行って下さい。
1. 接地工事
 1. 接地抵抗 (接地抵抗 10Ω以下、接地容量 14mm²以上) の接地工事を行って下さい。
 2. 注意
 1. 基礎土質 (接地抵抗 10Ω以下、接地容量 14mm²以上) の事。
 2. コンクリート圧縮強度 $f_c = 180 \text{ kgf/cm}^2$ (18MPa) 以上、引張強度 $f_t = 18 \text{ kgf/cm}^2$ (1.8MPa) 以上の事。
 3. コンクリート亀裂を生じないようにする事。
 4. 基礎土質が硬い場合は、掘削機でコンクリートと充分密着するように設置すること。
 5. 基礎土質が硬い場合は、掘削機でコンクリートと充分密着するように設置すること。掘削機が5mm以内のレベルが得られるように掘削し、基礎土質を、基礎ボルト、鉄線等を組み込んで基礎ボルトにコンクリートを固めなければならない。
 6. 基礎コンクリート打つ直後、コンクリートが完全に固まらなれば、ナットを締め付けるとコンクリートが割れる。
 7. 基礎ボルトを埋めるコンクリートは、乾燥収縮しないよう膨張剤 (デンカCSAなど) を入れること。
 8. 基礎土質が硬い場合は、掘削機でコンクリートと充分密着するように設置すること。
 9. 基礎の完成後、必要に応じて、掘削機で初期床面の掘削を施工してください。
 10. コンクリート総体積 約 1.78m³

- CONDITION OF INSTALLATION
 The foundation drawings in this volume of specifications are for more reference. Before construction the foundation please consult us referring the model and the machine number and get the correct drawing.
1. Grounding
 1. Provide Class C grounding (ground resistance 10 Ω or less, grounding cable 14 mm² or more).
 2. Notice
 1. Use gravel stones, to obtain a minimum soil bearing pressure of 8 tonf/m² (11.38 PSI).
 2. Use concrete with minimum compressive strength of 180 kgf/cm² (2560 PSI) and tensile strength of 18 kgf/cm² (256 PSI).
 3. Use cautions not to have the concrete cracked.
 4. Be certain that the inner walls of the foundation bolt pits must be jagged rough and uneven to facilitate the secondary poured concrete to adhere fast with the initial poured concrete.
 5. In the first step, pour the concrete with the holes prepared for foundation bolts. After the etc has been cured enough, install the foundation bolts, leveling blocks and other fittings and establish the rough level of the machine with 5 mm (0.2 in.) in the second step, pour the concrete into the foundation bolt holes to secure the foundation bolts in the floor.
 6. When pouring the secondary concrete into the foundation bolt pits, level the machine and secure the leveling block to the machine by tightening the nuts after the concrete has been cured.
 7. It is advisable to mix the proper inflating agent (such as Denka CSA) in the concrete used to fill the anchor bolt pits so as to prevent the concrete from contracting after it has cured.
 8. The surface of concrete for the foundation pits should be finished smoothly with the water-proof mortar.
 9. When complete water-proof on the floor is needed, ditches for collecting coolant should be made around the machine.
 10. Total volume of concrete 1.78m³ (62.9ft³)



QTN300/350□MSY 1500U (YMC) WITHOUT CHIP CV. チップコンベア無し mm(inch)

THIRD ANGLE PROJECTION				
APP'D	CHK'D	DSGN	DRAWING	
080310	080310	080310	080310	080310
H.N	H.N	G.Y	TL.K.K	
SCALE		NAME		
1/15 (1/3)		基礎図 (QTN-300/350□MSY)		
		FOUNDATION DRAWING		
DRAWING NO.		0	333	FL
QTY	DATE	DC NO.	SIGN	0



6 DETAILED COMPONENT SPECIFICATIONS

6-1 Headstock (Spindle)

A variable-speed AC spindle motor is built into the headstock, and the spindle is driven directly by this built-in motor.

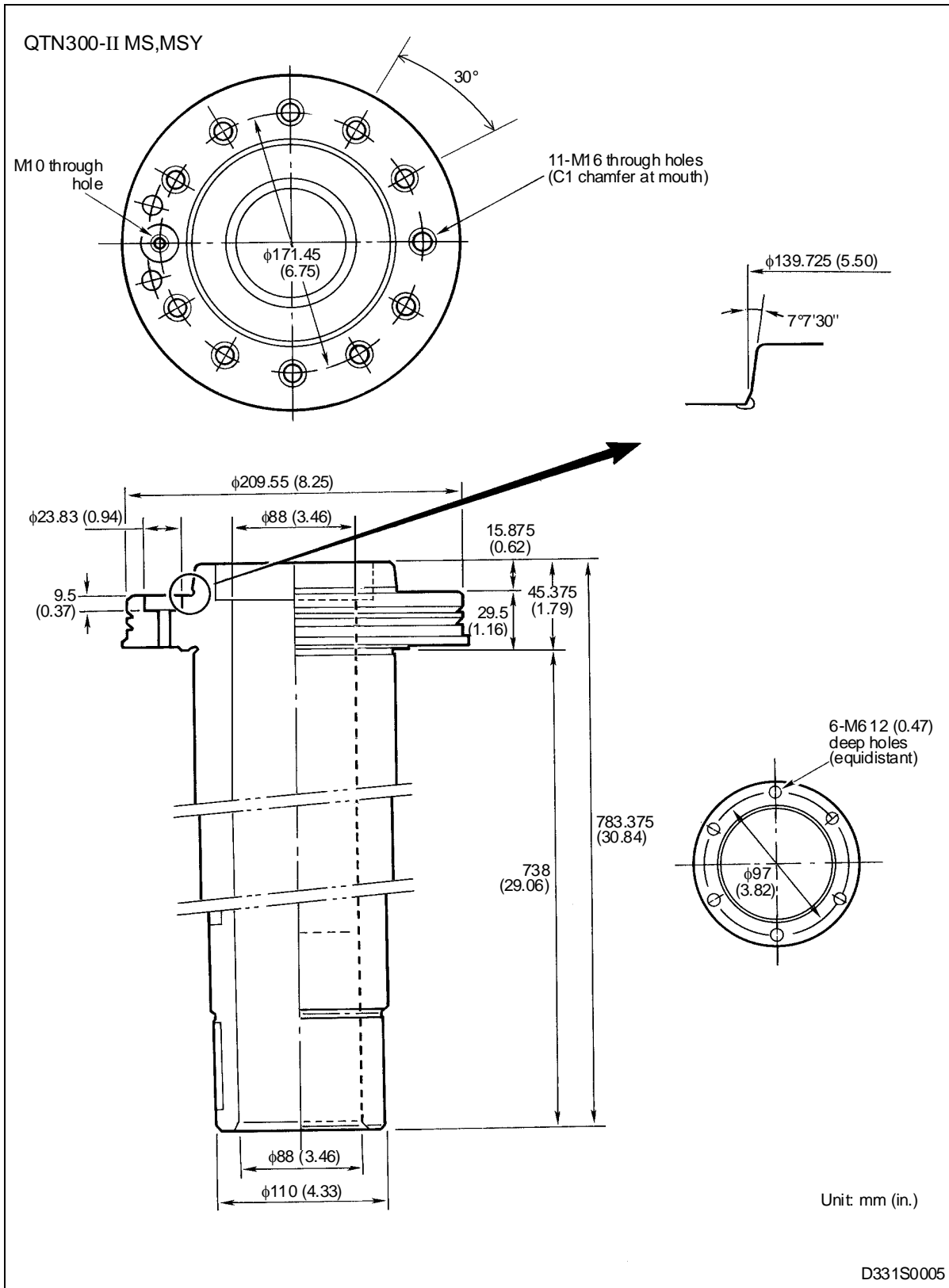
6-1-1 Specifications

Item		Unit	QTN300-II MS MSY	QTN350-II MS MSY	
Spindle end shape		—	JIS A2-8"	JIS A2-11"	
Through-hole diameter		mm [in.]	φ91φ3.58	φ112 [φ4.41]	
Spindle speed		min ⁻¹ (rpm)	35 to 4000	35 to 3300	
Speed change of spindle		—	Fully automatic stepless gear shift (coil selection type) [Fixed surface velocity control possible]		
Spindle motor	Type	—	Built-in AC spindle motor		
	Model	—	SJ-4B6913K		
	Output	30-min. rating	kW [HP]	26 [35]	30 [40]
		Cont. rating		22 [30]	22 [30]
Spindle torque (30-min. rating)		N·m (kgf·m) [ft·lbs]	808 (82.4) [596]		
Spindle bearing	Front bearing (1)	Type	Dual cylindrical roller bearing		
		Model (Maker)	—	NN3026KC9NA FWPZU00 B (KOYO) NN3026MBKRCC9P4YU17 (NSK)	NN3030KC9NA FWPZU00 B (KOYO) NN3030MBKRCC9P4BU17 (NSK)
		ID	mm [in.]	φ130 [φ5.12]	φ150 [φ5.91]
		OD		φ200 [φ7.87]	φ225 [φ8.86]
		Width		52 [2.05]	56 [2.20]
		Basic dynamic load rating	kN [lbs]	283 [63621] (KOYO) 284 [63846] (NSK)	334 [75086] (KOYO) 335 [75311] (NSK)
	Front bearing (2)	Type	—	Angular ball bearing	
		Model (Maker)	—	ACT026-6DB14 FGPZU00 B (KOYO) 130BAR10STYNDBCP15P4 AYU17 (NSK)	ACT030-6DB16 FGPZU00 B (KOYO) 150BAR10STYNDBCP10P4 AYU17 (NSK)
		ID	mm [in.]	φ130 [φ5.12]	φ150 [φ5.91]
		OD		φ200 [φ7.87]	φ225 [φ8.86]
		Width		63 [2.48]	67.5 [2.66]
		Basic dynamic load rating	kN [lbs]	94.2 [21177] (KOYO) 72.5 [16299] (NSK)	120 [26977] (KOYO) 92.5 [20795] (NSK)
	Rear bearing	Type	—	Cylindrical roller bearing	
		Model (Maker)	—	N1022-1KC9NA FYPZU00 B (KOYO) N1022BMR1KRCC9P5YU17 (NSK)	N1028KC9NA FYPZU00 B (KOYO) N1028BMR1KRCC9P5YU17 (NSK)
		ID	mm [in.]	φ110 [φ4.33]	φ140 [φ5.51]
		OD		φ170 [φ6.69]	φ210 [φ8.27]
		Width		28 [1.10]	33 [1.30]
		Basic dynamic load rating	kN [lbs]	117 [26303] (KOYO) 126 [28326] (NSK)	175 [39342] (KOYO) 164 [36869] (NSK)
Spindle bearing lubrication		—	Grease lubrication		
Spindle cooling	Cylinder	—	Water cooling by headstock cooling unit		
	Inside		Air cooling by fan		
Encoder	Type	—	ERM280 1200P	ERM280 2048P	
C-axis brake/clamp mechanism	Type	—	Hydraulic disk brake/clamp		
	Clamp torque	N·m (kgf·m) [ft·lbs]	3842 (392) [2834]		
Minimum c-axis command unit		degree	0.0001°/pulse		

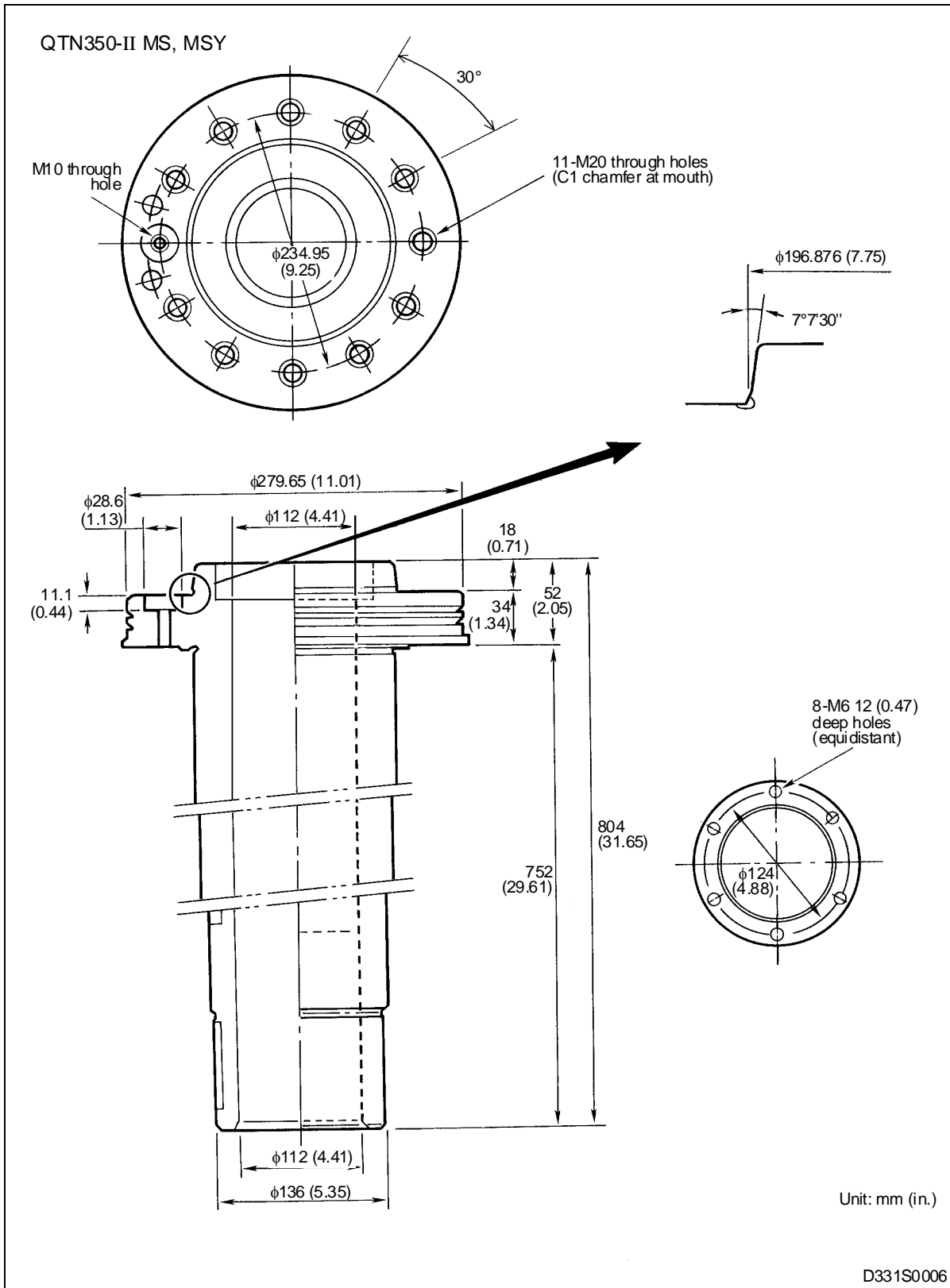
Item	Unit	QTN300-II MS MSY	QTN350-II MS MSY
C-axis rapid feedrate	min ⁻¹ (rpm)	555	
C-axis rated torque (15% ED)	N·m (kgf·m) [ft·lbs]	808 (82.4) [596]	
C-axis positioning accuracy *1	sec	20	
C-axis repeatability *1	sec	8	

*1 Positioning MAZAK specifications that were measured in accordance with ISO standards

6-1-2 Spindle nose diagram (QTN300-II MS, MSY: JIS A2-8")

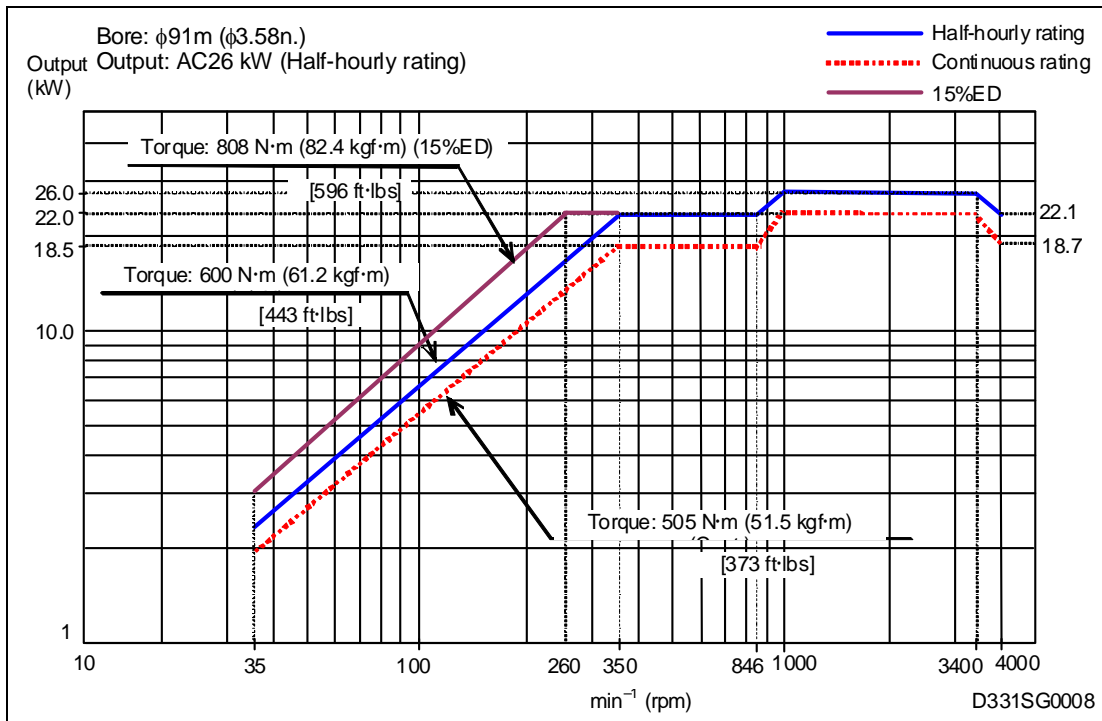


6-1-3 Spindle nose diagram (QTN350-II MS, MSY: JIS A2-11")

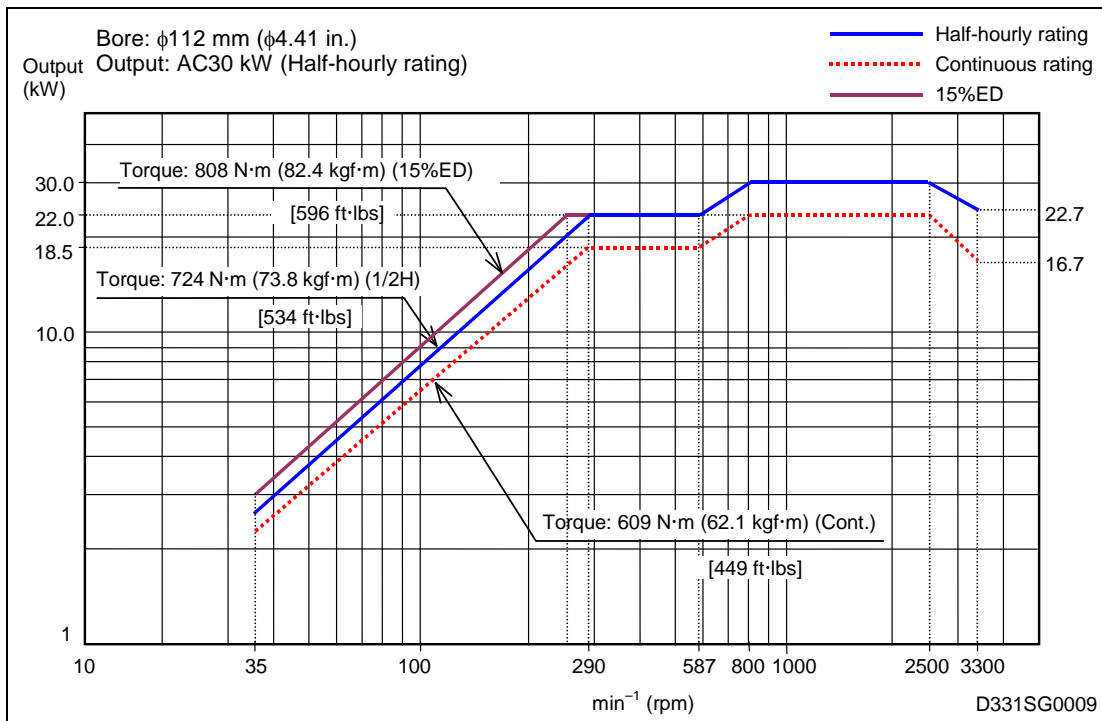


6-1-4 Spindle motor characteristics

1. QTN300-II MS, MSY



2. QTN350-II MS, MSY



6-1-5 Headstock cooling unit

The headstock is cooled using the coolant supplied from the headstock cooling unit and the air supplied from the fan. The coolant that has been fed in from the tank of the headstock cooling unit by a centrifugal pump is supplied to the headstock, then cooled by a radiator (fan cooler), and recycled into the tank.

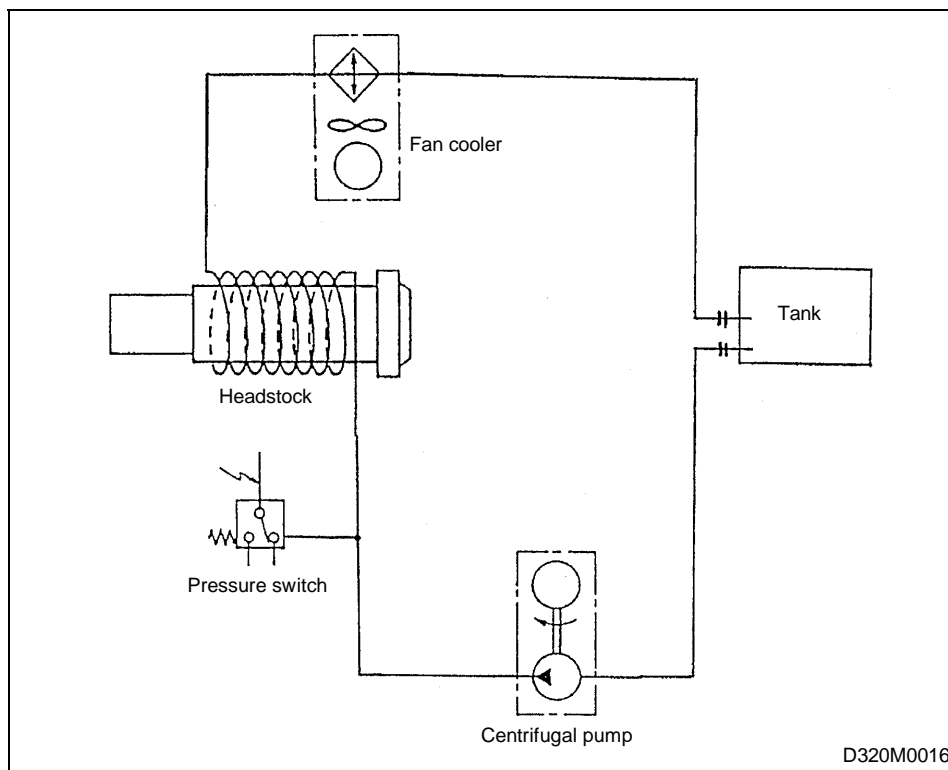
The headstock cooling unit is installed in integrated form with the headstock.

1. Specifications

Item		Unit	Specification
Pump	Type	—	Centrifugal pump (Grundfos)
Motor of pump		—	100 W/120 W 2P
No-load pump discharge capacity		L/min	14.2 [3.75] (at 50 Hz, 1500 min ⁻¹ (rpm))
		[gal/min (US)]	17.0 [4.49] (at 60 Hz, 1800 min ⁻¹ (rpm))
Rated pump pressure		MPa [PSI]	0.88 [128.07] (at 50 Hz, 1500 min ⁻¹ (rpm))
			0.69 [99.61] (at 60 Hz, 1800 min ⁻¹ (rpm))
Radiator	Type	—	Fan cooler MAC-7 (MAC)
	Quantity	pc.	1
Tank capacity		L [gal (US)]	5.5 [1.45]
Recommended fluid		—	Distilled water or ion exchange water 50 % LONG LIFE COOLANT YZ (MOBIL) 50 % *

* LONG LIFE COOLANT YZ is a special brand for Yamazaki Mazak.

2. Headstock cooling system



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6-2 Headstock (2nd Spindle)

A variable-speed AC spindle motor is built into the headstock, and the spindle is driven directly by this built-in motor.

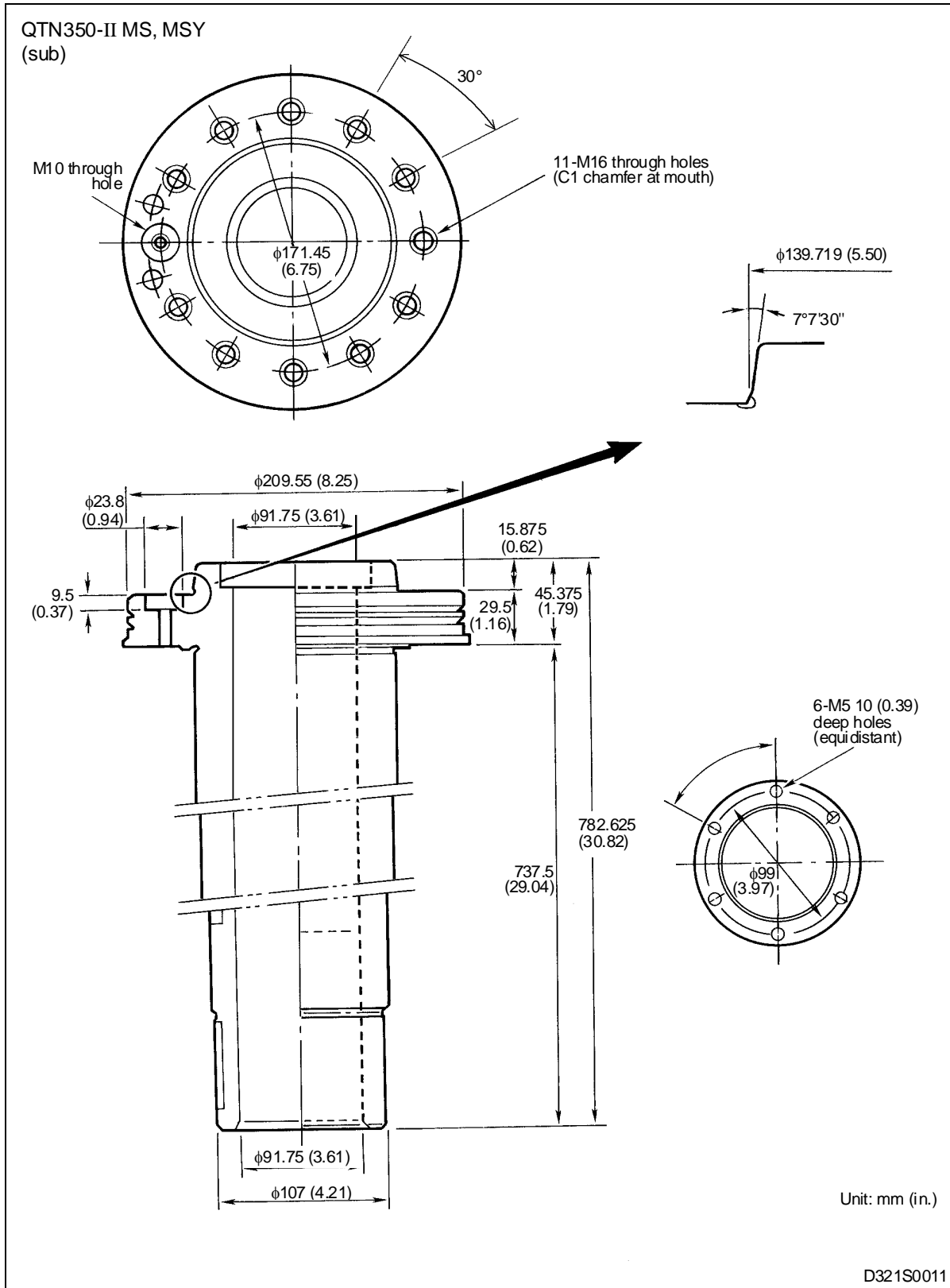
6-2-1 2nd Spindle specifications

Item		Unit	QTN300/350 II MS/MSY	
Spindle end shape		—	JIS A2-8"	
Spindle through-hole diameter		mm [in.]	φ91 [φ3.58]	
Taper of spindle bore		—	Straight through hole	
Spindle speed		min ⁻¹ (rpm)	35 to 4000	
Speed change of spindle		—	Fully automatic stepless gear shift (coil selection type) [Fixed surface velocity control possible]	
Spindle motor	Type	—	Built-in AC spindle motor	
	Model	Japan, Asia	SJ-4B6712TK	
		USA, EU		
	Output (30-min./continuous rating)	Japan, Asia	kW [HP]	26/22 [35/30]
USA, EU				
Max. spindle torque		Japan, Asia USA, EU	N·m (kgf·m) [ft·lbs]	465 (47.4) [343]
Spindle bearing	Front bearing	Type	—	Dual cylindrical roller bearing
		Model	—	NN3026MBKRCC1P4
		Maker	—	NSK
		ID	mm [in.]	φ130 [φ5.12]
		OD		φ200 [φ7.87]
		Width		52 [φ2.05]
		Basic dynamic load rating	kN [lbs]	284 [63845]
	Front bearing	Type	—	Angular ball bearing
		Model	—	130BARS10XTYDBCP5P4
		Maker	—	NSK
		ID	mm [in.]	φ130 [φ5.12]
		OD		φ200 [φ7.87]
		Width		63 [2.48]
		Basic dynamic load rating	kN [lbs]	67.5 [15174]
	Rear bearing	Type	—	Cylindrical roller bearing
		Model	—	N1022BMR1KRCC9P5
		Maker	—	NSK
		ID	mm [in.]	φ110 [φ4.33]
		OD		φ170 [φ6.69]
		Width		28 [1.10]
		Basic dynamic load rating	kN [lbs]	126 [28325]
Spindle bearing lubrication		—	Grease lubrication	
Headstock cooling		—	Water cooling by cooling unit + Air cooling	
Encoder	Type	—	ERM280-φ110	

Item		Unit	QTN300/350 II MS/MSY
C-axis brake/clamp mechanism	Type	—	Hydraulic disk brake/clamp
	Clamp torque	N·m (kgf·m) [ft·lbs]	1780 (182) [1313]
Minimum C-axis command unit		degree	0.0001°/pulse
C-axis rapid feedrate		min ⁻¹ (rpm)	555
C-axis rated torque (15%ED)	Japan, Asia	N·m (kgf·m) [ft·lbs]	465 (47.4) [343]
	USA, EU		
C-axis positioning accuracy	*1	sec	20
C-axis repeatability	*1	sec	8

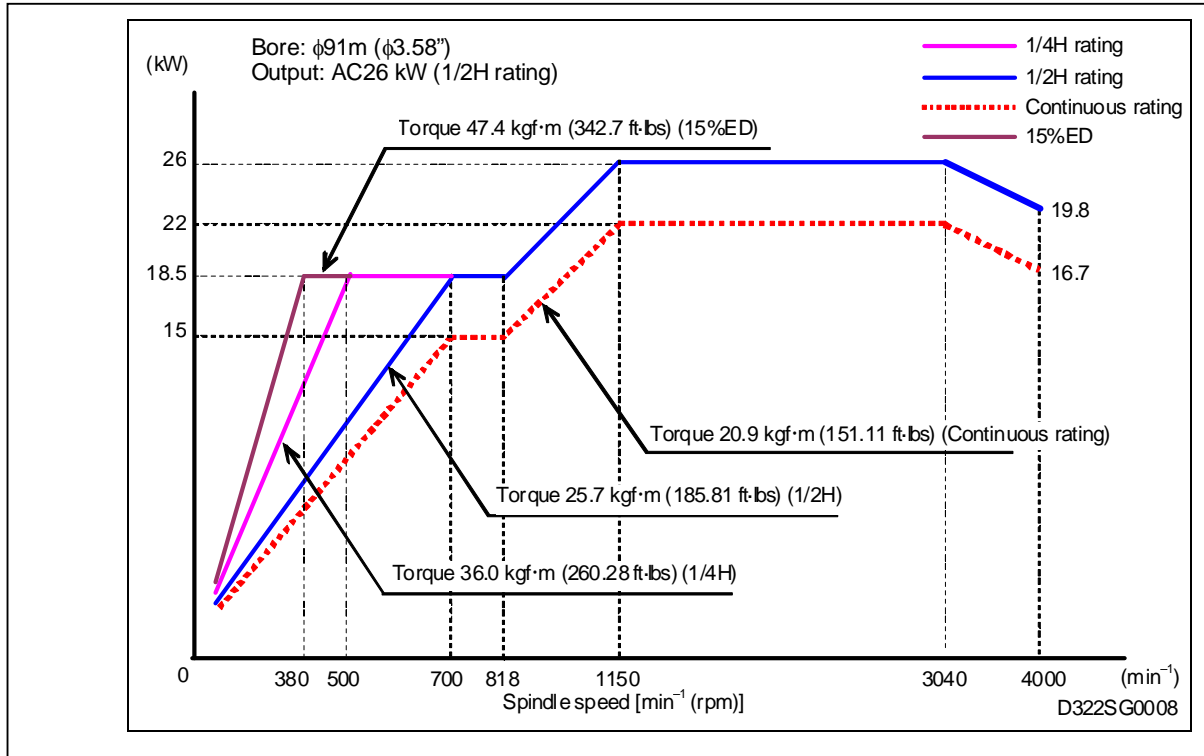
*1 Positioning MAZAK specifications that were measured in accordance with ISO standards

2nd Spindle nose diagram (QTN300/350-II MS, MSY: JIS A2-8")



6-2-2 Spindle motor characteristics

QTN300/350-II 2nd Spindle MS, MSY



6-2-3 Headstock cooling unit

The headstock is cooled using the coolant supplied from the headstock cooling unit and the air. The coolant that has been fed in from the tank of the headstock cooling unit by a centrifugal pump is supplied to the headstock, then cooled by a radiator (fan cooler), and recycled into the tank.

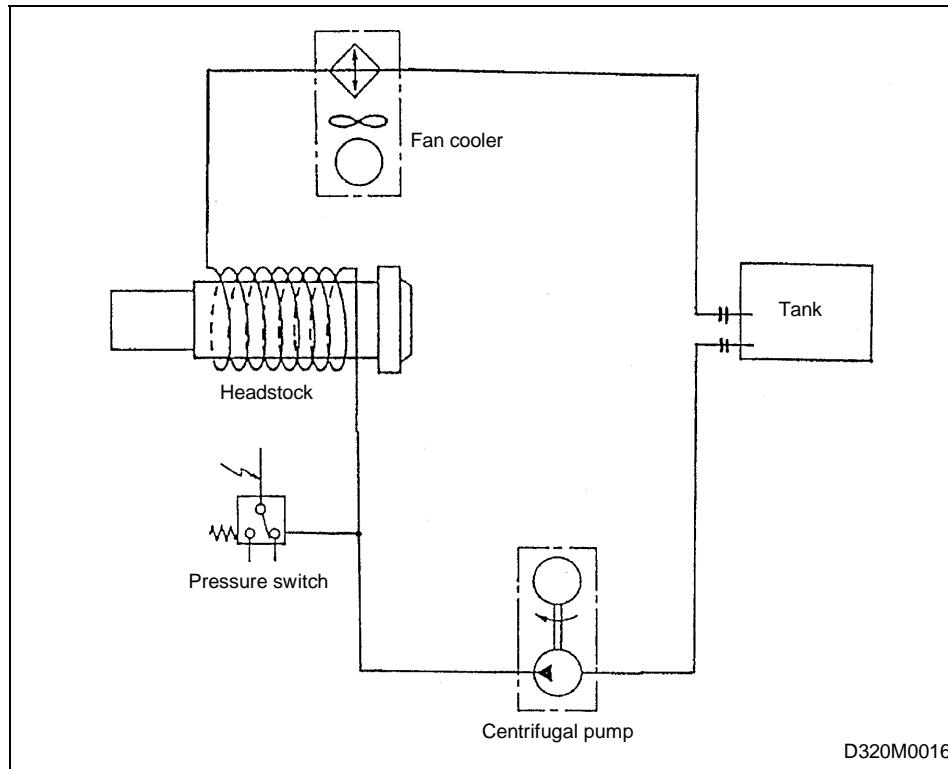
The headstock cooling unit is installed in integrated form with the headstock.

