TECNARA®

Technitron
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KITAGAWA MACDEX

AC SERVO MOTOR DRIVEN INDEXERS WITH MAC Mini INDEPENDENT CONTROLLER

MODEL NO.	KIW NO.
RS-5C-1	TCM100
RS-5C-1A	TCM100A
RS-5C-2A	TCM2100A
RS-5C-3A	TCM3100A

MODEL NO.	KIW NO.
RS100	RSM100

MODEL NO. • KIW NO.
MRM120
MRM160
MRM200
MRM250
MRM320

NOW INTERFACES WITH KITAGAWA INTEGRATED PROGRAMMING AND OPERATING SYSTEM OR THRU M SIGNAL WITH MAC Mini i CONTROLLER

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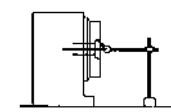
AC SERVO MOTOR DRIVEN INDEXERS

MODEL NO.	KIW NO.
RS-5C-1	TCM100
RS-5C-1A	TCM100A
RS-5C-2A	TCM2100A
RS-5C-3A	TCM3100A

MODEL/KIW NO.		RS-5C-1/ TCM100	RS-5C-1A/ TCM100A	RS-5C-2A/ TCM2100A	RS-5C-3A/ TCM3100A
Center Height in Vertical		4.33	4.33	4.33	4.33
Overall Height in Vertical		8.43	8.43	8.27	8.27
Thru Hole Diameter		1.19	1.19	1.19	1.19
Collet Draw Force		1079	1079	1236	1236
Gear Ratio		1/36	1/36	1/60	1/60
*Maximum R.P.M.		83.3	83.3	50	50
Minimum Resolution (Degree)		0.001	0.001	0.001	0.001
Indexing Accuracy (second)		50	50	60	60
Repeatability (second)		±5	±5	±5	±5
Number of Indexing Position		2-999	2-999	2-999	2-999
Permissible Load (lb.)	Horizontal	132	132	132	132
	Vertical	66	66	66	66
Maximum Work Inertia (lb.-in-sec^2)		0.48	0.48	0.48	0.48
Weight (lb.)		53	60	154	220

ITEM	DESCRIPTION OF INSPECTION	GUARANTEED ACCURACY	
		RS-5C-1 RS-5C-1A	RS-5C-2A RS-5C-3A
1	Run-out of Table I.D.	.0004	.0004
2	Run-out of Table Face	.0008	.0008
3	Parallelism Between Spindle and Base	.0008	.0008
4	Indexing Accuracy (second)	50	60
5	Repeatabillity (second)	±5	±5

1



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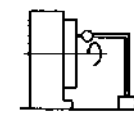

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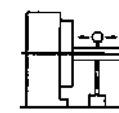

Note: * means maximum RPM is obtained with motor speed at 3,000 rpm.
Note: See accessory chart (p223) for complete listing of optional accessories.
Note: RS-5C-1 furnished with manual 5C collet closer. RS-5C-1A, -2A, & -3A furnished with pneumatic 5C collet closer.

