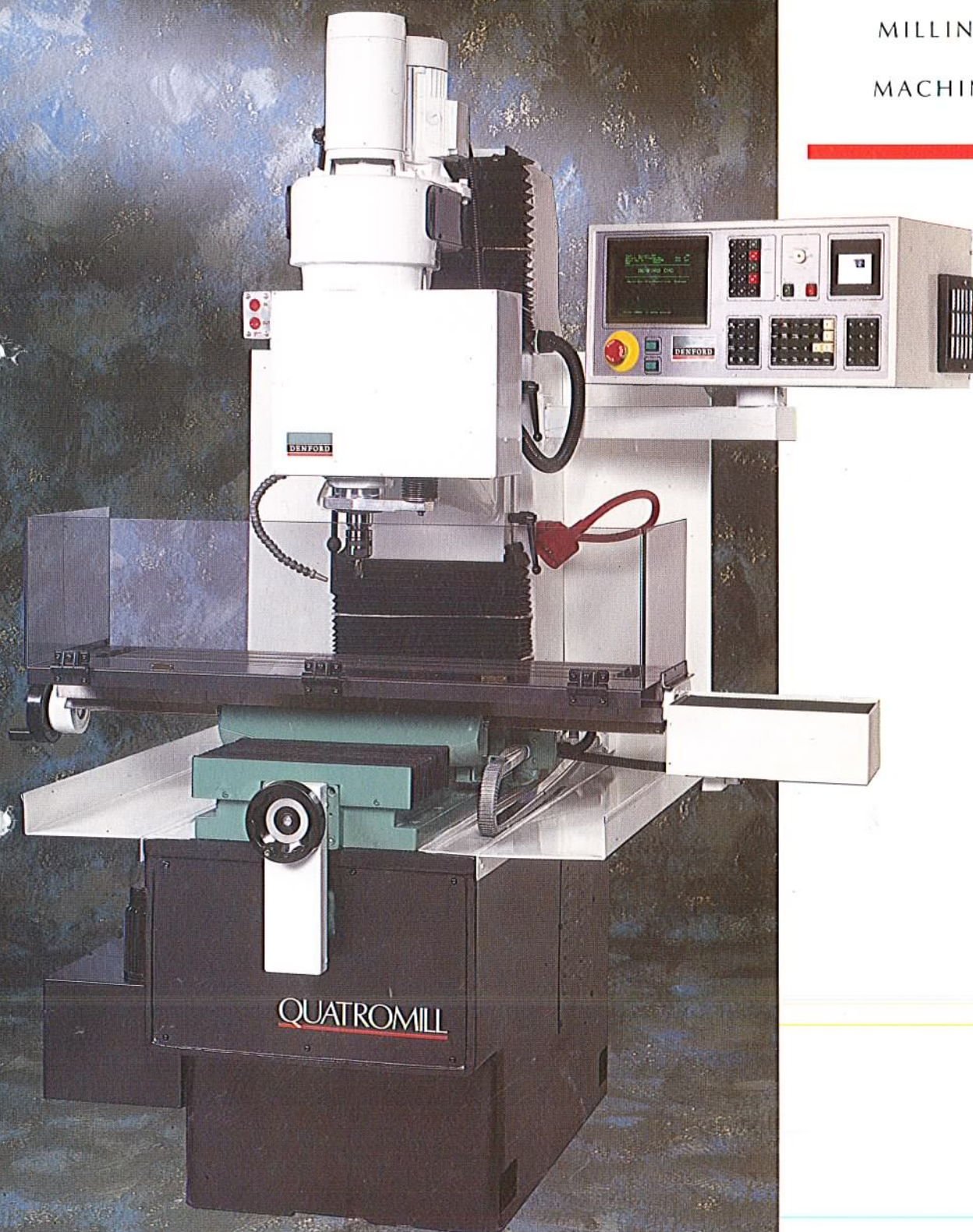


QUATROMILL

A
3 AXIS C.N.C.
BED TYPE
MILLING
MACHINE



DENFORD

COMPUTERISED MACHINES AND SYSTEMS

QUATROMILL

The DENFORD QUATROMILL incorporates the latest PNC4 control. The machine combines precision with the very latest micro-processor technology allowing program writing using I.S.O. format with the facility for proving the programs using Toolpath Graphics. Quatromill also has compatibility with the full range of Denford CAD/CAM, DNC and flexible manufacturing systems.