1. Specifications

Item		Unit	Specification
Pump	Type	—	Centrifugal pump (Grundfos)
	Motor of pump	—	100 W/120 W 2P
No-load pump discharge capacity	L/min [gal/min (US)]	—	14.2 [3.75] (at 50 Hz, 1500 min ⁻¹ (rpm))
			17.0 [4.49] (at 60 Hz, 1800 min ⁻¹ (rpm))
Rated pump pressure	—	MPa [PSI]	0.88 [128.07] (at 50 Hz, 1500 min ⁻¹ (rpm))
			0.69 [99.61] (at 60 Hz, 1800 min ⁻¹ (rpm))
Radiator	Type	—	Fan cooler MAC-7 (MAC)
	Quantity	pc.	1
Tank capacity		L [gal (US)]	5.5 [1.45]
Recommended fluid		—	Distilled water or ion exchange water 50 % LONG LIFE COOLANT YZ (MOBIL) 50 %*

* LONG LIFE COOLANT YZ is a special brand for Yamazaki Mazak.

2. Headstock cooling system



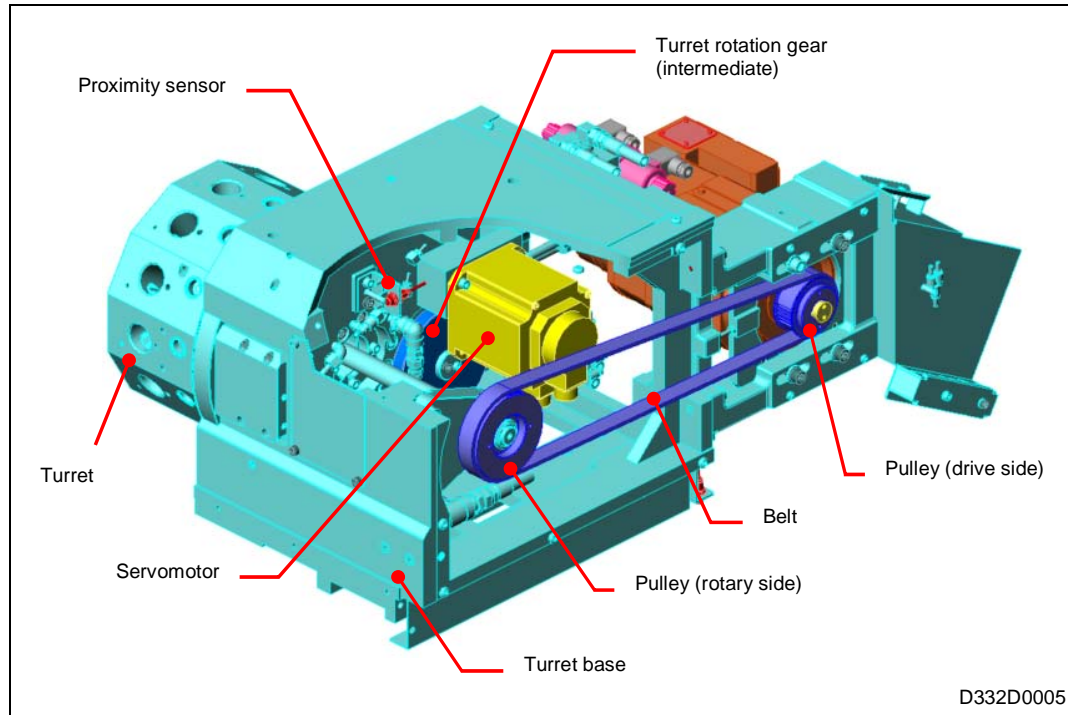
6-3 Turret

The turret allows 12 tools to be mounted and a rotary tool to be mounted in any position. Unlike the bolt-on fixing scheme, this turret scheme makes it possible to change tools, together with the tool holder, with one operation.

The turret is hydraulically clamped and unclamped, and rotated by an AC servomotor.

Rotary tools are driven by an AC spindle motor via a milling spindle and a timing belt.

The milling spindle is connected by an air cylinder and disconnected by the action of a spring.



6-3-1 Turret specifications

1. Turret specifications

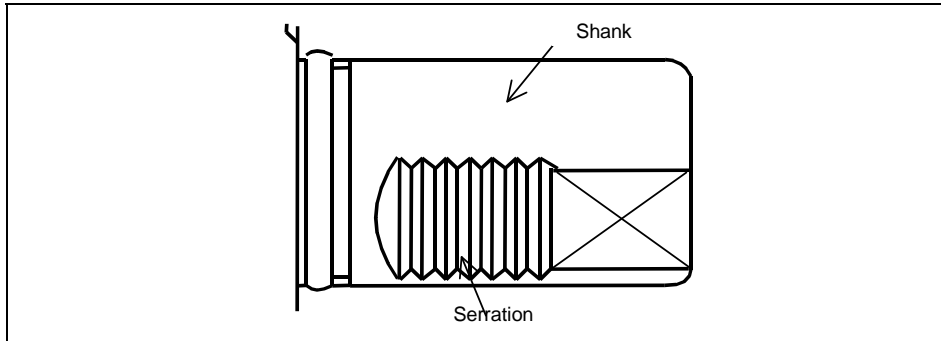
Item		Unit	QTN300-II/350-II MS, MSY
Turret type		—	Dodecagonal drum turret (VDI type for straight shank) NOTE
Number of tools		—	12 Rotary tools can be mounted on any positions.
Shank diameter		mm [in.]	φ50 [φ1.97]
Tool size	OD/edge machining tool	mm [in.]	□25 × 150 (□1 × 6)
	Boring bar		φ50 [φ2]
	Rotary tool		Drill
		End mill	MAX H: φ25 [φ0.98] V: φ25 [φ0.98]
	Tap	mm	M24 × 3.0
Turret rotating motor	Type	—	AC servomotor
	Model (Maker)	—	HC-SF202K (Mitsubishi Electric)
Turret rotating scheme	Automatic mode	—	Short-distance random scheme
	Manual mode	—	Selective bidirectional rotation

Item		Unit	QTN300-II/350-II MS, MSY
Turret rotating time	1 step	sec	0.25
	Full step (6 steps)		0.8
Turret clamping scheme		—	Hydraulic cylinder
Clamping force		kgf [lbs]	8264 [18180]
Coolant nozzle		—	For each tool

2. Milling function specifications

Item		Unit	QTN300-II/350-II MS, MSY	
			4000 min ⁻¹ (rpm)	6000 min ⁻¹ (rpm)
Motor for milling tools	Type	—	SJ-4-V7.5-15M	
	Output	kW [HP]	7.5 [10]	
Rotary tool speed change type		—	Stepless automatic speed change	
Rotary tool max. torque (4-min. rating)		N·m (kgf·m) [ft·lbs]	95 (9.7) [70]	48 (4.9) [35]
Milling spindle connection/release	Connection	—	Air cylinder	
	Release	—	Spring return	

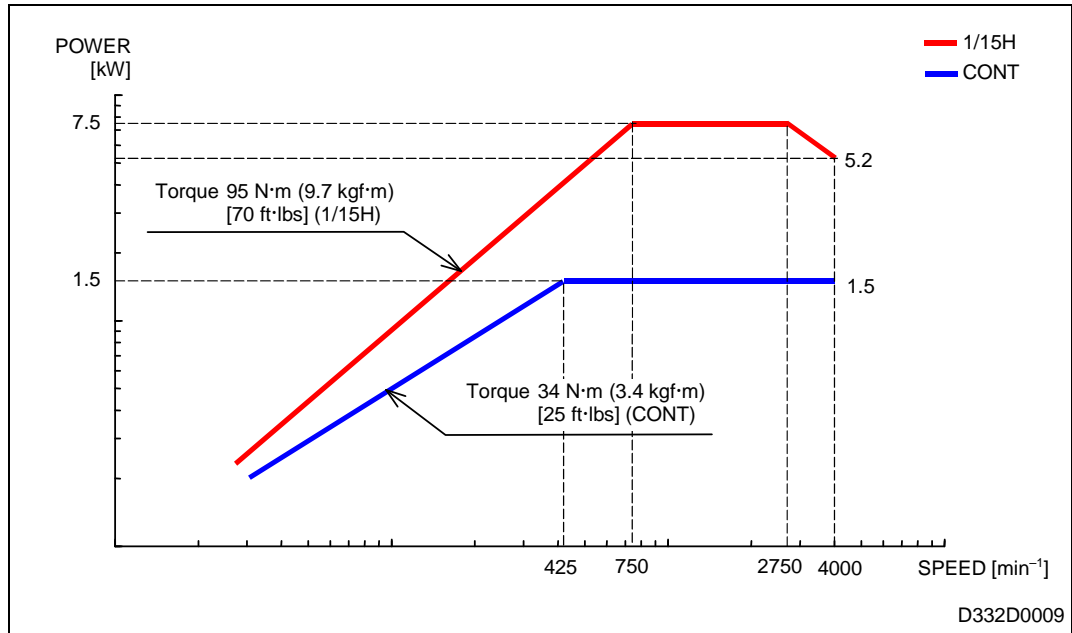
Note: The turrets of this machine will be provided with that tool holder of the VDI scheme (tool fixing by engagement of a serration) that has a shank of the shape shown below.



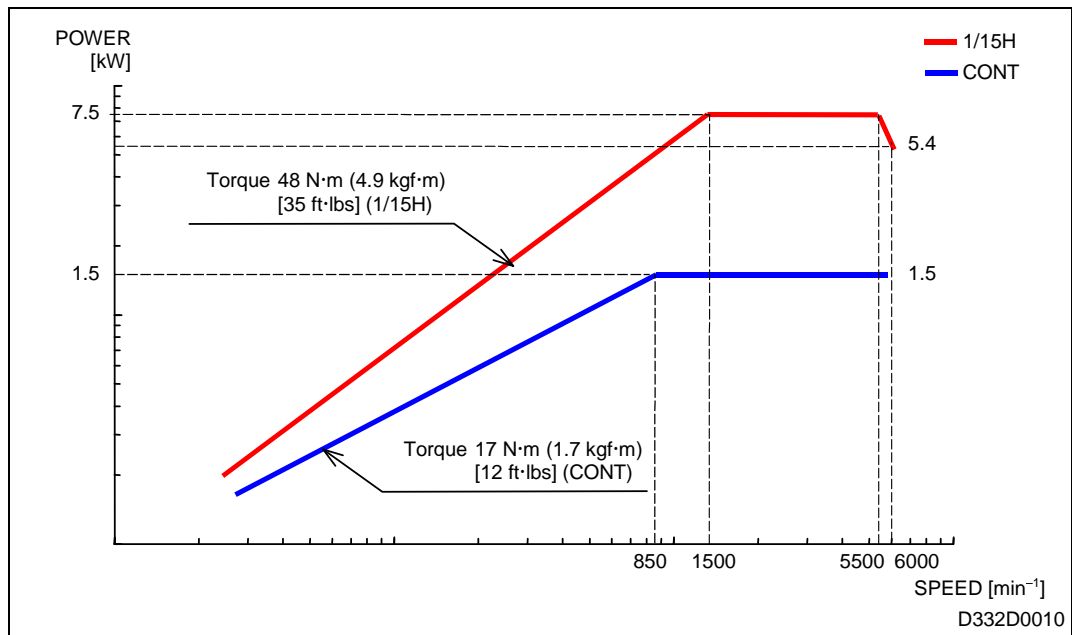
However, a tool holder for VDI-standardized tools cannot be used.

6-3-2 Rotary tool characteristics

1. Rotary tool characteristics 4500 RPM (Standard for QTN300-II/350-II MS, MSY)



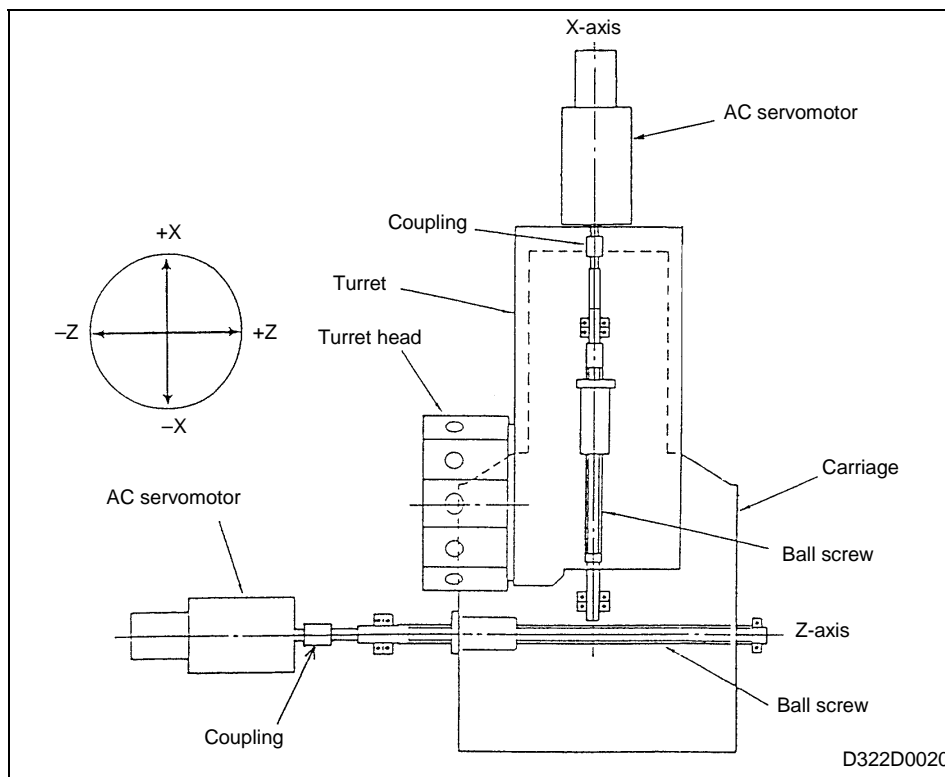
2. Rotary tool characteristics 6000 RPM (Optional for QTN300-II/350-II MS, MSY)



6-4 Axis Feed

6-4-1 X-axis, Z-axis

The turret base and the carriage (carriage base) are driven respectively by the X-axis or Z-axis AC servomotor via the ball screw to move in the respective direction. The position encoder is located at the end of the motor and the motor is directly connected to the ball screw by coupling ensuring high positioning accuracy.



6-4-2 X-axis feed mechanism specifications

Item		Unit	QTN300-II/350-II MS, MSY
Travel		mm [in.]	275 (270+5) [10.75 (10.55+.2)]
Minimum setting unit		mm [in.]	0.0001 [0.00001]
Maximum cutting feed rate		m/min [IPM]	8 [315.0]
Rapid traverse		m/min [IPM]	30 [1181.1]
Rapid feed time constant		msec	110
Thrust	Continuous	kgf [lbs]	+ direction 264 [582]
			- direction 1094 [2412]
	Maximum (150%)		+ direction 659 [1453]
			- direction 1489 [3283]
Ball screw	Diameter	mm [in.]	$\phi 36$ [$\phi 1.42$]
	Lead		10 [0.39]
	Support		—

Item		Unit	QTN300-II/350-II MS, MSY	
Bearing	Top side	Model (Maker)	—	Tack bearing 30TAB06DB (NACHI)
		Shaft diameter	mm [in.]	φ30 [φ1.18]
	Motor side	Model (Maker)	—	Tack bearing 30TAB06DB (NACHI)
		Shaft diameter	mm [in.]	φ30 [φ1.18]
Servomotor		Model (Maker)	—	AC servomotor HF-H204BS-A48 (Mitsubishi Electric)
		Output	kW [HP]	2.0 [2.7]
Brake		Type	—	With built-in servomotor
		Static friction torque	N·m (kgf·m) [ft·lbs]	43.1 (4.4) [31.8]
Coupling		Model (Maker)	—	Rigid coupling ERC25-35CX25C-L90 (Tsubakimoto Emerson)
		Shaft diameter	mm [in.]	φ25 × φ35 [φ0.98 × φ1.38]
Linear guide		Model (Maker)	—	SRG45LC2SSCOE+935LP-II (THK)
Lubrication		Ball screw	—	Grease lubrication (Automatic intermittent lubrication by the lubrication unit)
		Linear guide		

6-4-3 Z-axis feed mechanism specifications

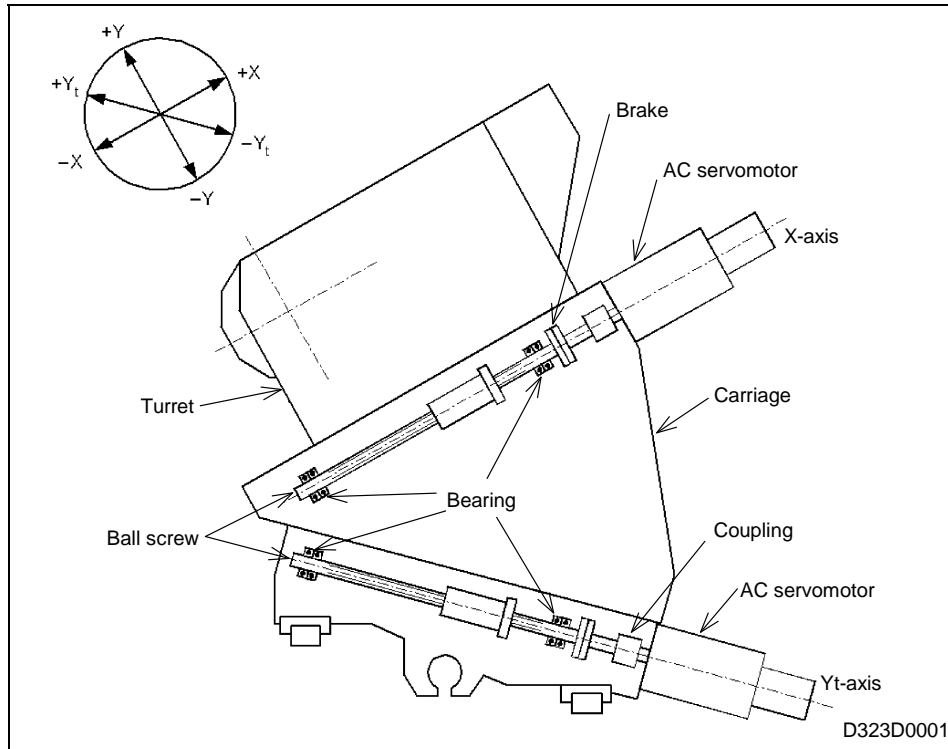
1.

Item	Unit	QTN300-II/ 350-II MS/MSY	
		650	1500
Travel	mm [in.]	670 (520+150) [26.25 (20.5+5.75)]	1605 (1455+150) [63.19(57.28+5.75)]
Minimum setting unit	mm [in.]	0.0001 [0.00001]	
Maximum cutting feed rate	m/min [IPM]	8 [315]	
Rapid traverse	m/min [IPM]	33 [1299]	
Rapid feed time constant	msec	93	
Thrust	Continuous	985 [2170]	
	Maximum (150%)	1526 [3361]	

Item		Unit	QTN300-II/ 350-II MS/MSY			
			650		1500	
Ball screw	Diameter	mm [in.]	φ40 [φ1.57]			
	Lead		12 [0.47]			
	Support	—	Front end: supported, Motor end: fixed			
Bearing	Top side	Model (Maker)	—	Deep groove ball bearing 6205ZZ (KOYO)		
		Shaft diameter	mm [in.]	φ25 [φ0.98]		
	Motor side	Model (Maker)	—	Tack bearing 35TAB07DB (NACHI)		
		Shaft diameter	mm [in.]	φ35 [φ1.38]		
Servomotor	Model (Maker)	—	AC servomotor HC-H354S-A48 (Mitsubishi Electric)			
	Output	kW [HP]	3.5 [4.7]			
Coupling	Model (Maker)	—	Rigid coupling ERC25-35CX25C-L90 (Tsubakimoto Emerson)			
	Shaft diameter	mm [in.]	φ25 × φ35 [φ0.98 × φ1.38]			
Linear guide	Model (Maker)	—	SRN45LR2SS COS+1540LP- II (MASTER)	SRN45LR2SH COS+1725LP- II (SUBSIDIARY)	SRN45LR2SS COS+2580LP S-II (MASTER)	SRN45LR2SS COS+1540LP S-II (SUBSIDIARY)
Lubrication	Ball screw	—	Grease lubrication (Automatic intermittent lubrication by the lubrication unit)			
	Linear guide					

6-4-4 Y-axis (QTN300-II/350-II MSY)

The ball screw of the X-axis and that of the Yt-axis inclined at 45 degrees to the X-axis are combined to move the turret in the Y-axis direction. The ball screws are directly connected via a coupling and driven by the respective AC servomotors.



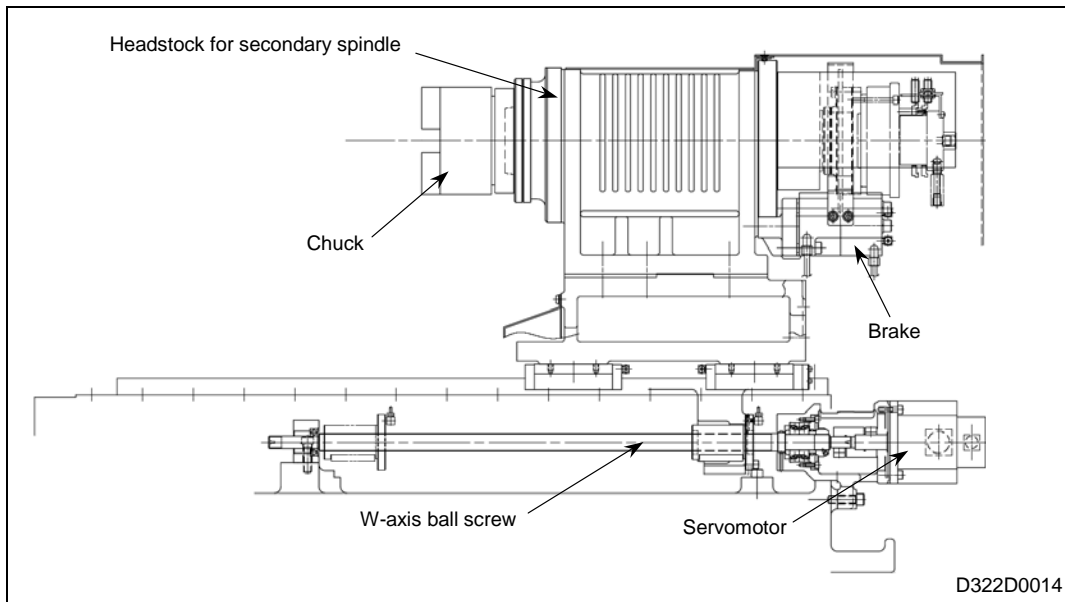
6-4-5 Y-axis feed mechanism specifications

Item		Unit	QTN300-II/350-II MSY
Travel	Yt-axis	mm [in.]	212.14 (106.07 + 106.07) [8.486 (4.243+4.243)]
	Y-axis		100 (50 + 50) [4 (2+2)]
Minimum setting unit		mm [in.]	0.0001 [0.00001]
Maximum cutting feed rate		m/min [IPM]	3.5 [139]
Rapid feed time constant		msec	110
Rapid traverse	Yt-axis	m/min [IPM]	21 [826]
	Y-axis		15 [591]
Rapid feed time constant		msec	110
Thrust	Continuous	kgf [lbs]	-direction: 1067 [2352] +direction: 617 [1360]
	Maximum (150%)		-direction: 1526 [3364] +direction: 1076 [2372]
Ball screw	Diameter	mm [in.]	φ36 [φ1.42]
	Lead	mm [in.]	10 [0.39]
	Support	—	Front end: fixed, Motor end: fixed
Bearing	Front side	Model (Maker)	Tack bearing 30TAB06DB (NACHI)
	Motor side		Tack bearing 30TAB06DB (NACHI)
Servomotor	Model (Maker)	—	AC servomotor HF-H354BS-A48 (Mitsubishi Electric)
	Output	kW [HP]	3.5 (4.7)

Item		Unit	QTN300-II/350-II MSY
Brake	Type	—	With built-in servomotor
	Static friction torque	N·m (kgf·m) [ft·lbs]	43.1 (4.4) [31.8]
Coupling	Model (Maker)	—	Rigid coupling ERC25-35CX25C-L90 (Tsubakimoto Emerson)
	Shaft diameter	mm [in.]	φ25 × φ35 [φ0.98 × φ1.38]
Linear guide	Model (Maker)	—	SRN45LC1DDCOS/1KKHCOS+930LP-II (THK)
Lubrication	Ball screw	—	Grease lubrication (Automatic intermittent lubrication by the lubrication unit)

6-4-6 W-axis feed mechanism (QTN300-II MS, MSY / QTN350-II MS, MSY)

The 2nd spindle moves in the Z-axial direction via a ball screw. The ball screw is directly connected to an AC servomotor via a coupling and is driven by the AC servomotor.



6-4-7 W-axis specifications

Item		Unit	QTN300/350-IIMS, MSY	
			650	1500
Travel		mm [in.]	650[645+5](25.625[25.39+0.1968])	1585[1580+5](62.41[62.2+0.1968])
Minimum setting unit		mm [in.]	0.0001 [0.00001]	
Maximum cutting feed rate		m/min [IPM]	5 [197]	
Rapid traverse		m/min [IPM]	30 [1181]	
Rapid feed time constant		msec	100	
Thrust	Continuous	kN (kgf) [lbs]	2.8 (282) [622]	
	Maximum (150%)		4.4 (452) [996]	
Ball screw	Diameter	mm [in.]	28 [φ1.10]	
	Lead	mm [in.]	10 [0.39]	
	Support	—	Front end: supported Motor end: fixed	
Bearing	Front side	Model (Maker)	Deep groove ball bearing 6004ZZ (KOYO)	
	Motor side		Tack bearing 25TAB06DB (NACHI)	
Servomotor	Model (Maker)	—	AC servomotor HF-H204S-A48 (Mitsubishi Electric)	
	Output	kW [HP]	2 [2.7]	
Coupling	Type	—	Rigid coupling ERC10-24CX18C-L68 (Tsubakimoto Emerson)	
	Shaft diameter	mm [in.]	φ18 × φ24 [φ0.71 × φ0.94]	
Linear guide	Model (Maker)	—	SRN45LR2SSHCO+131 0LP-II (THK)	SRN45LR2SSHCO+252 0LPS-II (THK)
Lubrication	Ball screw	—	Grease lubrication	
	Linear guide		(Automatic intermittent lubrication by the lubrication unit)	

6-5 Cooling Unit and Coolant Circuit Diagram

The cutting fluid within the coolant tank is pumped up by the coolant pump located to the right of the coolant tank, and is discharged from the nozzles of the turret. The discharged cutting fluid is retrieved into the coolant tank through a chip receiving plate.

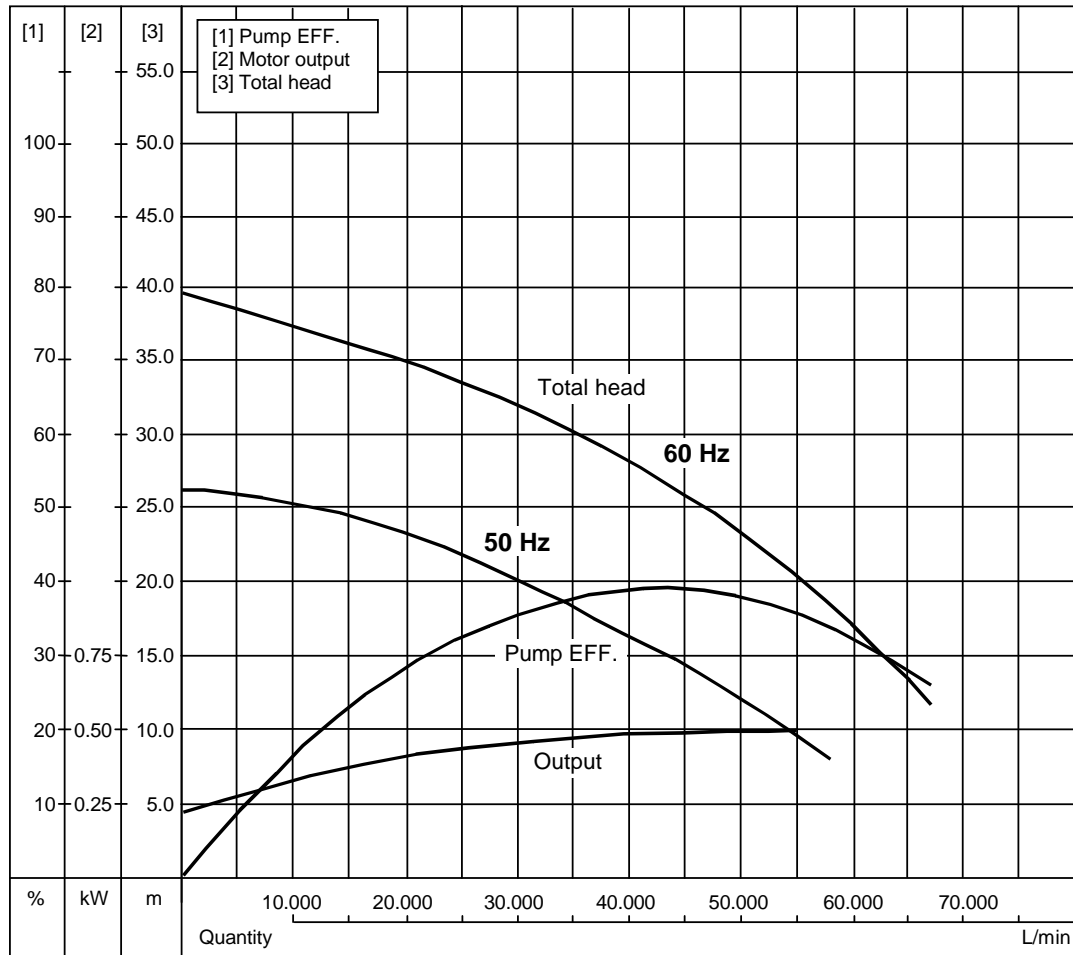
6-5-1 Cooling Unit

1. Standard specifications

Item		Unit	Specification
Type of pump		—	Immersion coolant pump
Pump model number (Maker)		—	MTH2-30/3A (Grundfos)
Motor output (50/60 Hz)		kW [HP]	0.325/0.520 [0.436/0.697]
Pump discharge rate (50/60 Hz)	OD turning tool holder	L/min [gal (US)/min]	10.3/12.9 [2.72/3.41]
	Boring bar holder		11.6/14.5 [3.06/3.83]
	U-drill holder		10.9/13.6 [2.88/3.59]

Note: The discharge rates listed above were measured in a 60-Hz area when an actual machine was installed. The discharge rates in 50-Hz areas are 80% of the data in 50-Hz areas.

2. Coolant pump characteristics

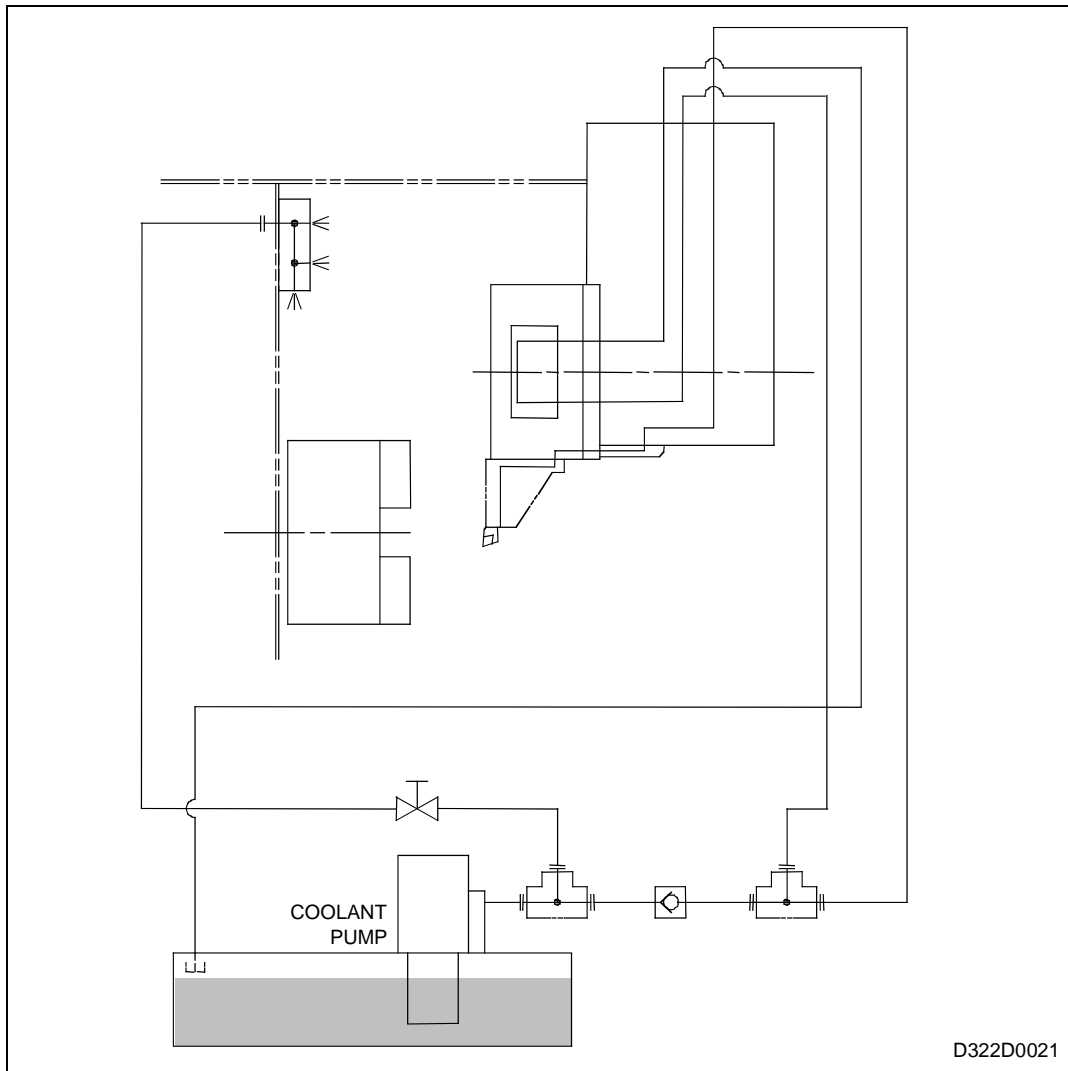


Motor			Pump		
Output	kW (HP)	0.325 (0.43)/0.52 (0.69)	Type	—	MTH2-30/3A
Frequency	Hz	50/60	Delivery	mm	20
Phases voltage	V	φ3 × 200	Total head	m	Refer to figure above
Amperage	A	2.7/2.4	Quantity	L/min	Refer to figure above
Source of power: 200 V 50/60 Hz	A	3.5/3.5	* Source of power: 200V 50/60 Hz		
Poles	—	2 P			
Revolution	min ⁻¹	ss. 3000/3600			
Winding insulation	—	F			
Type	—	Totally-enclosed outside door indoor type			

The pump discharge rate changes with oil viscosity and according to the nozzle piping method used.