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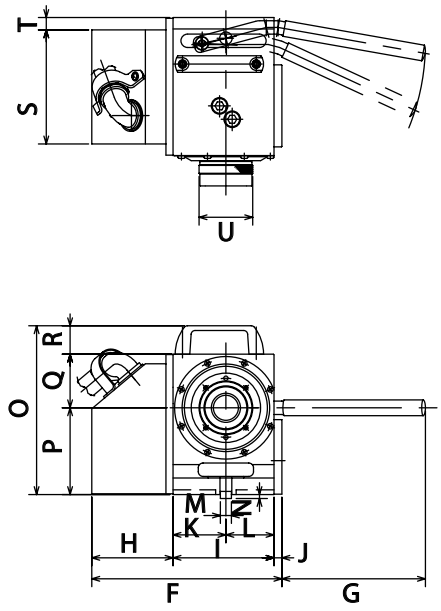
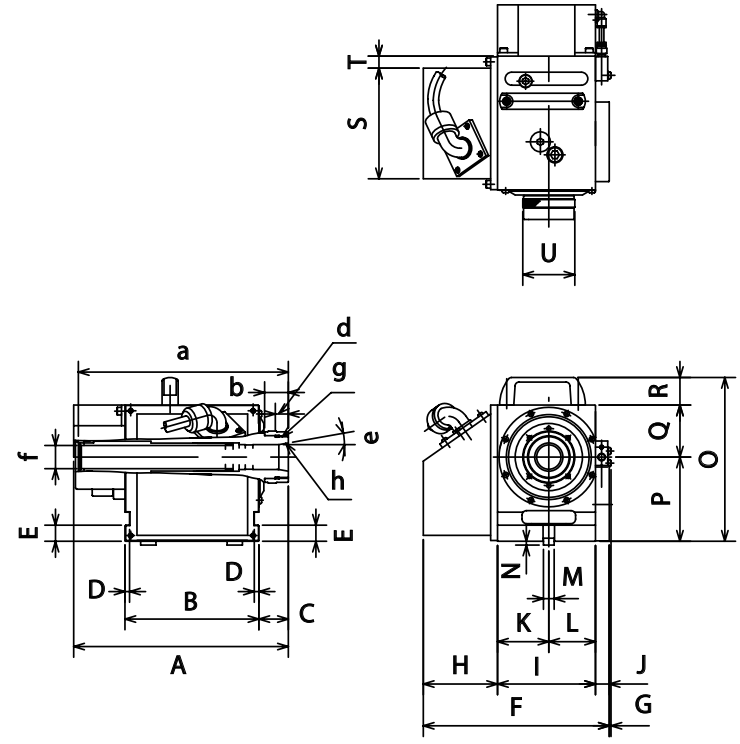
AC SERVO MOTOR DRIVEN INDEXERS



RS-5C-1

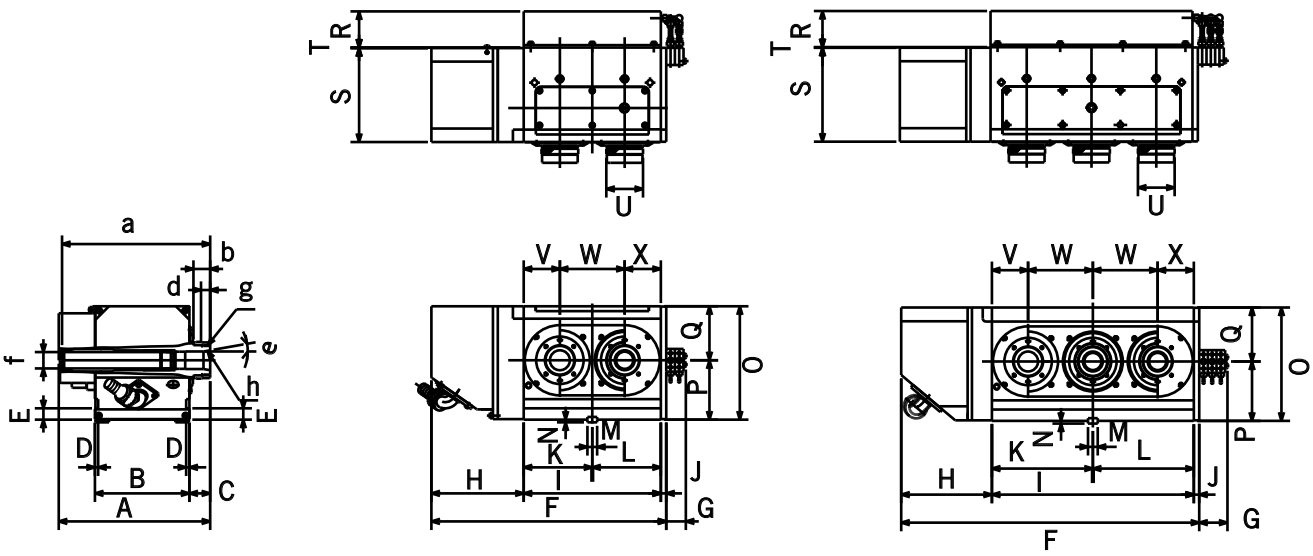


RS-5C-1A

MODEL	KIW NO.	A	B	C	D	E	F	G	H	I	J	K	L
RS-5C-1	TCM100	8.41	6.89	1.52	.24	.83	9.25	7.17	3.82	5.04	.71	2.64	2.40
RS-5C-1A	TCM100A	11.04	6.89	1.52	.24	.83	9.57	.09	3.82	5.04	.71	2.64	2.40