GENERAL SPECIFICATIONS

C.N.C. CONTROL SYSTEM

1. 490 x 290 x 335mm Self Contained Console.
2. Green on Black 9" V.D.U. with Anti-glare screen and outlet to external V.D.U. Monitor.
3. Facility for proving programs using Toolpath Graphics.
4. 5 displays of cutter path available: plan, plan and isometric view showing cutter diameter, side elevation, front view, isometric view.
5. Alpha numeric keyboard allowing full Manual Data Input.
6. Mini Magnetic Cassette Unit for Multi Program Storage - up to 6000 Blocks.
7. M.D.I. Single Step and Auto selector for programs.
8. RS.232C Interface with 7 Pin Din connection to computers and paper tape punch units.
9. Parallel Printer Interface for obtaining hard copy of programs.
10. I.S.O. Format - allowing 'G' and 'M' Code Programming from DIN 66025 extract.
11. Full 'G' and 'M' code Listings on V.D.U. when required to assist programming.
12. Single Mode Selection Keys.
13. Axis Jog on All Axes with variable feedrate and 0.01mm step.
14. Feedrate over-ride from 1mm/min. to 750mm/min.
15. Programmable Spindle Speed 0-3000r.p.m. (optional extra). Programmable Feedrate 0-1500mm/min.
16. Linear Interpolation on any 2 out of 3 axes with vectorially correcting feedrates.
17. Circular Interpolation on X-Y Plane, X-Z Plane or Y-Z Plane enabled by the plane switching facility.
18. Absolute/Incremental, Inch/mm programming throughout program build-up.
19. Manual and Programable Program Stops.
20. Repeat facility allowing build-up of subroutines and Do-Loops for drilling, pocket milling, slotting and pecking cycles. (Repeats available - 10³).
21. Dedicated canned cycles for rectangular and circular pocket milling, drilling and pecking G82, 83, 84.
22. Floating Datum Facility.
23. 750 Block Memory.
24. Tool length Offsets for up to 16 tools.
25. Tool diameter compensation for all tools.
26. Programmable Coolant.
27. Programmable Dwell from 0.1 9999.9 seconds.
28. 4 Auxiliary Outputs.
29. 6 Programmable Inputs.
30. Mirror Imaging on XY XZ or YZ planes simultaneously.
31. Program Scaling and Component Scaling from 0.01%-650%.

32. Program Offset allowing for dry run facility.
33. System resolution 0.01mm (0.0004").

MECHANICAL

Working Table Surface	230 x 1067mm (9" x 42")
Longitudinal Travel	745mm (29")
Cross Travel	400mm (15 3/4")
Vertical Head Travel	510mm (20")
Quill Travel	127mm (5")
Spindle to Table	600mm (23 1/2")
Spindle to Column	390mm (15 1/2")
Spindle Taper	R8 or N.S.T. #30
Slot of Table	16mm (5/8")
Max. Size Workpiece (approx.)	745 x 400 x 600mm (29" x 15 3/4" x 23 1/2")
Max. Weight Workpiece (approx.)	450kgs (990lbs)
Milling Capacity	76mm (3")
Spindle Speeds (8 Step)	70-2250
Spindle Speeds infinitely variable (extra)	0-3000
Max. Machine Length	1335mm (54")
Max. Machine Width	2235mm (88")
Height	2050mm (80")
Weight	1200kgs (2640lbs)
Mechanical Resolution	0.01mm (0.0004")

ELECTRICAL

Standard 10 Speed Machine	
50Hz-3 phase 380/440V + Neutral.	
60Hz-3 phase 220V	
Vari Speed Machine	
50/60Hz-1 phase 220V-AC Frequency Changer	
Spindle Motor:	
Standard 8 Speed Machine	4 pole 2H.P.
Vari Speed	2H.P. A.C.
Axes Motors:	
DC Servo Motors.	

STANDARD EQUIPMENT

Flood Coolant System, Splash Guards, Table Guards and Swarf Tray, Tool Kit, Halogen Lo Vo Light, Operation and Instruction Manual, Automatic Lubrication System. 2 Days' Operator Training.

EXTRA EQUIPMENT

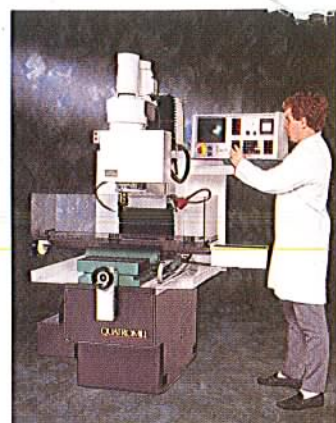
Power Draw Bar, Spray Mist Coolant, Quick Change Tooling, Programmable Vari Speed (0-3000r.p.m.), Printer, Off Line Programming for Acorn BBC, Apple IIe, IBM P.C., and 100% compatibles. Robots and integration into Flexible Manufacturing and CAD/CAM systems.

NOTE: Quatromill is also available with: Heidenhain 151 or 155 controls
Fanuc OM control

CAD/CAM SOFTWARE

For IBM P.C. and 100% compatibles.
- Auto CAD, Auto CAM.
For BBC computers.
- EASICAD, EASICAM - Compas Starter/Cam.
For Nimbus Computers.
- Compas Designer, Auto CAM.
- Auto CAD, Auto CAM.