If viscosity is high or when using a U-drill, an optional 1.1 kW coolant pump is recommended.

6-5-2 Coolant circuit diagram



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6-6 Operating Panel and Functions of Switches

6-6-1 NC operating panel

1. Disposition of switches and indicator lamps

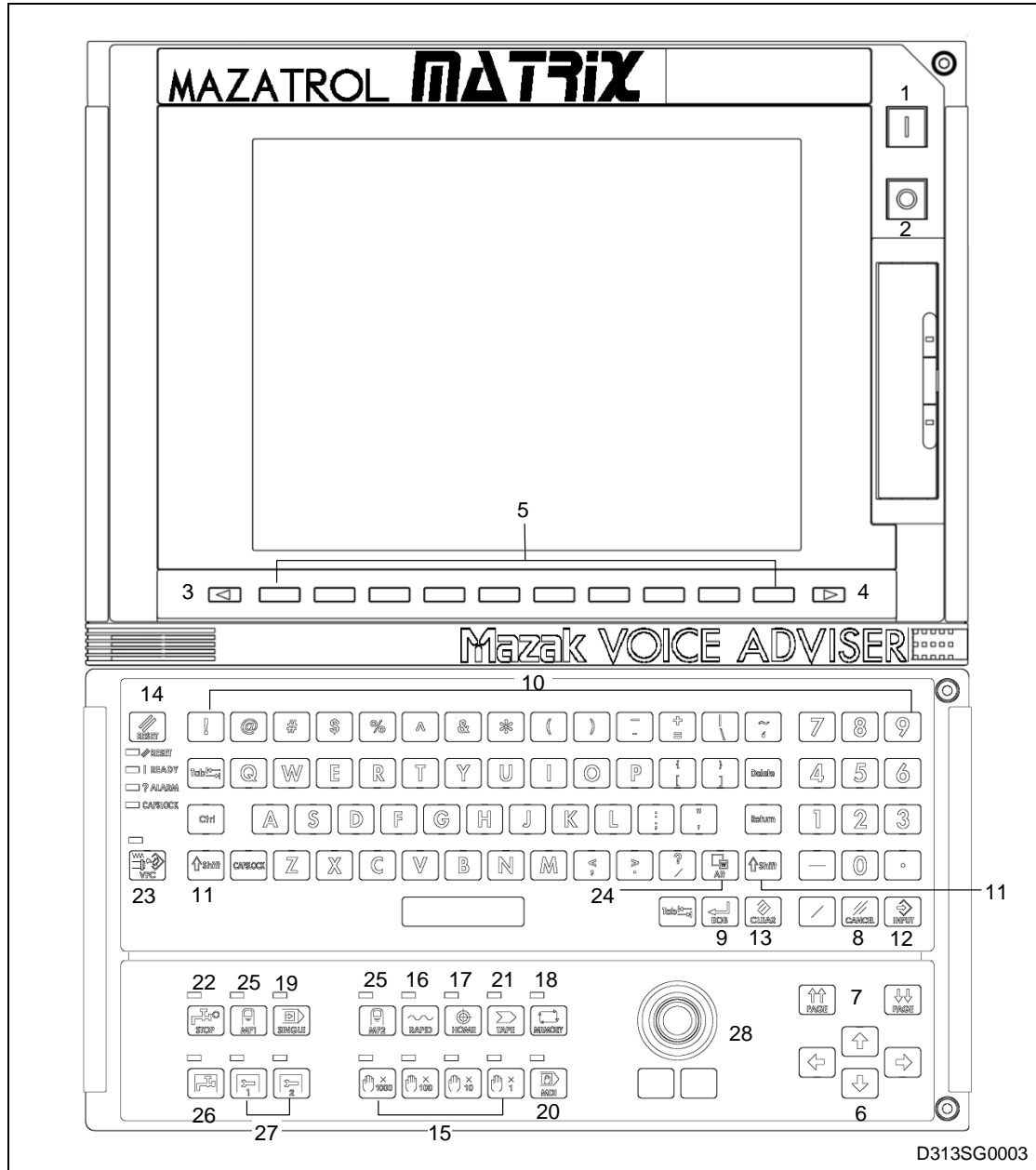


Fig. 6-1 Operating panel

2. Controls on the NC operating panel

Some of the keys and buttons on the operating panel have a small lamp at their respective top left corner. The lamp is on when the function is effective and off when the function is ineffective (except for the power ON button).

Example: Lamp on



Function effective









Lamp off







Function ineffective

* The numbers in Table 6-1 correspond to those in Fig. 6-1.

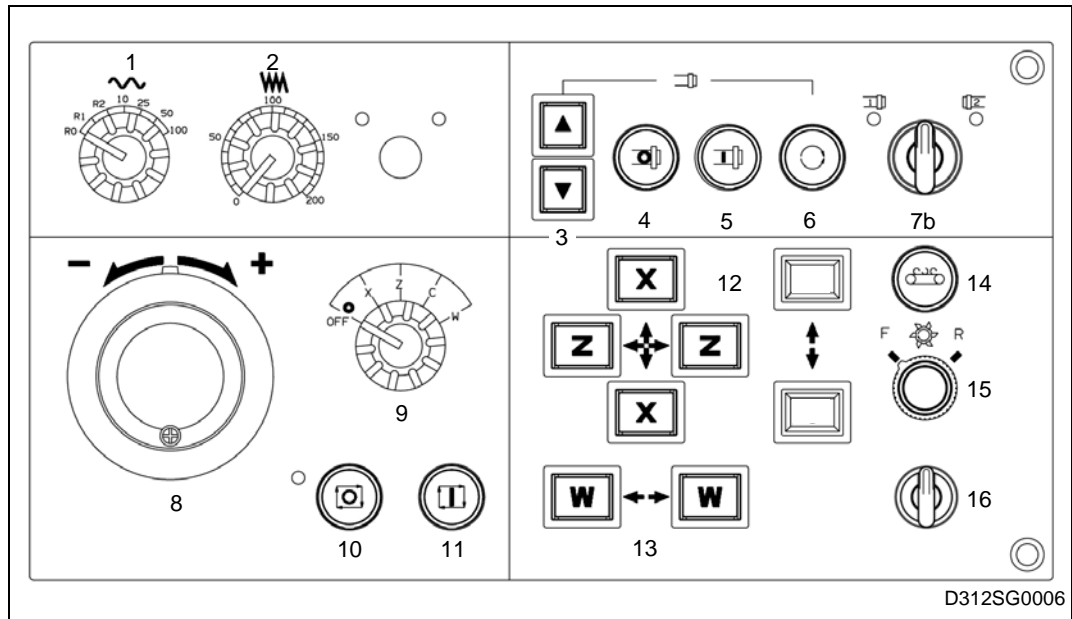
Table 6-1 Description of operational controls (on the NC operating panel)

No.	Name	Function
1	Power ON button	<ul style="list-style-type: none"> - This button is used to switch on the power to the NC unit. Several seconds after this button has been pressed, the "READY" lamp will light, indicating that the machine is ready for operation. When the main power breaker is switched on, the backlighting of this button will light, indicating that power is being supplied to the machine. - When this button is pressed, the backlighting will go off.
2	Power OFF button	This button is used to switch off the power to the NC unit. When this button is pressed, the backlighting of the power ON button will light.
3	Display selector key	This key is used to select the display on the liquid crystal screen. When this key is pressed, the display selection menu is displayed.
4	Menu selector key	This key is used to change the menu currently being displayed over to another one.
5	Menu keys	These keys are used to select one of the menu items being displayed.
6	Cursor keys	<p>These keys are used to make the cursor appear on the screen and to move the cursor around the screen.</p> <ul style="list-style-type: none">  Press this key to move the cursor to the left. If this key is pressed when the cursor is at the left end, the cursor will move to the right end of the line above.  Press this key to move the cursor to the right. If this key is pressed when the cursor is at the right end, the cursor will move to the left end of the line below.  Press this key to move the cursor up to the line above.  Press this key to move the cursor down to the line below.
7	Page keys	<ul style="list-style-type: none"> - These keys are used to call the previous page or the next page of a display which has multiple pages. <ul style="list-style-type: none">  Press this key to call the previous page.  Press this key to call the next page. - When a (MAZATROL) program is displayed on the PROGRAM display: <ul style="list-style-type: none">  Press this key to move the cursor to the beginning of the previous unit.  Press this key to move the cursor to the beginning of the next unit.
8	Data cancel key (CANCEL)	This key is used to cancel the data displayed in the data display area. When this key is pressed, the data at the position where the cursor is blinking will be deleted.
9	EOB key	This key is used to set an end-of-block code in data.
10	Address/numeric data keys	These keys are used to set address data (alphabetic characters) and numeric data. See Part 3, Chapter 3, DATA SETTING METHODS of the Operating Manual, for the usage of the key.
11	Shift key (SHIFT)	This key is used to set the address data displayed at the bottom right of the address keys. See Part 3, Chapter 3, DATA SETTING METHODS of the Operating Manual, for the usage of the key.

No.	Name	Function
12	Input key (INPUT)	This key is used to set the data displayed in the data input area of the display. Press this key after inputting the data with the numeric data keys.
13	Clear key (CLEAR)	This key is used to cancel the data displayed in the data input area of the display. Press this key if incorrect data has been input into the data input area.
14	Reset key (RESET)	This key is used to reset the NC unit to its initial status. If an alarm is displayed, eliminate its cause, then press this key to cancel the alarm.
15	Cutting feed/manual pulse feed keys (JOG/HANDLE)	<p>These keys are used to select the cutting feed/manual pulse feed mode. Press one of these keys and the appropriate axis movement button to execute axis motion at the cutting feed rate in the selected axis direction. Press the appropriate key and turn the manual pulse handle. An axis motion will occur over the selected distance in the selected axis direction.</p> <p> If this key is pressed, each graduation on the manual pulse handle will be equivalent to a movement of 0.0001 mm (0.00001 inch) or 0.0001 degree in the direction of the selected axis.</p> <p> If this key is pressed, each graduation on the manual pulse handle will be equivalent to a movement of 0.001 mm (0.0001 inch) or 0.001 degree in the direction of the selected axis.</p> <p> If this key is pressed, each graduation on the manual pulse handle will be equivalent to a movement of 0.01 mm (0.001 inch) or 0.01 degree in the direction of the selected axis.</p> <p> If this key is pressed, each graduation on the manual pulse handle will be equivalent to a movement of 0.1 mm (0.01 inch) or 0.1 degree in the direction of the selected axis.</p>
16	Rapid feed key (RAPID)	This key is used to select the rapid feed mode. Press this key, then press the appropriate axis movement button. Motion will take place in the selected direction along the selected axis at the rapid feed rate.
17	Zero-point return key (HOME)	This key is used to select the zero-point return mode. Press this key, then press the appropriate axis movement button. The selected axis will return to its zero-point in the machine coordinates system.
18	Automatic operation key (MEMORY)	This key is used to select the automatic operation mode. Press this key to execute programs registered in the NC unit.
19	Single-block key	This key specifies the single-block operation mode. Press this key to execute the program in steps of one block.
20	MDI key	This key is used to select the MDI operation mode. Select the mode to execute automatic operation according to an occasionally prepared program.
21	Tape run key (TAPE)	This key is used to select the tape run operation mode. Press this key to execute programs stored on paper tape, a micro disk, or other external equipment. * This key is used for EIA/ISO programs only.
22	Coolant stop key	This key is used to switch coolant feed on and off.
23	VFC key	This key is used to change the cutting condition values (peripheral speed, feed rate) set in the program to the values set using the override keys and switches. If this key is pressed after the spindle/milling spindle rotation speed or the cutting feed rate has been adjusted during automatic operation, the values set in the program will be changed automatically to the values set using the override keys and switches. * This key can be used for MAZATROL programs only.
24	Window key	This key is used to display a window on the liquid crystal screen.
25	Auxiliary keys (MF1/MF2)	Use these keys as aid keys according to the particular machine specifications.
26	Coolant menu key	This key is used to display the coolant menu on the liquid crystal screen. Pressing this key will display the menu for various coolant functions on the liquid crystal screen.
27	Machine menu key	This key is used to display the menu for various machine-operations on the liquid crystal screen. Pressing this key will display the menu for various machine-operations on the liquid crystal screen.
28	Pointing device (Mouse)	This section (similar to the mouse of a PC) is mainly used to apply various functions proper to personal computer.

6-6-2 Machine auxiliary operating panel

1. QTN300-II/350-II MS



2. QTN300-II/350-II MSY

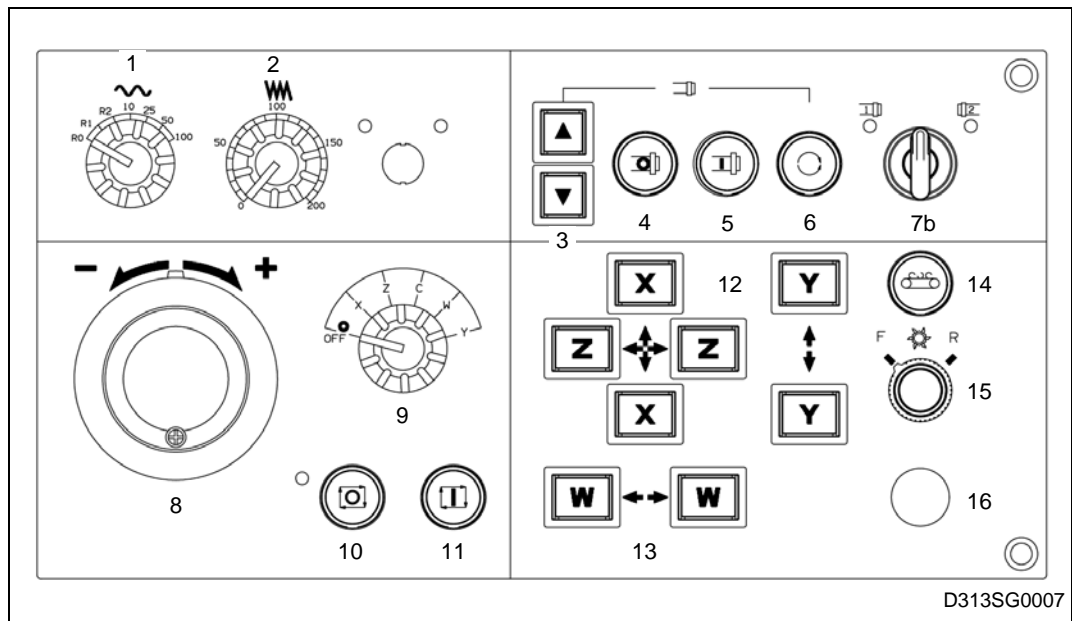




Table 6-2 Description of operational controls (on the machine auxiliary operating panel)

	Name	Function
1	Rapid feed override switch	<p>This switch is used to adjust the rapid feed override rate.</p> <p>The current rate is indicated on the display as a percentage of the maximum rapid feed rate.</p> <p>Turn this switch to CW direction to increase the rapid feed override.</p> <p>Turn this switch to CCW direction to reduce the rapid feed override.</p>
2	Cutting feed override switch	<p>This switch is used to adjust the cutting feed rate.</p> <p>When the machine is in the manual operation mode, the code corresponding to the feed rate is indicated on the display.</p> <p>When the machine is in the automatic operation mode, the current feed rate is indicated on the display as a percentage of the feed rate set in the program.</p> <p>Turn this switch to CW direction to increase the cutting feed override.</p> <p>Turn this switch to CCW direction to reduce the cutting feed override.</p>
3	Spindle/milling spindle override keys	<p>These keys are used to adjust the spindle/milling spindle rotation speed (peripheral speed).</p> <p>When the machine is in the manual mode, the speed indicated on the display is the current rotation speed.</p> <p>When the machine is in the automatic operation mode, the current rotation speed is indicated on the display as a percentage of the speed set in the program.</p> <div style="display: flex; align-items: center; margin-bottom: 5px;">  Press this key to increase the speed. </div> <div style="display: flex; align-items: center;">  Press this key to reduce the speed. </div>
4	Spindle/milling spindle stop button	<p>This button is used to stop the spindle or the milling spindle when the machine is in the manual operation mode.</p>
5	Spindle/milling spindle start button	<ul style="list-style-type: none"> - This button is used to rotate the spindle or the milling spindle when the machine is in the manual operation mode. - The backlighting of this button is on while the spindle or the milling spindle is rotating.
6	Spindle/milling spindle rotation direction change button	<p>This button is used to specify the spindle or the milling spindle rotation direction when the machine is in the manual operation mode.</p> <p>When the backlighting of this button is on, the spindle or the milling spindle rotates in the reverse direction.</p> <p>When the backlighting of this button is off, the spindle or the milling spindle rotates in the forward direction.</p>
7	Spindle selector switch	<p>This switch is used to select the 1st spindle or 2nd spindle to be rotated and also used to change the display of the data for the spindle to that for the 2nd spindle or vice versa in the POSITION display, or the display of the servo-axis data, etc. for the spindle to that for the 2nd spindle or vice versa in the PARAMETER display. SP1 or SP2 is displayed on the related display.</p>
8	Manual pulse handle	<p>This handle is used to specify the axis motion direction and distance when the machine is in the manual pulse feed mode.</p>
9	Axis selector switch	<p>This switch is used to select the axis for the movement in the manual pulse feed mode.</p> <p>No feed operation will occur by turning the pulse handle with this switch remaining set to OFF.</p>
10	Feed hold button (red) Orange LED	<p>This button is used to stop the axis feed when the machine is in the automatic operation mode.</p> <p>When the feed is stopped, the LED comes on and the cycle start button LED goes off.</p>
11	Cycle start button (green) Green LED	<p>This button is used to start the machine when it is in the automatic operation mode.</p> <p>The LED is on when the machine is in the automatic operation.</p> <p>The LED goes off when the automatic operation is interrupted or has been completed.</p>
12	Axis movement buttons	<p>These buttons are used to move the tool in the X-axis or the Z-axis direction when the machine is in the manual operation mode.</p> <p>The axis motion is performed as long as a button is being pressed and stops when the button is released.</p>

No.	Name	Function
13	W-axis movement buttons	These buttons are used to move 2nd spindle in the W-axis direction when the machine is in the manual operation mode. The axis motion is performed as long as a button is being pressed and stops when the button is released.
14	Chip conveyor start button (option)	This button is used to start the chip conveyor. Pressing this button will start the chip conveyor operation. Pressing this button once again will stop it. Only for chip conveyor specification of the control from the operation panel.
15	Tool selector button	This button is used to select the direction of turret rotation (forward "F" or reverse "R") and to index a tool when the machine is in the manual operation mode.
16	GL/CF display mode selector switch	This switch allows machine display/GL display/CF display mode selection.

6-6-3 Auxiliary operating panel

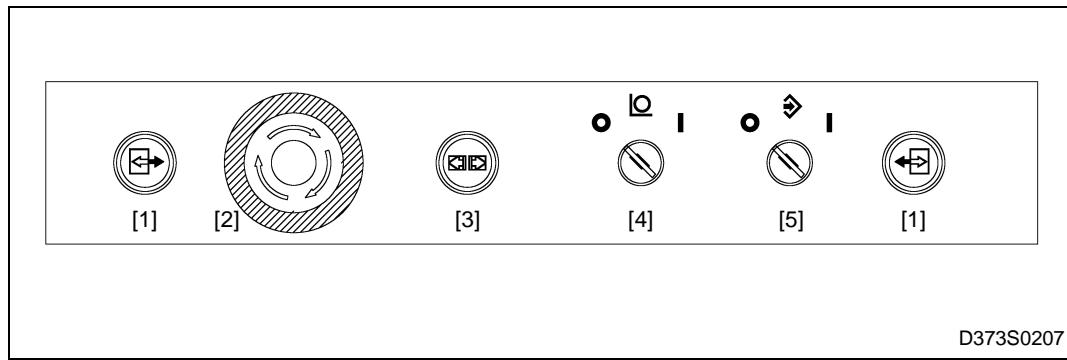
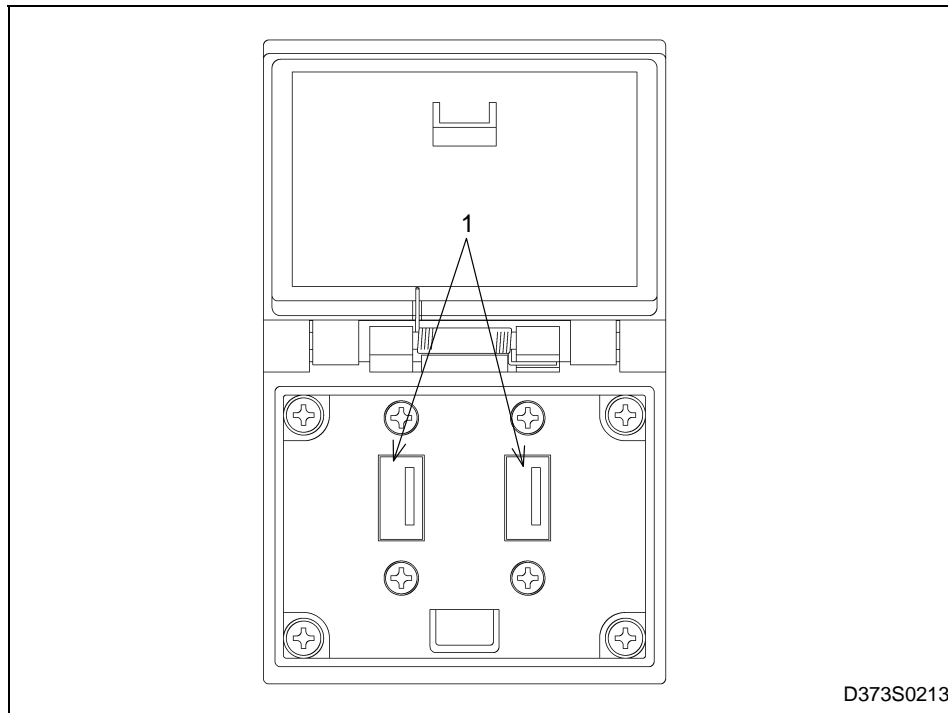


Table 6-3 Controls on the auxiliary operating panel

No.	Name	Function
1	Automatic door opening/closing button	- This button is used to open and close manually the automatic door. - The automatic operation will start if the automatic door is closed to the close end.
2	Emergency stop button	This button is used to stop the machine operation in case of emergency. If this button is pressed, all of the machine operations will stop immediately and the alarm 2 EMERGENCY STOP will be displayed. To cancel an emergency stop, turn the emergency stop button in the direction of the arrow and then press the reset key.
3	Door unlock button	- This button releases the door interlock mechanism. - Press the button to release the lock. This button is not active when the spindle rotation, axis feed or turret rotation is in progress, or the cycle start lamp is on to indicate that the machine is running in the automatic operation mode.
4	Machine setup switch (with key)	This switch makes a certain degree of machine action valid with the front door remaining opened during set-up operations.
5	Reprogramming switch (with key)	This switch is used to prevent programs or data in the NC unit from being erased accidentally. To rewrite a program or data, set this switch to the □ position. When the switch is set to the ⊙ position, rewriting of programs and part of the data is rendered impossible.

6-6-4 USB interface panel



No.	Part name	Function
1	USB (Universal Serial Bus) connector	This enables interfacing with an FD (floppy disk) drive, mouse, keyboard or other external devices.

6-7 Reduction in stand-by power consumption

For the QTN300-II/350-II MS, MSY, the stand-by electric power consumed by the machine can be reduced for environmental protection.

- Automatic switching-off of the lighting unit
The lighting unit will be automatically turned off for energy saving after the lapse of a certain time of lighting. The light, however, will be turned on again by opening the front door, operating the foot switch or any control on the operating panel, etc., for a set-up job.
- Automatic switching-off of the chip conveyor
The chip conveyor will be automatically stopped for energy saving after the lapse of a certain time of operation.

The stand-by power consumption reducing function can be made invalid by specifying the machine menu.

6-8 Guarantee to Hydraulic Pressure Interlock

1. Outline

This interlock is a safety unit for detecting an oil pressure alarm through a pressure switch and stopping the machine.

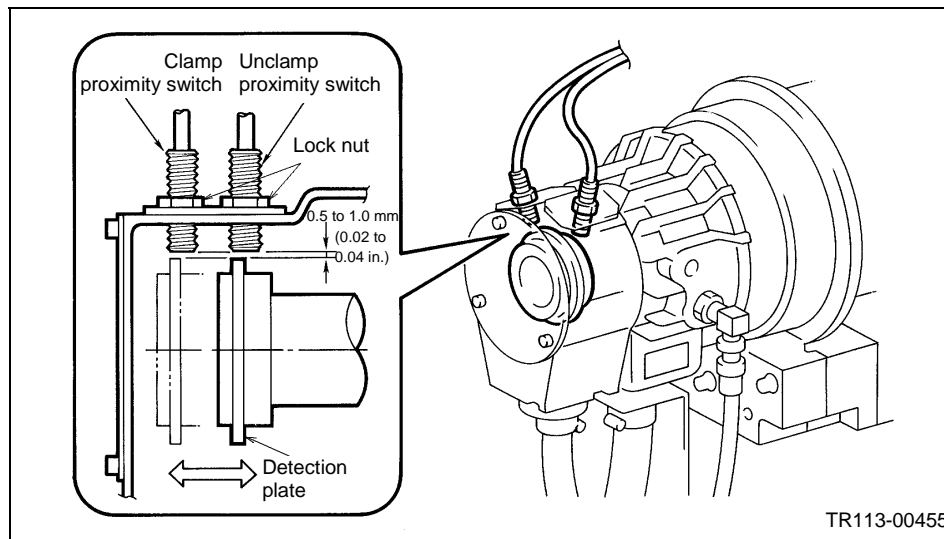
2. Specification

Type	SPS-8T-PC-23
Maker	SANWA
Pressure for operation	2 MPa (284.6 PSI) (Emergency stop about 3 seconds later)
Mounting position	Hydraulic unit P port

6-9 Chuck Jaw Open/Close Check

1. Outline

This unit uses a sensor to detect the open/close operation of the chuck jaws. Thus, the spindle rotation inhibition interlock and other safety units operate to improve safety. This unit is required when a bar feeder and/or automatic loading/unloading workpiece device is mounted.



2. Specification

		QTN300-II MS, MSY	QTN350-II MS, MSY
Detection signal		Clamp or unclamp signal	
Interlock	Chuck open end	Prohibition of spindle rotation	
	Chuck close end	Erroneous chucking action alarm	
Solid cylinder specification	Standard (Sensor-provided specs.)	Y1225RE47	Y1530RE47
Hollow cylinder specification	Standard (Sensor-provided specs.)	S2078-15Y (With proximity switch)	S2078-15Y (With proximity switch): STD F2511HS-15A (With proximity switch): OP

Note: The detection may be impossible due to the combination of chuck and cylinder.

6-10 Standard Accessories

6-10-1 Table of standard accessories

1. QTN300-II/350-II MS

Item		QTN300-II MS	QTN350-II MS
Main Spindle Chuck	10" solid power chuck + Hollow cylinder KITAGAWA B-210A815D +KITAGAWA S1877-15Y	1 set	—
	12" hollow power chuck + Hollow cylinder KITAGAWA BB212A115 +KITAGAWA SS2110C15Y	—	1 set
	15" solid power chuck + Hollow cylinder KITAGAWA B-15A115B +KITAGAWA SS2110C15Y	—	Optional
Sub Spindle Chuck	10" hollow power chuck + Hollow cylinder KITAGAWA B-210A815D +KITAGAWA S1877-15Y	1 set	1 set`
Coolant unit	Coolant tank	1 set	1 set
	Pump (520 W)	1 set	1 set
Cover	Work light	1 set	1 set
	Cover	1 set	1 set
Safety devices/ functions	Front door interlock	1 set	1 set
	Hydraulic safety interlock	1 set	1 set
	Chuck jaw open/close check	1 set	1 set
Other	Tool for adjustment	1 set	1 set
	Transit clamps	1 set	1 set
	Foundation kit	1 set	1 set
	TOOL EYE	Optional	Optional
Manuals	Operating manual (Machine) Operating manual (NC) Programming manual Maintenance manual Parts list Electric circuit diagram Parameter list Alarm list	1 set	1 set
Tooling	Standard tooling	1 set	1 set

2. QTN300-II/350-II MSY

Item		QTN300-II MSY	QTN350-II MSY
Main Spindle Chuck	10" solid power chuck + Hollow cylinder KITAGAWA B-210A815D +KITAGAWA S1877-15Y	1 set	—
	12" hollow power chuck + Hollow cylinder KITAGAWA BB212A115 +KITAGAWA SS2110C15Y	—	1 set
	15" solid power chuck + Hollow cylinder KITAGAWA B-15A115B +KITAGAWA SS2110C15Y	—	Optional
Sub Spindle Chuck	10" hollow power chuck + Hollow cylinder KITAGAWA B-210A815D +KITAGAWA S1877-15Y	1 set	1 set`
Coolant unit	Coolant tank 225 L [59.45 gal (US)] : 650U 350 L [92.47 gal (US)] : 1500U	1 set	1 set
	Pump (520 W)	1 set	1 set
Cover	Work light 36 W x 1: 650U 36 W x 2: 1500U	1 set	1 set
	Cover	1 set	1 set
Safety devices/ functions	Front door interlock	1 set	1 set
	Hydraulic safety interlock	1 set	1 set
	Chuck jaw open/close check	1 set	1 set
Other	Tool for adjustment	1 set	1 set
	Transit clamps	1 set	1 set
	Foundation kit	1 set	1 set
	TOOL EYE	Optional	Optional
Manuals	Operating manual (Machine) Operating manual (NC) Programming manual Maintenance manual Parts list Electric circuit diagram Parameter list Alarm list	1 set	1 set
Tooling	Standard tooling	1 set	1 set

6-10-2 List of standard tooling

1. Standard for QTN300-II/350-II MS, MSY

- Turning tools

Item, size		mm spec.	inch spec.	Std. Q'ty	Remarks
Holder	OD turning tool holder (L-R) (□25 x 150L, □1" x 6")	—	—		
	OD turning tool holder (L) (□25 x 150L, □1" x 6")	53308000600	53308010600	1	
	OD turning tool holder (R) (□25 x 150L, □1" x 6")	53308000100	53308010100	2	
	Facing holder (□25 x 150L, □1" x 6")	53308000300	53308010300	1	
	Boring bar holder (φ50·φ2")	53308000200	53308010200	2	
	Boring bar holder (φ50·φ2") SS	533380206C0	533380202C0	1	
	Tandem turning holder (□1" x 1" x 6") SS	533380205C0	533380201C0	1	
	Cut-off tool holder	53308000400		1	
	Cap	53818000701		1	
Socket	Boring bar socket (φ40·φ1-3/4")	53428000200	53428001900	1	
	Boring bar socket (φ35·φ1-1/2")	53428000300	53428002000		
	Boring bar socket (φ32·φ1-1/4")	53428000400	53428002100	1	
	Boring bar socket (φ25·φ1")	53428000500	53428002200		
	Boring bar socket (φ20·φ7/8")	53428003900	53428004800		
	Boring bar socket (φ16·φ3/4")	53428004000	53428004900		
	Boring bar socket (φ15·φ5/8")	53428009300	53428005000		
	Boring bar socket (φ12·φ1/2")	53428004100	53428005100		
	Boring bar socket (φ10·φ3/8")	—	—		
	Boring bar socket (φ8·φ5/16")	—	—		
	MT. drill socket M·T4	53428001500	53428003100	1	
	MT. drill socket M·T3	53428001600	53428003200		
	MT. drill socket M·T2	53428001700	53428003300		
	MT. drill socket M·T1	—	—		
	U-drill socket φ32	—	—		
	U-drill socket φ25	—	—		
	U-drill socket φ20	—	—		

- Milling tools

	Item, size	MAS	CAT-MM	CAT-INCH	Std. Q'ty	Remarks
Holder	H type milling drill holder (BT40·CAT40)	53308020100		53308020200	2	
	H type taper with torque limiter (M4 to M12)	53308020300				
	H type taper with torque limiter (M14 to M16)	53308020400				
	V type holder (BT40·CAT40)	53308020500		53308020600	1	
	V type taper with torque limiter (M4 to M12)	53308020700				
	H type back taper (M4 to M10) SS	533380204C0				
	H type back taper collet (M14 to M10) (J420) SS	51408032400				
	H type back milling drill holder (□20 chuck collet) SS	533380203C0				
Tool	Compact honey (φ20·φ3/4")	53488010500	53488025500	53488020500	1	
	Morse taper holder (for big diameter)	53488010600	53488025600	53488020600		
	Morse taper holder (for small diameter)	53488010700	53488025700	53488020700		
	Special LL chuck (Drill φ3 to 13·φ1/8" to 1/2")	53488010800	53488025800	53488020800	1	
	Special taper (M4 to M12)	53488010900	53488025900	53488020900		
	Special taper (M14 to M16)	53488011000	53488026000	53488021000		
	Side cutter arbor (MAX φ100·φ3.94")	53488011100	53488026100	53488021100		
	Side cutter arbor (MAX φ66·φ2.6")	53488011200	53488026200	53488021200		
	Face milling arbor (MAX φ80·φ3.15")	53488011400	53488026400	53488021400		
Collet	Straight collet (Milling φ16·φ5/8")	51718008700		51718009200		
	Straight collet (Milling φ12·φ1/2")	51718008800		51718009300		
	Straight collet (Milling φ10·φ3/8")	51718008900		51718009400		
	Straight collet (Milling φ8·φ5/16")	51718009000		51718009500		
	Straight collet (Milling φ6·φ1/4")	51718009100		51718009600		
	Morse taper socket (M. T. No. 1)	51718009800				
	Morse taper socket (M. T. No. 2)	51718009900				
	Rubber collet (φ3 to φ7·φ1/8" to φ9/32")	51408032100				
	Rubber collet (φ7 to φ13·φ9/32" to φ1/2")	51408032200				
	Rubber collet (M4 to M10·No. 8 to 3/8UNC)	51408032400				
	Rubber collet (M10 to M12·3/8UNC to 1/2UNC)	51408032500				
	Rubber collet (M14 to M16·9/16UNC to 5/8UNC)	51408032300				

7 OPTIONS

7-1 List of Optional Specifications

7-1-1 QTN300-IIMS, QTN300-IIMSY, QTN350-IIMS, QTN350-IIMSY

NC options are not included here.

Separate estimation of costs is required for user mounting.

