

```

1  [Info]
2  Version.=.3.28
3  CheckChange.=.13ff6a4f
4  PLCFileName.=.Mill55.awl
5  //.*****
6  //.*.
7  //.*.PLC.PROGRAM.FOR.THE.PCM55.*
8  //.*.FROM.VERS..3.00.AC95.and.ACC.*
9  //.*.
10 //.*.Designed.by.Friedrich.Schörghofer.April.19,.2002.*
11 //.*.
12 //.*****
13 //.TABLE.OF.CONTENTIS:
14 //.
15 //.OB.1.ORGANIZATIONAL.BLOCK
16 //.SIMULATE.FC.0.TOOL.TURNER
17 //.FC.1.INITIALIZATIONS
18 //.FC.2.ITEM.COUNTER
19 //.FC.3.MAIN.DRIVE.FELDERER.FU
20 //.FC.33.MAIN.DRIVE.LENZE.FU
21 //.FC.4.OPERATING.MODES
22 //.FC.5.AXES.READINESS
23 //.FC.6.AXES.JOG,.INC
24 //.REFERENCE.FC.7.AXES
25 //.FC.8.AUX_ON.AC95
26 //.FC.88.AUX_ON.AC95./AC88.CONVERSION.TO.ACC
27 //.FC.9.AUX_ON.ACC
28 //.FC.10.AT.PROGRAM.END.RESET.OR.RESTART
29 //.FC.11.NC.START.AND.NC.STOP.FROM.M0.OR.M1
30 //.FC.12.AFG./EFG
31 //.FC.13.NC.STARTVERR.AND.CONTROL.BUTTONS
32 //.FC.14.ALARM.STATUS
33 //.FC.16.PLC->.SURFACE.SIGNALS
34 //.FC.17.AUTOMATIC.DOOR
35 //.FC.18.tbsp.VICE
36 //.FC.21.PARTIAL.APPLIANCE
37 //.BLOW.OUT.FC.22
38 //.FC.23.SAFETY.CIRCUIT.ACC
39 //.FC.26.COOLANT.(M8./M9)
40 //.FC.30.PNEUMATIC.CLAMPING.DEVICE
41 //.FC.32.AUTOMATICALLY.SWITCH.TO.BA.REF
42 //.FC.34.ASSIGN.THE.INPUTS.AC95.-.ACC
43 //.FC.35.ASSIGN.THE.OUTPUTS.AC95.-.ACC
44 //.FC.40.ROBOTICS.INTERFACE
45 //.FC.41.RENISHAW.PROBE
46 //.FC.49.ADOPT.TOOL.POSITIONS.INTO.MILL55_ACC.MSD
47 //.FC.50.TOOL.TURNERS
48 //.FC.51.TOOL.CLAMPING.SYSTEM
49 //.SET.FC.52.TOOL.POSITION.FROM.THE.SETTING.DATA
50 //.FC.53.CHECK.NEW.T-WORD.AND.DETERMINE.NEW.TOOL.DISC.POSITION
51 //.RETURN.FC.54.TOOL.1
52 //.Return.FC.55.TOOL.0.OR.NO.TOOL
53 //.Return.FC.56.TOOLS.2.TO.8
54 //.FC.57.PICK.UP.TOOL.1
55 //.FC.58.PICK.UP.TOOL.0
56 //.FC.59.PICK.UP.TOOLS.2.TO.8
57 //.FC.60.Z-AXIS.TRAVEL.TO.TARGET.POSITION
58 //.FC.61.A-AXIS.TRAVEL.TO.TARGET.POSITION
59 //.FC.62.LED.CONTROL
60 //.FC.63.WARNING.LIGHT
61 //.FC.64.M0.TRIP.WITH.TXX.and.CAMCONCEPT
62 //.TRIGGER.FC.65.M0.and.move.up.the.Z-axis.with.TXX.and.Sinumeric.Operate
63 //.FC.66.HANDWHEEL
64 //.

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65  //·SETTING·BIT'S·FOR·COMMISSIONING·AND·SERVICE:
66  //·M·200.0·=·0·FOR·SETTING·THE·TOOL·REFERENCE·POINT
67  //·M·200.0·=·1·TOOL·AXIS·TRAVELS·TO·0·DEGREES·AFTER·REFERENCING
68  //·SET·THE·TOOL·POSITIONS·AND·APPLY·TO·THE·MSD·FILE
69  //·ADOPT·THE·POSITION·FOR·Z-AXIS·T1-T8·EXPRESSION·AND·RECOVERY·POSITION
70  //·PULL·IN·TOOL·AND·EXIT·WITH·"CTR·^"
71  //·M·300.0·DOOR·AUTOMATICALLY·OPEN·/·CLOSE·VIA·PLC
72  //
73  //
74  //·EASY·CYCLE-·WINNC-·PC·key·assignment·MILL·/·TURN55:
75  //
76  //·ALT·U·CTR·^·DB20.DBX·294.2·CHUCK·OPEN·/·CLOSE
77  //·ALT·K·CTR·1·DB20.DBX·294.5·WZW·SWIVEL·FURTHER·ONE·POSITION·TURN55
78  //·ALT·K·CTR·1·DB20.DBX·294.5·EXTRACT·/·PULL·IN·TOOL·MILL55
79  //·ALT·O·CTR·2·DB20.DBX·294.6·BLOW·OUT·ON·/·OFF·(M71-ON,·M72-OFF)
80  //·ALT·O·CTR·2·DB20.DBX·294.6·MINIMUM·QUANTITY·COOLING·ON·/·OFF·Q·3.5·(M7-ON,·M9-OFF)
81  //·(ONLY·IF·THE·BLOW·DEVICE·IS·NOT·ACTIVATED)
82  //·ALT·I·CTR·3·DB20.DBX·294.1·SWIVELING·PART·UNIT·ONE·DIVISION·(M27)
83  //·ALT·X·CTR·4·DB20.DBX·295.1·FEED·STOP
84  //·ALT·C·CTR·5·DB20.DBX·295.2·FEED·START
85  //·ALT·V·CTR·6·DB20.DBX·295.3·SPINDLE·STOP
86  //·ALT·B·CTR·7·DB20.DBX·295.4·SPINDLE·START
87  //·ALT·N·CTR·8·DB1.DBX·1374.4·AUXILIARY·DRIVES·ON
88  //·ALT·H·CTR·9·DB20.DBX·294.4·VICE·/·QUILL·FORE·(M26)
89  //·ALT·J·CTR·0·DB20.DBX·294.3·VICE·/·QUILL·BACK·(M25)
90  //·ALT·M·CTR·3·DB1.DBX·1374.3·AUXILIARY·DRIVES·OFF
91  //·ALT·P·CTR·'·DB1.DBX·1374.2·MACHINE·DOOR·OPEN·/·CLOSE
92  //
93  //·*****·Inputs·and·outputs·for·PCM·55·ACC·*****·**
94  //
95  //·Applies·to·both·stepper·motor·modules:
96  //
97  //·A·3.7·Enable·differential·line·driver·clocks·for·SM
98  //
99  //
100 //·1.1·Pin·assignment·for·1st·stepper·motor·module·Y5A011000
101 //
102 //
103 //·(-A111)
104 //
105 //·X3:·1·I·0.0·Servo·Ready·X·(physical·axis·0)
106 //·X3:·2·DIR·X
107 //·X3:·3·DIR·X·/
108 //·X3:·4·CK·X
109 //·X3:·5·CK·X·/
110 //·X3:·6·I·0.2·Servo·Ready·Z·(physical·axis·1)
111 //·X3:·7·DIR·Z
112 //·X3:·8·DIR·Z·/
113 //·X3:·9·CK·Z
114 //·X3:·10·CK·Z·/
115 //·X3:·11·I·0.1·Servo·Ready·Y·(physical·axis·2)
116 //·X3:·12·DIR·Y
117 //·X3:·13·DIR·Y·/
118 //·X3:·14·CK·Y
119 //·X3:·15·CK·Y·/
120 //·X3:·16·A·3.0·=·M·17.0·//·ENABLE·AXES·A
121 //
122 //·1.2·Pin·assignment·for·2nd·stepper·motor·module·Y5A011000
123 //·for·tool·turret·MILL·55
124 //
125 //·(-A112)
126 //
127 //·X3:·1·(I·0.3·Servo·SERVO·READY·HA·physical·axis·3)