M	N	O	P	Q	R	S	T	U	a	b	d	e	f	g
.5512 h7	.20	8.43	4.33	2.68	1.42	5.69	.62	2.68	8.15	1.22	.67	10°	1.19	2 3/16-UNS
.5512 h7	.20	8.43	4.33	2.68	1.42	6.85	.04	2.68	10.80	1.22	.67	10°	1.19	2 3/16-UNS

KITAGAWA MACDEX
AC SERVO MOTOR DRIVEN INDEXERS



RS-5C-2A RS-5C-3A

MODEL	KIW NO.	A	B	C	D	E	F	G	H	I	J
RS-5C-2A	TCM2100A	11.04	6.89	1.52	.24	.83	17.13	1.43	6.73	10.00	.39
RS-5C-3A	TCM3100A	11.04	6.89	1.52	.24	.83	21.73	2.06	6.73	14.72	.39

K	L	M	N	O	P	Q	R	S	T	U
5.00	5.00	.7089 h7	.20	8.27	4.33	3.94	2.64	6.85	.04	2.68
7.36	7.36	.7089 h7	.20	8.27	4.33	3.94	2.64	6.85	.04	2.68

V	W	X	a	b	d	e	f	g
2.64	4.72	2.64	10.80	1.22	.67	10°	1.19	2 3/16-UNS
2.64	4.72	2.64	10.80	1.22	.67	10°	1.19	2 3/16-UNS

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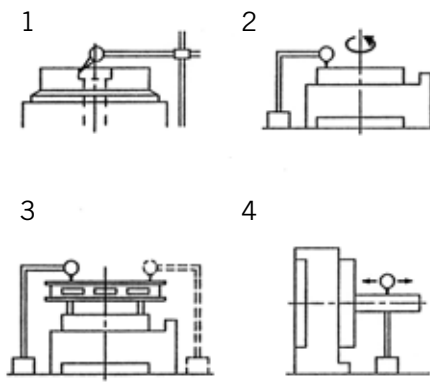
MODEL/KIW NO.	RS100/RSM100
Center Height in Vertical	4.33
Overall Height in Vertical	5.51
Thru Hole Diameter	1.26
AC Servo motor	400W
Gear Ratio	1/36
Table Rotating Direction	CW or CCW
*Maximum R.P.M.	83.3
Minimum Resolution (Degree)	0.001
Number of Indexing Position	2-999
Maximum Workpiece Diameter	4.13
Indexing Accuracy (second)	50
Repeatability (second)	±5
Clamping Force (ft-lb.)Air Pressure at 71PSI	59
Maximum Work Inertia (lb.-in-sec^2)	0.48
Weight (lb.)	53