◆: Standard ○: Option users can mount ◎: Option users cannot mount
 □: Special order —: Without setting

3D interference check model ○: Already equipped ×: Not applicable -: Unnecessary

	Option name		Remarks	QTN300-IIMS			QTN350-IIMS			3D interference check model
				QTN300-IIMSY			QTN350-IIMSY			
			JPN/Asia	USA	EU	JPN/Asia	USA	EU		
Machine body	Hollow chuck mounting (with clamp/unclamp check switch)	B-210A815D+S1877-15Y		◆	◆	◆	—	—	—	○ (Note 1)
		BB212A115+SS2110C15Y		—	—	—	◆	◆	◆	○ (Note 1)
	2nd spindle 0.0001° C-axis control			◎	◎	◎	◎	◎	◎	○
	Specified color			◎	◎	◎	◎	◎	◎	—
	Rotary tool of 6000 min ⁻¹ (rpm)			◎	◎	◎	◎	◎	◎	○
	Hand grease gun			○	○	○	○	○	○	—
	Tool Eye (automatic)			○	◆	◆	○	◆	◆	○ (Note 5)
	Front door automatic opening/closing device			◎	◎	◎	◎	◎	◎	—
FA	Signal tower		1-stage		○	○	○	○	○	○
			3-stage		○	○	○	○	○	○
	Machining finish buzzer			○	○	○	○	○	—	—
		Calendar-type automatic power on + Warming-up		○	○	○	○	○	—	—
	Automatic power off			○	○	○	○	○	○	—
	Automatic chuck jaw clamp/unclamp (1st spindle)			◆	◆	◆	◆	◆	◆	—
	Chuck jaw air blowout (1st spindle)			○	○	○	○	○	○	× (Note 6)
	Automatic chuck jaw clamp/unclamp (2nd spindle)			◆	◆	◆	◆	◆	◆	—
	Chuck jaw air blowout (2nd spindle)			◆	◆	◆	◆	◆	◆	× (Note 6)
	Absolute position detectors (Not allowed to be used together with a scale feedback system.)			○	○	○	○	○	○	—
	Spindle orientation			○	○	○	○	○	○	—
	Bar feeder interface kit			○	○	○	○	○	○	—
	Workpiece measurement			◎	◎	◎	◎	◎	◎	×
	Auto parts catcher			○	○	○	○	○	○	×
	Overload detector			○	○	○	○	○	○	—
	Leakage current circuit breaker (200 mA)			◎	—	—	◎	—	—	—
Double foot switch			○	○	◆	○	○	◆	—	
Safety	Chip conveyor (Hinge type)		Side discharge		○	○	○	○	○	○

	Option name		Remarks	QTN300-IIMS			QTN350-IIMS			3D interference check model	
				QTN300-IIMSY			QTN350-IIMSY				
devices/ functions				JPN/Asia	USA	EU	JPN/Asia	USA	EU		
	Chip bucket		Preparation for mounting side discharge conveyor		○	○	○	○	○	○	
			Rotatable type		○	○	○	○	○	○	
Chip disposal and coolant	Powerful coolant (520 W/1.1 kW)	Fixed type		○	○	○	○	○	○	—	
			○	○	○	○	○	○	—	—	
	Added coolant nozzle unit on the headstock side		○	○	○	○	○	○	○	× (Note 6)	—
			○	○	○	○	○	○	○	—	—
	Turret air blowers		○	○	○	○	○	○	—	—	
	Coolant temperature management			⊗	⊗	⊗	⊗	⊗	⊗	—	
	Mist collector (WSO-10 Donaldson)			○	○	○	○	○	○	—	
	Tool holder applicable to Magnum coolant system		For special order	○	○	○	○	○	○	×	
Super Flow interface		For special order	○	○	○	○	○	○	—		

Note 1: Users must create a 3D-chuck model if the spindle is prepared for mounting a chuck. Refer to the OPERATING MANUAL for MATRIX (H740S3007**).

Note 2: Refer to 7-1-3 “1”.

Note 3: Only automatic work rest SLU2 is applicable. Other than those will be special orders.

Note 4: Refer to 7-1-3 “2”.

Note 5: Refer to 7-1-3 “3”.

Note 6: Refer to 7-1-3 “4”.

Note : No 3D interference check model of a special order is available.

Note : Interfering part of a special order is out of guarantee.

Note : If you want the 3D-interference check model, ask us (QTN/MP/IVS Product). (Extra price and additional delivery time are required.)

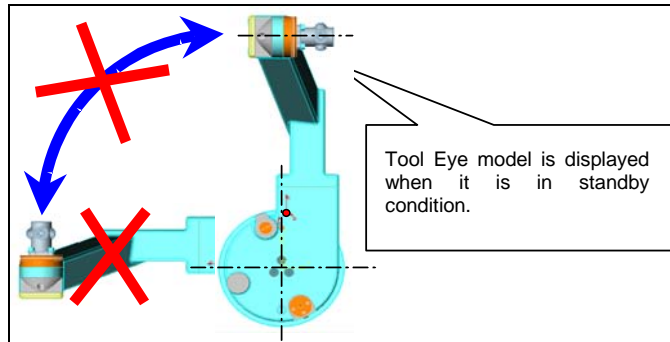
7-1-2 Restriction of Intelligent Safety Shield function

Mazatrol MATRIX has the Intelligent Safety Shield function that checks machine actions in advance for interference of a tool model with a 3D machine model (turret, chuck, or the like) from a commanded travel amount in manual mode of operation. If it judges that a 3D-machine model interferes with a tool model, it immediately stops axis movements, displaying a warning message. However, it has the following restrictions:

1. 3D interference check with Tool Eye

- 3D machine models of the Tool Eye are available only when the Tool Eye is at its returned place (not measuring mode).

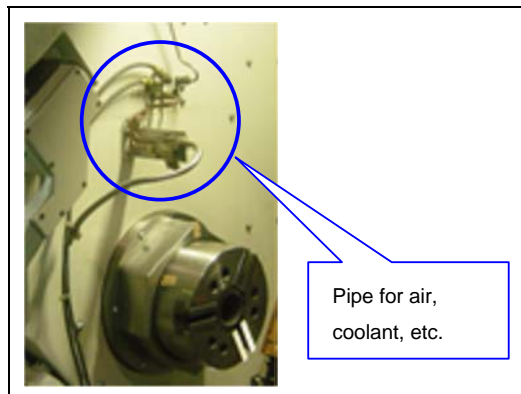
- No interference checks of the Tool Eye at measuring positions and in arm swinging status are available.
- 3D machine models are displayed even though no Tool Eye is equipped on the machine.



2. No 3D-machine model of a part that can freely change its direction like a pipe or nozzle is available.

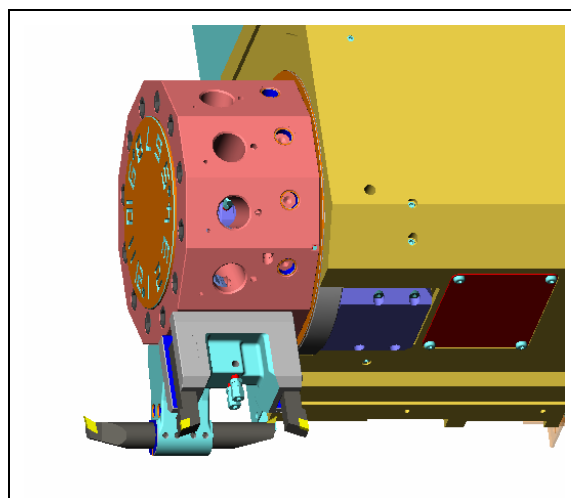
As MATRIX displays no 3D-machine model of a part that can freely change its direction like a pipe or nozzle above the spindle chuck, be fully cautious of operation when the pipe, nozzle, workpiece, tool, etc. approach each other.

No 3D-machine model of a pipe for tail center air blow or chuck jaw air blow is displayed.



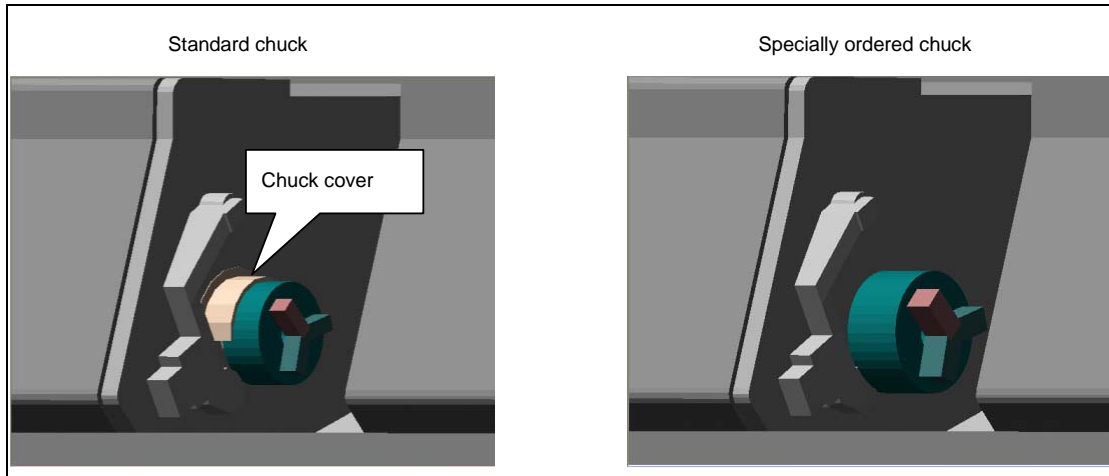
3. If multiple tools are mounted on one tool holder, only a selected tool is modeled for 3D-interference check.

Note that the interference check function does not work for unselected tool.



4. 3D-interference check model of a specially ordered chuck

For a specially ordered chuck, 3D interference check of the chuck body is available but is not available regardless of a chuck cover existing over the chuck.



7-2 Detailed Optional Specifications

7-2-1 Hollow chuck

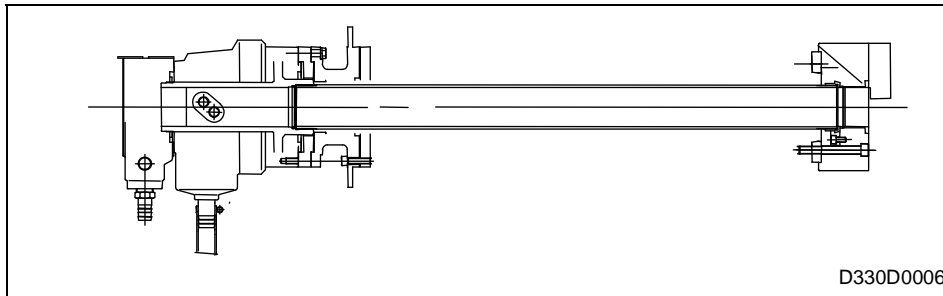
1. Corresponding machine

◆: Standard ○: Optional

Machine model	Type	JPN/Asia	USA	EU
QTN300-II MS, MSY 1st spindle	B-210A815D + S1877-15Y	◆	◆	◆
	B-212A815A + S2078-15Y	○	○	○
QTN350-II MS, MSY 1st spindle	BB212A115+SS2110C15Y	◆	◆	◆
	B-15A115B + SS2110C-15Y	○	○	○
QTN300-II/350-II MS, MSY 2nd spindle	B-210A815D + S1877-15Y	◆	◆	◆

2. Outline

In combination with a hollow type cylinder, the use of a hollow chuck allows a bar feeder system to be added and a slender workpiece to be gripped deeply in the chuck for safe and accurate machining.



3. Specification

A. QTN300-IIMS, QTN300-IIMSY, QTN350-IIMS, QTN350-IIMSY, 1st spindle

Item	Unit	QTN300-II MS, MSY		QTN350-II MS, MSY	
		STD	OPTION	STD	OPTION
Chuck type	—	B-210A815D	B-212A15A	BB212A115	B-15A115B
Cylinder type	—	S1877-15Y	S2078-15Y	SS2110C15Y	F2511HS-15A
Jaw stroke dia.	mm [in.]	8.8 [0.346]	10.6 [0.417]	10.6 [0.417]	10.6 [0.417]
Max. static gripping force	kgf [lbs]	11319 [24954]	14684 [32373]	15601 [34322]	18355 [38545]
Max. operating speed (*1)	min ⁻¹ (rpm)	4200	3000	3500	2500
Max. bar work machining ability	mm	φ75	φ77	φ105	φ116
Max. gripping dia. (*2)	mm [in.]	φ254 [10]	φ304 [11.97]	φ315 [12.40]	φ381 [15]
Min. gripping dia. (*2)	mm [in.]	φ31 [φ1.22]	φ34 [φ1.34]	φ47 [φ1.85]	φ30 [φ1.18]
Reference assembly drawing No.	—	033275AC030	033275A0031	033275AC010	033275AC020

*1: All values are the maximum speeds attainable in combinations of the chuck and the cylinder. These values are not the maximum speeds of the headstocks.

*2: All values are the gripping diameters of standard soft jaws.

B. QTN300-IIMS, QTN300-IIMSY, QTN350-IIMS, QTN350-IIMSY, 2nd spindle

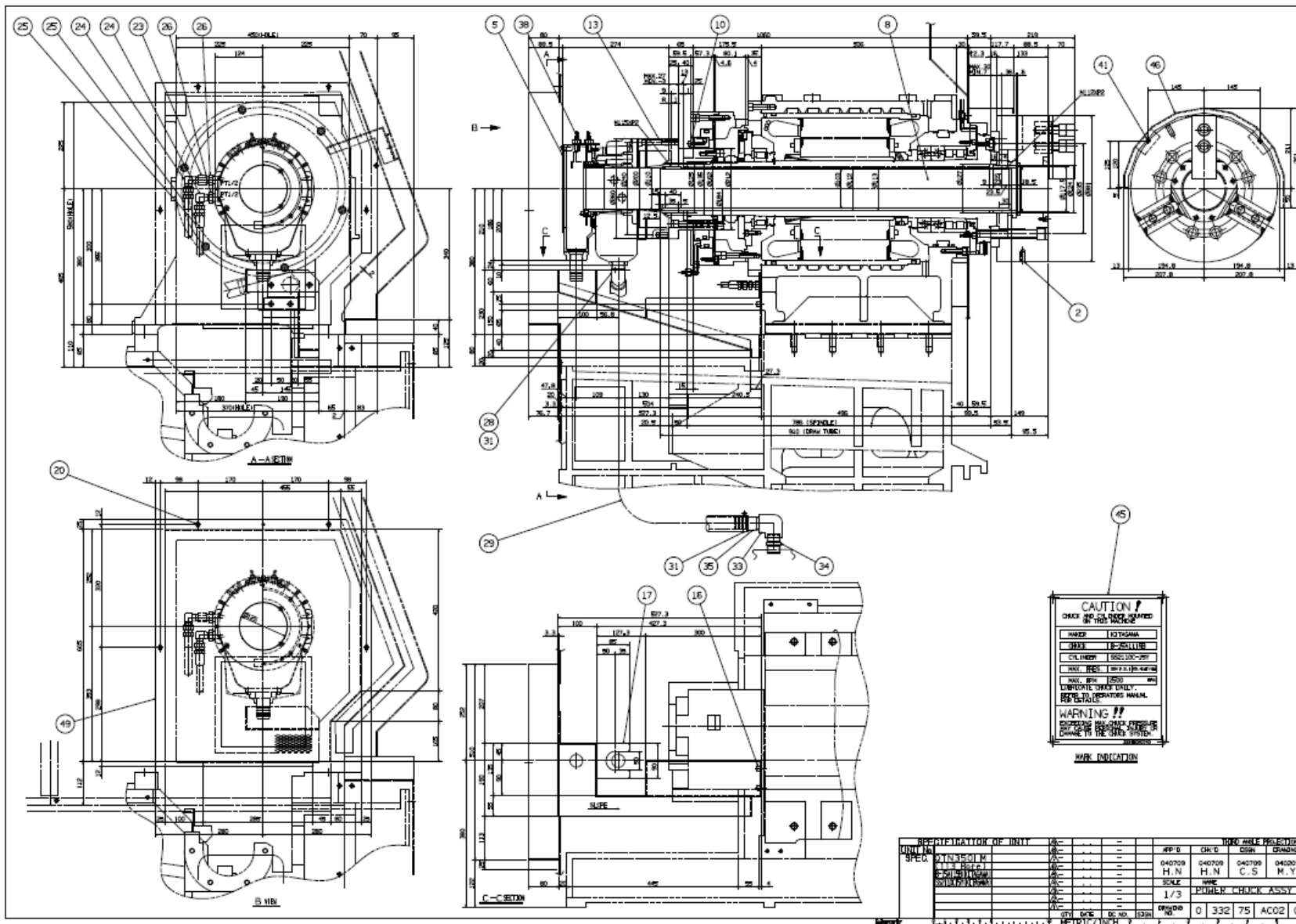
Item	Unit	QTN300/350-II MS, MSY
		STD
Chuck type	—	B-210A815D
Cylinder type	—	S1877-15Y
Jaw stroke dia.	mm [in.]	8.8 [0.346]
Max. static gripping force	kN (kgf) [lbs]	11319 [24954]
Max. operating speed (*1)	min ⁻¹ (rpm)	4200
Max. bar work machining ability	mm	φ75
Max. gripping dia. (*2)	mm [in.]	φ254 [10]
Min. gripping dia. (*2)	mm [in.]	φ31 [φ1.22]
Reference assembly drawing No.	—	033375AC020

4. Whether user-mounting is possible

Possible (Additional processing not required.)

5. Reference assembly drawing

Machine model	Specification	Drawing No.	Page
QTN300-II MS, MSY	Standard for USA/ EU	033275AC030	7-7
	Optional	033275A0031	7-8
	SS	033375AC020	7-9
QTN350-II MS, MSY	Standard for USA/ EU	033275AC010	7-10
	Optional	033275AC020	7-11
	SS	033375AC020	7-9



7-2-2 2nd spindle 0.0001° C-axis control

1. Corresponding machine: QTN300-II/350-II MS, MSY

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

The standard 2nd spindles of the QTN300-II Series are of PLG-based 0.0001° index specifications. However, the selection of C-axis control also allows C-axis control that uses a rotary encoder.

3. Specification

Item		Unit	QTN300-II/350-II MS, MSY
Encoder	Model (Maker)	—	ERM280-φ95 (HEIDENHAIN)
C-axis brake/clamp mechanism	Type	—	Hydraulic disk brake/clamp
	Clamp torque	N·m (kgf·m) [ft·lbs]	512.8 (52.3) [378]
Minimum c-axis command unit		degree	0.0001°/pulse
C-axis rapid feedrate		min ⁻¹ (rpm)	555
C-axis positioning accuracy *1		sec	20
C-axis repeatability *1		sec	8

*1 Positioning MAZAK specifications that were measured in accordance with ISO standards

4. Whether user-mounting is possible

Impossible (Mountable only at the production site.)

7-2-3 Hand grease gun

1. Corresponding machine

◆: Standard ○: Optional

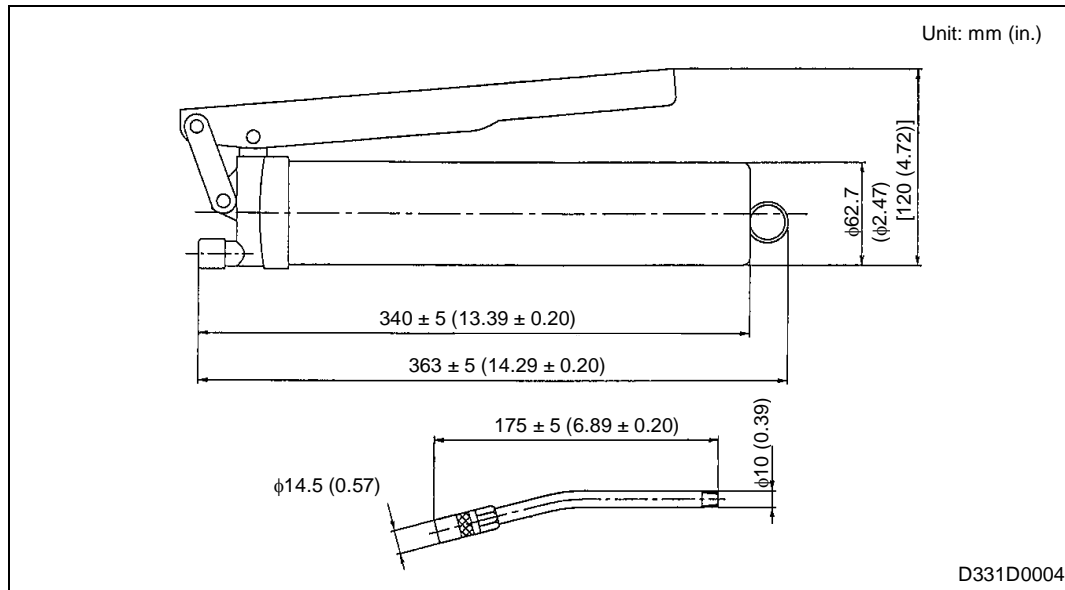
Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

Grease needs to be added as the lubricating oil if an oil-film breakage is detected on the rail surfaces of the tailstock or work rest linear guides. To regrease the tailstock or the grease pump at the machine rear, remove the front and rear covers and then supply grease from the linear guide block-fitted grease nipples (located in 4 places) using a hand grease gun.

Recommended oil

- SHELL ALVANIA GREASE EP (LF) 1
- MOBILUX EP1 (Mobil)



3. Specification

Type	—	Cartridge type
Model (Maker)	—	K-400 (Lube)
MAZAK parts No.	—	P21LA000210
Capacity	gf [lbs]	400 [0.88]
Max. pressure	MPa [PSI]	42 [6090]
Weight	kgf [lbs]	1.38 [3.036]

4. Whether user-mounting is possible (Additional processing not required.)

7-2-4 TOOL EYE

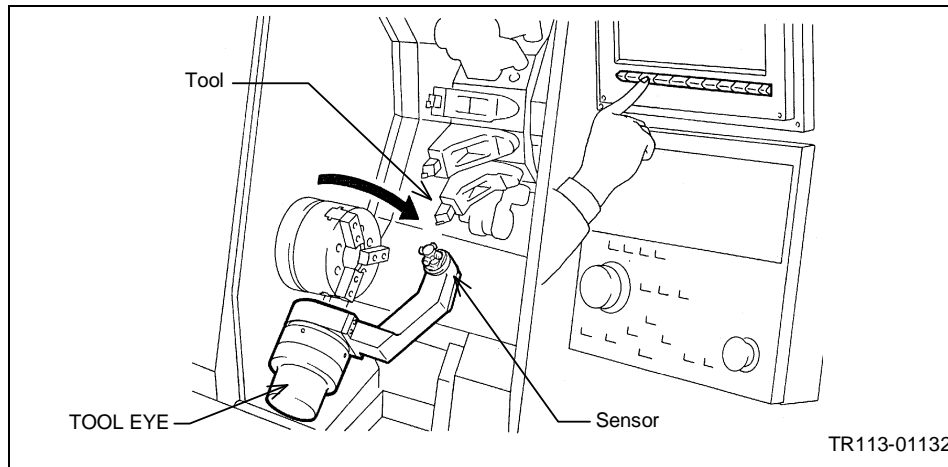
1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	◆	◆

2. Outline

How to minimize the time for tool nose position measurement and prevent the occurrence of defects in machining accuracy due to tool wear and damage during continuous machining, has been one of the problems to be solved toward achieving further automation and labor/energy saving. This machine is provided with a TOOL EYE and a tool wear/damage monitoring system to solve the problem mentioned above.



Note: If a chuck other than the standard bringing-up chuck is mounted, the use of the TOOL EYE may be limited.

1. Tool setup changing
Automatic storage of tool data into the NC memory is accomplished just by bringing the TOOL EYE sensor into contact with the tool nose. Thus, conventional test-cutting or program-editing for measuring the tool nose position are no longer necessary.
2. Tool tip changing
When the tool tip is changed for a new one, machining can be immediately restarted since fully automatic tool nose measurement becomes possible.
3. Wear correction
The results of tool nose wear detection can be used to correct the program. Fixed machining dimensions can therefore be maintained even during unattended operation.
4. Tool damage detection
Operation stops when tool nose damage is detected.

3. Specification

Measurement	4 directions (+X, -X, +Z, -Z)
Measurement accuracy	±0.007 mm [±0.00028 in.]
Turret speed (X- and Z-axis) during measurement	30 mm/min [1.18 IPM] (X-axis, Z-axis)
Rocking time of measuring arm	Extension of the arm 2.0 sec Retraction of the arm 2.0 sec

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-5 Automatic front door open/close function

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This unit automatically opens and closes the front door in accordance with the appropriate M-code program data. In manual operation mode, the door can be opened and closed using the corresponding menu keys.

This unit reduces the burdens of the operator during heavyweight workpiece loading and unloading and improves efficiency.

3. Specification

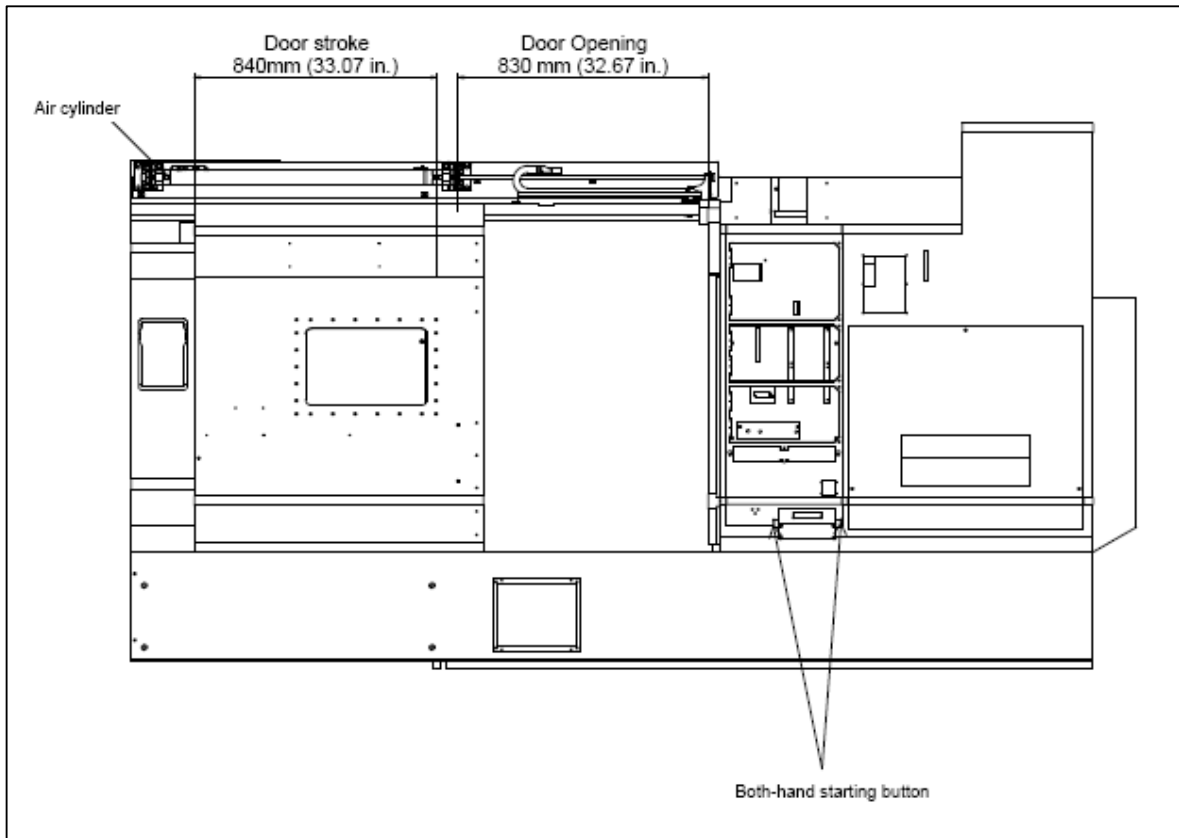
Stroke	650 mm [25.59 in.] (common to all center-to-center spec.) (common to M and M, MS, MY, MSY models)	
Door opening	614 mm [24.17 in.] (common to all center-to-center spec.) (common to M and M, MS, MY, MSY models)	
Door open/close time	Open: 3 sec Close: 5 sec	
Driving source Pressure required	Air 0.5 MPa (71.51 PSI)	
Specification/ Operation	Automatic	Door opening: M56 Door closing: No use for command Press and hold down the separately arranged both-hand starting buttons until door closing has been completed. Subsequent release of the buttons activates the cycle start function automatically. The door is closed in inching mode.
	Manual	Both-hand starting by operating the menu switch and the door unlock switch in inching mode

4. Whether user-mounting is possible

Impossible (Mountable only at the production site.)

5. Other

The opening/closing speed of the door may change according to the particular air operating conditions, namely, changes in air pressure. Be careful since this is particularly prone to occur when the capacity of the compressor is too small.



7-2-6 Signal tower (three-stage or single-stage type) and machining finish buzzer

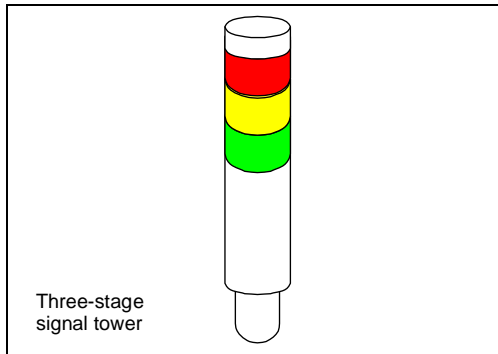
1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

Although the status of the machine is displayed on the operating panel, rotary lights or a buzzer is activated so that the machine status can be readily identified even from a distance. A three-stage or single-stage type of signal tower is available.



3. Specification

type	Three-stage signal tower	Single-stage signal tower	Machining finish buzzer
Signal tower type	LEL-302W-RYG-B049	LEL-102W-YB409	—
Description	Red	Alarm condition After having eliminated the concerned alarm, press the RESET key on the operating panel to turn off the lamp.	—
	Yellow	Machining operation is over. Press the RESET key or the CYCLE START button on the operating panel to turn off the lamp.	Machining operation is over.
	Blue	Machining operation is in automation.	—
	Buzzer	—	—

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-7 Calendar-type auto power on and warm-up operation

1. Corresponding machine

◆: Standard ○: Optional

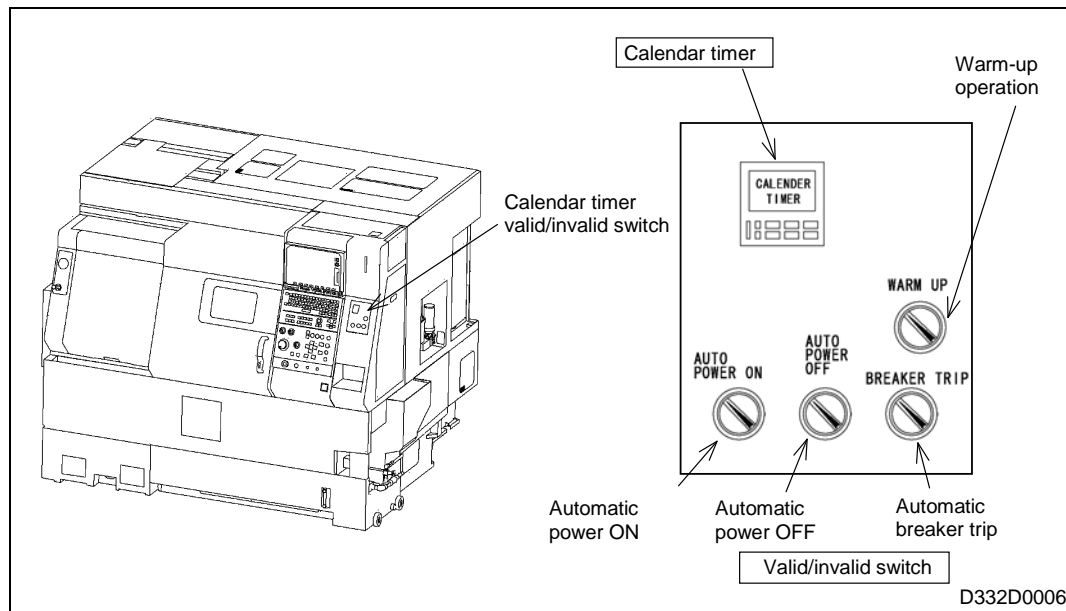
Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

Before the operator arrives, the spindle is warmed up automatically to set the machine to a thermally balanced state for improved machining accuracy. The time required for manual warming-up by the operator is also reduced. Effective warm-up can be implemented by executing the same program as an actual-cutting one. In that case, therefore, a coolant is also used.

3. Specification

Device to use	Daily time switch
Manufacturer	OMRON
Type	H5F-B-90
A cycle	24 h x 7 days
Time setting range	0 h 0 min to 23 h 59 min
Setting unit	1 min
Number of ON/OFF time settings	16
Programs usable for no-load operation	1
Position to be installed	Door of electric control cabinet



4. Operations

A warming-up operation VALID/INVALID switch is provided. When this switch is set to the VALID position, the following operational sequence starts at the time set previously using the calendar timer:

1. The NC power supply is turned on automatically.
2. Checks are performed to see if the front door is closed, and then if it is closed, the warming-up operation starts as programmed.

To release this function, set the switch to the INVALID position.

Note 1: Since the NC power is turned on automatically, always leave the main circuit breaker turned on. When this circuit breaker is off, the NC power cannot be turned on.

Note 2: It can be set whether the machine is to be turned on each day of the week. The timer contains a storage battery, so when the battery is fully charged, the timer functions for about 100 hours, even if the main circuit breaker is turned off.

5. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-8 Automatic power off

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

During unattended operation after the operator has left the site, the power is shut off when machining completes. Thus, energy can be saved. This function is valid during unattended (automatic) operation with a robot system and/or a bar feeder.

3. Specification

Operation	NC screen menu function on/off (Menu display reversed when enabled.)
Power cutoff	Machining terminates and then after about 3 seconds (set by the parameter), NC power goes off. After that, the main circuit breaker trips to shut off power. (When a warm-up operation system is provided, the main circuit breaker does not trip.)

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-9 Chuck jaw automatic opening/closing unit

1. Corresponding machine

◆: Standard ○: Optional

Machine model		JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	1st spindle	◆	◆	◆
	2nd spindle	◆	◆	◆

2. Outline

This unit automatically opens or closes the chuck jaws using M-codes. This unit is required when a bar feeder and/or a robot system manufactured by a company other than Yamazaki Mazak are mounted. The chuck jaw opening/closing check sensors are also necessary to detect the M-code completion signal.

3. Specification

Commands Chuck opening M206
 Chuck closing M207

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-10 Chuck jaw air blower

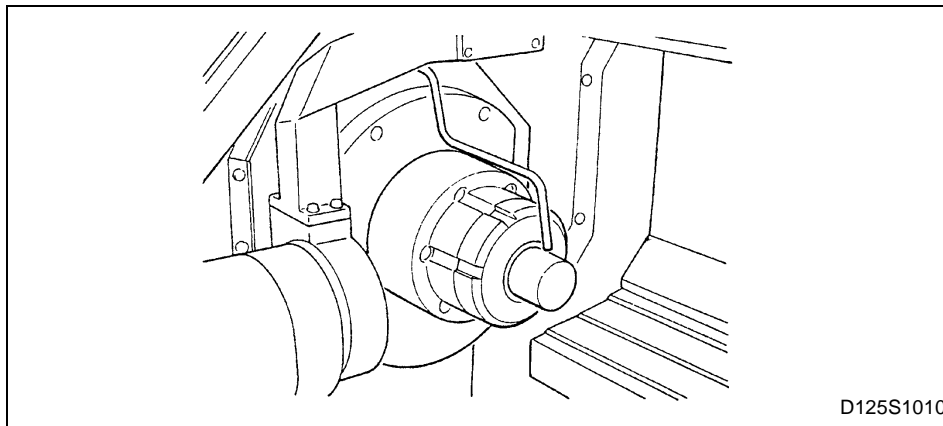
1. Corresponding machine

◆: Standard ○: Optional

Machine model		JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	1st spindle	○	○	○
	2nd spindle	◆	◆	◆

2. Outline

This unit blows out air from the nozzle piped at the top of the chuck in the synchronous operation with the spindle rotation and removes sticking chips from the chuck and the workpiece. The unit is required for automatic machining with a bar feeder and/or a robot system.