128 //·X3:·2·(This·line·is·disconnected·on·the·stepper·motor·card·with·it)

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129 // X3: 3 (there is no short circuit with the HA setpoint module)
130 // X3: 4
131 // X3: 5
132 // X3: 6 I 0.5 Servo Ready tool turret DRIVE (physical axis 4)
133 // X3: 7 DIR Z
134 // X3: 8 DIR Z -/
135 // X3: 9 CK Z
136 // X3: 10 CK Z -/
137 // X3: 11 I 0.4 Servo Ready round axis DRIVE (physical axis 5)
138 // X3: 12 DIR Y
139 // X3: 13 DIR Y -/
140 // X3: 14 CK Y
141 // X3: 15 CK Y -/
142 // X3: 16 A 3.1 ACC ONLY // AXES ENABLE B
143 //
144 //
145 // 2nd pin assignment SET VALUE MODULE Y5A013000
146 //
147 // (-A114)
148 //
149 // X3: 1 rotating field frequency
150 // X3: 2 GND
151 // X3: 3 // SET VALUE 0-10V
152 // X3: 4 // DIRECTION
153 // X3: 5
154 // X3: 6 + 24V
155 // X3: 7 I 0.3 = M 15.7 // SERVO READY HA (physical axis 3)
156 // X3: 8
157 // X3: 9
158 // X3: 10
159 // X3: 11 Q 0.3 = M 17.1 // CONTROLLER ENABLE MAIN DRIVE
160 // X3: 12 Q 11.5
161 // X3: 13 A 11.6
162 // X3: 14
163 // X3: 15 GND
164 //
165 //
166 // 3. Input and output assignment on REF module Y5A017000
167 //
168 // (-A131)
169 //
170 // X5: 1 I16.0 REF1 // REF switch X-axis
171 // X5: 2 I16.1 REF2 // REF switch Y-axis
172 // X5: 3 I16.2 REF3 // REF switch Z-axis
173 // X5: 4 I16.3 REF4 // REF BERO A-ROUND AXIS
174 // X5: 5 I16.4 REF5 // REF BERO WZW
175 // X5: 6 I17.0 SYNC1 // SYNC BERO X-axis
176 // X5: 7 I17.1 SYNC2 // SYNC BERO Y-axis
177 // X5: 8 I17.2 SYNC3 // SYNC BERO Z-axis
178 // X5: 9 I17.5 SYNC4 // SYNC BERO A-ROUND AXIS
179 // X5: 10 I17.4 SYNC5 // SYNC BERO tool axis
180 // X5: 11 E 2.3 = M 15.6; // only TURN !! WHEEL COVER LIMIT SWITCH (IN SERIES WITH
EMERGENCY STOP!)
181 // X6: 1 I 2.0 = M 15.0 // 1st door limit switch MACHINE DOOR CLOSED (MAIN MOTOR
CONTACTOR ON)
182 // Monitoring whether HA contactors have dropped out (must have 0 signal
183 // be with the door or wheel cover open or the EMERGENCY STOP pressed)
184 // X6: 2 I 2.1 = M 15.1 // 1st door limit switch MACHINE DOOR OPEN
185 // (0 signal when the door is closed!)
186 // X6: 3 I 2.2 = M 15.2 // EMERGENCY OFF
187 // X6: 4 I 2.4 = M 16.0 // n = 0 RELAY FROM LENZE-FU
188 // X6: 5 I 2.5 ON 24V (only ACC) // 2nd door limit switch MACHINE DOOR CLOSED 2nd door
limit switch
189 // X6: 6 I 2.6 IN 24V

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190    //X6:7.I.2.7.A.5V
191    //X6:8.I.3.0.A.5V
192    //X6:9.A.3.5.AUS.24V.(ACC.only)///ACTIVATE.RENISHAW.PROBE.WITH.12.INTERFACE
193    //X6:10.A.3.4.AUS.24V.(ACC.only)///OUTPUT.FOR.AUXILIARY.RELAY.DOOR.CLOSED
194    //X6:11.A.3.3.OFF.24V///COOLANT.(M8.=.ON./M9.=.OFF)
195    //
196    //
197    //4.Pin.assignment.on.INPUT.module.Y5A018000
198    //
199    //(-A132)
200    //
201    //X5:1.I.4.0.///TOOL.RETRACTED
202    //X5:2.I.4.1.///TOOL.EXPRESSED
203    //X5:3.I.4.2.///12mm.BERO.TOOL.EQUIPPED
204    //X5:4.I.4.3
205    //X5:5.I.4.4.///DOOR.OPEN,AUTOMATIC.DOOR
206    //X5:6.I.4.5.///PRESSURE.SWITCH.VICE
207    //X5:7.I.4.6
208    //X5:8.E.4.7.SCHÄFER.dividing.attachment.finished
209    //X5:9.E.5.0.robotics.close.door
210    //X5:10.I.5.1.Open.the.robotics.door
211    //X5:11.E.5.2.Open.the.robotics.vice
212    //X6:1.I.5.3.Close.the.robotics.vice
213    //X6:2.I.5.4.Handwheel.clock.input.(in.MSD.file:PLCHandWheelInput0.=.5.4)
214    //X6:3.I.5.5.Handwheel.direction.input
215    //X6:4.I.5.6.Start.the.robotics.program
216    //X6:5.I.5.7.Robotics.feed.stop
217    //X6:6.I.6.0.tool.infeed.above
218    //X6:7.I.6.1.Tool.infeed.below
219    //X6:8.I.6.2.STATUS.RENISHAW.PROBE.MI.12.INTERFACE
220    //X6:9.E.6.3\STATUS.RENISHAW.PROBE.MI.12.INTERFACE
221    //X6:10.I.6.4.NO.ERROR.RENISHAW.PROBE.MI.12.INTERFACE
222    //X6:11.E.6.5.LOW.BATT.RENISHAW.PROBE.MI.12.INTERFACE
223    //
224    //
225    //
226    //5.Pin.assignment.on.OUTPUT.module.Y5A019000
227    //
228    //(-A134)
229    //
230    //X5:1.A.4.0.=M.18.0.///MINIMAL.LUBRICATION.(M7.=.ON./M9.=.OFF)
231    //X5:2.Q.4.1.=M.18.1
232    //X5:3.A.4.2.=M.18.2.///BLOW-OUT.VALVE
233    //X5:4.A.4.3.=M.18.3.///DOOR.OPEN
234    //X5:5.A.4.4.=M.18.4.///DOOR.CLOSED
235    //X5:6.A.4.5.=M.18.5.///VICE.FORE
236    //X5:7.A.4.6.=M.18.6.///VICE.BACK
237    //X5:8.Q.4.7.=M.18.7.///PARTIAL.APPLIANCE.PART
238    //X5:9.Q.5.0.=M.19.0.///ROBOTIC.PROGRAM.STOP
239    (M30,M0,M1,M2)
240    //X5:10.A.5.1.=M.19.1.///ROBOTIC.AXES.ARE.AT.REF.PKT.