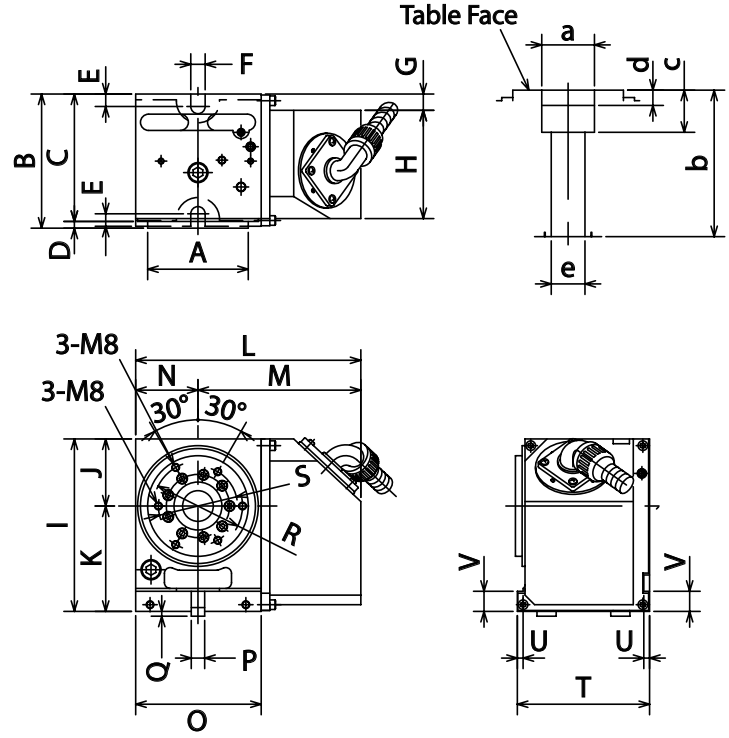
ITEM	DESCRIPTION OF INSPECTION	GUARANTEED ACCURACY
1	Run-out of Table Bore	.0004
2	Run-out of Table Face	.0004
3	Parallelism Between Table Face and Base at 6" in Horizontal	.0008
4	Parallelism Between Spindle and Base upto 6" Long in Vertical	±.0008
4	Indexing Accuracy (second)	50
5	Repeatabillity (second)	±5



Note: * means maximum RPM is obtained with motor speed at 3,000 rpm.
Note: See accessory chart (p223) for complete listing of optional accessories.

KITAGAWA MACDEX

AC SERVO MOTOR DRIVEN INDEXERS



MODEL	KIW NO.	A	B	C	D	E	F	G	H	I	J	K	L
RS100	RSM100	4.13	5.51	5.24	.28	.51	.59	.67	4.45	7.09	2.76	4.33	9.25

M	N	O	P	Q	R	S	T	U	V	a	b	c	d	e
6.69	2.56	5.16	.5512 h7	.20	3.66	3.25	5.43	.24	.83	1.9685 H7	5.47	1.57	.57	1.26

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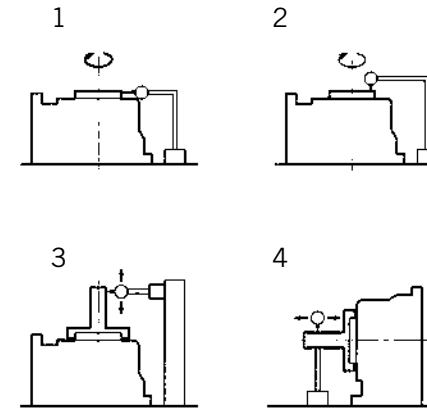
AC SERVO MOTOR DRIVEN INDEXERS

MODEL		MRM120	MRM160	MRM200	MRM250	MRM320
Table Diameter		5.04	6.5	7.95	9.84	12.6
Center Height in Vertical		4.72	5.51	5.51	7.09	8.86
Table Height in Horizontal		5.52	5.91	7.01	7.29	8.47
Overall Height in Vertical		8.07	9.37	10.59	12.01	15.16
Thru Hole Diameter		1.26	1.57	1.77	2.76	4.13
Gear Ratio		1/60	1/72	1/90	1/90	1/120
*Maximum R.P.M.		50	41.6	33.3	33.3	16.6
Minimum Resolution (Degree)		0.001	0.001	0.001	0.001	0.001
Indexing Accuracy (sec)		20	20	20	20	20
Repeatability (sec)		±2	±2	±2	±2	±2
**Clamping Force (ft-lb.)		110	229	258	443	885
Permissible Load (lb.)	Horizontal	264	353	441	551	772
	Vertical	132	176	220	276	397
Maximum Work Inertia (lb.-in-sec^2)		1.91	4.51	8.85	17.26	39.67
Weight (lb.)		62	88	108	187	287

Note: * means maximum RPM is obtained with motor speed at 3,000 rpm.
Note: ** means clamping force is based on air pressure at 71 PSI.
Note: See accessory chart (p223) for complete listing of optional accessories.

ITEM	DESCRIPTION OF INSPECTION	GUARANTEED ACCURACY
1	Run-out of Table I.D.	.0004
2	Run-out of Table Face	.0008
3	Parallelism Between Table Face and Base	.0008
4	Parallelism Between Spindle and Base	.0008
5	Parallelism Between Spindle and Guide Block	.0008
6	Indexing Accuracy	20
7	Repeatabillity	±2



Note: Measurement is taken at 6" length from face or center of the table.