HAS BEEN
DESIGNED AS
AN EFFICIENT
PRODUCTION
MACHINE TOOL
FOR MEDIUM
SIZED
COMPONENTS,
AND ALSO FOR
TRAINING OR
RE-TRAINING
OPERATORS



DENFORD MACHINE TOOLS LTD,
BIRDS ROYD, BRIGHOUSE
WEST YORKSHIRE, HD6 1NB
TELEPHONE: 0484 712264
TELEX: 517478 FAX: 0484 722160

DENFORD

COMPUTERISED MACHINES AND SYSTEMS

PART No.	DESCRIPTION	QTY
QM.100/1	QUILL BALLSCREW	1
2A	MOTOR PLATFORM	1
3	MOTOR PLATFORM BRACKET	2
4	QUILL CLAMP	1
5	QUILL KNOCK OFF TRIP	1
6B	HEAD COVER	1
7		
8	HEAD COVER BACKPLATE	1
9	QUILL BELLOW END CAP	1
10	QUILL BELLOW END DISC	1
11	QUILL BELLOW CLAMP DISC	1
12A	SPINDLE PULLEY	1
13A	MOTOR PULLEY	1
14	DRIVE BELT GUARD	2
15	DRAW BAR	1
16	DRAW BAR ADAPTOR	1
17	SPINDLE LOCK CAP	1
18A	SPINDLE LOCK ARM	1
19	SPINDLE LOCK SHAFT	1
55	SPINDLE END CAP	1
59	MOTOR PLATFORM SPACER	1
61	QUILL BALLSCREW ATTACHMENT	1
64	HEAD COVER FIXING PLATE	1
EM.100/		
12B	DRIVEN PULLEY	1
14A	MANUAL FEED BUSH	1
15A	12T PULLEY	1
17	VERTICAL FEED DRIVE GUARD	1
29	SPINDLE BALLSCREW WASHER	1
46	MICRO SWITCH MOUNTING PLATE	2
52	TERMINAL BLOCK BRACKET	1
53	SENSOR SWITCH BRACKET	1
54	SWITCH FIXING BRACKET	1
63	BALLSCREW STOP	1
EM.102/2	MOTOR PLATE	1
9	R.P.M. SENSOR BRACKET	1
DS.3/202	BALLNUT ADAPTER	1
DS.3/203	ADAPTER LOCKNUT	1
CH.371	NAME PLATE	1
QM.103/127	SPINDLE	1
129	LOCKNUT	1
130	WASHER	1
132	SLEEVE	1
133	NOSE PIECE	1
134	SPINDLE DIRT SHIELD	1
136	LARGE BEARING SPACER	1
137	SMALL BEARING SPACER	1
142	QUILL	1
155	TEE BOLT	4
156	LOWER CLAMPING BOLT SPACER	2
157	ADAPTOR NUT	4
192	QUILL HOUSING	1

VARIABLE SPEED HEAD

BELT REF:-

MULTI-SPEED BELT
2430V345

QUATRO MILLER

1a

HEAD ASSEMBLY (cont.)

QM.100

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
QM. 103/41	MOTOR MOUNTING STUD	2
42	BELT HOUSING	1
43	MOTOR LOCKNUT	2
44	MOTOR LOCKWASHER	2
45	MOTOR LOCK HANDLE	2
50	HOUSING COVER	1
57	SPINDLE GEAR HUB	1
66	GEAR HOUSING	1
72	SNAP RING	1
73	LOCKWASHER	1
74	LOCKNUT	1
76	VERTICAL TEE BOLT	3

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF.</u>	<u>COMPUTER No.</u>	<u>QTY</u>
POWER DRAW BAR MOTOR	G.B.ELECTRIC GBD-125	55500831 55500311B	1 1
STEP MOTOR BEARING	CETRONIC HY200/3450/350-A8 FAG 6008 2RS	55500422 55500109	1. 2
" "	" 6206	55500112B	1
" "	" 6208	55500113	2
" "	" 7207	55500177A	2
TIMING PULLEY	FENNER 12L050 (EM.100/15A)	55500641C	1.
" " " "	" " 24L050 (EM.100/12A)	55500641D	1.
TIMING BELT	" " 150L050	55500646	1.
BELT	TBA 240 J16	55500627	1.
BALLNUT	WARNER RM 1605.A	55500178B	1.
BELLOW	UNIMATIC 8179 C	55501427D	1.
SENSOR	BALLUFF NJ1-58GN	55500401A	2
MICRO SWITCH	BURGESS V3S	55500425	2
SWITCH ACTUATOR	" " VL R1	55500425A	2
S/LID OILER	ADAMS 1749	55501122	1
PLASTIC KNOB	RENCOL 302	55501205	2