241    //X6:1.Q.5.2.=M.19.2
242    //X6:2.A.5.3.=M.19.3.///ROBOTIC.DOOR.OPEN
243    //X6:3.A.5.4.=M.19.4.///ROBOTIC.DOOR.CLOSED
244    //X6:4.A.5.5.=M.19.5.///ROBOTIC.REAR.VICE
245    //X6:5.A.5.6.=M.19.6.///ROBOTIC.VICE.CLAMPED
246    //X6:6.A.5.7.=M.19.7.///ROBOTIC.ALARM.OUTPUT
247    //X6:7.A.6.0.ACC.ONLY.///TOOL.CLAMPING.MOTOR
248    //X6:8.A.6.1.ACC.ONLY.///BLOW.OFF.THE.TOOL.CONE
249    //X6:9.A.6.2
250    //X6:10.Q.6.3
251    //
252    //
253    //*****.Inputs.and.outputs.for.PCM.55.AC95.*****.

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254 // with LENZE FU and 3-phase stepper motors
255 //
256 // 1st input assignment on the AC plug-in board Y4A091000 top-hat rail external FU
257 // (Axiscontroller Y4A-080-000 for top-hat rail)
258 //
259 // X113.1 + 24V
260 // X113.2 GND
261 // X113.3 I 0.0 Reference switch axis 0 (X)
262 //
263 // X115.1 + 24V
264 // X115.2 GND
265 // X115.3 I 0.1 Reference switch axis 1 (Y)
266 //
267 // X117.1 + 24V
268 // X117.2 GND
269 // X117.3 I 0.2 Reference switch axis 2 (Z)
270 //
271 // I 0.3 Reference point axis 3 (HA)
272 //
273 // X114.3 + 24V (X) Bero
274 // X114.3 GND (X) Bero
275 // X114.3 I 0.4 Sync axis 0 (X) Bero
276 //
277 // X116.3 + 24V (Y) Bero
278 // X116.3 GND (Y) Bero
279 // X116.3 I 0.5 Sync axis 1 (Y) Bero
280 //
281 // X118.3 + 24V (Z) Bero
282 // X118.3 GND (Z) Bero
283 // X118.3 I 0.6 Sync axis 2 (Z) Bero
284 //
285 // X109.1 + 5V
286 // X109.2 GND
287 // X109.3 free
288 // X109.4 I 0.7
289 // X109.5
290 //
291 // A 3.7 Enable differential line driver clocks for SM
292 // Ribbon cable connector to the stepper motor board 16pol.:
293 // X104.1 I 1.0 // I 0.0 = M 15.3; // SERVO READY AXIS 0 (X)
294 // X104.6 I 1.1 // I 0.1 = M 15.4; // SERVO READY AXIS 0 (Y)
295 // X104.14 I 1.2 // I 0.2 = M 15.5; // SERVO READY AXIS 0 (Z)
296 // X104.16 Servo Enable (via X110.4 from X121.3 = Q 0.1)
297 //
298 //
299 // X111.1 I 1.5 // I 2.0 = M 15.0 // MACHINE DOOR CLOSED (MAIN MOTOR CONTACTOR ON)
300 // Monitoring whether HA contactors have dropped out (must have 0 signal
301 // be with the door or wheel cover open or the EMERGENCY STOP pressed)
302 // X111.2 GND
303 // X111.3 I 1.6 // I 2.1 = M 15.1 // MACHINE DOOR OPEN
304 // (0 signal when the door is closed!)
305 // X111.4 I 1.7 // I 2.3 = M 15.6; // WHEEL COVER LIMIT SWITCH (IN SERIES WITH
EMERGENCY STOP!)
306 //
307 // X110.1 I 1.4 // I 2.2 = M 15.2 // EMERGENCY OFF
308 // X110.2 GND
309 // X110.3 I 2.0 reserve input
310 // X110.4 Servoenable (signal comes from X121.3 = Q0.1). This entrance
311 // is via the 16pol. Ribbon cable connector X104 Pin16 to the
312 // SM card and releases the output stages there (works
313 // only with new SM card Y4A031000).