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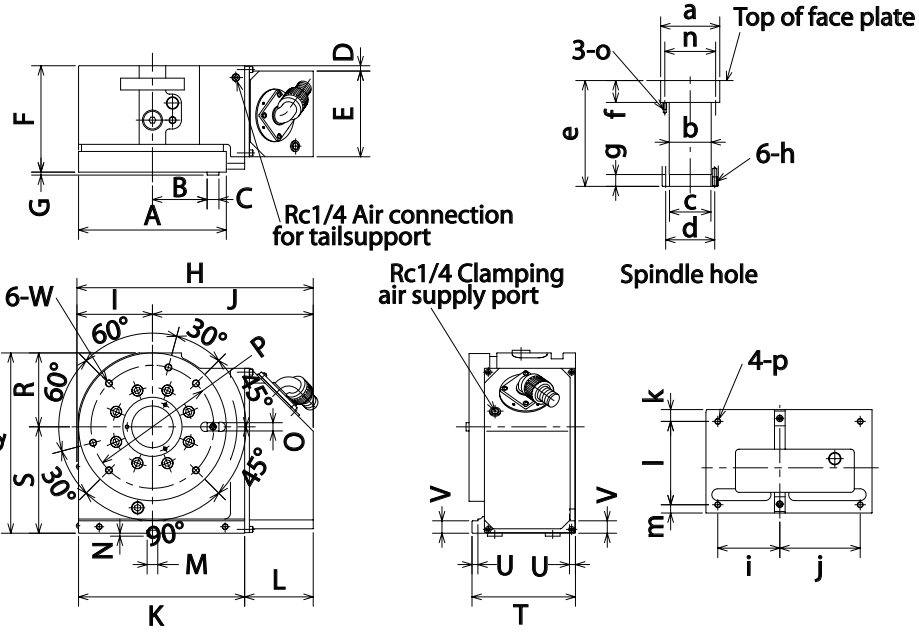

MODEL	A	B	C	D	E	F	G	H	I	J
MRM120	5.04	1.65	.79	.40	4.76	5.36	.16	12.44	3.35	9.09
MRM160	6.50	1.97		.35	4.84	5.71	.20	13.27	3.62	9.65
MRM200	7.95	2.64		.27	5.79	6.81		14.69	4.41	10.28
MRM250	9.84	3.64		.26	5.81	7.09		15.75	5.04	10.71
MRM320	12.6	4.92		.59	6.02	8.27		16.81	6.30	10.51

K	L	M	N	O	P	Q	R	S	T
7.05	5.39	.5512 h7	.20	.3937 h7	4.45	8.07	3.35	4.72	5.16
7.91	5.28	.7087 h7		.5512 h7	5.71	9.37	3.86	5.51	5.59
10.16	4.53				6.69	9.84	4.33	5.51	6.61
11.06	4.57				8.19	12.01	4.92	7.09	6.89
12.60	4.21				11.10	15.16	6.30	8.86	7.87

U	V	W	a	b	c	d	e	f
.39	.83	M8	1.9685 H7	1.28	1.2598 H8	1.61	5.33	.94
		M10	1.9685 H7	1.59	1.5748 H8	1.97	5.67	1.10
		M10	2.5591 H7	1.81	1.7717 H8	2.17	6.77	1.38
		M12	3.9370 H7	2.80	2.7559 H8	3.27	7.05	1.46
	1.18	M12	5.1181 H7	4.17	4.1339 H8	4.80	8.24	1.34

g	h	l	j	k	l	m	n	o	p
.79	M5	2.36	2.36	.83	3.78	.55	1.61	M5	M10
	M6	2.76	3.70	.98	4.06	.55	—	—	
	M6	3.35	5.00	.83	5.24	.55	2.09	M5	
	M8	4.13	5.35	.79	5.55	.55	3.39	M6	
	M10	4.72	4.72	.63	6.65	.59	4.57	M6	M16