3. Specification

Number of nozzles	1
Blowout time	Approx. 3 sec. (parameter setting)
Spindle rotation speed	45 min ⁻¹ (rpm) (parameter setting)
Required air volume	50 L/min (ANR) (1.75 ft ³ /min)
Manual operation	Menu keys command to operate ON/OFF
Automatic operation	M-code command (M58) to operate ON/OFF automatically

4. Methods of operation

1. Manual operation
Select the air blower menu item in the machine menu. The spindle rotates at a parameter-set speed of 45 min⁻¹ (rpm) and air is injected.
2. Automatic operation
Use M-code commands to operate the unit automatically. When command code M58 is issued, the 1st spindle rotates at the parameter-set speed of 45 min⁻¹ (rpm) and air is injected for a parameter-set time of about three seconds.

5. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-11 Absolute position detectors (cannot be used together with a scale feedback system)

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

Absolute position detectors are provided along the feed axes to enable absolute position detection. This function makes power-on homing unnecessary.

3. Structure

	Servomotor detector	Battery unit
X-axis	HF-H204BS-A48	MDS-A-BT-2
Y-axis	HF-H354BS-A48	
Z-axis	HF-H354S-A48	

4. Whether user-mounting is possible

Possible (Additional processing not required.)

5. Other

The detectors are not allowed to be used together with a scale feedback system.

7-2-12 Spindle orientation function

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This function orients the spindle at a fixed position. This function is required in the following cases:

1. When supplying rectangular or hexagonal materials using a bar feeder
2. When loading/unloading special-form materials using a robot system

3. Specification

Number of orientation points	1
Setting of the orientation point	At every 1°
M-code command	M19
Spindle orientation time	5.0 sec (Max. spindle rotation speed → Stop → Orientation)

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-13 Bar feeder interface kit

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

When a bar feeder is mounted, this kit is required for exchange of signals between the machine and the bar feeder.

3. Major interface signals

Classification	Item	Description
Input signal transfer from bar feeder to machine	Top Cut Request	Command signal for edging the end of the first workpiece
	Bar Feeder Alarm	Signal generated if an alarm occurs in the bar feeder
	Spindle Inching	Signal for operating the spindle in inching mode if the workpiece gets stuck in the spindle
Output signal transfer from machine to bar feeder	Bar Feeder Mode	Signal generated when the machine is set to bar feeder mode
	Emergency Stop	Signal generated if the machine comes to an emergency stop
	Bar Feeder Request	Signal generated when the chuck of the machine is open

The interface kit includes an automatic chuck jaw clamp/unclamp unit and a chuck jaw clamp/unclamp status checking unit. Details of the interface differ according to the type of bar feeder mounted. Confirm the bar feeder type when ordering the interface kit.

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-14 Workpiece measurement

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This function uses a turret-mounted touch sensor to automatically measure the inside and outside diameters, surface irregularity, etc. of the machined workpiece, to perform tool corrections, and to maintain machining accuracy during unattended operation. Two types of automatic workpiece-measuring units are available: fixed type (armless) and a swing arm type capable of measuring a maximum outside diameter of 170 mm (6.69 in.) by allowing arm rotation by the actuation of the milling spindle. The swing arm type of automatic workpiece-measuring unit also allows highly accurate machining with a test-cutting macro to be started from the first workpiece.

3. Whether user-mounting is possible

Impossible (Mountable only at the production site.)

4. Other

A turret air blasting function is supplied as standard for cleaning the stylus. This function is of the same specifications as those of the optional turret air blowers described later in this manual.

7-2-15 Automatic parts catcher

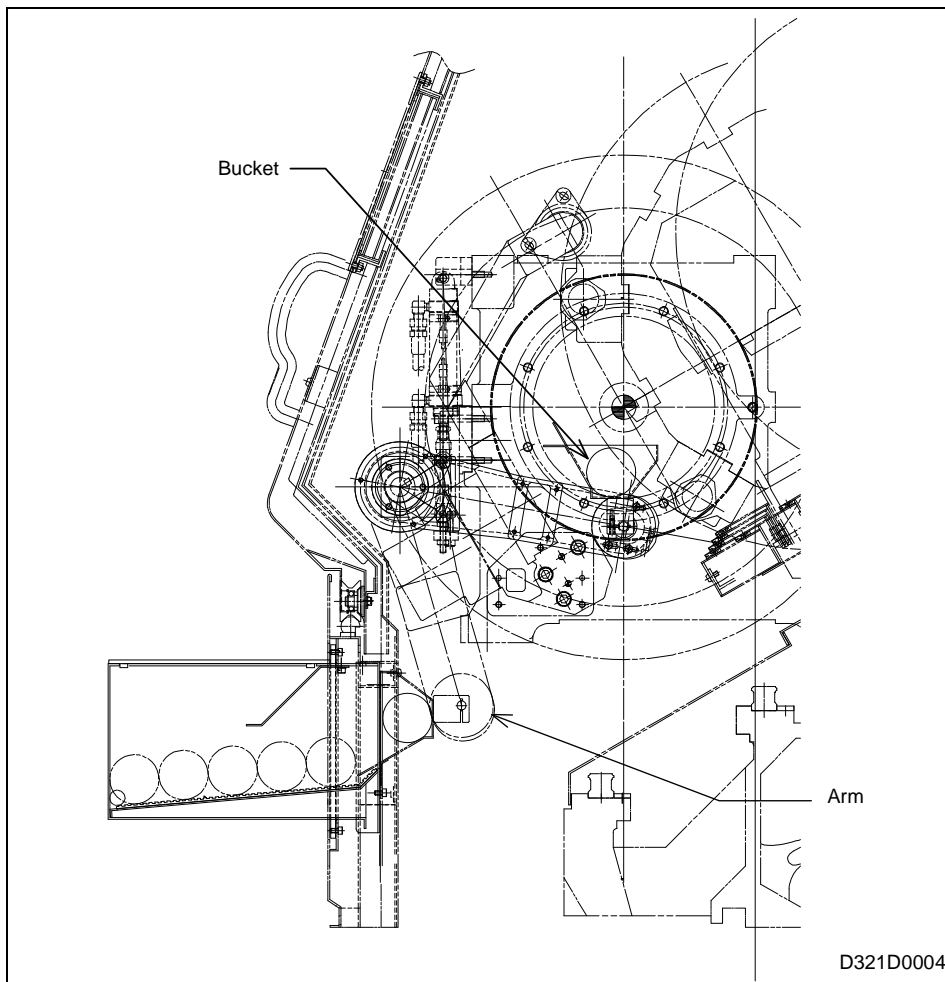
1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This unit unloads machined workpieces automatically from the machine. When combined with a bar feeder, the unit enables automatic processing. The cycle time can be reduced since the unit unloads workpieces without opening or closing the front door.



3. Specification

Max. unloadable workpiece diameter and length		φ102 × 150 L [φ4.02 × 5.91]
Max. unloadable workpiece weight		4.0 kgf [8.8 lbs]
Driving source		Air
Type		Swing arm bucket receiving
Arm swinging-in time		2 sec
Operation	Automatic	M-code command (Extension: M48, Retract: M49)
	Manual	Menu key command

4. Whether user-mounting is possible

Possible (Additional processing not required.)

5. Other

1. Workpieces can also be unloaded from the right side of the machine by combining this unit with a Z-axial workpiece-unloading conveyor (available only on an order-receiving basis).
2. This unit cannot be combined with the gantry system, hydraulic automatic work rest, and manual work rest together.

7-2-16 Overload detector

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This detector detects an overload of the spindles or other axial feed systems. If the load is detected to be over the preset amount, the machine stops automatically to protect it from damaging. This extends tool and equipment life and increases machining accuracy. (Option common to all market destinations.)

3. Specification

Detective axes		X-axis, Y-axis, Z-axis and 1st spindle
Setting of detective axes		By A- or B-codes
Load detective	Method	Detection level and time
	Setting	By M-codes
	Indication	By alarm on the NC display
Machine halt when an overload is detected		Selected by M-codes NC feed hold NC feed hold and spindle stop

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-17 Earth leakage breaker

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	—	—

2. Outline

This unit detects ground current leakage in the machine and cuts off the main power.
This unit is used as the main power breaker.

3. Specification

Standard rated sensing current Standard setting 200 mA

4. Whether user-mounting is possible

Impossible (Mountable only at the production site.)

7-2-18 Double foot switches

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN200-II/250-II M, MS, MY, MSY	○	○	◆

2. Outline

The standard single foot switch allows you to clamp and unclamp a workpiece in the chuck alternately by stepping the switch. On the contrary, the optional double foot switch allows you to clamp a workpiece in the chuck by stepping one switch and to unclamp it by stepping the other.

3. Specification

Double foot switch [Type] OFL-2TVG-SM2K (Ogiden)

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-19 Chip conveyor

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

The chip conveyor discharges chips in the lateral direction (Z-axial direction) or backward (X-axial direction) of the machine and allows the chips to be stored into a chip bucket.

3. Operations

1. After the machine power and the NC power have been turned on, when the chip conveyor operation switch on the switch box of the chip conveyor is set to the forward or reverse position, the conveyor belt moves forward or backward, respectively. The conveyor stops when the switch is set to the stop position.
2. If the machine comes to an emergency stop, the conveyor immediately stops, and when the emergency stop status is released, the conveyor restarts.
3. The conveyor must not be operated in intermittent operation mode. If the conveyor is operated in intermittent operation mode, the fine chips that may have moved past the surface of the belt accumulate between the belt or at the bottom plate of the conveyor and give significant resistance during a start.

4. Specification

A. QTN300-II/350-II MS, MSY

Specification	Unit	QTN300-II/350-II MS, MSY
Direction of ejection	—	Lateral ejection
Model	—	L02JCC90082 (Hinge type)
Maker	—	Jorgensen
Overall length	mm [in.]	2420.1 [95.28]
Discharge height	mm [in.]	1035 [40.75]
Weight	kgf [lbs]	363 [800]
Motor output (50/60 Hz)	kW [HP]	0.1 [0.13]
Chain speed (50/60 Hz)	m/min [ft/min]	0.9 [2.95]/1.1 [3.61]
Conveyed amount	L/h [ft ³ /H]	782 [27.37]
Coolant tank capacity	L [gal (US)]	210 [55.48]

5. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-20 Chip bucket (fixed type/rotatable type)

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

The chip bucket can be used to store chips after they have been discharged from the chip conveyor. The chip bucket is easy to carry because it has tires. It is available in two versions: a fixed type and a rotatable type that is convenient for discharging stored chips.

3. Specification

Fixed type chip bucket		Rotatable type chip bucket	
Order code No.	41569200750	Order code No.	41509200761
Length	1100 mm [43.31 in.]	Length	1260 mm [49.61"]
Width	700 mm [27.56 in.]	Width	860 mm [33.86"]
Height	615 mm [24.21 in.]	Height	750 mm [29.53"]
<p>Unit: mm (in.) D125S1007</p>		<p>Unit: mm (in.) D125S1008</p>	

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-21 Powerful coolant (520 W/1.1 kW)

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

The capacity-improved type of coolant pump (standard coolant pump: 180 W) having a nominal output enhances the cooling, lubricating and chip removing capabilities of the coolants. Thus, machining efficiency and surface finishing accuracy can be improved and tool life extended. Use the powerful coolants when mounting U-drilling tools or other through coolant tools.

3. Specification

Specification		Unit	Powerful coolant (520 W/0.69 HP)	Powerful coolant (1.1 kW/1.5 HP)
Model (Maker)		—	MTH2-30/3 (Grundfos)	MTH2-60/6 (Grundfos)
Motor output (50/60 Hz)		kW [HP]	0.325 [0.432]/0.520 [0.692]	0.635 (0.845)/1.040 (1.383)
Pump discharge rate (50/60 Hz)	OD turning tool holder	L/min [gal (US)/min]	11.2 [2.96]/14.0 [3.70]	17.6[4.65]/ 22.0 [5.81]
	Boring bar holder		11.5 [3.04]/ 14.4 [3.80]	16.0 [4.23]/ 20.0 [5.28]
	U-drill holder		10.9 [2.88]/ 13.6 [3.59]	17.6 [4.65]/ 22.0 [5.81]

Note: The discharge rates listed above were measured in a 60-Hz area when an actual machine was installed. The discharge rates in 50-Hz areas are 80% of the data in 50-Hz areas.

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-22 Added coolant nozzle unit on the headstock side

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This unit injects a coolant from the coolant nozzle (piped at the top of the chuck) directly to the workpiece to assist in cooling it, in removing chips, and in extending tool life.

3. Specification

Nozzles 1 place
 Commands Synchronized with tool nose coolant injection

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-23 Turret air blowers

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

This unit uses the coolant nozzle of the turret-mounted holder to deliver air in accordance with the appropriate M-code. This unit is effective for removing small chips during I.D. machining, for removing chips during coolant-free machining of workpieces such as gunmetals, or for cooling.

3. Specification

Commands ON M45
OFF M09

4. Whether user-mounting is possible

Possible (Additional processing not required.)

7-2-24 Coolant temperature management

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

The coolant chiller maintains a constant coolant temperature to prevent workpiece-cutting heat from warming the coolant for minimum adverse effects on workpiece-machining accuracy. Therefore, it is most effective to mount the chiller before machining not only the workpieces strictly required to be accurate at heavy duty, but also those requiring accurate heavy-duty cutting. The coolant chiller and the coolant pump are connected to a subsidiary coolant tank, which in turn is hose-connected separately from the main coolant tank of the machine.

3. Specification

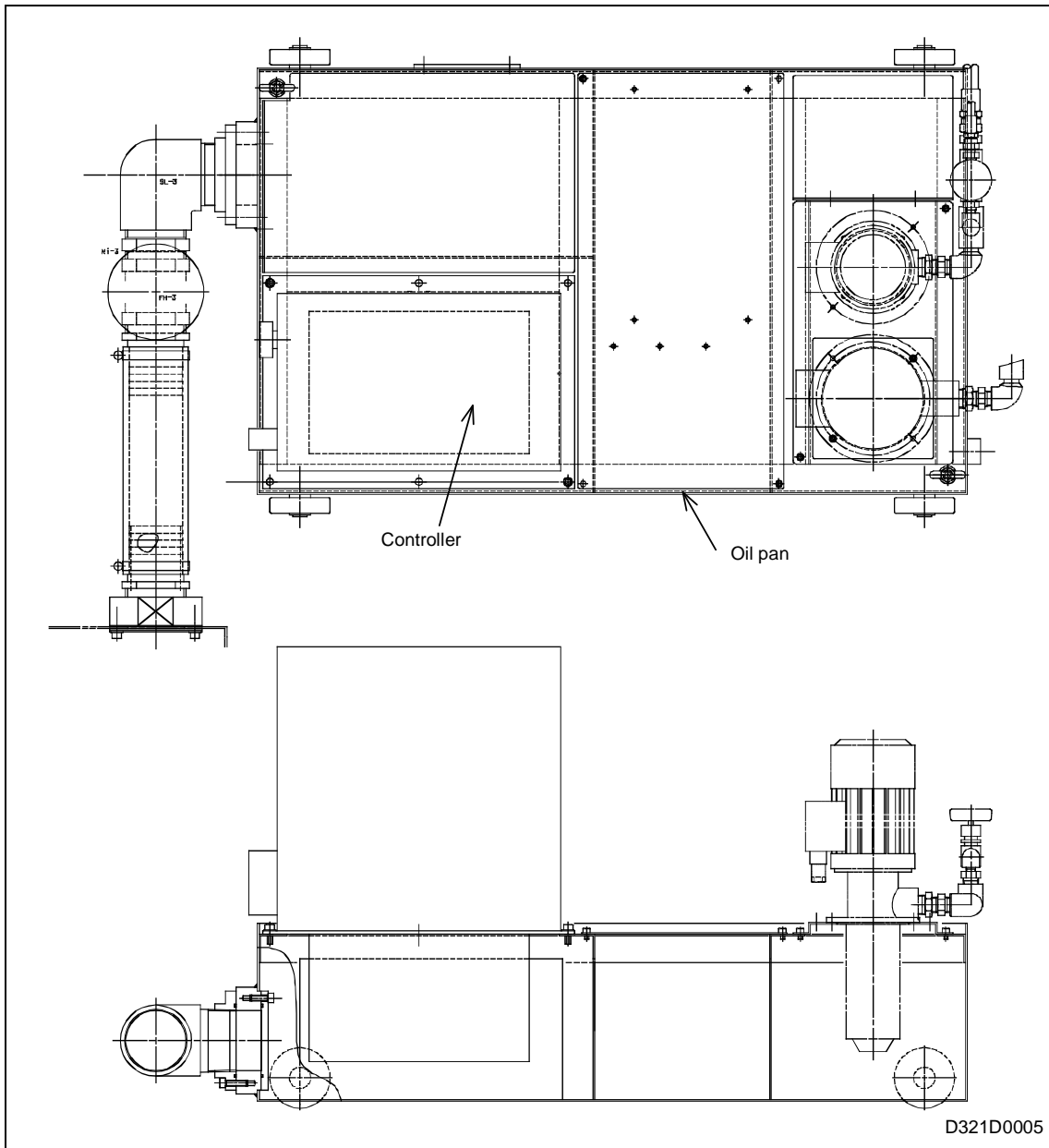
Item	Unit	JPN/Asia/USA	EU
Model	—	MAC-50C-MR-V-4F-F	MAC-50C-MR-V-6F-F
Maker	—	MAC	
Standard cooling capability	Kcal/h	800 [60 Hz·35°C (95°F)]	
Refrigerant	—	HFC-R407C	
Operation control unit	—	Electronic-type room-temperature follow-up automatic temperature regulator	
Coolant temperature control accuracy	°C	±0.3	
Circuit protector	—	Anti-overcurrent relay with noise killer	
Operating ambient temperature range	°C [°F]	Less than 40 (104)	
Subsidiary coolant tank	L [gal (US)]	Without chip conveyor: 120 [31.70] With chip conveyor: 100 [26.42]	

4. Whether user-mounting is possible

Impossible (Mountable only at the production site.)

5. Other

- (1) Since mounting the coolant chiller increases the floor space required, take notice of the total machine installation space requirement.
- (2) The coolant chiller requires a subsidiary coolant tank, and since this tank is connected to the main coolant tank of the machine, the main coolant tank becomes uneasy to remove during removal of chips. When using the coolant chiller, therefore, mounting it in conjunction with the chip conveyor is recommended.



7-2-25 Mist collector

1. Corresponding machine

◆: Standard ○: Optional

Machine model	JPN/Asia	USA	EU
QTN300-II/350-II MS, MSY	○	○	○

2. Outline

Mist poses the following problems:

1. Special types of mist adversely affect humans.
2. Since mist sticks to it, the floor becomes slippery and this causes secondary hazards.
3. Mist sticks to electronics and thus causes fire.

For these reasons, the working environment in the factory deteriorates and this makes its employees less labor-minded and results even in reduced production efficiency.

Fine-grain mist stems from machining with the Magnum coolant system and/or a cutting fluid. The mist collector prevents such mist from being discharged from the clearances of the machine during workpiece mounting/dismounting and thus protects the working environment from pollution. It is therefore suggested that users who operate their machine tools under these conditions should adopt the mist collector.

3. Specification

Item	Unit	QTN300-II/350-II MS, MSY
Model	—	WSO-10
Maker	—	Donaldson
Output	kW [HP]	0.56 [.75]
Processing capacity	m ³ /min	8/9
Weight	kgf [lbs]	88 [194]

4. Whether user-mounting is possible

Possible (Additional processing not required.)

8 ENVIRONMENTAL CONDITIONS

1. Environmental conditions (Machine)

Whenever installing a machine tool, avoid the following:

1. Direct sun light heat sources or places where temperatures may change considerably. (Near a door or air conditioner).
2. High humidity
3. Dusty locations
4. Places near vibration generating equipment
5. Where the ground is soft and weak

Note 1: When the machine tool must be installed near a source of vibration, adopt countermeasures such as vibration-insulating trenches, etc.

Note 2: When installing the machine tool on a soft and weak ground, increase the bearing capacity of the soil with piling, etc. to prevent sinkage or compression of the ground on which the machine tool is to be installed.

2. Environmental conditions (NC)

1. Ambient temperature
0°C to 40°C (32°F to 116°F) (for operation)
2. Humidity
Usually, relative humidity 75% or lower
As humidity increases, insulation is impaired and this causes components to deteriorate more quickly. No special dehumidification measures are necessary but places which are susceptible to high humidity should be avoided when setting up the equipment.
3. Vibration
0.5 G or lower (for operation)
3.5 G or lower (for transportation)
4. Environment
If the machine must be installed at dusty place, places with high concentration of corrosive gas or organic gas, etc., always consult our service staff.

8-1 Delivering the machine

To deliver the machine, the delivering entrance shown below is required. (Fig. 8-1)

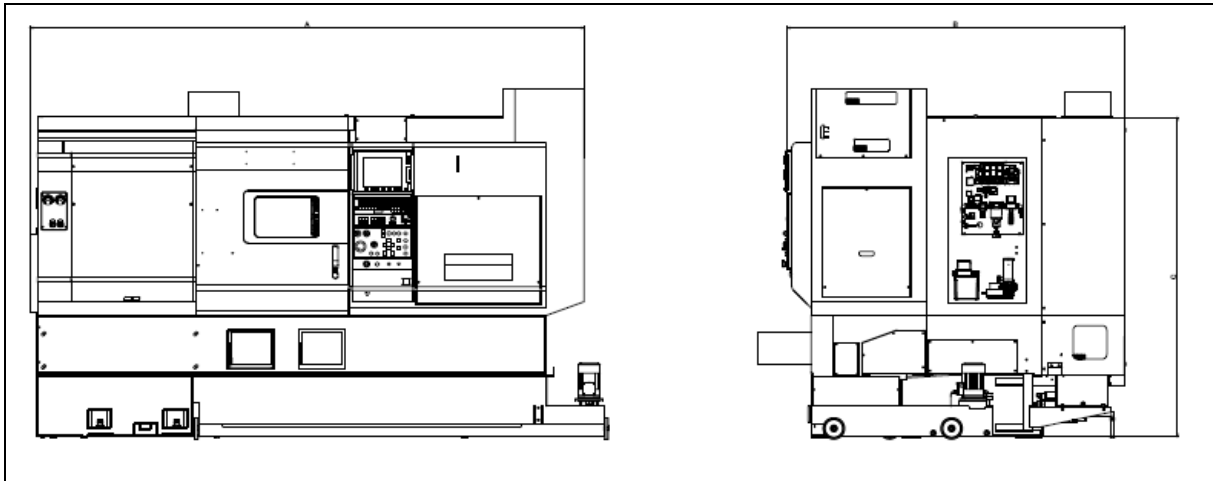


Fig. 8-1 Delivering the machine

Unit: mm (in.)

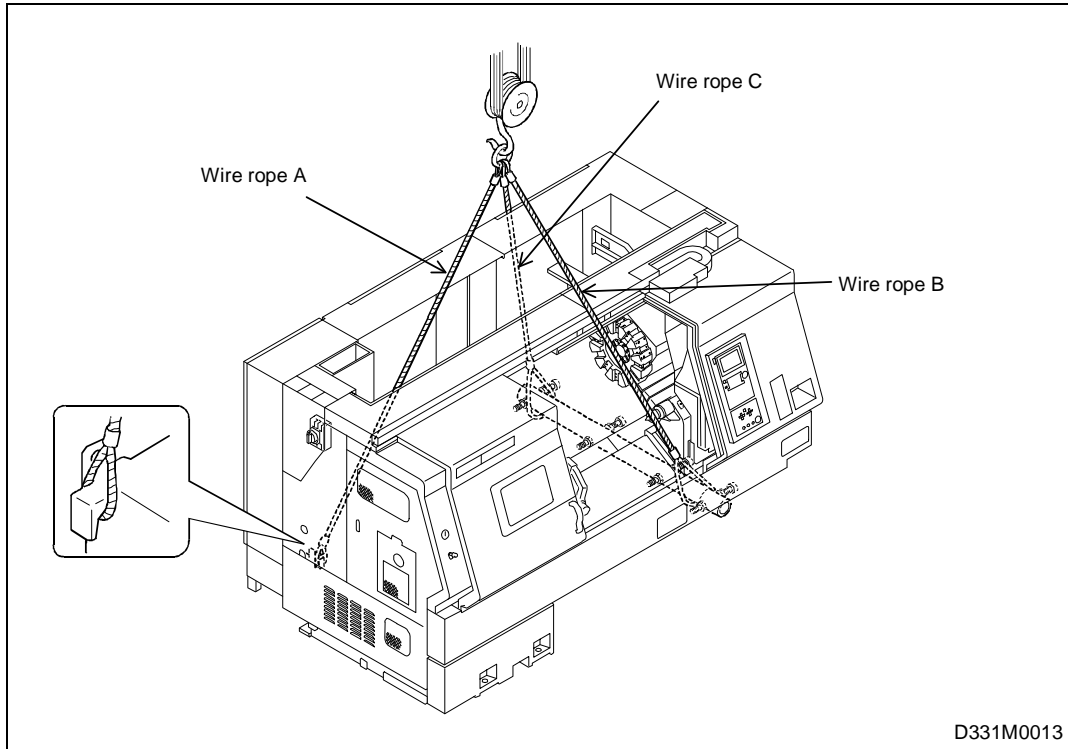
		QTN300-II/350-II MS, MSY
A	650U	3715 (146.3)
	1500U	5600 (220)
B	650U	2640 (103.9)
	1500U	2640 (103.9)
C	All center distance	2169 (85)

8-2 Machine Installation

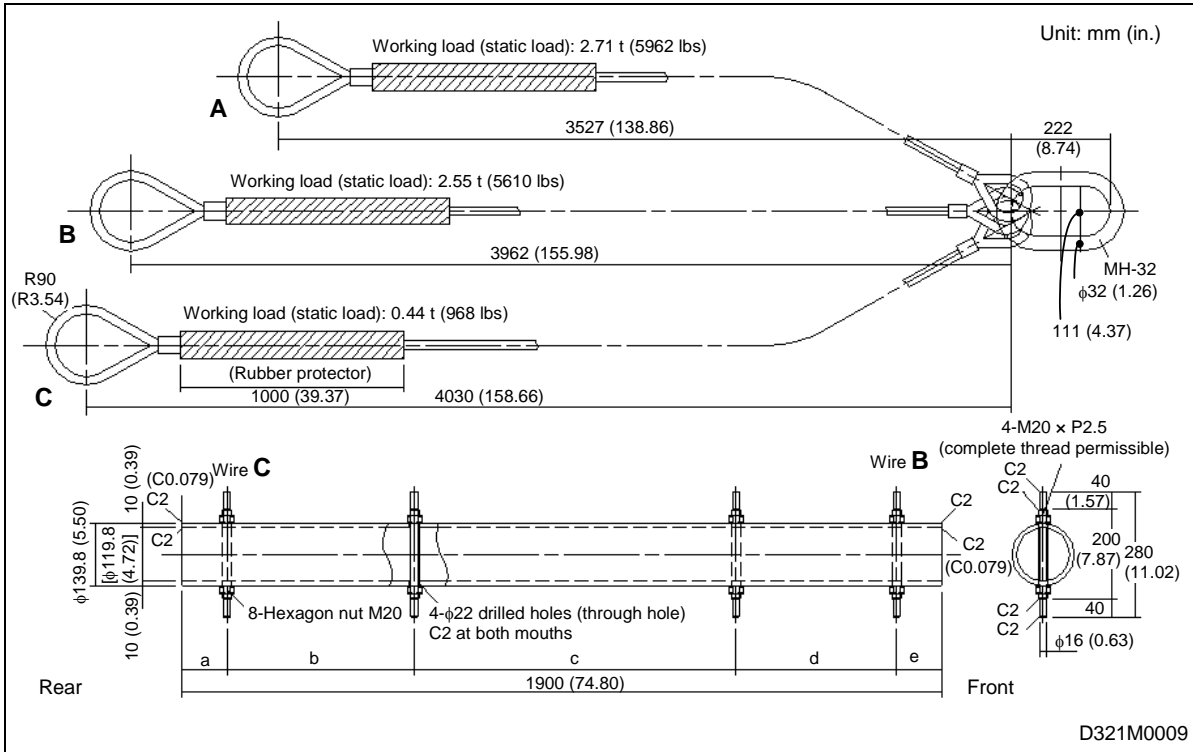
Recommended lifting diagram is shown below.

Use a crane with an 11 ton (21500 lbs) capacity or larger for lifting the QTN300-II/350-II MS, MSY machine of 650U

Lifting the machine (for 650U)



Lifting sling (for 650U)



Position of pipe center

Unit: mm (in.)

	a	b	c	d	e
QTN300-II/350-II MS, MSY	140 (5.51)	335 (13.19)	855 (33.66)	400 (15.75)	170 (6.69)

9 CONDITIONS FOR INSTALLATION

The foundation drawings in this volume of detail specifications are for mere reference.

Before constructing the foundation, please consult with us referring to the machine model and the machine number and get the correct drawing.

1. Grounding

Implement grounding (earthing) in compliance with individual national standards. [Type C, grounding resistance 10 Ω or under, and grounding cable 14 mm² or more in Japan]

2. Notice

- (1) Use gravel stones, to obtain a minimum soil bearing pressure of 8 tonf/m² (11.38 PSI).
- (2) Use concrete with minimum compressive strength of 180 kgf/cm² (2559.6 PSI) and tensile strength of 18 kgf/cm² (256 PSI).
- (3) Use cautions not to have the concrete cracked.
- (4) Be certain that the inner walls of the foundation bolt pits must be judged rough and uneven to facilitate the secondary poured concrete to adhere fast with the initial poured concrete.
- (5) In the first step, pour the concrete with the holes prepared for foundation bolts. After the concrete has been cured enough, install the foundation bolts, leveling blocks and other fittings and establish the rough level of the machine with 5 mm (0.2 in.) In the second step, pour the concrete into the foundation bolt holes to secure the foundation bolts in the floor.
- (6) When pouring the secondary concrete into the foundation bolt pits, level the machine and secure the leveling block to the machine by tightening the nuts after the concrete has been cured.
- (7) It is advisable to mix the proper inflating agent (such as Denka CSA) in the concrete used to fill the anchor bolt pits so as to prevent the concrete used to fill the anchor bolt pits so as to prevent the concrete from contracting after it has cured.
- (8) The surface of concrete for the foundation pits should be finished smoothly with the water-proof mortar.
- (9) When complete water-proof on the floor is needed, ditches for collecting coolant should be made around the machine.

3. Power requirements

A. Power source

Voltage	200 to 220 V 3 phases	200 to 480 V 3 phases	380 to 415 V 3 phases
Permissible voltage fluctuation	±10%	±10%	±10%
Frequency	50/60 Hz ± 2 Hz	60 Hz ± 2 Hz	50 Hz ± 2 Hz

B. The size of the primary side power cable is calculated under the following conditions.

- Primary incoming cable: 38 mm² (0.06 in²) or larger for QTN300-II/350II MS, MSY
- Environment temperature: Less than 30°C (86°F)
- Power source: 200 VAC, 3 phases
- Metallic conduit: 3 pieces
- Continuous rating for spindle drive motor

Note 1: Implement grounding (earthing) type C, grounding resistance 10 Ω or under, and

grounding cable 14 mm² or more. If the grounding type C is difficult due to a machine installation place or environment, provide an earth leakage breaker in the main power breaker to ease to the grounding type D (100 Ω or under) or so (only in Japan).

Note 2: For installation of an earth leakage breaker, use one with the operating current 200 mA without fail. As the machine tool uses inverter units, 30 mA may cause a machine malfunction; so it cannot be used (only in Japan).

Note 3: Use an AC inverter breaker in your factory power source. Negligence may shut down the breaker due to a high-frequency current leakage inherent to AC inverters (only in Japan).