314 //
315 // X101.1 + 5V
316 // X101.2 GND

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317 //·X101.3·I·2.1
318 //
319 //·X102.1·+·5V
320 //·X102.2·GND
321 //·X102.3·I·2.2
322 //
323 //·X103.1·+·24V
324 //·X103.2·GND
325 //·X103.3·I·2.3·//·I·2.4·=·M·16.0·//·n·=·0·RELAY·FROM·LENZE-FU
326 //
327 //·X105.1·+·24V
328 //·X105.2·GND
329 //·X105.3·E·2.4·Renishaw·measuring·probe·(special·machine·for·USA,·input·only·for·NC)
330 //
331 //·E·2.5·Sync·X·(for·monitor·display·for·setting·the·reference·switch)
332 //·E·2.6·Sync·Y·(for·monitor·display·for·setting·the·reference·switch)
333 //·E·2.7·Sync·Z·(for·monitor·display·for·setting·the·reference·switch)
334 //
335 //·2nd·output·assignment·on·the·AC·connector·board·Y4A081000:
336 //
337 //·X1070.1·rotating·field·frequency·analog
338 //·X1070.2·GND
339 //·X1070.3·setpoint·analog
340 //·X1070.6·+·24V
341 //·X1070.7·I·1.3·//·I·0.3·=·M·15.7·//·SERVO·READY·HA
342 //
343 //·X107.2·Q·0.0·//·Q·0.3·=·M·17.1·//·CONTROLLER·ENABLE·MAIN·DRIVE
344 //·X107.6·RE·/·LI·(0/1)·Direction·of·rotation·of·the·main·drive
345 //·X107.7·GND
346 //
347 //·X121.1·+·24V
348 //·X121.2·GND
349 //·X121.3·Q·0.1·//·Q·3.0·=·M·17.0·//·ENABLE·AXES
350 //·(AC95·is·connected·to·X110.4·--·enable
351 //·the·stepper·motor·output·stages)
352 //
353 //·X120.1·+·24V
354 //·X120.2·GND
355 //·X120.3·Q·0.2·reserve·output
356 //
357 //·X123.1·+·24V
358 //·X123.2·GND
359 //·X123.3·Q·0.3·reserve·output
360 //
361 //·X122.1·+·24V
362 //·X122.2·GND
363 //·X122.3·A·0.4·//·A·3.3·=·M·17.2·//·COOLANT·(M8·=·ON·/·M9·=·OFF)
364 //
365 //·3·Input·/·output·assignment·on·the·CANBUS·I·/·O·board·Y4A029000:
366 //
367 //·input·byte·4,5
368 //·X201.1·E·4.0·8·*****·ONLY·AC95·EL.VICE·"No·part·clamped"
369 //·X201.2·I·4.1·8·*****·ONLY·AC95·EL.VICE·open
370 //·X201.3·E·4.2·8·*****·ONLY·ACC·12mm-BERO·TOOL·EQUIPPED
371 //·X201.4·E·4.3
372 //·X201.5·E·4.4·//·DOOR·OPEN,·AUTOMATIC·DOOR
373 //·X201.6·I·4.5·8·*****·ACC·/·AC95·EL.VICE·PART·CLAMPED·(signal·from·clamping·device·
board)
374 //·8·*****·ACC·/·AC95·Pneum.·VICE·PRESS
375 K·SWITCH
376 //·X201.7·E·4.6
377 //·X201.8·E·4.7·SCHÄFER·dividing·attachment·finished
378 //·X201.9·+·24V·supply
379 //·X201.10·GND·supply

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380 //
381 //
382 // X301.1 E 5.0 robotics close door
383 // X301.2 I 5.1 Open the robotics door
384 // X301.3 E 5.2 Open the robotics vice
385 // X301.4 E 5.3 Close robotics vice
386 // X301.5 E 5.4 Robotics
387 // X301.6 E 5.5 Robotics
388 // X301.7 I 5.6 Start the robotics program
389 // X301.8 E 5.7 Robotics feed stop
390 // X301.9 + 24V supply
391 // X301.10 GND supply
392 //
393 //
394 // output byte 4.5
395 // X501.1 Q 4.0 // Q 4.0 = M 18.0 MINIMAL LUBRICATION
396 // X501.2 Q 4.1 // Q 4.1 = M 18.1
397 // X501.3 A 4.2 // A 4.2 = M 18.2 BLOW-OUT VALVE
398 // X501.4 A 4.3 // A 4.3 = M 18.3 DOOR OPEN
399 // X501.5 A 4.4 // A 4.4 = M 18.4 DOOR CLOSED
400 // X501.6 A 4.5 // A 4.5 = M 18.5 CLAMPING THE VICE
401 // X501.7 Q 4.6 // Q 4.6 = M 18.6 RELEASE THE VICE
402 // X501.8 Q 4.7 // Q 4.7 = M 18.7 PARTIAL APPLIANCE PART
403 // X501.9 + 24V supply
404 // X501.10 GND supply
405 // X502.1 A 5.0 // A 5.0 = M 19.0 ROBOTIC PROGRAM STOP (M30, M0, M1, M2)
406 // X502.2 A 5.1 // A 5.1 = M 19.1 ROBOTIC AXES ARE AT REF. PKT.
407 // X502.3 Q 5.2 // Q 5.2 = M 19.2
408 // X502.4 A 5.3 // A 5.3 = M 19.3 ROBOTIC DOOR OPEN
409 // X502.5 A 5.4 // A 5.4 = M 19.4 ROBOTIC DOOR CLOSED
410 // X502.6 A 5.5 // A 5.5 = M 19.5 ROBOTIC REAR VICE
411 // X502.7 A 5.6 // A 5.6 = M 19.6 ROBOTIC VICE CLAMPED
412 // X502.8 Q 5.7 // Q 5.7 = M 19.7 ROBOTIC ALARM OUTPUT
413 // X502.9 + 24V supply
414 // X502.10 GND supply
415 //
416 //
417 //
418 // SET; = 1
419 // CLR; = 0
420 //
421 // TIMER:
422 // SI = IMPULSE
423 // THE MAXIMUM PULSE LENGTH CORRESPONDS TO THE PROGRAMMED TIME
424 // THE MINIMUM PULSE LENGTH CORRESPONDS TO THE LENGTH OF THE INPUT SIGNAL
425 //
426 // SV = PULSE (EXTENDED)
427 // THE PULSE LENGTH CORRESPONDS TO THE PROGRAMMED TIME
428 // THE DURATION OF THE INPUT SIGNAL HAS NO INFLUENCE
429 //
430 // SE = SWITCH-ON DELAY
431 // THE DELAY DURATION CORRESPONDS TO THE PROGRAMMED TIME
432 // THE INPUT SIGNAL MUST BE PRESENT FOR AT LEAST
433 //
434 // SS = SWITCH-ON DELAY (STORING)
435 // THE DELAY DURATION CORRESPONDS TO THE PROGRAMMED TIME
436 // THE DURATION OF THE INPUT SIGNAL HAS NO INFLUENCE
437 //
438 // SA = SWITCH-OFF PULSE
439 // THE PULSE LENGTH CORRESPONDS TO THE PROGRAMMED TIME
440 // THE TIMER CHANGES FROM "0" TO "1" AND THE TIME IS STARTED
441 // IF THE INPUT SIGNAL GOES FROM "1" TO "0".
442 //
443 // TIME BASE ASSIGNMENT OF THE TIME WORD

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444 //·16·.....8·7·.....0
445 //·0.01·S·0000·0000·0000·0000
446 //·0.1·S·0001·0000·0000·0000
447 //·1·S·0010·0000·0000·0000
448 //·10·S·0011·0000·0000·0000
449 //·H·Z·E·=·TIME·VALUE·IN·BCD·FORMAT
450 //·00·=·BINARY·CODE·FOR·TIME·BASE
451 FUNCTION FC 64: VOID
452 NAME: M0 RELEASE ON TXX AND CAMCONCEPT
453 BEGIN
454 U DB20.DBX 182.0; // NEW T-WORD
455 SPBN M001;
456 L DB20.DBW 184; // T-WORD
457 L DB20.DBW 356; // ACTIVE TOOL IN DB20
458 <>·I.