ACCESSORY CHART & RECOMMENDED LUBRICANT OIL
FOR KITAGAWA ROTARY TABLES

MODEL/ KIW NO.	TAIL STOCK	AIR/HYDRAULIC TAILSTOCK	SCROLL CHUCK	AIR CHUCK	ROTARY JOINT	AIR BOOSTER	LUBE/OIL
TC-5C-1/ TC100	TS100	TS100-RSA	SC-4	—	—	—	MOBIL VACTRA NO. 1
TC-5C-1A/ TC100-A	TS100	TS100-RSA	SC-4				
TC-5C-2A/ TC2100-A	TS100-2	TS100-2RSA	SC-4				
TC-5C-3A/ TC3100-A	TS100-3	TS100-3RSA	SC-4				
MR120	TS160	TS160-RSA	SC-5	NRC04	RJ32H12Q		
MR160	TS200	TS200-RSA	SC-6T	NRC04	RJ40H16Q		
MR200	TS200	TS200-RSA	SC-7T	NRC06	RJ40H20Q		
MR250	TS250	TS250-RSA	SC-9T	NRC08	RJ70H25Q		
MR320	TS320	TS320-RSA	SC-12T-4	NRC10	RJ70H25M		
TMX160	TS160	TS160-RSH(A)	SC-6T	NRC04,06	RJ40H16D		
TMX200	TS200	TS200-RSH(A)	SC-7T	NRC04,06	RJ40H20D		MOBIL VACTRA NO. 2
TMX250	TS250	TS250-RSH(A)	SC-9T	NRC06,08	RJ70H25D		
TRX320	TS320	TS320-RSH(A)	SC-12T-4	NRC10	RJ70H32K		
TR401	TS400	—	SC-14-PB	—	RJ80H40R	AB50T	
TR500	TS500		SC-14-PB		RJ80H		
TP530	TS500		SC21-12.6 IC21-13.6		—		
TR630	TS630		SC-16		RJ80H		
TBX160	TS160	TS160-RSA(H)	SC-6T	NRC04,06	—	—	MOBIL VACTRA NO. 1
TBX200	TS200	TS200-RSH(A)	SC-7T	NRC04,06	RJ40H20F		MOBIL VACTRA NO. 2
TBX250	TS250	TS250-RSH(A)	SC-9T	NRC06,08	RJ70H25F		
TBX320	TS320	TS320-RSH(A)	SC-12T-4	NRC10	RJ70H32F		

ACCESSORY CHART & RECOMMENDED LUBRICANT OIL
FOR KITAGAWA ROTARY TABLES

MODEL/ KIW NO.	TAIL STOCK	AIR/HYDRAULIC TAILSTOCK	SCROLL CHUCK	AIR CHUCK	ROTARY JOINT	AIR BOOSTER	LUBE/OIL
TT101	—	—	SC-4	—	RJ32H	—	MOBIL VACTRA NO. 1
TT140			SC-4	—	RJ32TT140		
TT(TW)182			SC-6T	NRC06	RJ40FTT182		
TW2180			SC-6T	—	—		
TT(S)251			SC-9T	NRC08	RJ70H25T	AB25T	MOBIL VACTRA NO. 2
TT(S)321			SC-12T-4	NRC10	RJ70H32T		
TM-100-2R/ TM2100	TS100-2	TS100-2RSA	SC-4	—	RJ32H		MOBIL VACTRA NO. 1
TM-100-3R/ TM3100	TS100-3	TS100-3RSA	SC-4		RJ32H		
TM-160-2R/ TM2160	TS160-2	TS160-2RSA(H)	SC-6T	NRC04	RJ40H		
TM-160-3R/ TM3160	TS160-3	TS160-3RSA(H)	SC-6T	NRC04	RJ40H		
TCM100	TS100	TS100-RSA	SC-4	NRC04	—	—	
TCM100A	TS100	TS100-RSA	SC-4	NRC04			
TCM2100A	TS100-2	TS100-2RSA	SC-4	—			
TCM3100A	TS100-3	TS100-3RSA	SC-4				
MRM120	TS160	TS160-RSA	SC-5	NRC04			
MRM160	TS200	TS200-RSA	SC-6T	NRC04			
MRM200	TS200	TS200-RSA	SC-7T	NRC06			
MRM250	TS250	TS250-RSA	SC-9T	NRC08			
MRM320	TS320	TS320-RSA	SC-12T-4	NRC10			