C. Total power requirements

Table 9-1 Power requirement table (QTN300/350-II MS, MSY)

Item		Model	QTN300-II MS, MSY	QTN350-II MS, MSY
Spindle drive motor				
	X-axis servomotor	Continuous rating	39.02 kVA (*1)	
	Y-axis servomotor	30-min. rating	44.86 kVA (*1)	50.70 kVA (*1)
	Z-axis servomotor			
Hydraulic unit			0.98 kVA (*2)	
Coolant supply pump			0.68 kVA	
Radiator fan motor for headstock cooling			0.12 kVA	
NC unit			0.28 kVA	
Total	Continuous rating		44.9 kVA	
	30-min. rating		50.8 kVA	59.6 kVA

* 1: The spindle drive motor, and the servomotors are of the batch power supply scheme, the ratios of the axes were calculated as follows:

- Spindle drive motor : 1
- X-axis, Y-axis servomotor : 0.2
- Z-axis servomotor : 1

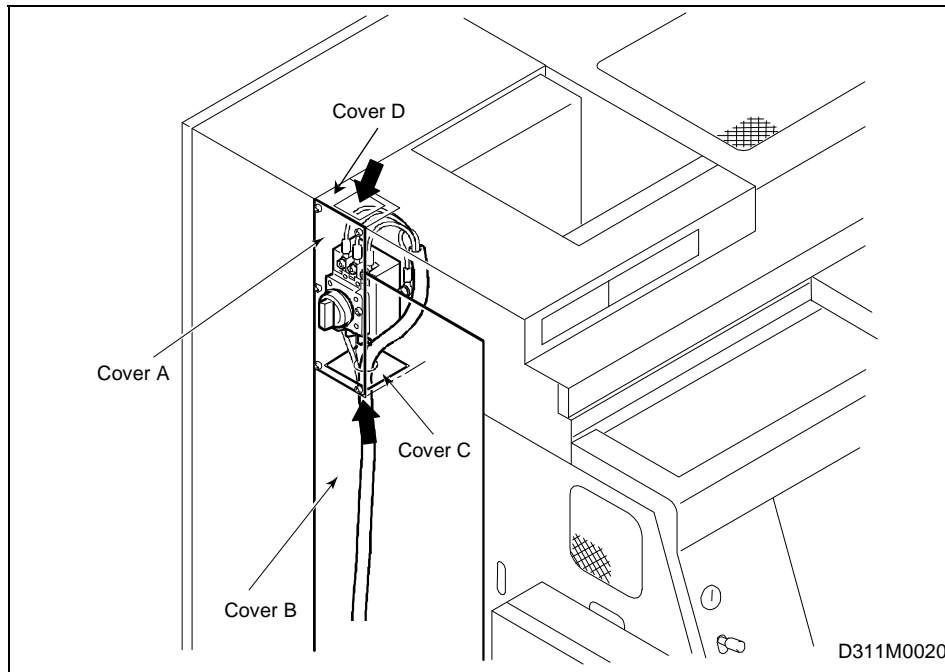
Additional unit for FA

Chip conveyor (0.2 kW) (option)	0.26 kVA
Coolant chiller MAC50C (option)	1.2 kVA

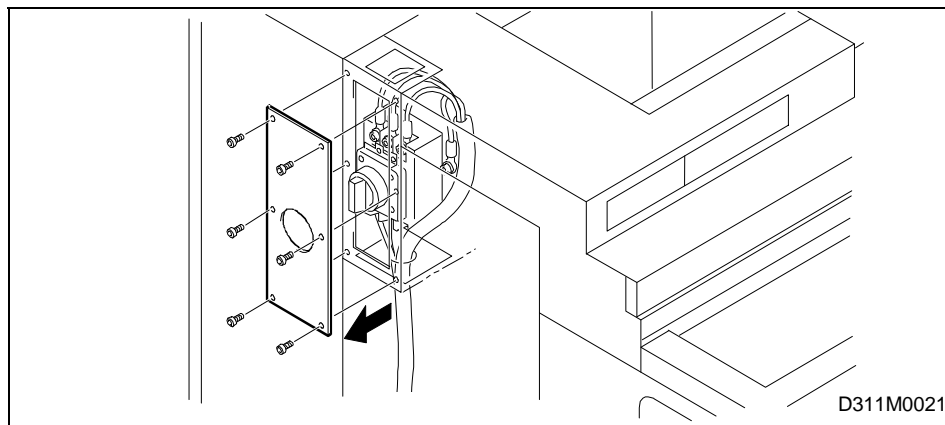
*2: The capacity of the hydraulic unit assumes the following load factor:

Hydraulic unit: 0.5

4. Connecting the power supply cable

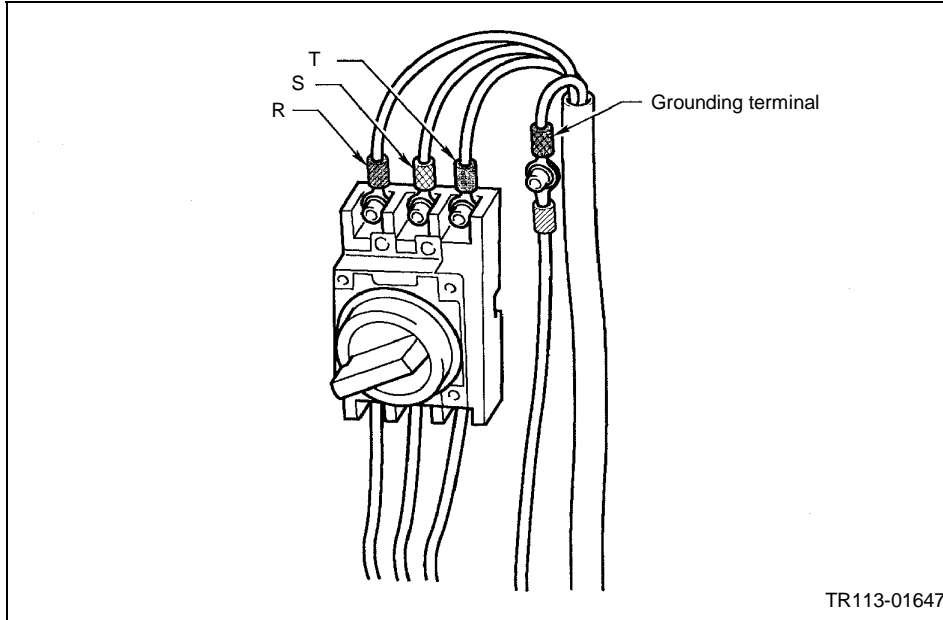


- (1) Remove the cover B and C.
- (2) Remove the six screws fixing the cover A.
- (3) Turn the breaker handle to the OPEN RESET position and pull the cover A.

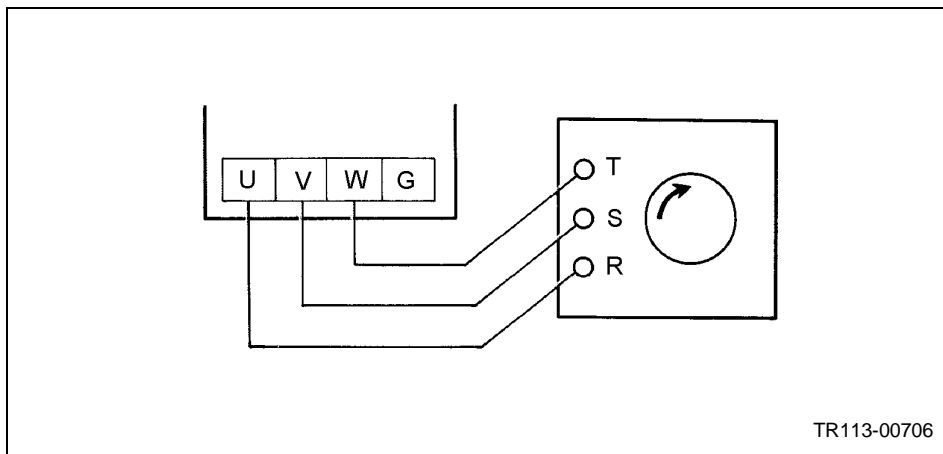


- (4) Pass the primary incoming power cable through the notch at the bottom end of the cover B, and insert the cable into the hole that has been filled up by the cover C.

- (5) Connect the cable to the NFB (no fuse breaker). Make sure connections to the R, S and T terminals and grounding terminal.



- (6) Check for correct connection using a phase tester. Otherwise, damage to the important sections of the machine may result.



- (7) Return the cover and breaker handle to their original position by pushing them into place.
 (8) Tighten the screws securely to fix the cover.

5. Breaker

Item	QTN300-II MS / QTN300-II MSY		QTN350-II MS / QTN350-II MSY	
	JPN/Asia/USA	EU	JPN/Asia/USA	EU
Model	NF250-CW-3P-225A-SHT, AC100V	M: NF125-SW-3P-100A-F-SHT, AC100V MY: NF250-SW-3P-125A-F-SHT, AC100V	NF250-CP-3P-225A-SHT, AC100V	NF250-SW-3P-125A-F-SHT, AC100V
Maker	Mitsubishi Electric			
R/S/T terminal size	M8			

Earth terminal size	M12
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6. Air pressure requirements

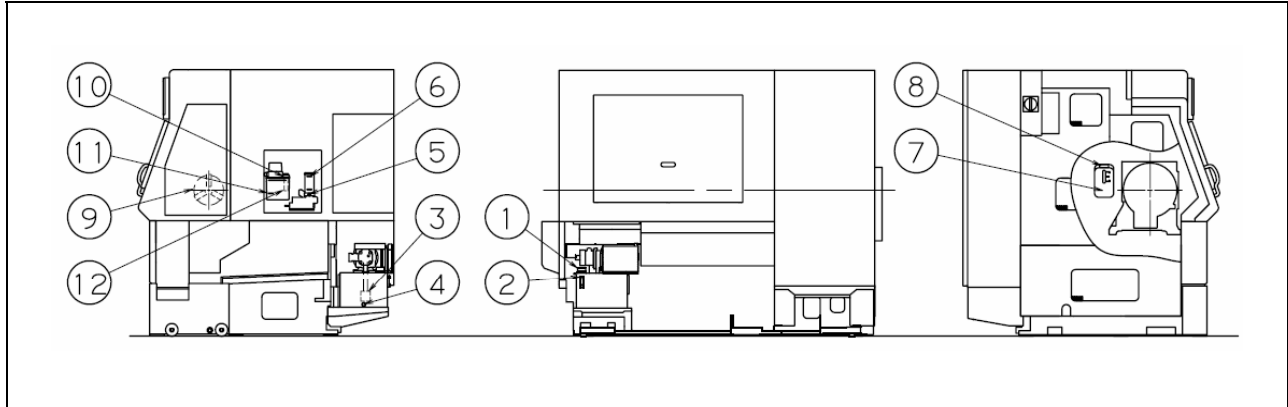
Dew-point temperature: -17°C (1.4°F) or less (Atmospheric pressure)

Use an air compressor that supplies clean air free from moisture and oil mist. Also, avoid inducting air directly from the compressor into the machine via a short pipeline. Otherwise, since hot air will be cooled inside the machine, moisture and/or oil components will condense and may thus clog valves and piping. As a result, not only corrosion may occur, but also the spindle bearings may be thermally damaged. If it is necessary to supply air heavily laden with moisture or hot air, use an auxiliary unit such as an air dryer.

10 LUBRICATION

The lubricating or replacement period is determined on the basis of eight hours operation a day. Determine suitable period according to the actual operation time.

Delayed replacement or use of any product other than recommended oil may damage the machine.



No.	Part name	Lubricating point	Amount	Recommended oil	Remarks
1	Oiling port	Hydraulic unit	20 L (5.28 gal.)	MOBIL DTE24 SUPER MALPUS DX32 (Nippon Oil) DAPHNY SUPER MULTI OIL 32 (Idemitsu) COSMO New MIGHTY SUPER 32	Change oil every 6 months and clean strainers then.
2	Level gauge				
3	Strainer				
4	Drain port				
5	Grease supply nipple	Ball screw & slideway	0.26 L (0.07 gal.)	MOBILUX EP1 (MOBIL) MULTI NOC GREASE 1 (Nippon Oil) DUPLEX EP1 (Kyodo Yushi)	Automatically lubricated. Replenish oil in need.
6	Level gauge				
7	Tank	Headstock cooling unit	5.0 L (1.32 gal.)	Distilled water or ion exchanged water 50% MOBIL LONG LIFE COOLANT YZ (*) 50%	Exchange coolant every 2 years following the procedure outlined in the <i>MAINTENANCE MANUAL</i> .
8	Watering port				
9	Grease supply nipple	Chuck	1-2 cc (0.03-0.06 oz)	MOLYKOTE EP GREASE (Dow Corning)	Replenish oil once a day.
10	Oiling port	Turret gear & spindle brake (Oil lubrication unit)	1.8 L (0.48 gal.)	MOBIL VACTRA OIL NO. 2 SUPER MALPUS DX68 (Nippon Oil) DAPHNY SUPER MULTI OIL 68 (Idemitsu)	Automatically lubricated. Replenish oil in need. Clean suction filters every year.
11	Level gauge				
12	Suction filter				

*: The "MOBIL LONG LIFE COOLANT YZ (LLC) YZ" is a Mazak's brand.

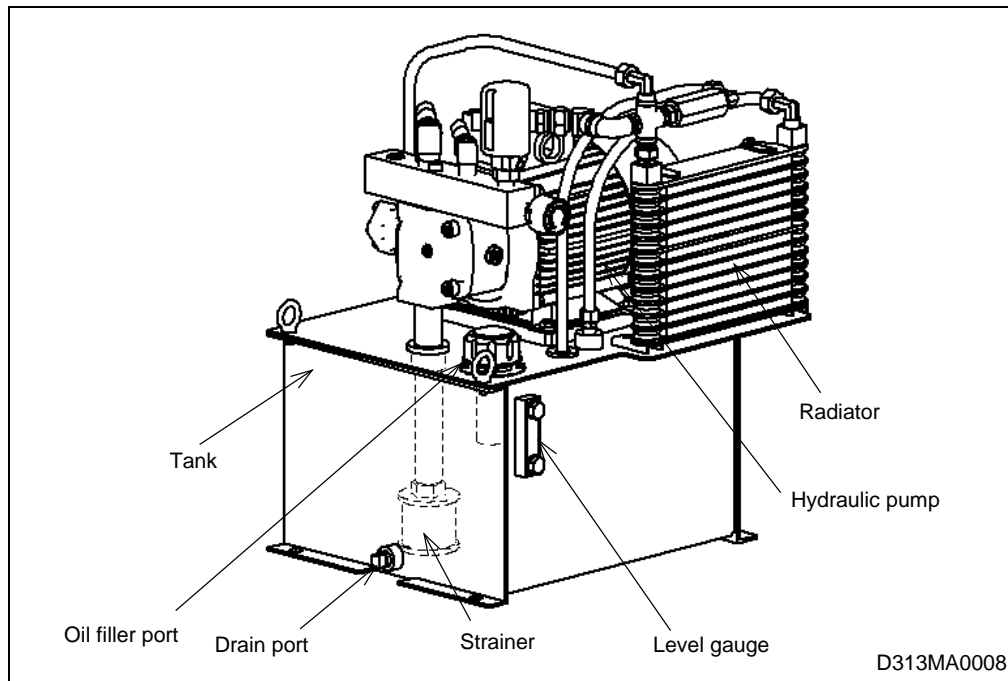
11 HYDRAULIC UNIT AND HYDRAULIC CIRCUIT DIAGRAM

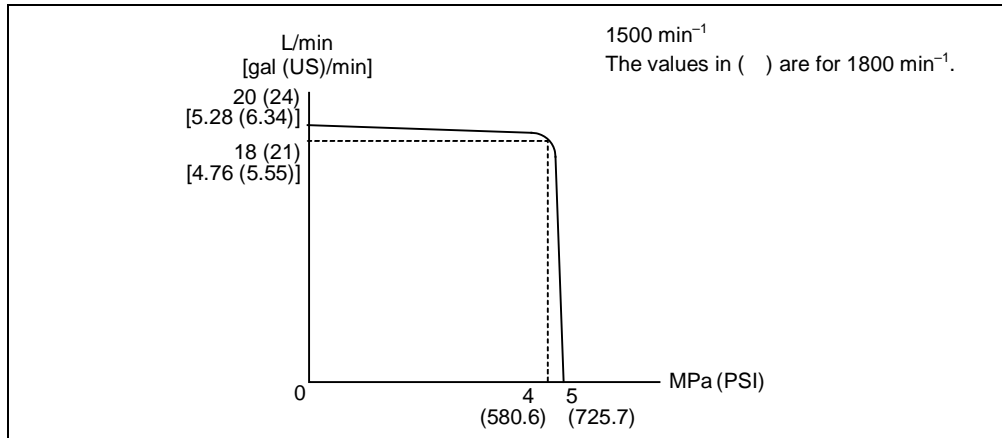
11-1 Hydraulic Unit

Motor		1.5 kW (2 HP) 4 P	
Working pressure		5 MPa [50 kgf/cm ² /725 PSI]	
Discharge amount		20 L/min. [5.28 gal (US)/min.] (1500 min ⁻¹ , 50 Hz)	
Tank capacity		20 L [5.28 gal (US)]	
Recommended oil	Japan	D.T.E. 24 (MOBIL) SUPER MULPAS 32 (NIPPON OIL) DAPHNY SUPER MULTI 32 (IDEMITSU)	
	Export	DTE 24 (MOBIL) NUTO H32 (ESSO)	

Hydraulic unit model number

Maker	Model No. of maker	Mazak parts No.
TOKIWA	TS-6505002-A	G49FH008310



Pump P-Q characteristics (1.5 kW)

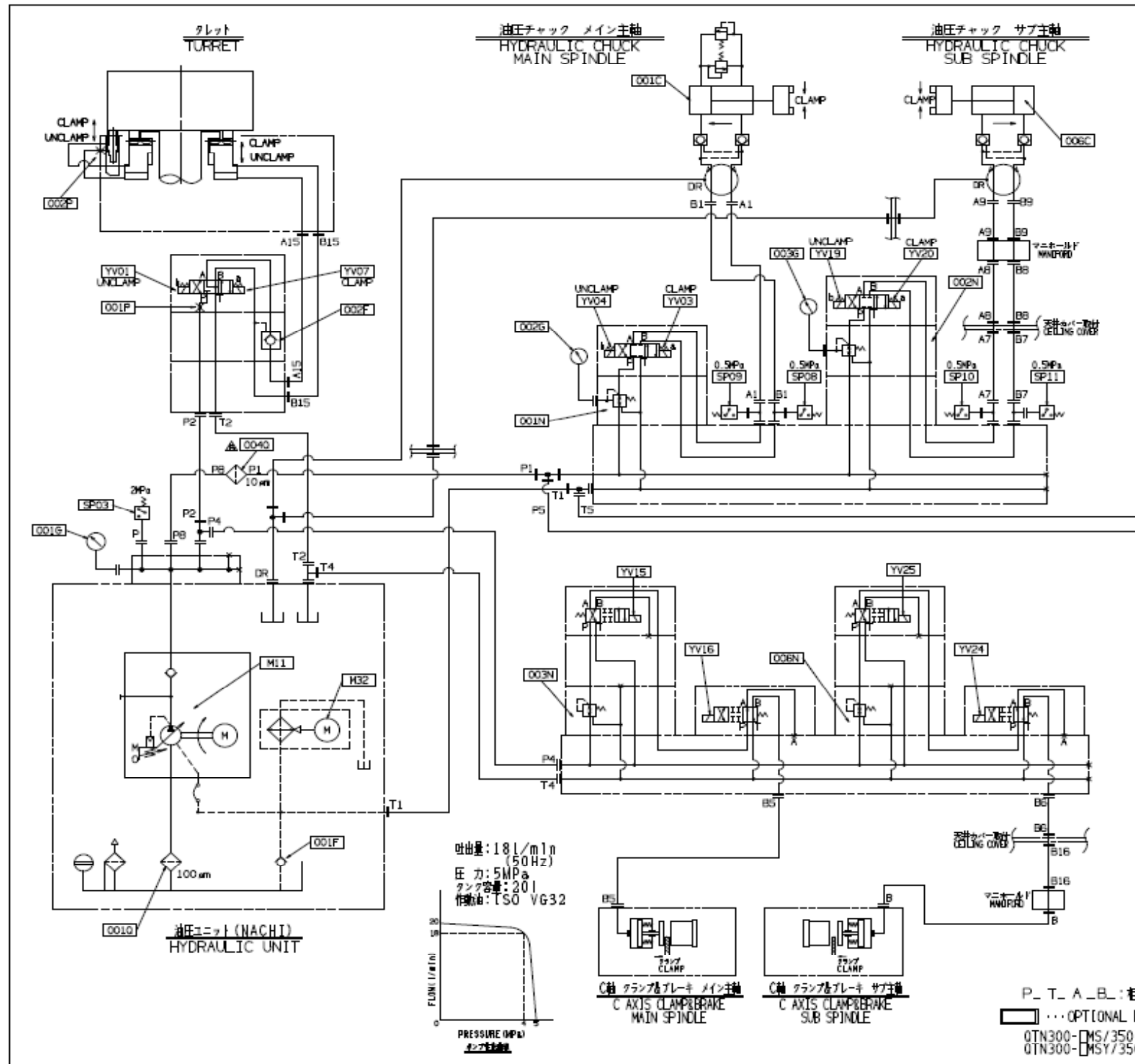
Specifications

Power supply	AC 200/220 V, 50/60 Hz
Pump performance	See diagram above
Hydraulic oil	ISO VG32 or equivalent
Coating color	Black gray

11-2 Hydraulic Circuit Diagrams

Machine model	Drawing No.	Page
QTN300-II/350-II MS QTN300-II/350-II MSY	1333HCC0010	11-3

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NO.	PARTS NO.	PARTS NAME	品 名	数	MAKER	REMARKS
004P	43271667240	BUSH	ブッシュ	1	ASK	Ø1.8 ORIFICE
004N	G11FH001341	REDUCING VALVE	レデュシングバルブ	NACHI	1	OG-601-PC-21
003C	G205V027230	CYLINDER	シリンダー	SMC	1	04R40-50-C1
YV17/18	G16FH005231	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-CS-D2-31
0040	G30Z2003340	LINE FILTER	ラインフィルター	YAMASHITA	1	DT-04-10X-B
0010	G49Z200523F	SUCTION STRAINER	サクションストレーナー	TAISEI	1	SFT-06-150W
002P	43251653720	PLUG	プラグ	ASK	1	Ø1.8 ORIFICE
001P	43271667240	BUSH	ブッシュ	ASK	1	Ø1.8 ORIFICE
006N	G11FH001341	REDUCING VALVE	レデュシングバルブ	NACHI	1	OG-601-PC-21
003N	G11FH001341	REDUCING VALVE	レデュシングバルブ	NACHI	1	OG-601-PC-21
002N	G11FH002051	REDUCING VALVE	レデュシングバルブ	NACHI	1	OG-601-PC-W-5/8
001N	G11FH002051	REDUCING VALVE	レデュシングバルブ	NACHI	1	OG-601-PC-W-5/8
003G	43776196610	PRESSURE GAUGE	アツリョクゲイ	ASAHI	1	CHUCK PRESSUER
002G	43776196610	PRESSURE GAUGE	アツリョクゲイ	ASAHI	1	CHUCK PRESSUER
001G	G13AK001311	PRESSURE GAUGE	アツリョクゲイ	ASK	1	06-01-04-800MPa-S
002F	G14FH001541	CHECK VALVE	チェックバルブ	NACHI	1	OCF-601-A1-21
001F	G49FH008318	CHECK VALVE	チェックバルブ	NACHI	1	ALC-03-01-11P
006C	M11MK091340	CYLINDER	シリンダー	ITAKAWA	1	S187-50(10)SD1
001C	M11KH004030	CYLINDER	シリンダー	ITAKAWA	1	F5U16-15A(12)P
	M11KH007330	CYLINDER	シリンダー	ITAKAWA	1	Y150REN(12)SD1
	M11KH005990	CYLINDER	シリンダー	ITAKAWA	1	S208-50(10)SD1
	M11KH006910	CYLINDER	シリンダー	ITAKAWA	1	Y120REN(10)SD1
H32	G49FH007460	FAN COOLER	ファンクーラー	TOYO	1	SA32-004-0002
M11	G49FH008158	UNI PUMP	ユニポンプ	NACHI	1	UM-03-15-01-003C
SP10/11	G23AH001800	PRESSURE SWITCH	アツリョクスイッチ	OMRON	2	176-110-300-N1
SPO8/09	G23AH001800	PRESSURE SWITCH	アツリョクスイッチ	OMRON	2	176-110-300-N1
SPO3	G23AV001590	PRESSURE SWITCH	アツリョクスイッチ	SANMA	1	SPS-8TP-PC-23
YV24	G16FH005240	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-H3X-D2-30
YV19/20	G16FH005231	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-CS-D2-31
YV16	G16FH005240	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-A3X-D2-30
YV15	G16FH005250	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-H3X-D2-30
YV03/04	G16FH005231	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-CS-D2-31
YV01/07	G16FH005261	SOLENOID VALVE	ソレノイドバルブ	NACHI	1	SA-G01-06-D2-31

APP'D	CHK'D	DSGN	DRAWING
120909	120909	120909	120909
H.N	H.N	G.Y	T.K.K
SCALE		NAME	
FREE		油圧回路図	
FREE		HYDRAULIC CIRCUIT DRAWING	
QTY	DATE	DC NO.	SIGN
1	333	HC	COOL
			0

12 AIR KIT AND AIR CIRCUIT DIAGRAM

12-1 Specifications

1. Standard specification

Air is supplied for the following purposes:

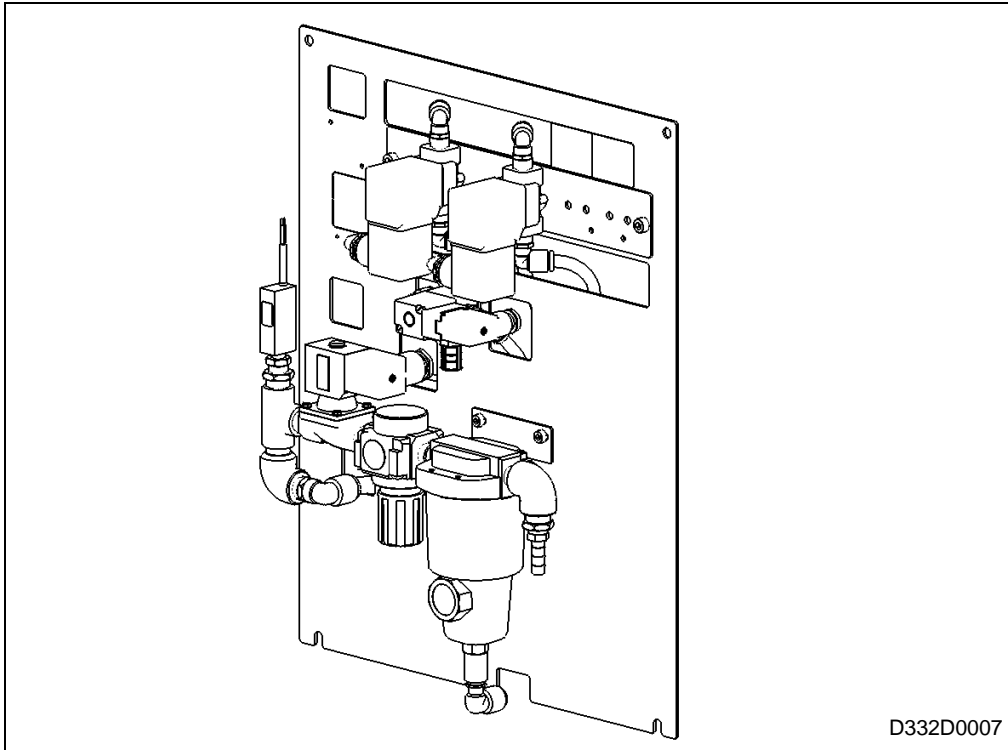
- Turret milling spindle connection
- Oil and air lubrication of turret mill gear
- Inner turret air cooling
- Main spindle air curtaining
- Oil and air lubrication of Main spindle C-axis brake
- Main spindle air cooling

2. Optional specification

Air is supplied for the following optional purposes:

- TOOL EYE system
(Standard specification for USA and EU, and optional specification for Japan/Asia)
- Workpiece measuring system (inside the machine)
- Main spindle chuck air blowout
- Automatic door open/close unit

12-2 Diagram of the Air Kit



The supply line up to the air kit is to be provided by the user.

Supply air

<Supply pressure>

0.5 MPa to 1.0 MPa [71.1 PSI to 142.2 PSI]

<Supply rates>

Regular consumption 150 L/min (5.3 ft³/min) (ANR) or more

Maximum consumption 150 L/min (5.3 ft³/min) (ANR) or more

Non-periodic consumption

◆:Standard ○: Optional

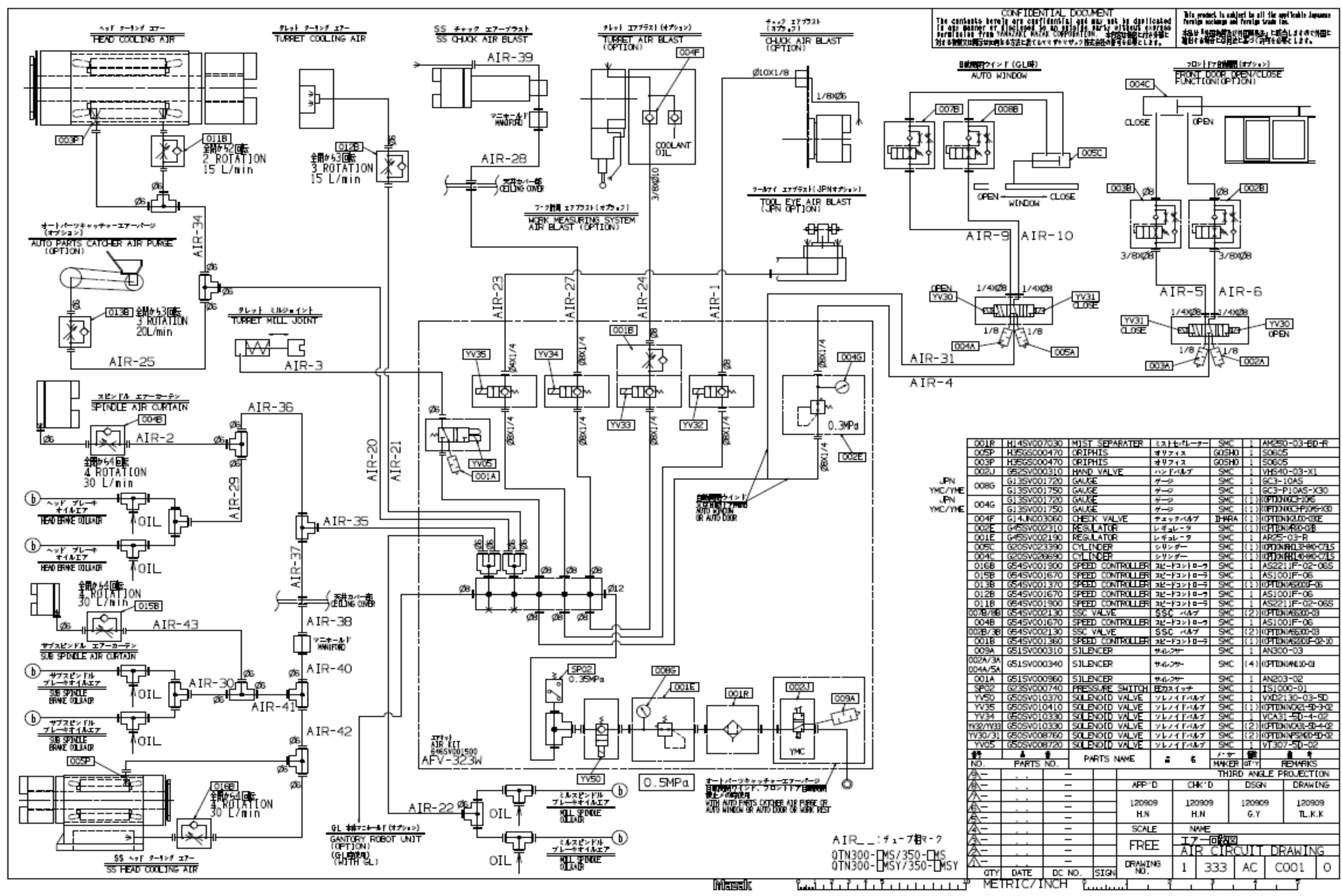
	Consumption L/min (ANR)	Operation time	JPN/Asia	USA	EU
TOOL EYE	70	Air blow on during TOOL EYE measurement	○	◆	◆
GL	200	Chuck jaw air blow on during GL loading/unloading	○	○	○
Turret air blow	270	Air blow on during valve on command	○	○	○
Automatic front door open/close	20	3 s	○	○	○
Chuck jaw air blow	100	3 s	○	○	○
Automatic parts catcher air blast	120	Air blow on during power on	○	○	○

<Connection>

Direct connection using a 9-mm (0.35") inside diameter tube or a 1/4" joint

12-3 Air Circuit Diagrams

Machine model	Drawing No.	Page
QTN300-II / QTN350-II MS QTN300-II / QTN350-II MSY	1333ACC0010	12-4



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NO.	PARTS NO.	PARTS NAME	QTY	MAKER	REMARKS
001B	H145V007030	MIST SEPARATOR	1	SMC	AM250-03-BD-R
003P	H35GS000470	ORIPHIS	1	GOSHO	SO605
003P	H35GS000470	ORIPHIS	1	GOSHO	SO605
002J	G525V000310	HAND VALVE	1	SMC	VHS40-03-X1
008G	G135V001720	GAUGE	1	SMC	GC3-10AS
004G	G135V001720	GAUGE	1	SMC	GC3-P10AS-X30
004G	G135V001720	GAUGE	1	SMC	(1) (OPT)DNKCF-206
004F	G14LN003060	CHECK VALVE	1	SMC	(1) (OPT)DNKLD-03E
002E	G45SV002310	REGULATOR	1	SMC	(1) (OPT)DNK450-03E
001E	G45SV002190	REGULATOR	1	SMC	AR25-03-R
005C	G20SV023390	CYLINDER	1	SMC	(1) (OPT)DNRL3-80-C3LS
004C	G20SV026690	CYLINDER	1	SMC	(1) (OPT)DNHL3-80-C3LS
016B	G54SV001900	SPEED CONTROLLER	1	SMC	AS2211F-02-06S
015B	G54SV001670	SPEED CONTROLLER	1	SMC	AS1001F-06
013B	G54SV001370	SPEED CONTROLLER	1	SMC	(1) (OPT)DNK500-06
012B	G54SV001670	SPEED CONTROLLER	1	SMC	AS1001F-06
011B	G54SV001900	SPEED CONTROLLER	1	SMC	AS2211F-02-06S
007B/8B	G54SV002130	SSC VALVE	2	SMC	(2) (OPT)DNK630-03
004B	G54SV001670	SPEED CONTROLLER	1	SMC	AS1001F-06
002B/3B	G54SV002130	SSC VALVE	2	SMC	(2) (OPT)DNK630-03
001B	G54SV001360	SPEED CONTROLLER	1	SMC	(1) (OPT)DNK250-02-30
009A	G51SV000310	SILENCER	1	SMC	AN300-03
002A/3A 004A/5A	G51SV000340	SILENCER	4	SMC	(4) (OPT)DNK10-01
001A	G51SV000960	SILENCER	1	SMC	AN203-02
SP02	G23SV000740	PRESSURE SWITCH	1	SMC	IS1000-01
YV50	G50SV010370	SOLENOID VALVE	1	SMC	VXD2130-03-5D
YV35	G50SV010410	SOLENOID VALVE	1	SMC	(1) (OPT)DNK021-50-3-02
YV34	G50SV010330	SOLENOID VALVE	1	SMC	VCA31-50-4-02
YV32/YV33	G50SV010330	SOLENOID VALVE	2	SMC	(2) (OPT)DNK031-50-4-02
YV30/31	G50SV008760	SOLENOID VALVE	2	SMC	(2) (OPT)DNK250-02-30
YV05	G50SV008720	SOLENOID VALVE	1	SMC	VT307-50-02

NO.	PARTS NO.	PARTS NAME	QTY	MAKER	REMARKS
THIRD ANGLE PROJECTION					
APP'D	CHK'D	DSGN	DRAWING		
120909	120909	120909	120909		
H.N	H.N	G.Y	TL.K.K		
SCALE	NAME				
FREE	17-0000	AIR CIRCUIT DRAWING			
DRAWING NO.	1	333	AC	COOL	0

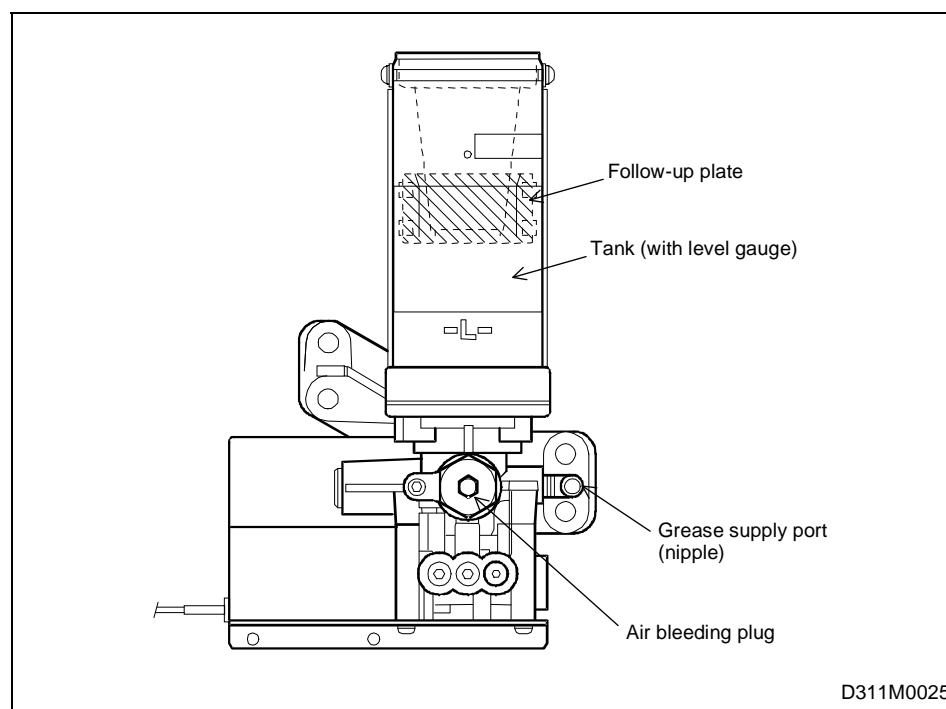
13 LUBRICATION UNIT AND LUBRICATION CIRCUIT DIAGRAM

13-1 Lubrication Unit for Slideway and Ball Screw

Pump unit	Manufactured by LUBE EGM-10S-4-3P Electric intermittent grease pumpe		
Motor	DC 24 V		
Discharge amount	10 cm ³ /min (0.61 in. ³ /min)		
Discharge pressure	10 MPa [102 kgf/cm ² /1450 PSI]		
Oil tank capacity	260 cm ³ (15.86 in. ³)		
Recommended oil	For Japan	DUPLEX EP1 BEACON EP1 MOBILUX EP1	(KYODO YUSHI) (Esso) (Mobil)
	For export	BEACON EP1 MOBILUX EP1	(Esso) (Mobil)

Note: A piping internal pressure monitoring device is provided that operates as a safety device in the event of lubrication trouble.