459 SPBN M001;
460 S M 12.0
461 M001: NOP 0;
462 U M 12.0
463 FP M 12.1
464 U M 12.1
465 SPBN M002;
466 = DB20.DBX 192.0; // M0 DYNAMIC
467 S DB3.DBX 0.2; // Message 7002 change tool
468 R M 12.0
469 M002: NOP 0;
470 O DB1.DBX 1370.3; // RESET KEY PRESSED
471 O DB1.DBX 1440.0; // RESET TRIPPED
472 O DB20.DBX 3.6; // NC START REQUEST
473 O DB20.DBX 0.2; // FC NC START
474 R DB3.DBX 0.2; // 7002 change tool
475 END_FUNCTION
476 FUNCTION FC 65: VOID
477 NAME: TRIP M0 and move up the Z-axis with TXX and Sinumeric Operate
478 BEGIN
479 U DB20.DBX 182.0; // NEW T-WORD
480 SPBN M6401;
481 L DB20.DBW 184; // T-WORD
482 L DB20.DBW 356; // ACTIVE TOOL IN DB20
483 <>·I.
484 SPBN M6401;
485 S M 12.0 // T-WORD IS VALID
486 M6401: NOP 0;
487 NETWORK
488 TITLE = T-WORD IS VALID SPINDLE ENABLE AND AFC / EFG switch off
489 U M 12.0 // T-WORD IS VALID
490 = M 94.7; // SPINDLE ENABLE T-WORD IS VALID
491 = M 90.5; // AFC / EFG T-WORD IS VALID
492 NETWORK
493 TITLE = CALCULATE Z-AXIS TOOL CHANGE POSITION
494 U M 12.0 // T-WORD IS VALID
495 FP M 12.1 // FP T-WORD IS VALID
496 U M 12.1 // FP T-WORD IS VALID
497 SPBN M6402;
498 L DB20.DBD 486 // max. Software limit switch for channel axis Z
499 L +.5.0E-03;
500 -R
501 T MD 28 // Z-AXIS TARGET POSITION
502 M6402: NOP 0;
503 NETWORK
504 TITLE = MOVE Z-AXIS TO TOOL CHANGE POSITION
505 U M 12.0 // T-WORD IS VALID
506 CC FC 60 // Z-AXIS TRAVEL TO TARGET POSITION
507 U M 22.3 // Z-AXIS IS ON TARGET POSITION

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508 S-M-20.3 // RETURN TOOL DONE
509 R-M-22.3 // Z-AXIS IS ON TARGET POSITION
510 NETWORK
511 TITLE = SPINDLE ENABLE AND AFG / EFG switch on
512 O-DB3.DBX-0.2; // Message 7002 change tool
513 O-DB1.DBX-1370.3; // RESET KEY PRESSED
514 O-DB1.DBX-1440.0; // RESET TRIPPED
515 R-M-94.7; // SPINDLE ENABLE T-WORD IS VALID
516 R-M-90.5; // AFG / EFG T-WLOCATION IS VALID
517 R-M-20.3 // RETURN TOOL DONE
518 R-M-12.0 // T-WORD IS VALID
519 R-M-22.2 // Z-AXIS MOVE TO TARGET POSITION ACTIVE
520 NETWORK
521 TITLE = Trigger M0 and display message 7002 Change tool
522 U-M-20.3 // RETURN TOOL DONE
523 SPBN-M6403;
524 SET
525 =-DB20.DBX-192.0; // M0 DYNAMIC
526 S-DB3.DBX-0.2; // Message 7002 change tool
527 R-M-20.3 // RETURN TOOL DONE
528 R-M-12.0 // T-WORD IS VALID
529 M6403: NOP 0
530 NETWORK
531 TITLE = message 7002 Change tool after NC START delete
532 O-DB1.DBX-1370.3; // RESET KEY PRESSED
533 O-DB1.DBX-1440.0; // RESET TRIPPED
534 O-DB20.DBX-3.6; // NC START REQUEST
535 O-DB20.DBX-0.2; // FC NC START
536 R-DB3.DBX-0.2; // 7002 change tool
537 R-M-12.0 // T-WORD IS VALID
538 END_FUNCTION
539 FUNCTION FC-66: VOID
540 NAME: HANDWHEEL
541 BEGIN
542 NETWORK
543 TITLE = functions for handwheel
544 O-DB20.DBX-326.5; // BA-INC1 from Kern
545 O-DB20.DBX-326.6; // BA-INC10 from Kern
546 O-DB20.DBX-326.7; // BA-INC100 from Kern
547 O-DB20.DBX-327.0; // BA-INC1000 from Kern
548 =-M-98.6; // Handwheel BA
549 U- (;
550 O- (;
551 U-M-98.6; // Handwheel BA
552 UN-M-98.7; // HM handwheel active
553 );
554 O-M-98.0; // Fl. Select INC1
555 O-M-98.1; // Fl. Select INC10
556 O-M-98.2; // Fl. Select INC100
557 O-M-98.3; // Fl. Select INC1000
558 );
559 =-DB1.DBX-1440.2; // Handwheel selection
560 O-DB1.DBX-1370.3; // RESET KEY PRESSED
561 O-DB1.DBX-1440.0; // RESET TRIPPED
562 ON-M-98.6; // Handwheel BA
563 U-M-98.7; // HM handwheel active
564 =-DB1.DBX-1440.3; // handwheel deselection
565 U-DB1.DBX-1440.2; // Handwheel selection
566 S-M-98.7; // HM handwheel active
567 U-DB1.DBX-1440.3; // handwheel deselection
568 R-M-98.7; // HM handwheel active
569 // Include INC increment when changing BA
570 U-DB20.DBX-326.5; // BA-INC1 from Kern
571 FP-M-98.0; // Fl. Select INC1

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572 UN·M·98.0;
573 SPB·INC1;
574 L·+·1.0E-06;
575 T·DB20·DBD·16; // INC increment
576 INC1·NOP·0;
577 U·DB20·DBX·326.6; // BA·INC10 from Kern
578 FP·M·98.1; // Fl·Select·INC10
579 UN·M·98.1;
580 SPB·INC2;
581 L·+·1.0E-05;
582 T·DB20·DBD·16; // INC increment
583 INC2·NOP·0;
584 U·DB20·DBX·326.7; // BA·INC100 from Kern