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KITAGAWA NC CONTROLLER
MAC mini i INDEPENDENT CONTROLLER

- **ADVANCED INTEGRATED PROGRAMMING AND OPERATING SYSTEM (IPOS MODE)**
  Direct control of MAC mini series controllers with host computers (CNC, NC, etc.) through RS-232C Serial Port. One RS-232C Serial Port can control one or two MAC mini controllers.
- **M-SIGNAL MODE OPERATION**
  Indexing, Zero Return, etc. from the machine control with one M Signal interfaced. Conversion between IPOS MODE and M Signal MODE by simple parameter changes.
- **POWERFUL DRIVING TORQUE**
  A maintenance free AC Servo Motor with absolute pulse coder, provides powerful driving torqe.

Note: Mac Mini i is used for rotary tables up to #320.

- **PRECISE INDEXING**
  Minimum resolution of 0.001˚
- **HIGH SPEED TABLE ROTATION**
  High speed indexing with AC Servo Motor
- **FULL DIGITAL SERVO CONTROL**
  Guarantees superb indexing accuracy and stable performance.
- **DUST PROOF CONTROL BOX**
- **PLENTY OF PROGRAMMING SPACE**
  Large programming capacity of total 2,000 blocks, 500 blocks x 1 channel and 100 blocks x 15 channels.
- **2 AXES CONTROLLER FOR TILTING ROTARY TABLE AVAILABLE UPON REQUEST**

KITAGAWA NC CONTROLLER - SPECIFICATIONS

ITEM	Name of Function	Description of Function
1	Integrated Programming and Operating System (IPOS)	IPOS Mode Operation through Host Computers (CNC, NC, etc)
2	M - Signal Mode Operation	Easy Interface with the Machine Control for M - Signal Operation with One M Code
3	Minimum Resolution	0.001 Degrees
4	Max. Programmable Angle	±825 Rotations and ±999.999 Degrees
5	Number of Divisions	2 - 999
6	Program Capacity	500 Blocks x 1 Channel, 100 Blocks x 15 Channels (N00 - N99 x CH00 - CH15)
7	Input Method	MDI Keyboard
8	Command Method	Incremental (G91) / Absolute (G90)
9	Zero Return	*Establishes both Machine and Work Origin
10	Manual Feed	Rapid, Fine and Step Feed
11	Emergency Stop	*Stops All Functions
12	Feed Hold	*Stops Table Rotation Temporarily
13	Jump Function	Skips and Goes to Sub-programs
14	Repeat Function	Repeats up to 8 Times between Programs specified
15	Step-out Function from Loop	Step-out form Loop by External Command
16	Buffer Function	Reads One Block Ahead and Operates Continuously
17	Key-lock Function	Avoids Pushing Wrong Functional Button in error
18	G Function	Dwell, Brake On/Off, etc. (G04 - G99)
19	Uni-directional Function	Positioning from One Direction (CW or CCW) only
20	Software Limit Function	Setting Value of Software Limit from Machine Origin
21	Stop Over-shooting	Prevents Over-shooting from the Preset Position
22	Controlling Finish Signal	Outputs Selected Finish Singal (G97, G98, G99)
23	RS232C Interface	Interfacing with PC, etc.
24	Alarm No. Display Function	Display Alarm Code No. for Error
25	Self Diagnosis Function	Displaying Current Condition of Controller
26	Feed Override	5 - 200%
27	External Input Signal	Start, Emergency Stop, Feed Hold, etc.
28	External Output Signal	One Block Finish, Finish, Alarm Output, etc.
29	Servo Motor	Yasnac AC Servo Motor
30	**Hand-Held Pendant	Detachable Hand-Held Pendant for Easy Key Operation
31	Power Input	AC200-220V, 50/60Hz, Single Phase

Note: * means to accept External Commands.
Note: ** means optional feature.