CROSS SLIDE & TABLE ASSEMBLY

QM.200

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.100/20	CROSS SLIDE BALLSCREW	1
21	TABLE BALLSCREW	1
22	CROSS SLIDE BALLNUT BRACKET	1
23	BEARING CAP	2
24	TABLE BEARING COVER	1
25	TABLE DRIVE BRACKET	1
26	'X' AXIS MOTOR PLATE	1
27	TABLE DRIVE COVER	1
62	FIXED NUT ADAPTOR	1
QM.100/30		
31	SENSOR BRACKET	1
32	FRONT SADDLE KNOCK OFF	1
33	REAR SADDLE KNOCK OFF	1
34	TABLE RAIL	1
35	TABLE CONNECTION BOX	1
36	CROSS SLIDE BELLOW (ref to 55501427D)	2
56	CROSS SLIDE BELLOW RAIL	1
57	FRONT BELLOW RAIL	1
58	REAR BELLOW RAIL	1
EM.100/3	MOTOR BRACKET	1
4	DRIVE GUARD	1
7B	FIXED NUT ADAPTOR	2
28	$\frac{1}{2}$ B.S.P. TAILPIECE ADAPTOR	2
44	MICRO SWITCH TRIP	1
45	SENSOR TRIP	1
46	MICRO SWITCH MOUNTING PLATE	1
56	HANDWHEEL	2
CH.336 'X'	AXIS DIRECTION PLATE	1
M.203/7	TABLE GIB STRIP	1
13	CROSS SLIDE GIB STRIP	1
16	CROSS SLIDE	1
53	TABLE	1
QM.203/11	LEFT BEARING BRACKET	1
12	RIGHT BEARING BRACKET	1
28	CROSS FEED BEARING BRACKET	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF.</u>	<u>COMPUTER No.</u>	<u>QTY</u>
BEARING	FAFNIR MM 9306 W1-2DU	55500190	2SETS.-
" "	FAG 6303 2RS	55500114A	2
STEP MOTOR	CETRONIC HY200/3450/350/A8	55500422	2
TIMING PULLEY	FENNER 12L050	55500641C	2
" " " "	" " 24L050	55500641A	2
TIMING BELT	" " 210L050	55500645	1
TAPER LOCK BUSH	" " 1108-16	55500647C	2
HANDWHEEL	ELESA VD125 FP-1(EM.100/56)	55501218	2
LOCKNUT	FAG KM 4	55500183	2
TAB WASHER	" MB 4	55500184	2
MICRO SWITCH	BURGESS V3S	55500425	4
SWITCH ADAPTOR	" " VL R1	55500425A	4
SENSOR	BALLUFF NJ1-58GN	55500401A	2
TIMING BELT	FENNER 150L050	55500646	1
CROSS SLIDE COVER	BEAKBANE (QM,100/36) 8179C	55501427D	2

COLUMN & BASE ASSEMBLY

QM.300

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.100/40		
41		
42A	PENDANT ARM	1
43	CONNECTION BOX	1
44	CONTROL BOX	1
45	HEAD KNOCK OFF BRACKET	2
46	HEAD KNOCK OFF COLLAR	2
47	HEAD KNOCK OFF PAD	2
48	HEAD KNOCK OFF ROD	1
49	COLUMN CONDUIT BRACKET	1
QM.100/50 A	REAR SPLASH GUARD	1EACH
51A	SPLASH TRAY	1EACH
52		
60		
63	CONNECTION BOX FIXING	1
	COOLANT PIPE GUIDE BUSH	1
BVS.160/104	EASITURN CONNECTION BOX	1
100/226	COOLANT PIPE BRACKET	1
SK.689/1	COOLANT TANK & LID	1
CH.265	ELECTRIC SYMBOL	1
267	SPECIFICATION PLATE	1
269	ELECTRICAL WARNING LABLE	1
336'Y'	AXIS DIRECTION PLATE	1
336'Z'	" " " " " " "	1
SP.192E	SUPPORT CHANNEL	1
SP.193E	FRONT PLATE	1
SP.194E	SIDE Plate	1
QM.303/14	KNEE WIPER PLATE	2
17	LEFT HAND COLUMN WIPER HOLDER	1
18	LEFT HAND COLUMN WIPER FELT	1
19	COLUMN GIB STRIP	1
21	RIGHT HAND COLUMN WIPER HOLDER	1
22	RIGHT HAND COLUMN WIPER FELT	1
23	TOP CHIP GUARD	1
24	MIDDLE CHIP GUARD	1
25	BOTTOM CHIP GUARD	1
26	KNEE	1
45	BASE	1
60	ELEVATING SCREW HOUSING	1
61	ELEVATING SCREW NUT	2
64	BEARING RETAINER	1
66	ELEVATING SCREW	1
69	BEVEL GEAR	1
71	RISEING STEM BEARING BRACKET	1
73	DIAL LOCKNUT	2
74	MOTOR BRACKET	1
75	DIAL HOLDER	1
86	COLUMN	1
87	COLUMN TOP COVER	1
88	HEAD ADAPTOR	1
89	QUILL HOUSING ADJUSTING GEAR	1
92	COLUMN BELLOWS	2

COLUMN & BASE ASSEMBLY (cont.)QM.300

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER No.</u>	<u>QTY</u>
BEARING	FAG 6205	55500112	1
" "	" 30205		1
MOTOR	$\frac{1}{2}$ HP DC.		1
COOLANT PUMP	M.G.ELECTRICS AQ3/2/Q/SS 3PH	55500398	1.
OR	" " " " " AQ3/1/Q/SS 1PH	55500397	1.
TAP	ALCO MINI VALVE TYPE 00	55501116D	1.
HINGE	SOUTHC0 E6-10-501-20	55501229	1.
CATCH	HOME PAK 78	55501228A	2.
TUBE (BRAIDED)	$\frac{1}{4}$" I.D. BROOK & FRANCE	55501108	3m.
" "	$\frac{3}{4}$ " I.D. ARCO C19/15	55501110A	5m.
COOLANT PIPE	LOCK LINE	55501102BC	1.
PIPE CLIP	25mm CONDUIT SADDLE		2.
ELECTRICAL BOX	SAREL 8026 (QM.100/44)	55500420D	1
BACK PLATE	" " 5226	55500420E	1
TUBE	$\frac{1}{2}$ " I.D. BROOK & FRANCE	55501110	3m
SNAP BUSH	HEYCO 2126 BLACK		2.
ELBOW	ELBOW $\frac{3}{8}$ " BSP M/F		1
TAIL PICS ADAPTER	ENOTS 34-0321-27	55501451Z	2