585 FP·M·98.2; // Fl·Select·INC100
586 UN·M·98.2;
587 SPB·INC3;
588 L·+·1.0E-04;
589 T·DB20·DBD·16; // INC increment
590 INC3·NOP·0;
591 U·DB20·DBX·327.0; // BA·INC1000 from Kern
592 FP·M·98.3; // Fl·Select·INC1000
593 UN·M·98.3;
594 SPB·INC4;
595 L·+·1.0E-03;
596 T·DB20·DBD·16; // INC increment
597 INC4·NOP·0;
598 END·FUNCTION
599 FUNCTION·FC·88·VOID
600 NAME·AUX_ON·AC95·/·AC88·CONVERSION·TO·ACC
601 BEGIN
602 NETWORK·1
603 TITLE·=·ENABLE·DIFFERENTIAL·LINE·DRIVER·ON·ACC·MOTHERBOARD
604 U·M·110.3; // AUX-ON·MANUAL
605 S·A·3.7; // ENABLE·DIFFERENTIAL·LINE·DRIVER·CYCLES·FOR·SM
606 UN·M·110.3; // AUX-ON·MANUAL
607 L·S5TIME·#·1S; // 10X0.1S
608 SE·T·10;
609 U·T·10;
610 R·A·3.7; // ENABLE·DIFFERENTIAL·LINE·DRIVER·CYCLES·FOR·SM
611 NETWORK·1
612 TITLE·=·ALARM·NOT_AUS·AC95·CONVERSION·TO·ACC
613 UN·M·15.2; // EMERGENCY·STOP·SWITCH
614 S·DB2·DBX·0.0; // ALARM·EMERGENCY·STOP
615 =·DB1·DBX·1390.5; // PLC>·SURF·EMERGENCY·STOP·SWITCH
616 O·DB1·DBX·1370.0; // 1st·PLC·LOOP
617 O·DB1·DBX·1370.2; // ACKNOWLEDGMENT·KEY·PRESSED
618 O·DB1·DBX·1370.3; // RESET·KEY·PRESSED
619 R·DB2·DBX·0.0; // ALARM·EMERGENCY·STOP
620 NETWORK·2
621 TITLE·=·MESSAGE·MACHINE·DOOR·OPEN·AC95·CONVERSION·TO·ACC
622 U·M·15.1; // MACHINE·DOOR·OPEN
623 UN·DB3·DBX·6.2; // NO·PART·CLAMPED·(M7050)
624 UN·DB1·DBX·1370.0; // 1st·PLC·LOOP
625 UN·DB3·DBX·2.7; // MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
626 UN·DB3·DBX·0.2; // 7002·change·tool
627 =·DB3·DBX·5.0; // MACHINE·DOOR·OPEN·(7040)
628 NETWORK·3
629 TITLE·=·6024·ALARM·DOOR·OPEN·AC95·CONVERSION·TO·ACC
630 O·M·131.7; // AXES·IN·MOVEMENT
631 O·M·92.0; // ROUND·AXIS·IN·MOVEMENT
632 U·DB20·DBX·326.4; // AUTO·OPERATING·MODE
633 =·M·102.0; // HM
634 U·M·131.7; // AXES·IN·MOVEMENT
635 U·DB20·DBX·327.2; // REFERENCE·OPERATING·MODE

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636   = M·102.1; /// HM
637   U·DB20.DBX·324.0; /// PROGRAM·RUNNING
638   UN·DB20.DBX·324.1; /// STOP·STATE
639   U·DB20.DBX·326.4; /// AUTO·OPERATING·MODE
640   = M·102.2; /// HM
641   UN·M·114.3; /// ACTUAL·SPEED·LESS·THAN·20RPM
642   = M·102.3; /// HM
643   O·M·102.0; /// HM
644   O·M·102.1; /// HM
645   O·M·102.2; /// HM
646   O·M·102.3; /// HM
647   = M·110.2; /// HM·DOOR·ALARM
648   U·M·110.2; /// HM·DOOR·ALARM
649   U·M·15.1; /// MACHINE·DOOR·OPEN
650   S·DB2.DBX·3.0; /// 6024·ALARM·DOOR·OPEN
651   O·DB1.DBX·1370.2; /// ACKNOWLEDGMENT·KEY·PRESSED
652   O·DB1.DBX·1370.3; /// RESET·KEY·PRESSED
653   R·DB2.DBX·3.0; /// 6024·ALARM·DOOR·OPEN
654   NETWORK·4
655   TITLE·=·SUM·ALARMS·1·AC95·CONVERSION·TO·ACC
656   L·DB2.DBW·0; /// WORD·ALARMS·1
657   L·W·#·16·#·0;
658   <>·I;
659   = M·105.0; /// SUM·ALARMS1
660   NETWORK·5
661   TITLE·=·SUM·ALARMS·2·AC95·CONVERSION·TO·ACC
662   L·DB2.DBW·2; /// WORD·ALARMS·2
663   L·W·#·16·#·0;
664   <>·I;
665   = M·105.1; /// SUM·ALARMS·2
666   NETWORK·6
667   TITLE·=·SUM·THERMAL·ALARMS·AC95·CONVERSION·TO·ACC
668   L·DB2.DBW·4; /// BYTE·/·THERM·ALARMS
669   L·W·#·16·#·0;
670   <>·I;
671   = M·105.2; /// SUM·THERM·ALARMS
672   NETWORK·7
673   TITLE·=·SELECTION·AUX_ON·AC95·CONVERSION·TO·ACC
674   U·DB1.DBX·1370.0; /// 1st·PLC·LOOP
675   S·M·110.1; /// AUX_ON·ON
676   U·M·110.1; /// AUX_ON·ON
677   = DB1.DBX·1390.2; /// PLC>·SURFACE·AUX-ON
678   S·M·110.0; /// AUX_ON·AUTO
679   S·M·110.3; /// AUX-ON·MANUAL
680   NETWORK·8
681   TITLE·=·DESELECT·AUX_ON·AC95·CONVERSION·TO·ACC
682   O·M·105.0; /// SUM·ALARMS·1
683   O·M·105.1; /// SUM·ALARMS·2
684   O·M·105.2; /// SUM·THERM·ALARMS
685   O·DB1.DBX·1366.3; /// ALARM·ACTIVE
686   R·M·110.3; /// AUX-ON·MANUAL
687   UN·M·110.3; /// AUX-ON·MANUAL
688   O·M·15.1; /// MACHINE·DOOR·OPEN
689   O·M·18.3; /// EXIT·FLAG·DOOR·OPEN
690   O·DB1.DBX·1366.3; /// ALARM·ACTIVE
691   R·M·110.0; /// AUX-ON·AUTO
692   NETWORK·9
693   TITLE·=·HW·CHECK·DOOR·OPEN·AC95·CONVERSION·TO·ACC·(ALARM·6009)
694   U·M·15.1; /// MACHINE·DOOR·OPEN
695   L·S5TIME·#·1S; /// 10X0.1S
696   SE·T·6; /// T6·SWITCH-ON·DELAYED
697   U·T·6; /// T6
698   U·M·15.0; /// MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
699   S·DB2.DBX·1.1; /// HW·ERROR·SAFETY·CIRCUIT