<Grease lubricating pump>

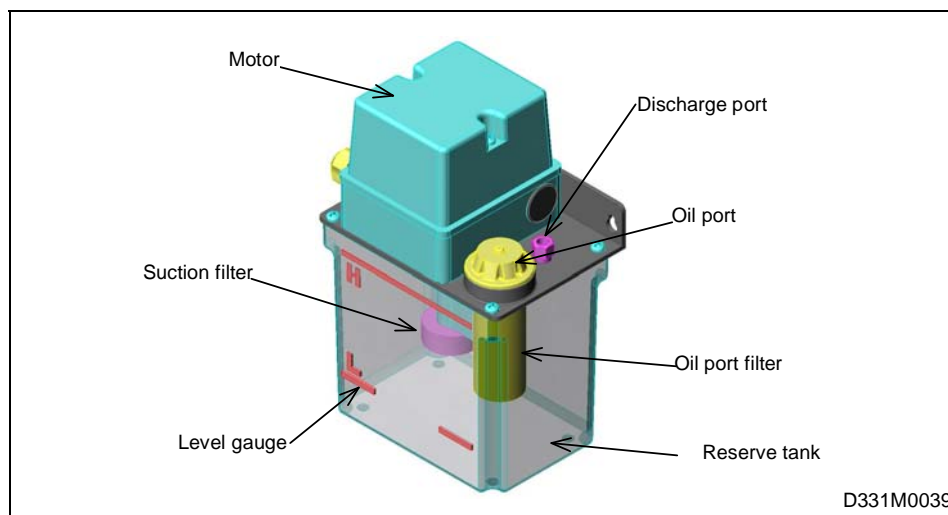


13-2 Turret Index Gear Coupling Lubrication Unit

Pump unit	Manufactured by LUBE AMZ-100SL-18LP Electric intermittent grease pump		
Motor	AC 100 V		
Discharge amount	90/110 cc/min (50/60 Hz)		
Discharge pressure	1.5 MPa [15 kgf/cm ² , 218 PSI]		
Oil tank capacity	1.8 L [0.48 gal (US)]		
Recommended oil	For Japan	Vactra No. 2 (Mobil) Super Mulpas 68 (Nippon oil corporation) Daphne Super Multi 68 (Idemitsu)	
	For export	VACTRA No. 2 (Mobil) FEBIS K68 (Esso) TONNA OIL T68 (Shell)	

Note: The internal pressure of piping is monitored by a pressure switch as a safety device against lubrication system failures.

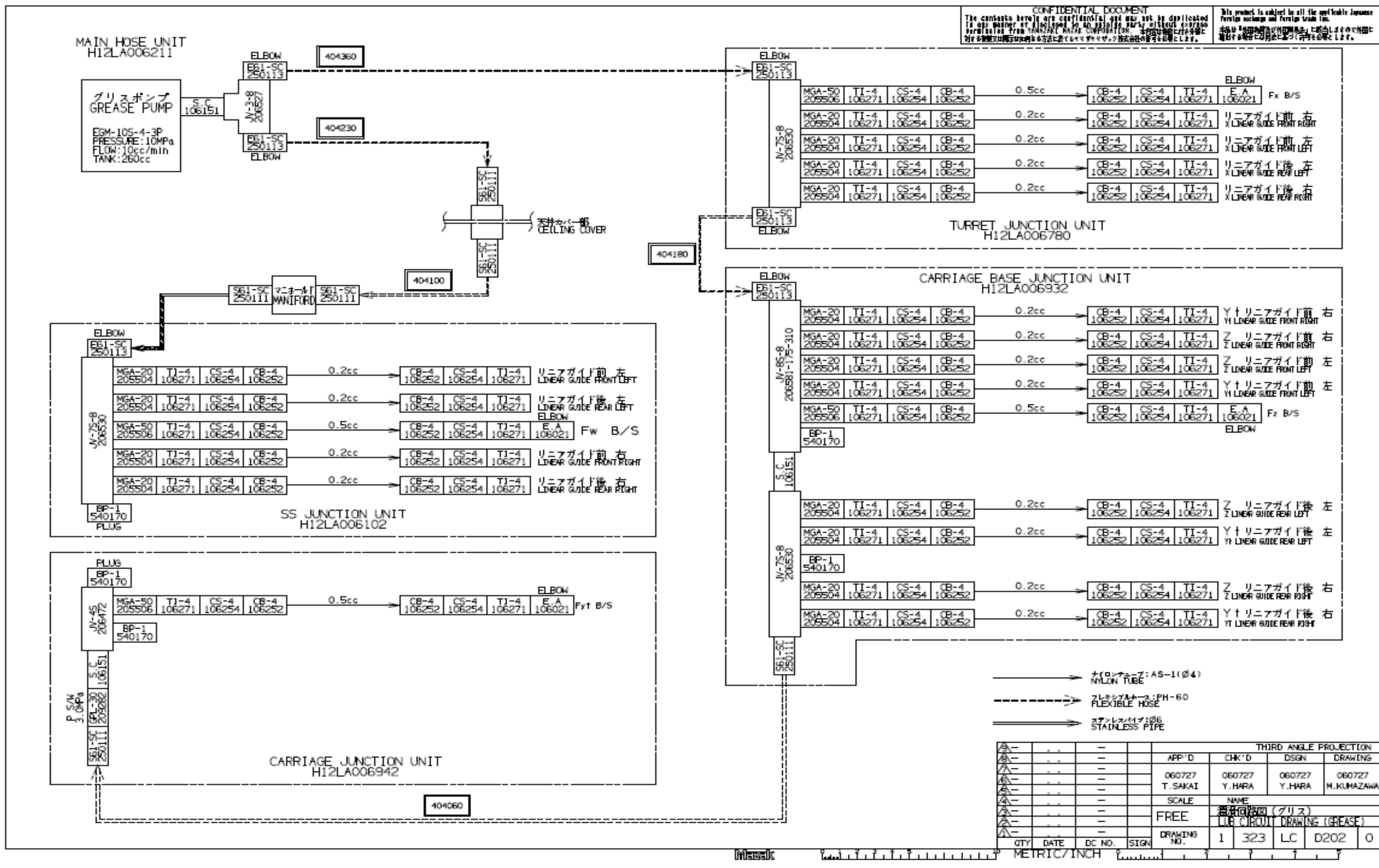
<Oil lubricating pump>



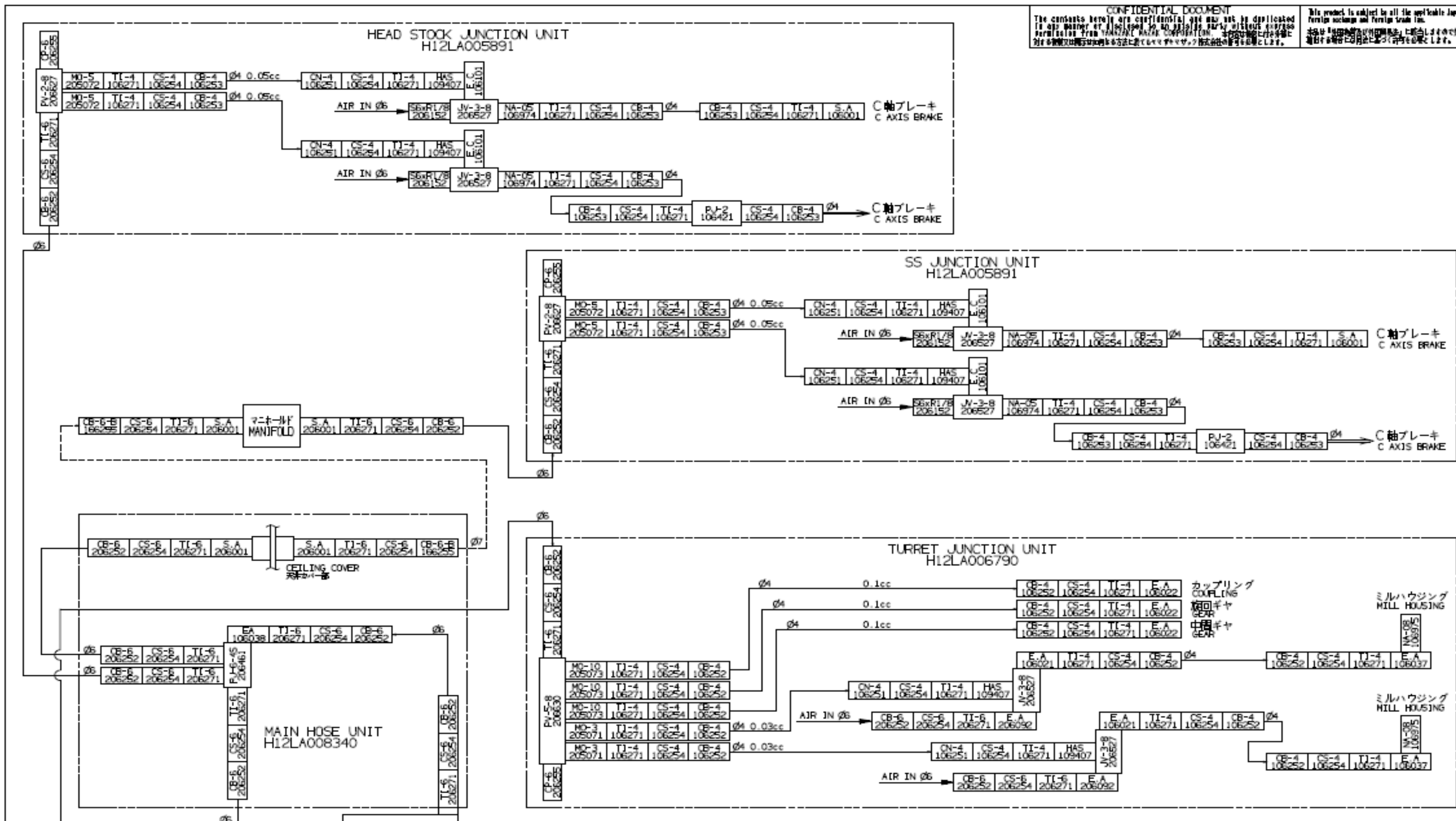
13-3 Lubrication Circuit Diagrams

Machine model	Specification	Drawing No.	Page
QTN300-II/350-II MS	Grease lubrication	1323LCD2020	13-3
	Oil lubrication	1333LCC0010	13-4
QTN300-II/350-II MSY	Grease lubrication	1323LCD2020	13-3
	Oil lubrication	1333LCC0010	13-4

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THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
121009	121009	121009	121009
H.N	H.N	G.Y	T.L.K.K
SCALE			
NAME			
FREE 潤滑回路図(オイル)			
LUB CIRCUIT DRAWING (OIL)			
DRAWING NO.	1	333	LC COOL 0

QTN300-MS/350-MS
 QTN300-MSY/350-MSY

14 CODE LIST

14-1 Miscellaneous Function (M-Code)

M-code

M○○○

○○○: Refer to the separate M-code list.

14-2 Spindle Speed Function

S-code

S○○○○○

Spindle speed (Number of revolutions per minute)

14-3 Tool Function

T-code

T◆◆○○

◆◆:

○○: Tool offset No.

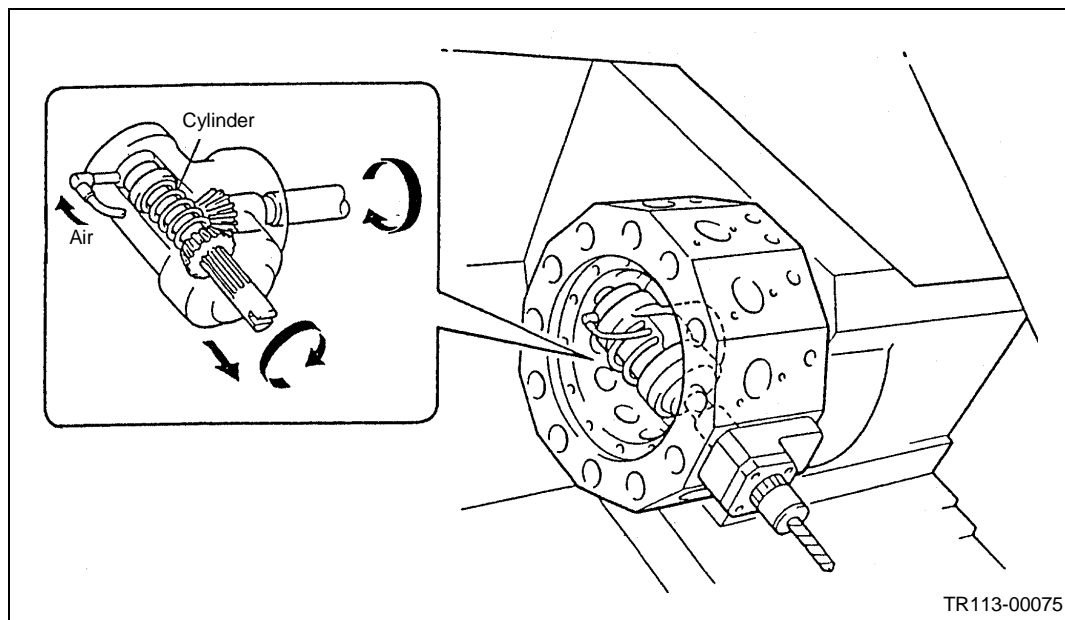
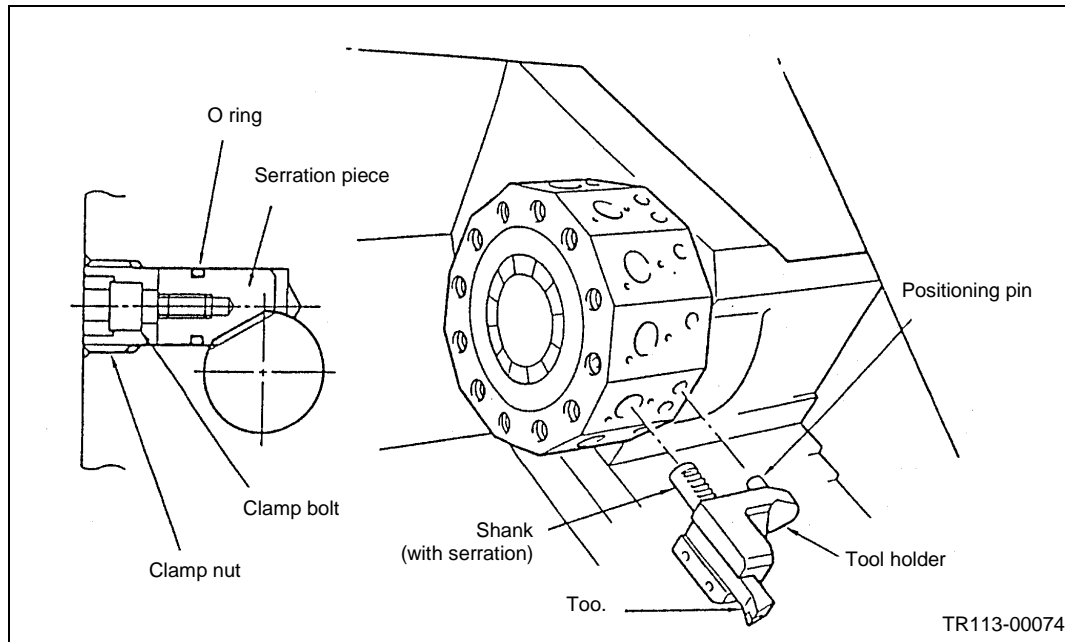
Tool

No.

15 TOOLING

15-1 Outline

The turret holds 12 tools and any turret position allows the mounting of a milling tool. Turning tool and milling tool holders, use the VDI clamp method, to ensure quick and simple tool change.



15-2 Specification and List of Compatibility

15-2-1 Specification

Tooling system and specification of QTN300-II/350-II MS, MSY are as shown in the table below.

		Mounting type	Bite size		Remarks
			mm spec.	in. spec.	
O.D. tool	With holder	VDI (Quick change)	□25 × 150L	□1" × 6"	
Facing tool					
I.D. tool			1st spindle: φ50 2nd spindle: φ50	1st spindle: φ2 2nd spindle: φ2	
Cutoff tool			—	—	
Rotary tool			Using BT-40 milling holder		

15-2-2 List of compatibility of tool holder

The QTN300-II/350-II MS, MSY tool holders are mounting-compatible with our lathes of other series. The compatible tool holders are listed in the table below.

mm specification ○: Compatible

Turret type	Tooling name of QTN300-II/350-II MS, MSY	Unit No.	QTN300-II/350-II MS, MSY
12D	OD turning tool holder (Normal rotation)	53308000600	○
	OD turning tool holder (Reverse rotation)	53308000100	○
	Facing holder (Normal rotation)	53308000300	○
	Cutoff tool holder	53308000400	○
	Boring bar holder (φ50)	53308000200	○
	U-drill holder	53308000500	○
	Cap	53818000701	○
	OD turning tool holder (2nd spindle)	533380205C0	○
	Boring bar holder (2nd spindle φ50)	533380206C0	○
	V type milling drill holder	53308020500	○
	H type milling drill holder	53308020100	○
	V type tap holder with torque limiter	53308020700	○
	H type tap holder with torque limiter (M4 to M12)	53308020300	○
	H type tap holder with torque limiter (M14 to M16)	53308020400	○
	H type back tapper (M4 to M10)	533380204C0	○
	H type back tapper (M4 to M10 J420 collet)	51408032400	○
	H type back milling holder (with φ20 chuck collet)	533380203C0	○

inch specification ○: Compatible

15-3 Diagram of Tooling System and Holder

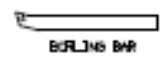
Diagram of tooling system and holder (First Spindle)

Specification			Drawing No.	Page
Machine model	Unit	Tool type		
QTN300-II/350-II MS, QTN300-II/350-II MSY	mm	Turning tool	0333TSC0010	15-4
	inch	Turning tool	0333TSC0020	15-5
	MAS	Milling tool	0333TSC0030	15-6
	CAT-MM	Milling tool	0333TSC0040	15-7
	CAT-INCH	Milling tool	0333TSC0050	15-8

Diagram of tooling system and holder (Second Spindle)

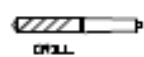
Specification			Drawing No.	Page
Machine model	Unit	Tool type		
QTN300-II/350-II MS, QTN300-II/350-II MSY	mm	Turning tool	1333TSC0061	15-9
	inch	Turning tool	1333TSC0071	15-10

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BORLING BAR SOCKET

UNIT NO.	PART NO.	d	STD. QTY
53428004100	33428042111	Ø12	
53428009300	33428042121	Ø15	
53428004000	33428042101	Ø16	
43428003900	33428042091	Ø20	
53428000500	33428042081	Ø25	
53428000400	33428042071	Ø32	1 1
53428000300	33428042061	Ø35	
53428000200	33428042051	Ø40	1 1



DRILL SOCKET

UNIT NO.	PART NO.	M. T.	STD. QTY
53428001700	33428042151	NO. 2	
53428001600	33428042141	NO. 3	
53428001500	33428042131	NO. 4	1 1

U DRILL SOCKET

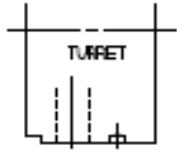
UNIT NO.	PART NO.	d	STD. QTY
53208001000	43208034830	Ø20	
53208001100	43208034820	Ø25	
53208001200	43208034810	Ø32	

BORLING BAR HOLDER

UNIT NO.	PART NO.	D (DIAMETER)	STD. QTY
53308000200	13308179480	Ø50	2 2

U DRILL HOLDER

UNIT NO.	PART NO.	D (DIAMETER)	STD. QTY
53308000500	13308177000	Ø40	1



UNIT NO.	PART NO.	STD. QTY
53818000701	33818071832	1



TURNING HOLDER (L)

UNIT NO.	PART NO.	STD. QTY
53308000600	13818071692	REVERSE 1 1



TURNING HOLDER (R)

UNIT NO.	PART NO.	STD. QTY
53308000100	13818071842	FORWARD 3 2



FACING HOLDER

UNIT NO.	PART NO.	STD. QTY
53308000300	13818071712	FORWARD 1 1



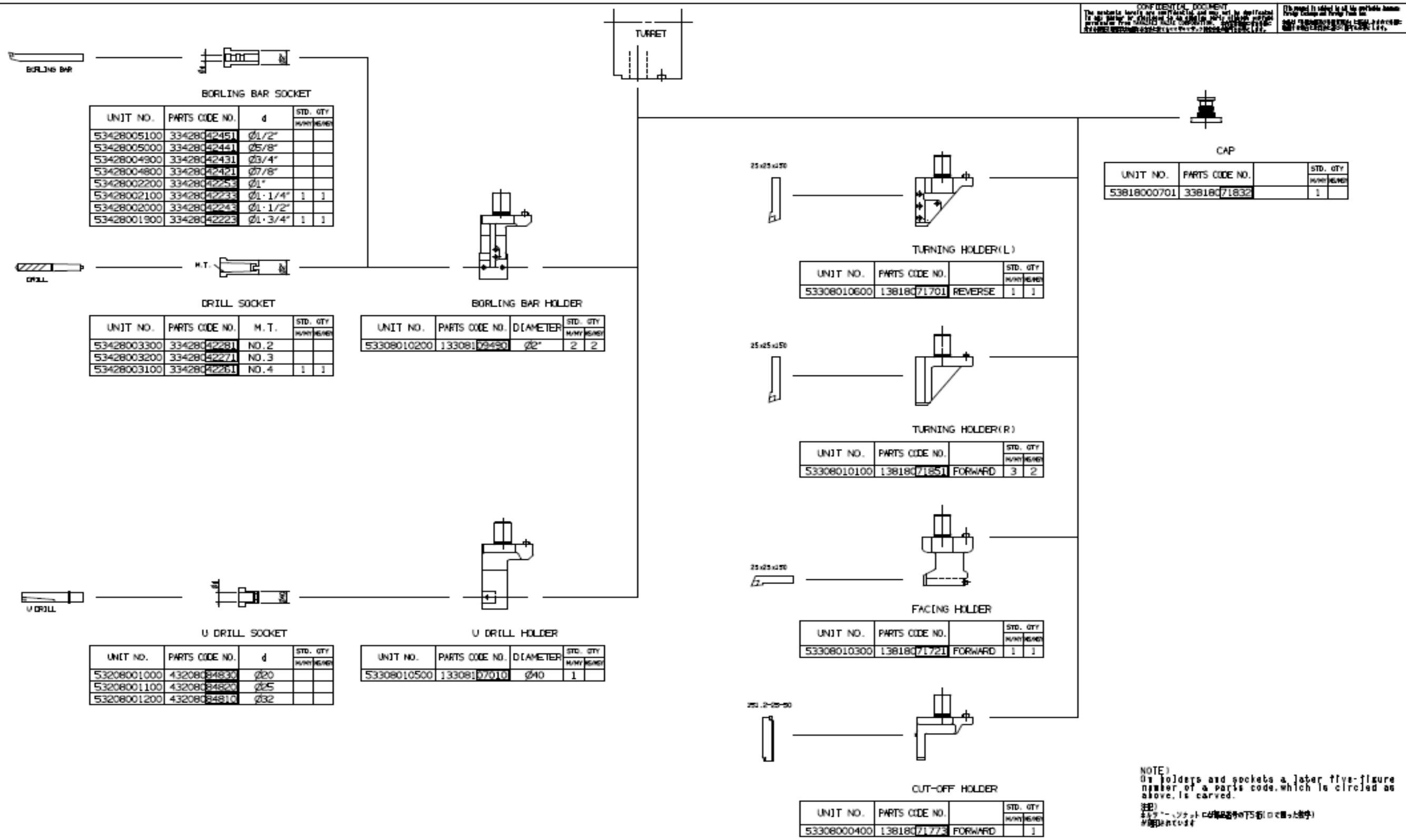
CUT-OFF HOLDER

UNIT NO.	PART NO.	STD. QTY
53308000400	13818071773	FORWARD 1

NOTE)
 On holders and sockets a later five-figure number of a part code, which is circled as above, is carved.
 注)
 本図に示すホルダ及びソケットに、上記の5桁の部品番号が刻印されている。

TURNING HOLDER (MM)		OTN-300/3500 M/MS/MY/MSY	
APP'D	CHK'D	DSN	DRW'G
112620	112620	112620	112620
HN	HN	SY	TS
SCALE		NAME	
1/4		TOOLING SYSTEM	
DRAWN		NO.	
0		333 TS C001 0	

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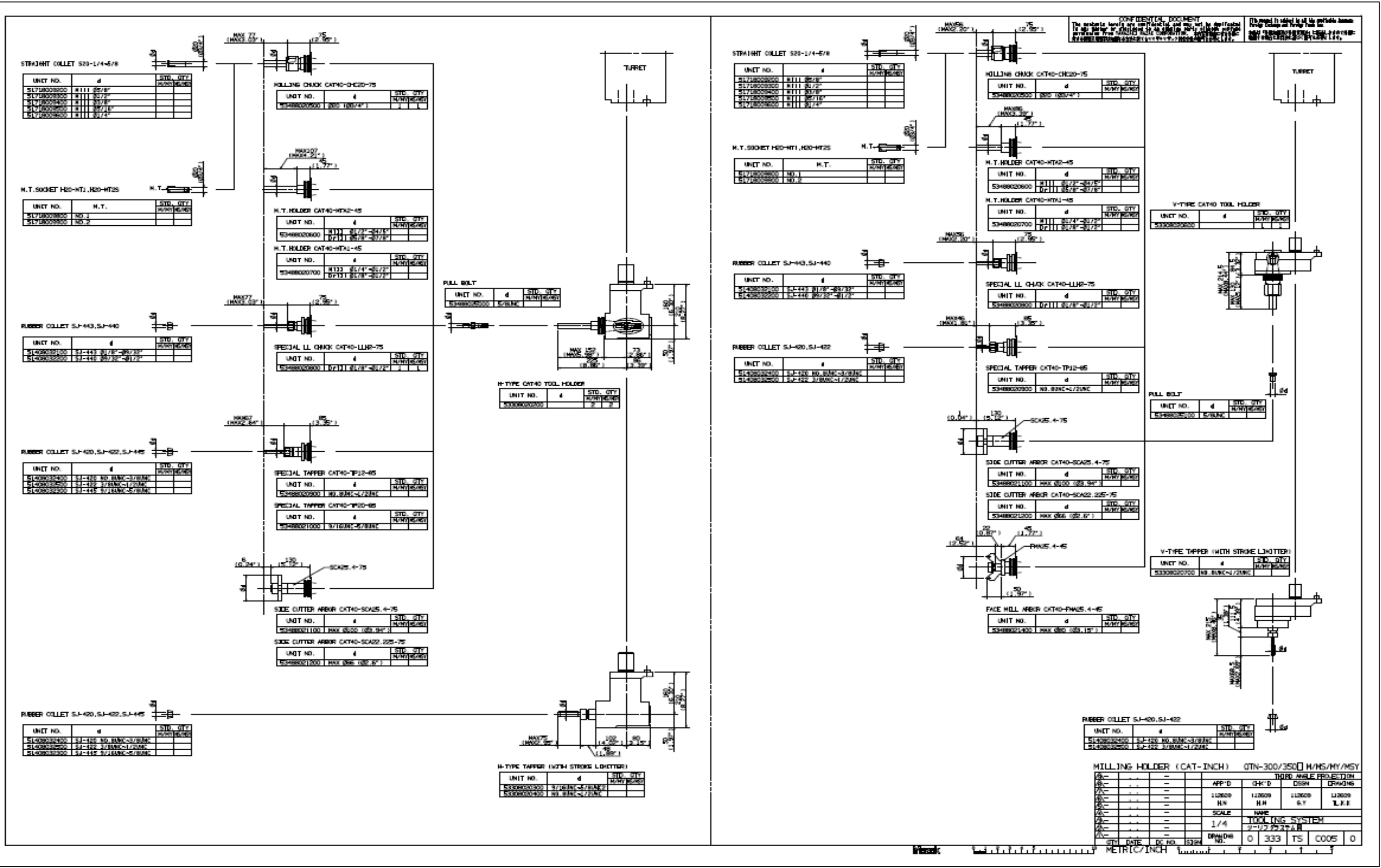


NOTE)
 On holders and sockets a laser five-figure number of a parts code, which is circled as above, is carved.
 注)
 本図に示すホルダとソケットには、上記の5桁の部品番号がレーザー彫刻されています。

TURNING HOLDER (INCH) QTN-300/350 M/M/S/MY/MSY

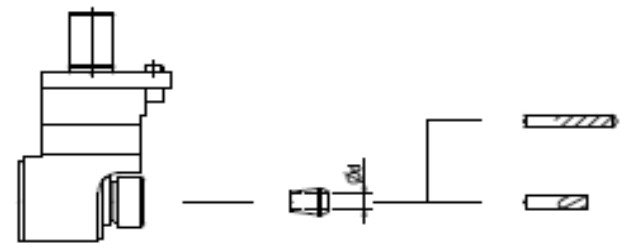
REV.	APP'D	CHK'D	DSGN	DRWNG
01				
02	112609	112609	112609	112609
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04				
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100				

SCALE: 1/4" = 1" (TOOLING SYSTEM)
 DATE: 2-1-77
 DRAWING NO.: 0 333 TS CO02 0



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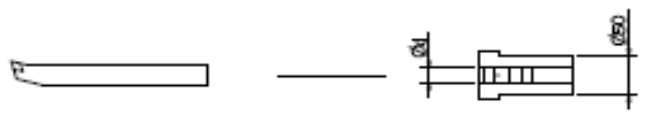
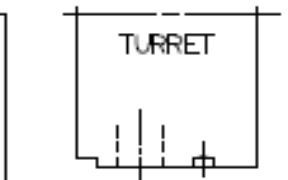


H-TYPE BACK MILLING HOLDER
(WITH Ø20 CHUCK COLLET)

UNIT NO.	MAX. MILLING SPEED	STD. QTY
533380207C0	6000r/min	

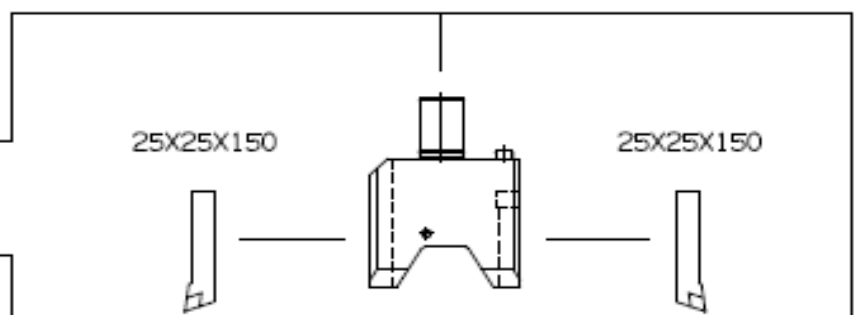
COLLET

UNIT NO.	d	STD. QTY
53628090100	Ø2	
53628090200	Ø2.5	
53628090300	Ø3	
53628090400	Ø3.5	
53628090500	Ø4	
53628090600	Ø4.5	
53628090700	Ø5	
53628090800	Ø6	
53628090900	Ø7	
53628091000	Ø8	
53628091100	Ø9	
53628091200	Ø10	
53628091300	Ø11	
53628091400	Ø12	
53628091500	Ø13	
53628091600	Ø14	
53628091700	Ø15	
53628091800	Ø16	
53628091900	Ø17	
53628092000	Ø18	
53628092100	Ø19	
53628092200	Ø20	



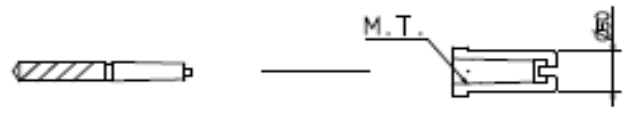
BORLING BAR SOCKET

UNIT NO.	PART CODE NO.	d	STD. QTY
53428004100	33428042111	Ø12	
53428009300	33428042121	Ø15	
53428004000	33428042101	Ø16	
43428003900	33428042091	Ø20	
53428000500	33428042083	Ø25	
53428000400	33428042073	Ø32	
53428000300	33428042063	Ø35	
53428000200	33428042053	Ø40	



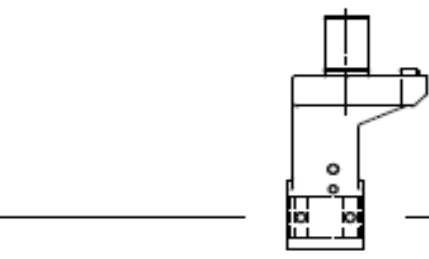
TURNING HOLDER (SS)

UNIT NO.	PART CODE NO.	STD. QTY
533380205C1	133380C0140	1



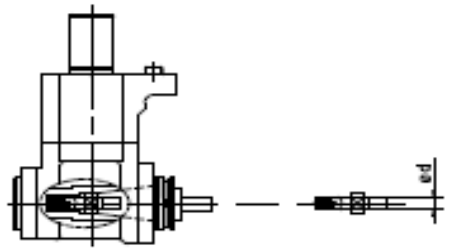
DRILL SOCKET

UNIT NO.	PART CODE NO.	M.T.	STD. QTY
53428001700	33428042151	NO.2	
53428001600	33428042141	NO.3	
53428001500	33428042131	NO.4	



BORLING BAR HOLDER (SS)

UNIT NO.	PART CODE NO.	d	STD. QTY
533380206C1	133380C0150	Ø50	1

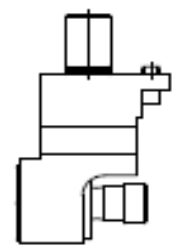


H-TYPE CAT40 BACK MILLING HOLDER

UNIT NO.	d	STD. QTY
533380209C0		

PULL BOLT

UNIT NO.	d	STD. QTY
53488015000	M16	



H-TYPE BACK TAPPER

UNIT NO.	STD. QTY
533380208C0	M4~M10

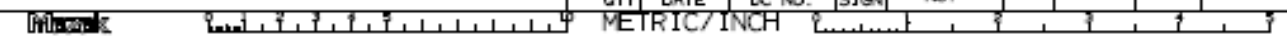
COLLET

UNIT NO.	STD. QTY
51408032400	M4~M10 (J420)