QUATRO MILLERLUBRICATION SYSTEM

QM. 400

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER No.</u>	<u>QTY</u>
ELECTRIC PUMP	BIJUR C-2894	55501120	1.
METER UNIT	" " FJB 310B-6548	55501123F	8.
COMPRESSION BUSH	" " B-1371	55501123H	12.
COPPER PIPE	YORKSHIRE IMPERIAL		
	4mm O/D x 0.6 WALL	55501123J	1m.
TEE BRACKETED	ENOTS 36-0549-05	55501123T	4.
8 WAY JUNCTION	BIJUR B-3265	55501123V	1.
COMPRESSION SLEEVE	" " B-1061	55501126A	14.
NYLON PIPE	ENOTS 5N25	55501126F	2m.
BRIADED OIL PIPE	" " P2 184	55501126G	2.
COMPRESSION NUT	BIJUR B-1095	55501124A	8.
" " " " SLEEVE	" " B-8272 (NYLON)	55501126	6.
BLANKING PLUG	" " B-3714	55501123N	3.

QUATROMILL HEIDENHAIN - HEAD ASSEMBLYQM.3/100

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.3/101	MOTOR PLATFORM	1
102	MOTOR PULLEY	1
QM100/1B	QUILL BALLSCREW	1
3	MOTOR PLATFORM BRACKET	2
4	QUILL CLAMP	1
5	QUILL KNOCK OFF TRIP	1
6B	HEAD COVER	1
8B	HEAD COVER BACKPLATE	1
12B	SPINDLE PULLEY	1
14	DRIVE BELT GUARD	2
15	DRAW BAR	1
16	DRAW BAR ADAPTOR	1
17	SPINDLE LOCK CAP	1
18A	SPINDLE LOCK ARM	1
19	SPINDLE LOCK SHAFT	1
61	QUILL BALLSCREW ATTACHMENT	1
64	HEAD COVER FIXING PLATE	1
13A	MOTOR PULLEY	1
QM.103/41	MOTOR MOUNTING STUD	2
42	BELT HOUSING	1
43	MOTOR LOCKNUT	2
44	MOTOR LOCKWASHER	2
45	MOTOR LOCK HANDLE	2
50	HOUSING COVER	1
57	SPINDLE GEAR HUB	1
66	GEAR HOUSING	1
72	SNAP RING	1
73	LOCKWASHER	1
74	LOCKNUT	1
76	VERTICAL TEE BOLT	3
QM.103/127	SPINDLE	1
129	LOCKNUT	1
130	WASHER	1
132	SLEEVE	1
133	NOSE PIECE	1
134	SPINDLE DIRT SHIELD	1
136	LARGE BEARING SPACER	1
137	SMALL BEARING SPACER	1
142	QUILL	1
155	TEE BOLT	4
156	LOWER CLAMPING BOLT SPACER	2
157	ADAPTOR NUT	4
192	QUILL HOUSING	1
DS.3/202	BALLNUT ADAPTOR	1
203	ADAPTOR LOCKNUT	1

/Cont ...

QUATROMILL HEIDENHAIN - HEAD ASSEMBLY

QM.3/100

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
EM.100/12B	DRIVEN PULLEY	1
17	VERTICAL FEED DRIVE GUARD	1
29	SPINDLE BALLSCREW WASHER	1
46	MICRO SWITCH MOUNTING PLATE	3
63	BALLSCREW STOP	1
EM.102/2	MOTOR ADAPTOR PLATE	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER NUMBER</u>	<u>QTY</u>
QUILL MOTOR	S.E.M MT 30 H4 33	55500308	1
TIMING PULLEY	FENNER 12L050	55500641C	1
	FENNER 24L050		
	(EM100/12B)	55500641D	1
TIMING BELT	FENNER 150L050	55500646	1
POLY V BELT	T.S.A 240 J10	55500627	1
BALLNUT	WARNER 1605 U.F	55500178B	2
MICRO SWTICH	BURGESS V3 S	55500425	3
ACTUATOR	BURGESS VLR 1	55500425A	3
S/LID OILER	ADAMS 1749	55501122	1
HANDLE	LBR 45		1
SPRING		55501415X	1
BEARING	FAG 7206B		2
TABWASHER	FAG MB6	55500184D	1
MOTOR	ASEA MT 90 L 24F165-4	55500311B	1