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700 NETWORK·10
701 TITLE·=·HW·REVIEW·CLOSE·DOOR·AC95·CONVERSION·TO·ACC
702 UN·DB1.DBX·1370.0;·//·1st·PLC·LOOP
703 UN·M·15.1;·//·MACHINE·DOOR·OPEN
704 U·M·15.2;·//·EMERGENCY·STOP·SWITCH
705 U·M·15.6;·//·WHEEL·COVER·CLOSED
706 L·S5TIME·#·1S;·//·10X0.1S
707 SE·T·11;·//·T11·SWITCH-ON·TV.
708 U·T·11;·//·T11
709 UN·M·15.0;·//·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
710 S·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT
711 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
712 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
713 R·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT
714 END_FUNCTION
715 FUNCTION·FC·41:·VOID
716 NAME:·RENISHAW·PROBE
717 BEGIN
718 //·X6:·9·A·3.5·//·ACTIVATE·RENISHAW·PROBE·MI·12·INTERFACE
719 //·X6:·8·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
720 //·X6:·9·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
721 //·X6:·10·I·6.4·//·NO·ERROR·RENISHAW·PROBE·MI·12·INTERFACE·(24VDC·IF·NO·ERROR)
722 //·X6:·11·E·6.5·//·LOW·BATT·RENISHAW·PROBE·MI·12·INTERFACE·(24VDC·IF·BATTERY·LOW)
723 NETWORK
724 TITLE·=·PROBE·PRESENT
725 O·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
726 O·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
727 =·M·11.0·//·RENISHAW·PROBE·MI·12·INTERFACE·AVAILABLE
728 NETWORK
729 TITLE·=·ACTIVATE·RENISHAW·PROBE·MI·12·INTERFACE
730 U·DB20.DBX·328.4·//·MEASURE·REQUIREMENTS
731 UN·DB2.DBX·2.5;·//·(A6021)·OPTICAL·CONNECTION·INTERRUPTED
732 U·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
733 UN·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
734 O·M·11.4·//·HM·RENISHAW·PROBE·MI·12·SWITCH·OFF·INTERFACE
735 O·M·11.5·//·CANCEL·FLAG·RESET·KEY·PRESSED
736 L·S5TIME·#·200MS;·//·200MS
737 SV·T·16;·//·LONGER·PULSE
738 U·T·16;·//·LONGER·PULSE
739 =·A·3.5·//·ACTIVATE·RENISHAW·PROBE·MI·12·INTERFACE
740 UN·T·16;·//·LONGER·PULSE
741 ;·R·T·17;
742 R·M·11.4·//·HM·RENISHAW·SWITCH·OFF·PROBE·MI·12·INTERFACE
743 U·A·3.5·//·ACTIVATE·RENISHAW·PROBE·MI·12·INTERFACE
744 U·DB20.DBX·328.4·//·MEASURE·REQUIREMENTS
745 S·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
746 U·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
747 UN·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
748 U·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
749 U·E·6.4·//·NO·ERROR·RENISHAW·PROBE·MI·12·INTERFACE
750 R·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
751 S·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
752 NETWORK
753 TITLE·=·ACC·RELEASE·MEASURE
754 U·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
755 S·DB20.DBX·343.7·//·ACC·RELEASE·MEASURE
756 NETWORK
757 TITLE·=·END·MEASUREMENT
758 U·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
759 U·E·6.4·//·NO·ERROR·RENISHAW·PROBE·MI·12·INTERFACE
760 U·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
761 UN·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
762 R·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
763 R·T·17;

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764 S·M·11.3·//·RENISHAW·MEASUREMENT·COMPLETED·WITHOUT·ERRORS
765 UN·DB20.DBX·328.4·//·MEASURE·REQUIREMENT
766 U·M·11.3·//·RENISHAW·MEASUREMENT·COMPLETED·WITHOUT·ERRORS
767 ON·M·11.0·//·RENISHAW·PROBE·MI·12·INTERFACE·AVAILABLE
768 R·DB20.DBX·343.7·//·ACC·RELEASE·MEASURE
769 R·M·11.3·//·RENISHAW·MEASUREMENT·COMPLETED·WITHOUT·ERRORS
770 S·M·11.4·//·HM·RENISHAW·PROBE·MI·12·SWITCH·OFF·INTERFACE
771 UN·E·6.2·//·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
772 U·E·6.3·//·\·STATUS·RENISHAW·PROBE·MI·12·INTERFACE
773 U·E·6.4·//·NO·ERROR·RENISHAW·PROBE·MI·12·INTERFACE
774 UN·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
775 UN·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
776 FP·M·11.5·//·CANCEL·FLAG·RESET·KEY·PRESSED
777 NETWORK
778 TITLE·=·CANCEL·MEASUREMENT
779 O·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
780 O·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
781 O·M·11.3·//·RENISHAW·MEASUREMENT·COMPLETED·WITHOUT·ERRORS
782 U·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
783 R·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
784 R·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
785 R·M·11.3·//·RENISHAW·MEASUREMENT·COMPLETED·WITHOUT·ERRORS
786 R·DB20.DBX·343.7·//·ACC·RELEASE·MEASURE
787 S·M·11.4·//·HM·RENISHAW·PROBE·MI·12·SWITCH·OFF·INTERFACE
788 R·T·17;
789 NETWORK
790 TITLE·=·(A6021)·OPTICAL·LINK·LOSSED
791 ;·U·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
792 U·M·11.1·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED
793 L·S5TIME·#·100S;·//·200M·SECONDS
794 SS·T·17;
795 U·T·17;
796 UN·E·6.4·//·NO·ERROR·RENISHAW·PROBE·MI·12·INTERFACE
797 S·DB2.DBX·2.5;·//·(A6021)·OPTICAL·CONNECTION·INTERRUPTED
798 R·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
799 R·T·17;
800 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
801 R·DB2.DBX·2.5;·//·(A6021)·OPTICAL·CONNECTION·INTERRUPTED
802 NETWORK
803 TITLE·=·7044·PROBE·BATTERY·LOW
804 U·M·11.2·//·RENISHAW·PROBE·MI·12·INTERFACE·ACTIVATED·AND·READY
805 U·E·6.5·//·LOW·BATT·RENISHAW·PROBE·MI·12·INTERFACE
806 S·DB3.DBX·5.4;·//·7044·PROBE·BATTERY·LOW
807 U·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
808 R·DB3.DBX·5.4;·//·7044·PROBE·BATTERY·LOW
809 END_FUNCTION
810 FUNCTION·FC·49:·VOID
811 NAME:·ENTER·TOOL·POSITIONS·IN·MILL55_ACC.MSD