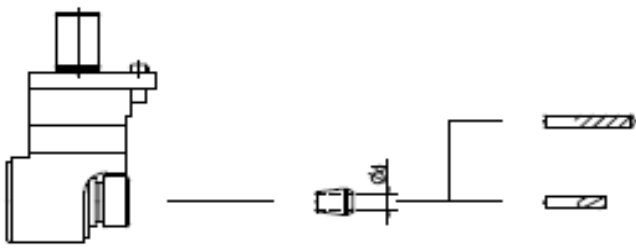
△ 図面再描画 THIS IS REDRAWN

QTN-300/350 □ MS/MSY
 120 (MM) VDI
 FOR HD MILLING HOLDER

THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
112609 H.N	112609 H.N	112609 G.Y	112609 T.L.K.K
SCALE		NAME	
1/4		TOOLING SYSTEM (SECOND SPINDLE)	
QTY	DATE	DC NO.	FLUX SIGN
1	080610	4232-	
DRWING NO.	1	333	TS C006
			1



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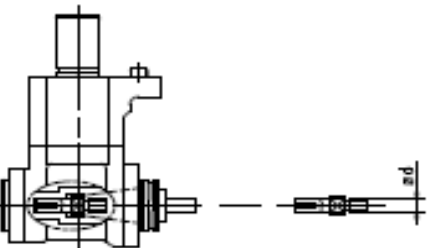


H-TYPE BACK MILLING HOLDER (WITH $\varnothing 20$ CHUCK COLLET)

UNIT NO.	MAX. MILLING SPEED	STD. QTY
533380207C0	6000rpm	

COLLET

UNIT NO.	d	STD. QTY
53628090100	0.079" ($\varnothing 2$)	
53628090200	0.098" ($\varnothing 2.5$)	
53628090300	0.118" ($\varnothing 3$)	
53628090400	0.138" ($\varnothing 3.5$)	
53628090500	0.157" ($\varnothing 4$)	
53628090600	0.177" ($\varnothing 4.5$)	
53628090700	0.197" ($\varnothing 5$)	
53628090800	0.236" ($\varnothing 6$)	
53628090900	0.276" ($\varnothing 7$)	
53628091000	0.315" ($\varnothing 8$)	
53628091100	0.354" ($\varnothing 9$)	
53628091200	0.394" ($\varnothing 10$)	
53628091300	0.433" ($\varnothing 11$)	
53628091400	0.472" ($\varnothing 12$)	
53628091500	0.512" ($\varnothing 13$)	
53628091600	0.551" ($\varnothing 14$)	
53628091700	0.591" ($\varnothing 15$)	
53628091800	0.630" ($\varnothing 16$)	
53628091900	0.669" ($\varnothing 17$)	
53628092000	0.709" ($\varnothing 18$)	
53628092100	0.748" ($\varnothing 19$)	
53628092200	0.789" ($\varnothing 20$)	

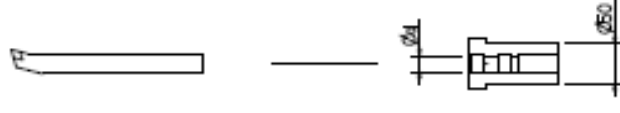
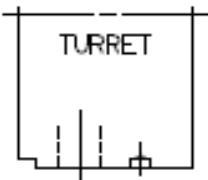


H-TYPE CAT40 BACK MILLING HOLDER

UNIT NO.	d	STD. QTY
533380209C0		

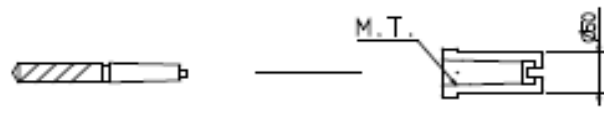
PULL BOLT

UNIT NO.	d	STD. QTY
53488025001	5/8UNC	



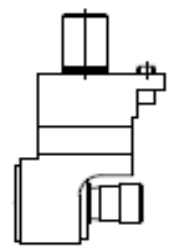
BORLING BAR SOCKET

UNIT NO.	PART CODE NO.	d	STD. QTY
53428005100	3342804245L	$\varnothing 1/2"$	
53428005000	3342804244L	$\varnothing 5/8"$	
53428004900	3342804243L	$\varnothing 3/4"$	
53428004800	3342804242L	$\varnothing 7/8"$	
53428002200	33428042253	$\varnothing 1"$	
53428002100	33428042233	$\varnothing 1.1/4"$	
53428002000	33428042243	$\varnothing 1.1/2"$	
53428001900	33428042223	$\varnothing 1.3/4"$	



DRILL SOCKET

UNIT NO.	PART CODE NO.	M.T.	STD. QTY
53428003300	3342804228L	NO. 2	
53428003200	3342804227L	NO. 3	
53428003100	3342804226L	NO. 4	

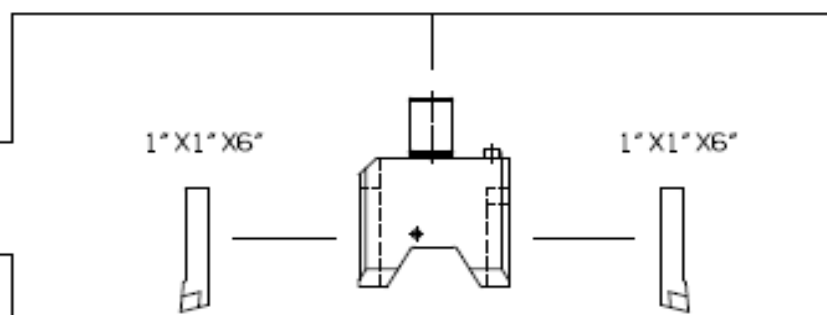


H-TYPE BACK TAPPER

UNIT NO.	STD. QTY
533380208C0	NO. 8UNC~3/8UNC

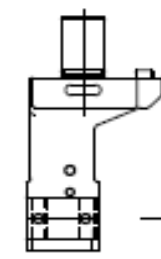
COLLET

UNIT NO.	STD. QTY
51408032400	NO. 8UNC~3/8UNC



TURNING HOLDER(SS)

UNIT NO.	PART CODE NO.	STD. QTY
533380201C1	133380C0040	1



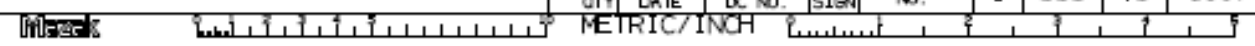
BORLING BAR HOLDER(SS)

UNIT NO.	PART CODE NO.	d	STD. QTY
533380202C1	133380C0050	$\varnothing 50$	1

△ 図面変更 THIS IS REDRAWN

OTN-300/350 MS/MSY
 12D(INCH) VDI
 FOR HD MILLING HOLDER

THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
112609 H.N	112609 H.N	112609 G.Y	112609 TLK.K
SCALE		NAME	
1/4		TOOLING SYSTEM (SECOND SPINDLE)	
QTY	DATE	DC NO.	DATE
1	080610	4232-	11JLK SIGN
DRAWING NO.		1 333 TS C007 1	



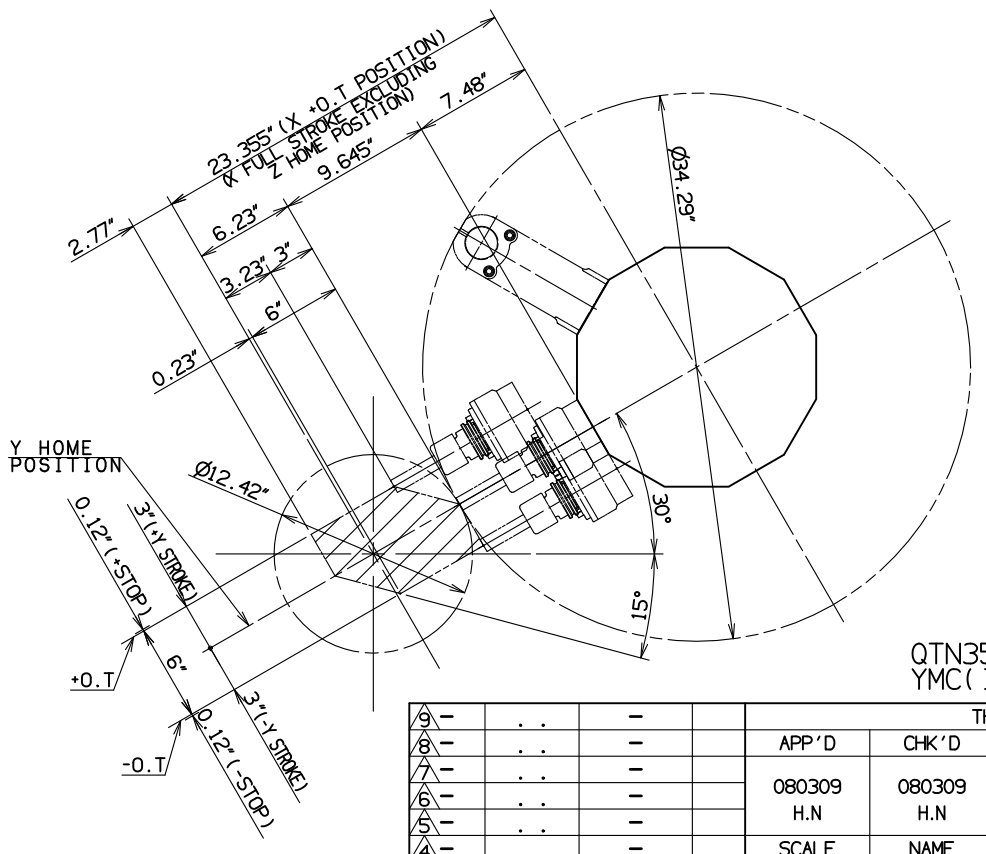
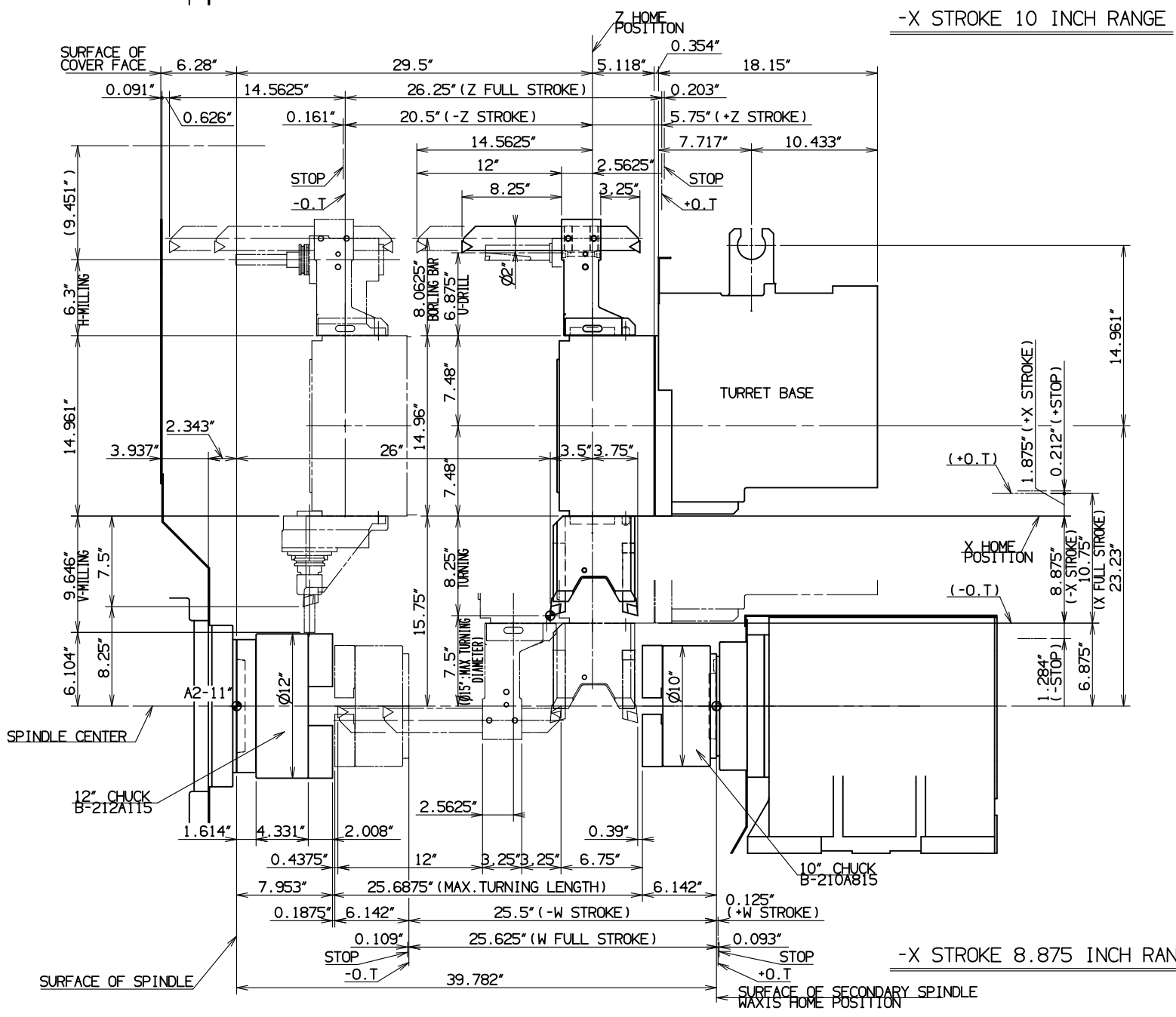
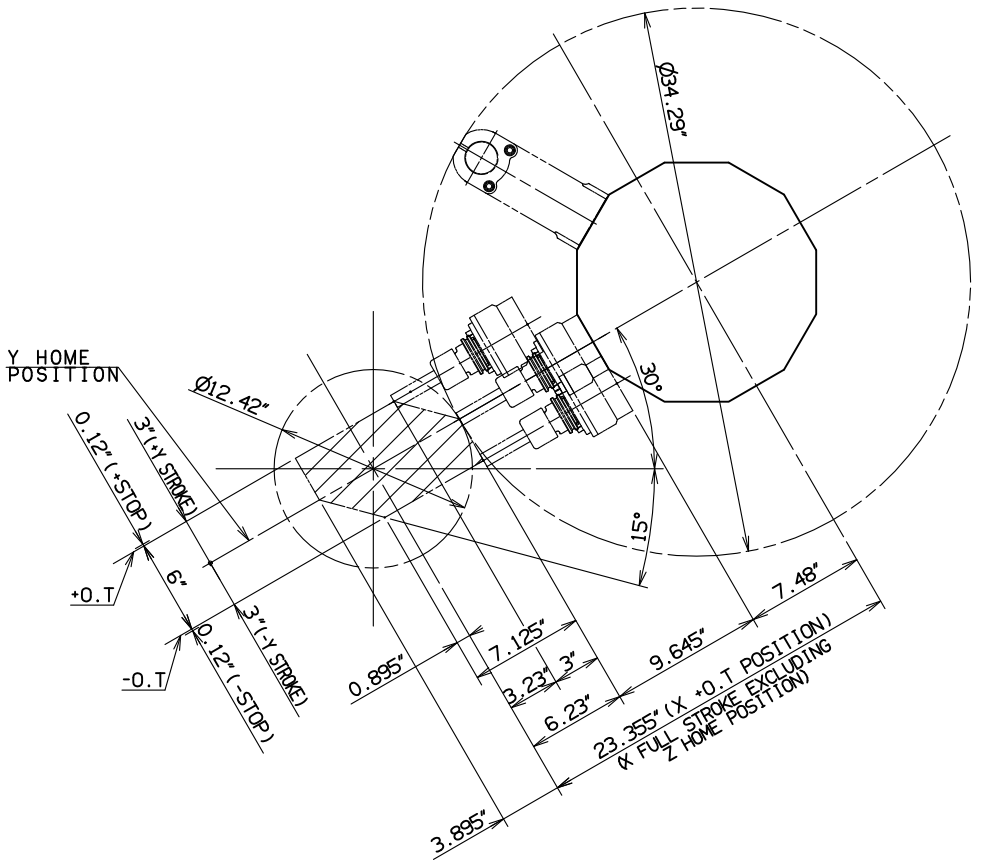
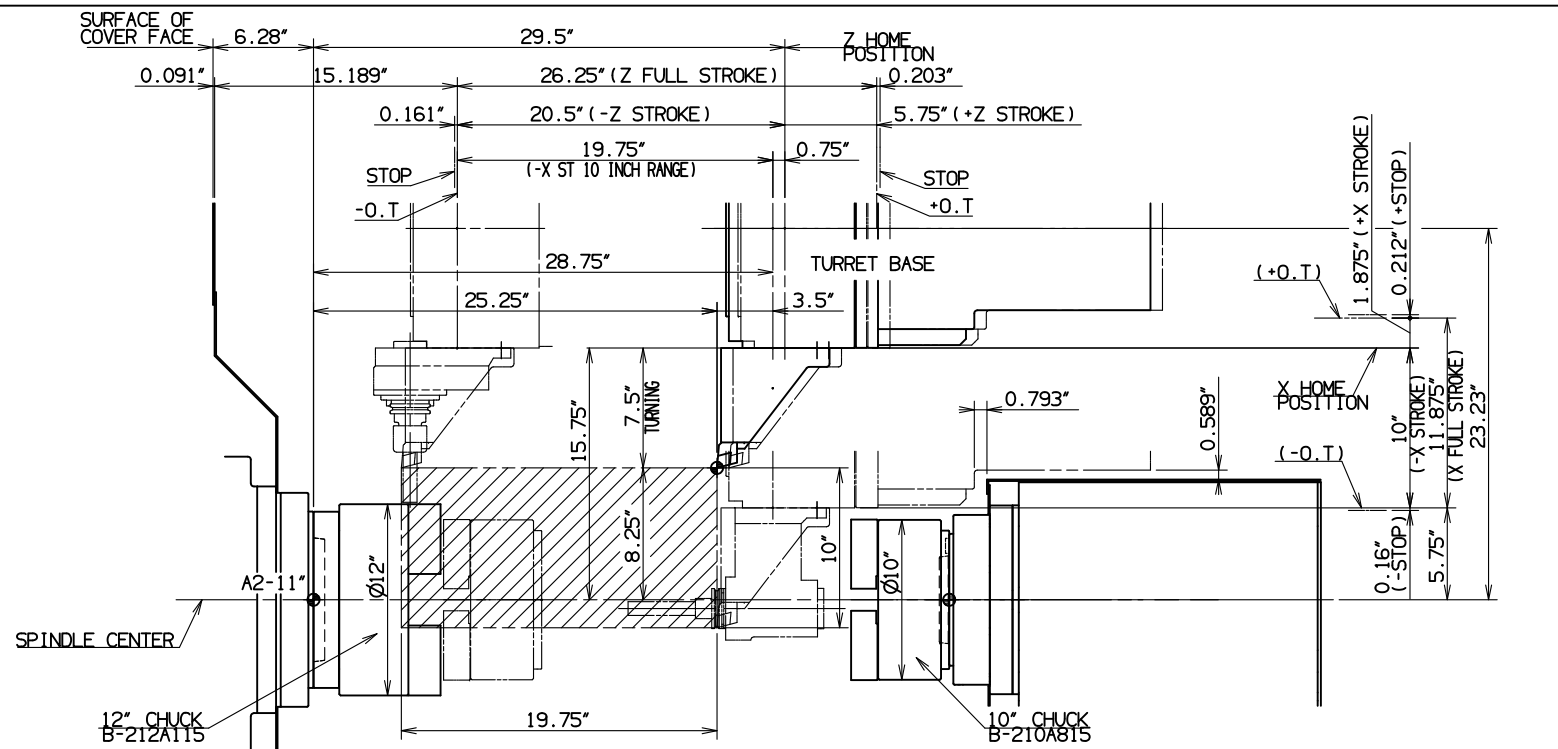
16 MACHINING CAPABILITY

16-1 Stroke Diagrams

1. QTN350-II MSY

Machine model	Unit	Drawing No.	Page	
QTN350-II MSY	650	[mm]	1333STC0021	16-2
		[inch]	1333STC0011	16-3
	1500	[inch]	1333STC0090	16-4
		[mm]	1333STC0100	16-5

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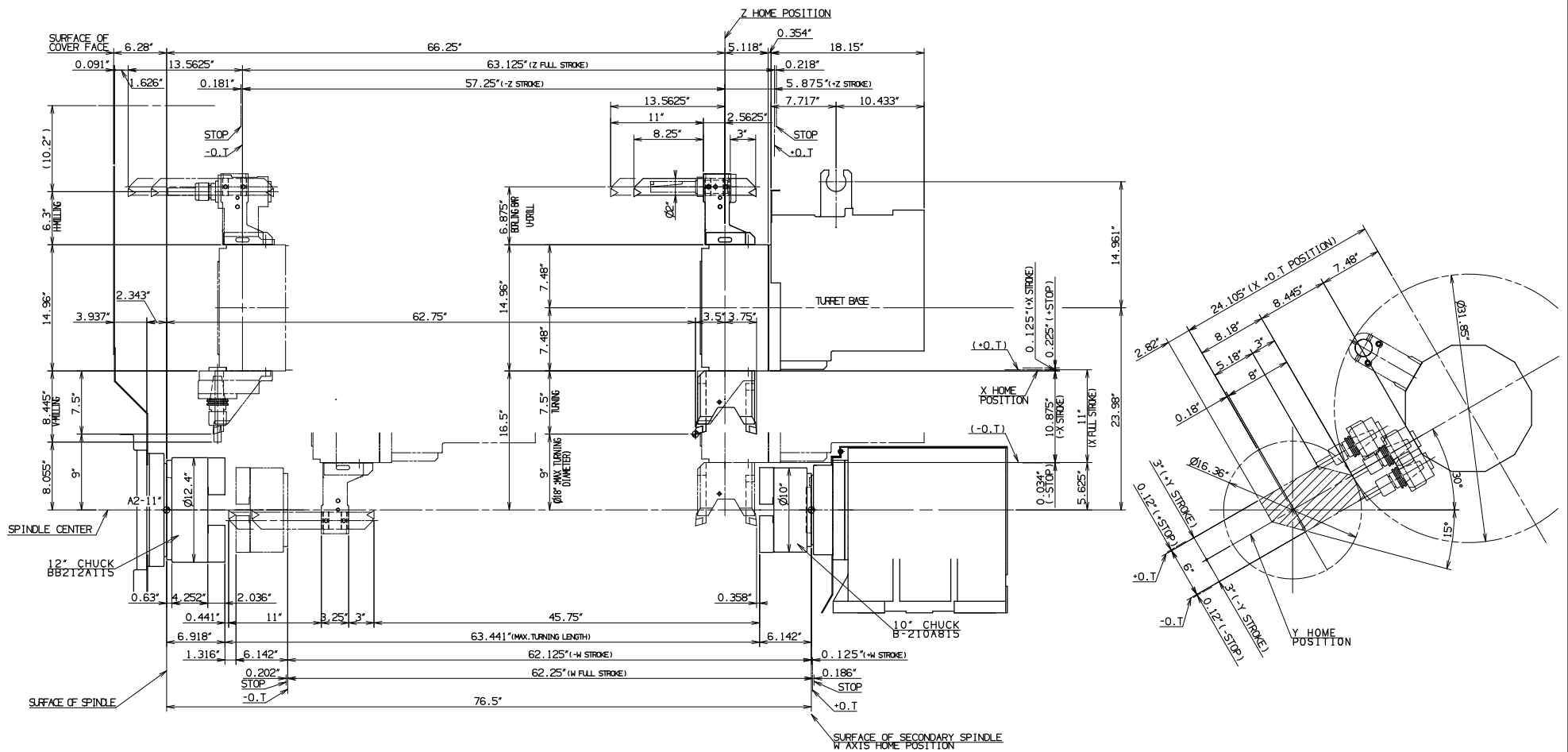


QTN350-MSY 650U
 YMC (INCH)

THIRD ANGLE PROJECTION			
APP'D	CHK'D	DSGN	DRAWING
080309	080309	080309	080309
H.N	H.N	G.Y	TL.K.K
SCALE		NAME	
1/6		ストローク線図	
STROKE DIAGRAM			
DRAWING NO.	1	333	ST C001 1

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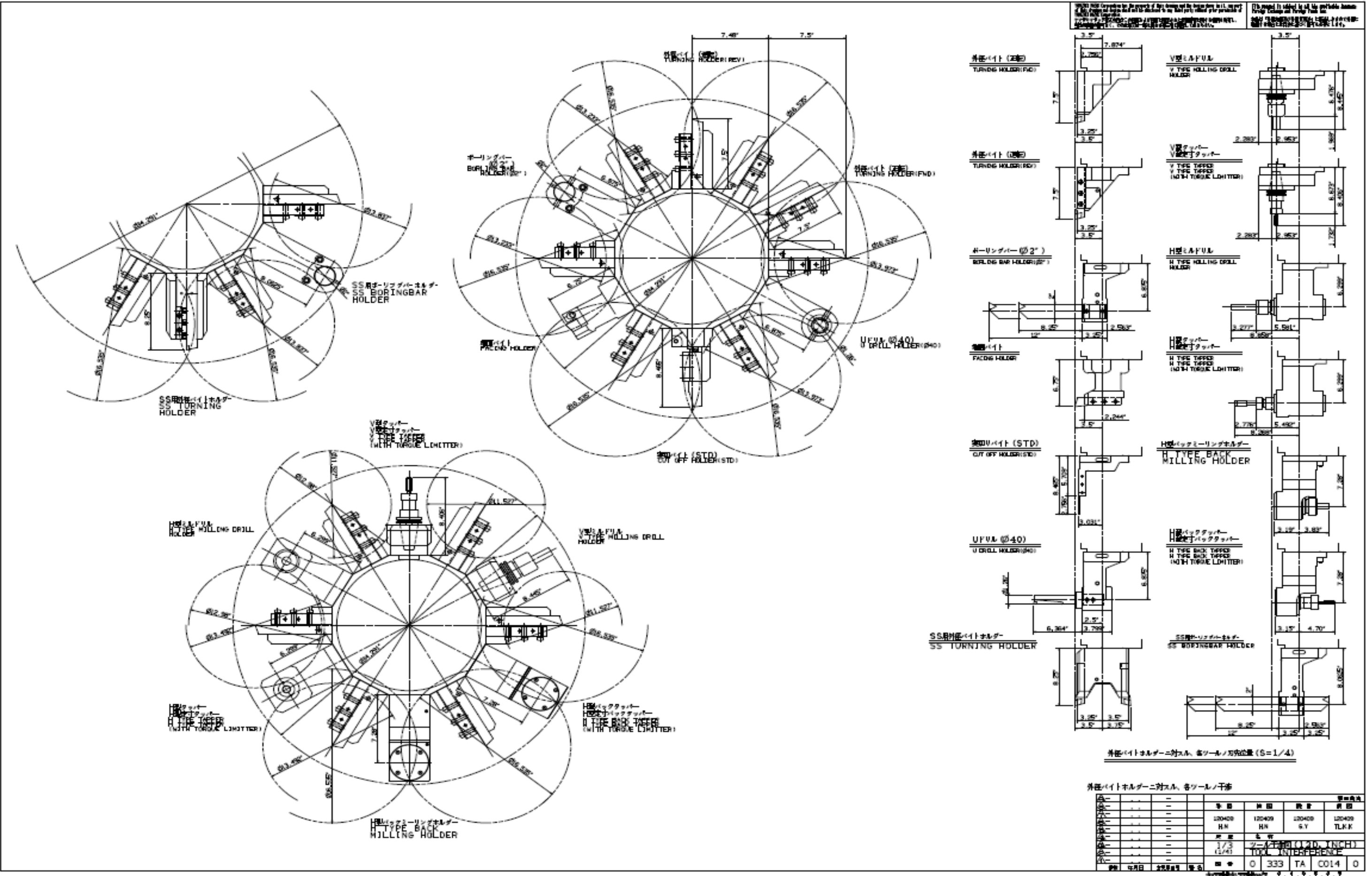


QTN350-MSY 1500U
 YMC (INCH)

THIRD ANGLE PROJECTION					
⑨	⑧	⑦	⑥	⑤	④
APP'D	CHK'D	DSGN	DRAWING		
071410	071410	071410	071410		
H.N	G.Y	G.Y	TL.K.K		
SCALE	NAME				
1/6	ストローク図				
STROKE DIAGRAM					
QTY	DATE	DC NO.	SIGN	DRAWING NO.	1 333 ST C009 0

17 TOOL INTERFERENCE DIAGRAM

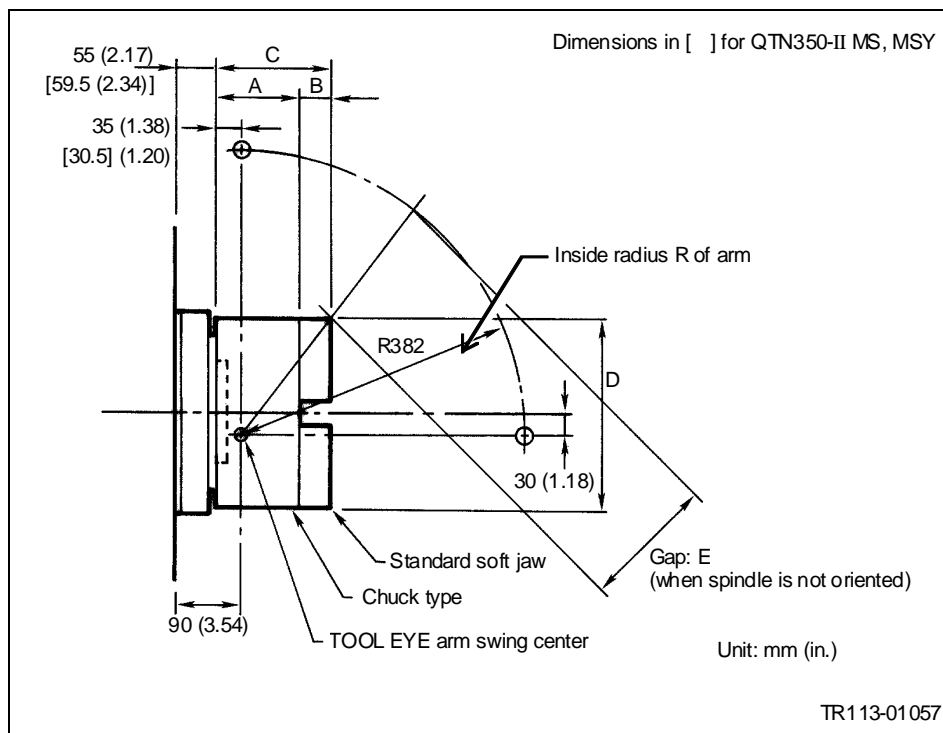
Specification		Drawing No.	Page
Machine model	Unit		
QTN300-II/350-II MS	mm	0333TAC0010	17-2
QTN300-II/350-II MSY	in.	0333TAC0140	17-3



項目	内容	単位	値
工具番号	120400		120400
ホルダー番号	HN		HN
加工条件	5 Y		TLK K
干渉係数	1/3		1/3
干渉係数	1/4		1/4
加工条件	TA		C014
加工条件	0		0

18 INTERFERENCE DIAGRAM OF TOOL EYE

18-1 Interference of the Chuck with the TOOL EYE



Machine model	Chuck		Dimensions [Unit: mm (in.)]				
	Maker	Type	A	B	C	D	E
QTN300-II MS, MSY	KITAGAWA	N-10A0815	102 (4.02)	46 (1.81)	148 (5.83)	φ254 (10.00)	φ188.6 (φ7.43)
		B-210A815X	113 (4.45)	43 (1.69)	156 (6.14)	φ254 (φ10.00)	φ183.8 (φ7.24)
QTN350-II MS, MSY		N-12A1115	147 (5.79)	54 (2.13)	201 (7.91)	φ304 (φ11.97)	φ132.6 (φ5.22)
		B-212A115	151 (5.94)	51 (2.01)	202 (7.95)	φ304 (φ11.97)	φ131.9 (φ5.19)
		B-212A115X	126 (4.96)	51 (2.01)	177 (6.97)	φ315 (φ12.40)	φ144.1 (φ5.67)

QTN300-II MS, MSY

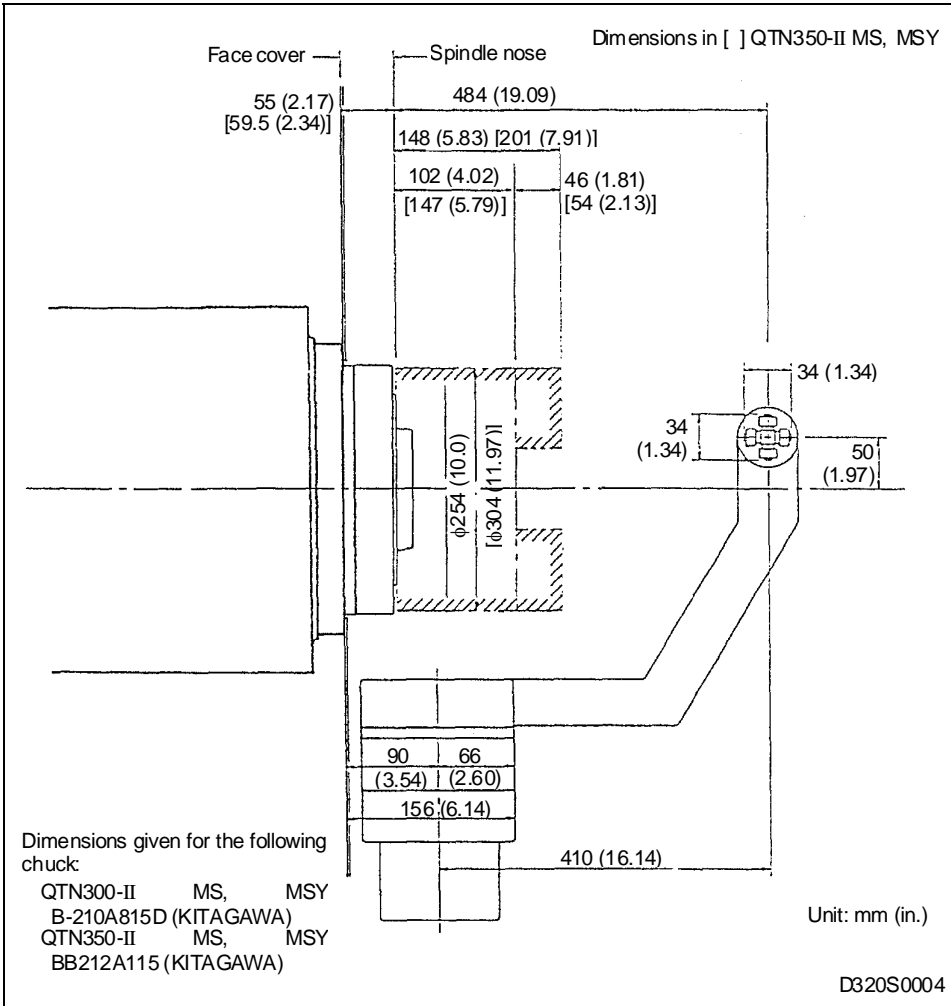
$$\text{Gap: E (mm)} = R - \sqrt{(C - 35)^2 + (D/2 + 30)^2}$$

QTN350-II MS, MSY

$$R - \sqrt{(C - 30.5)^2 + (D/2 + 30)^2}$$

18-2 TOOL EYE – Chuck Dimensional Diagram

1. TOOL EYE – chuck dimensional diagram (10"/12" hollow chuck)



2. TOOL EYE – chuck dimensional diagram (10"/12" chuck)