QUATROMILL HEIDENHAIN - CROSS SLIDE & TABLE ASSEMBLYQM.3/200

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.3/102	MOTOR PULLEY	2
QM.3/201	TABLE DRIVE BRACKET	1
202	X AXIS MOTOR PLATE	1
203	BEARING CAP	2
204	MOTOR BRACKET	1
205	TABLE DRIVE COVER	1
207A	TABLE TRIP BLOCK	1
208	MICRO SWITCH PLATE	1
209	TABLE DATUM TRIP	1
210	T NUT	2
211	ADAPTA-FLEX BRACKET	1
212	TABLE SPLASH TRAY	1
213	Y AXIS MOTOR COVER	1
214	AXIS MOTOR FINGER GUARD	1
QM.100/20	CROSS SLIDE BALLSCREW	1
21	TABLE BALLSCREW	1
22	CROSS SLIDE BALLNUT BRACKET	1
56	CROSS SLIDE BELLOW RAIL	1
EM.100/4	DRIVE GUARD	1
7B	FIXED NUT ADAPTOR	2
28	TAILPIECE ADAPTOR	2
46	MICRO SWITCH MOUNTING PLATE	1
56	CROSS SLIDE HANDWHEEL	2
QM.203/7	TABLE TAPER GIB STRIP	1
13	CROSS SLIDE TAPER GIB STRIP	1
16	CROSS SLIDE	1
53	TABLE	1
QM.203/11	LEFT BEARING BRACKET	1
12	RIGHT BEARING BRACKET	1
28	CROSS FEED BEARING BRACKET	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER NUMBER</u>	<u>QTY</u>
BEARING	FAG 630-3 2RS	55500114A	1
TIMING PULLEY	FENNER 12L050	55500641C	2
DRIVE MOTOR	SEM MT 30 H4 33	55500308	2
TIMING PULLEY	FENNER 24L050	55500641A	2
TIMING BELT	FENNER 210L050	55500645	1
TIMING BELT	FENNER 150L050	55500646	1
LOCK NUT	FAG KM4	55500183	2
TABWASHER	FAG MB4	55500184	2

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QUATROMILL HEIDENHAIN - CROSS SLIDE & TABLE ASSEMBLY QM.3/200

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER NUMBER</u>	<u>QTY</u>
MICRO SWITCHES	BURGESS V3 S	55500425	3
ACTUATOR	BURGESS VLR 1	55500425A	3
DIE CAST BOX	R.S 509989	509989	1
BALLNUT	WARNER 2505 U.F	55500180D	4
TAPER LOCK BUSH	FENNER 1108-16	55500647C	2
HANDWHEEL	VD 125 FP-1	55501218	2
MICROSWITCH	MULTISWITCH BNS519B2D8	55500381I	1

QUATROMILL HEIDENHAIN - COLUMN & BASE ASSEMBLYQM.3/300

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.3/301	BASE FRONT PLATE	1
302	COOLANT PIPE BLOCK	1
QM.100/42A	PENDANT ARM	1
50A	REAR SPLASH GUARD	1
51C	SPLASH TRAY	1
60	CONNECTION BOX FIXING	4
63	COOLANT PIPE GUARD BUSH	1
65	SPLASH TRAY	1
66	COOLANT TANK	1
67	BASE PLATE	1
49	COLUMN CONDUIT BRACKET	1
QM.303/14	KNEE WIPER PLATE	2
17	LEFT HAND COLUMN WIPER HOLDER	1
18	LEFT HAND COLUMN WIPER FELT	1
19	COLUMN GIB STRIP	1
21	RIGHT HAND COLUMN WIPER HOLDER	1
22	RIGHT HAND COLUMN WIPER FELT	1
23	TOP CHIP GUARD	1
24	MIDDLE CHIP GUARD	1
25	BOTTOM CHIP GUARD	1
26	KNEE	1
45	BASE	1
60	ELEVATING SCREW HOUSING	1
61	ELEVATING SCREW NUT	2
64	BEARING RETAINER	1
66	ELEVATING SCREW	1
69	BEVEL GEAR	1
71	RISING STEM BEARING BRACKET	1
73	DIAL LOCKNUT	2
74	MOTOR BRACKET	1
75	DIAL HOLDER	1
86	COLUMN	1
87	COLUMN TOP COVER	1
88	HEAD ADAPTOR	1
89	QUILL HOUSING ADJUSTING GEAR	1
92	COLUMN BELLOWS	2
BVS.100/226	COOLANT PIPE BRACKET	1
DS.3/102A	PENDANT HOUSING	1
S.P. 164	TAILPIECE ADAPTOR	2
193A	FRONT PLATE	1
194E	SIDE PLATE	2

/Cont ...

QUATROMILL HEIDENHAIN - COLUMN & BASE ASSEMBLY

QM.3/300

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
EM.100/41A	SUPPORT BUSH	1
EM.200/22	PENDANT BACKPLATE	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER NUMBER</u>	<u>QTY</u>
BULKHEAD ADAPTOR		55501123P	1
BULKHEAD NUT		55501123Q	1
LO-VO LIGHT	370	55501370	1
TAP	ALCO MINI VALVE 90	55501116	1
COOLANT PIPE	LOCKLINE	55501102B	1
DIE CAST BOX	RS 507-062		1
COOLANT PUMP	M G ELECTRONICS		
	AQ3/2/SS 3PH	55500398	1
TUBE	3/4 I.D	55501110A	5
TUBE	1/2 I.D	55501110	3
PIPE CLIP	25MM		
TAILPIECE			
ADAPTOR	ENOTS 34-0321-27	555014512	2
SNAP BUSH	HEYCO 2126 BLACK		2
ELBOW	3/8" BSP MIF		1

QUATROMILL HEIDENHAIN - DRIVEN HEADQM.500

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.500/1	HEAD BALLSCREW	1
2	BOTTOM BEARING HOUSING	1
3	TOP BEARING HOUSING	1
4	MOTOR PLATE	1
5	BALLNUT BUSH	2
6	BEARING CAP	1
7	SPACER	3
8	BALLSCREW COLLAR	1
9	BEARING CAP	1
10	TOP LIMIT TRIP	1
11	DATUM LIMIT TRIP	1
QM.100/45	HEAD KNOCK OFF BRACKET	2
48	HEAD KNOCK OFF ROD	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER NUMBER</u>	<u>QTY</u>
DRIVE MOTOR	SEM MT30 R4 37		1
TIMING PULLEY	FENNER 24L050 T.LOCK	55500641A	1
TIMING PULLEY	FENNER 12L050 (QM3/102)	55500641C	1
TIMING BELT	FENNER 187L050	55500644	1
BALLNUT	WARNER 2505 UF	55500180D	2
BEARING	FAG 6303 2RS	55500114A	1
BEARING	MM9306 WI-2	55500190	1 SET
LOCKNUT	KM.4 FAG	55500183	1
TABWASHER	MB.4 FAG	55500184	1
CIRCLIP	ANDERTON 1400-17M		1
T.LOCK BUSH	11 08 16	55500647C	1

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
CH.267	SPECIFICATION PLATE	1
269	ELECTRICAL WARNING SYMBOL	1
336X	AXIS DIRECTION PLATE	1
336Y	AXIS DIRECTION PLATE	1
336Z	AXIS DIRECTION PLATE	1
459	QUATROMILL NAMEPLATE	1

PART NO.DESCRIPTIONQTY

QM.2/101

MOTOR PLATFORM

1

102

MOTOR PULLEY 12T

1

QM.100/1B

QUILL BALLSCREW

1

3

MOTOR PLATFORM BRACKET

1

4

QUILL CLAMP

1

5

QUILL KNOCK OFF TRIP

1

6B

HEAD COVER

1

8B

HEAD COVER BACKPLATE

1

12B

SPINDLE PULLEY

1

14

DRIVE BELT GUARD

2

15

DRAW BAR

1

16

DRAW BAR ADAPTOR

1

17

SPINDLE LOCK CAP

1

18A

SPINDLE LOCK ARM

1

19

SPINDLE END CAP

1

61

QUILL BALLSCREW ATACHMENT

1

64

HEAD COVER FIXING PLATE

1

13A

MOTOR PULLEY

1

EM.100/12B

DRIVEN PULLEY

1

29

SPINDLE BALLSCREW WASHER

1

46

MICRO SWITCH MOUNTONG PLATE

3

63

BALLSCREW STOP

1

DESCRIPTIONMANUFACTURER & REF.COMPUTER NO.QTY.

BEARING

FAG. 7206B

2

TIMING PULLEY

FENNER 12L050

55500641C

2

DRIVE MOTOR

FANUC MODEL 2-0

1

TIMING PULLEY

FENNER 24L050

55500641D

1

TIMING BELT

FENNER 150L050

55500646

1

POLY V BELT

T.B.A.240 J10

55500627

1

MICRO SWITCHES

BURGESS V3 S

55500425

3

ACTUATOR

BURGESS VLR 1

55500425A

3

BALLNUT

WARNER 1605 U.F.

55500178B

2

S/LID OILER

ADAMS 1749

55501122

1

HANDLE

LBR 45

1

SPRING

55501415X

1

TABWASHER

FAG MB6

55500184D

1

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.2/201	TABLE DRIVE BRACKET	1
202	X AXIS MOTOR PLATE	1
203	BEARING CAP	2
204	MOTOR BRACKET	1
205	DRIVE COVER	1
206	TABLE END BRACKET CAP	1
207A	TABLE DRIVE GUARD	1
208	CROSS SLIDE DATUM TRIP	1
		1
		2
211	X DRIVE COUPLING	1
212	MOTOR SPACER	4
213	MOTOR PULLEY	2
214	TABLE DATUM TRIP	1
QM3./207A	TABLE TRIP BLOCK	2
		2
210	T NUT	2
QM.100/20	CROSS SLIDE BALLSCREW	1
21	TABLE BALLSCREW	1
22	CROSS SLIDE BALLNUT BRACKET	1
56	CROSS SLIDE BELLOW RAIL	1
ZT.2/319	X MOTOR COUPLING	1
AC.2/509		
EM/100/7B	FIXED NUT ADAPTOR	2
28	TAILPIECE ADAPTOR	2
46	MICRO SWITCH MOUNTING PLATE	1
56	CROSS SLIDE HANDWHEEL	2

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF.</u>	<u>COMPUTER NO.</u>	<u>QTY.</u>
BEARING	FAG.6303 2 RS	55500114A	1
TIMING PULLEY	FENNER 12L050	55500641C	2
TAPER LOCK BUSH	FENNER 1108-16	55500647C	1
TIMING PULLEY	FENNER 24L050	55500641A	1
TIMING BELT	FENNER 210L050	55500645	1
			1
LOCK NUT	FAG KM4	55500183	2
TABWASHER	FAG MB4	55500184	2
MICRO SWITCHES	BURGESS V3 S	55500425	3
ACTUATOR	BURGESS VLR 1	55500425A	3
DIE CAST BOX	R.S. 509989	509989	
BALLNUT	WARNER 2505 U.F.	55500180D	4
BEARING	FAFNIR MM9306WI 2DU	55500190	2 PAIRS
DRIVE MOTOR	FANUC MODEL O		2
HANDWHEEL	ASEA VD 125 FP-1	55501218	2
MICROSWITCH	M.SWITCH BNS519B2D8	55500381I	1

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM.100/49	COLUMN CONDUIT BRACKET	1
QM.100/42A	PENDANT ARM	1
50A	REAR SPLASH GUARD	1
51A	SPLASH TRAY	1
60	CONNECTION BOX FIXING	1
63	COOLANT PIPE GUIDE BUSH	1
65	SPLASH TRAY	1
66	COOLANT TANK	1
67	BASE PLATE	1
BVS.100/226	COOLANT PIPE BRACKET	1
S.P.164	TAILPIECE ADAPTOR	2
192E	SUPPORT CHANNEL	1
193E	FRONT PLATE	1
194E	SIDE PLATE	2
Em100/41A TR21504A	SUPPORT BUSH OM + OP PANEL PENDANT	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF.</u>	<u>COMPUTER NO.</u>	<u>QTY.</u>
BULKHEAD ADAPTOR		55501123P	1
BULKHEAD NUT		55501123Q	1
LO VO LIGHT	370	55501370	1
TAP	ALCO MINI VALVE 90	55501116	1
COOLANT PIPE	LOCKLINE	55501102B	1
DIE CAST BOX	RS.507-062		1
COOLANT PUMP	M.G.ELECTRONICS	55500398	1
	AQ3/2/SS 3PH.		

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM600/1	MAIN SPINDLE	1
2	SPINDLE SLEEVE	1
3	SPINDLE PULLEY	1
4	NOSE CAP	1
5	INNER SLEEVE	1
6	OUTER SLEEVE	1
7	BEARING SPACER	1
8	BEARING SHIM	1
9	DRAWBAR	1
10	CYLINDER ADAPTOR	1
11	DRIVING DOGS	1
12	OUTER SHIM	2
		1
TR3/105	DRAWBAR COLLET	1
110	PRE LOAD NUT	1
113	LIMIT NUT	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER No.</u>	<u>QTY</u>
BEARING	RHP 7209TADEP7		2
	6007 2RS		2
	6010 2RS		2
CLAMP UNIT	BRAUER 489	BI 00845D	1
DISC SPRING	ANDERTON 28.0x14.2x1.25	BI 00196E	52
LOCK NUT	FAG KM7	BI 00186E	1
LOCK NUT	FAG KM10	BI 00186J	1
TAB WASHER	FAG MB7	BI 00186F	1
TAB WASHER	FAG MB10	BI 00186k	1
STEEL BALLS	$\frac{1}{4}$ DIA		6

QUATROMILLCOUNTERWEIGHTQM700

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
QM700/1	COUNTERWEIGHT ARM	2
2	COUNTERWEIGHT	5
3	TIE ROD	1
4	CHAIN GUARD	1

MCV1/903	AXLE	4
904	SPROCKET	4
906	CHAIN ANCHOR BOLT	4

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF</u>	<u>COMPUTER No.</u>	<u>QTY</u>
BEARING	INA : RNA 4902		4
ROLLER CHAIN	SINGLE/o.750" x 950		2

QUATRO FANUCDRIVEN HEAD.QM800

<u>PART No.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
QM800/1	MOTOR PLATE	1
/2	Z DATUM TRIP	1
3	Z LIMIT TRIP	1
QM500/1	HEAD BALLSCREW	1
2	BOTTOM BEARING HOUSING	1
3	TOP BEARING HOUSING	1
5	BALLNUT BUSH	2
6	BEARING CAP	1
7	SPACER	3
8	BALLSCREW COLLAR	1
9	BEARING CAP	1
10	TOP LIMIT TRIP	1
QM100/45	HEAD KNOCK OFF BRACKET	2
48	HEAD KNOCK OFF ROD	1

<u>DESCRIPTION</u>	<u>MANUFACTURER & REF.</u>	<u>COMPUTER No.</u>	<u>QTY.</u>
DRIVE MOTOR	FANUC MODEL O	BI 00	1
TIMING PULLEY	FENNER 24L050 T.L.	BI 00641A	1
TIMING PULLEY	FENNER 12L050	BI 00641C	1
TIMING BELT	FENNER 187L050	BI 00644	1
BALLNUT	WARNER 2505 UF.	BI 00180D	2
BEARING	FAG.6303 2rs.	BI 00114A	1
BEARING	MM9306 WI-2	BI 00190	1SET
LOCKNUT	FAG KM4	BI 00183	1
TABWASHER	FAG MB4	BI 00184	1
CIRCLIP	ANDERTON 1400-17M		1
T.LOCK BUSH	FENNER 11-08-16	BI 00647C	1

PART NO.DESCRIPTIONQTY.

CH.267	SPECIFICATION PLATE	1
269	ELECTRICAL WARNING SYMBOL	1
336X	AXIS DIRECTION PLATE	1
336Y	" " "	1
336Z	" " "	1
459	QUATROMILL NAMEPLATE	1