812 BEGIN
813 //·CTR·1·DB20.DBX·294.5·ACCEPT·POSITION·FOR·TOOL·1
814 //·CTR·2·DB20.DBX·294.6·ACCEPT·POSITION·FOR·TOOL·2
815 //·CTR·3·DB20.DBX·294.1·ACCEPT·POSITION·FOR·TOOL·3
816 //·CTR·4·DB20.DBX·295.1·ACCEPT·POSITION·FOR·TOOL·4
817 //·CTR·5·DB20.DBX·295.2·ACCEPT·POSITION·FOR·TOOL·5
818 //·CTR·6·DB20.DBX·295.3·ACCEPT·POSITION·FOR·TOOL·6
819 //·CTR·7·DB20.DBX·295.4·ACCEPT·POSITION·FOR·TOOL·7
820 //·CTR·8·DB1.DBX·1374.4·ACCEPT·POSITION·FOR·TOOL·8
821 //·CTR·8·DB1.DBX·1374.3·POSITION·FOR·Z-AXIS·T1-T8·ADOPT·EXPRESSION·AND·RECOVERY·POSITION
822 NETWORK
823 TITLE·=·APPLY·POSITION·FOR·TOOL·1
824 U·DB20.DBX·294.5·//·"CTR·1"·KEY·ADOPT·POSITION·FOR·TOOL·1
825 SPBN·M001;
826 L·1·//·SWIVELED·TOOL
827 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER

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828 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
829 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
830 *·R;
831 T·DB10.DBD·32·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
832 S·DB20.DBX·4.2·//·COMMAND-BIT·2
833 M001:·NOP·0;
834 NETWORK
835 TITLE·=·APPLY·POSITION·FOR·TOOL·2
836 U·DB20.DBX·294.6·//·"CTR·2"·KEY·ADOPT·POSITION·FOR·TOOL·2
837 SPBN·M002;
838 L·2·//·SWIVELED·TOOL
839 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
840 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
841 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
842 *·R;
843 T·DB10.DBD·36·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
844 S·DB20.DBX·4.2·//·COMMAND-BIT·2
845 M002:·NOP·0;
846 NETWORK
847 TITLE·=·ACCEPT·POSITION·FOR·TOOL·3
848 U·DB20.DBX·294.1·//·"CTR·3"·KEY·ADOPT·POSITION·FOR·TOOL·3
849 SPBN·M003;
850 L·3·//·SWIVELED·TOOL
851 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
852 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
853 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
854 *·R;
855 T·DB10.DBD·40·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
856 S·DB20.DBX·4.2·//·COMMAND-BIT·2
857 M003:·NOP·0;
858 NETWORK
859 TITLE·=·ADOPT·POSITION·FOR·TOOL·4
860 U·DB20.DBX·295.1·//·"CTR·4"·KEY·ADOPT·POSITION·FOR·TOOL·4
861 SPBN·M004;
862 L·4·//·SWIVELED·TOOL
863 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
864 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
865 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
866 *·R;
867 T·DB10.DBD·44·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
868 S·DB20.DBX·4.2·//·COMMAND-BIT·2
869 M004:·NOP·0;
870 NETWORK
871 TITLE·=·APPLY·POSITION·FOR·TOOL·5
872 U·DB20.DBX·295.2·//·"CTR·5"·KEY·ADOPT·POSITION·FOR·TOOL·5
873 SPBN·M005;
874 L·5·//·SWIVELED·TOOL
875 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
876 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
877 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
878 *·R;
879 T·DB10.DBD·48·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
880 S·DB20.DBX·4.2·//·COMMAND-BIT·2
881 M005:·NOP·0;
882 NETWORK
883 TITLE·=·APPLY·POSITION·FOR·TOOL·6
884 U·DB20.DBX·295.3
885 //·"CTR·6"·KEY·ADOPT·POSITION·FOR·TOOL·6
886 SPBN·M006;
887 L·6·//·SWIVELED·TOOL
888 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
889 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
890 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
891 *·R;
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892 T·DB10.DBD·52·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
893 S·DB20.DBX·4.2·//·COMMAND-BIT·2
894 M006:·NOP·0;
895 NETWORK
896 TITLE·=·APPLY·POSITION·FOR·TOOL·7
897 U·DB20.DBX·295.4·//·"CTR·7"·KEY·ADOPT·POSITION·FOR·TOOL·7
898 SPBN·M007;
899 L·7·//·SWIVELED·TOOL
900 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
901 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
902 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
903 *·R;
904 T·DB10.DBD·56·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
905 S·DB20.DBX·4.2·//·COMMAND-BIT·2
906 M007:·NOP·0;
907 NETWORK
908 TITLE·=·ACCEPT·POSITION·FOR·TOOL·8
909 U·DB1.DBX·1374.4·//·"CTR·8"·KEY·ADOPT·POSITION·FOR·TOOL·8
910 SPBN·M008;
911 L·8·//·SWIVELED·TOOL
912 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
913 L·DB1.DBD·16·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·4
914 L·+·1.0E·+·03;·//·MULTIPLE·BY·1000
915 *·R;
916 T·DB10.DBD·60·//·WRITE·ACTUAL·POSITION·INTO·THE·MSD·DATA
917 S·DB20.DBX·4.2·//·COMMAND-BIT·2
918 M008:·NOP·0;
919 NETWORK
920 TITLE·=·POSITION·FOR·Z-AXIS·T1-T8·EXPRESSION·AND·ADOPT·INPUT·POSITION
921 U·DB1.DBX·1374.3·//·Z-AXIS·T1-T8·EXPRESSION·AND·INPUT·POSITION
922 SPBN·M009;
923 L·14·//·SWIVELED·TOOL
924 T·DB20.DBW·356·//·TRANSFER·CURRENT·TOOL·NUMBER
925 L·DB1.DBD·8·//·LOAD·THE·ACTUAL·POSITION·FROM·ABSOLUTE·AXIS·2
926 T·DB10.DBD·84·//·WRITE·THE·ACTUAL·POSITION·INTO·THE·MSD·DATA
927 S·DB20.DBX·4.2·//·COMMAND-BIT·2
928 M009:·NOP·0;
929 END_FUNCTION
930 FUNCTION·FC·50:·VOID
931 NAME:·TOOL·TURNERS
932 BEGIN
933 ;·MD·28·Z-AXIS·TARGET·POSITION
934 ;·MD·32·A-AXIS·POSITION·FOR·CLAMPED·TOOL
935 ;·MD·36·NEW·A-AXIS·POSITION
936 ;·MW·40·NEW·TOOL·FROM·VALID·T-WORD
937 ;·MW·42·CLAMPED·TOOL·FROM·THE·SETTING·DATA
938 ;·MW·44·RESULTS·OF·TOOL·HOLDER·INSPECTION·(TOOL·HOLDER·FREE)
939 ;·MW·46·TOOL·EQUIPMENT·(RESULTS·WHEN·EXTENDING·THE·TOOL·DISC·FROM·12mm·BERO)
940 ;·MD·64·Z-AXIS·T1-T8·EXPRESSION·AND·INPUT·POSITION
941 ;·MD·74·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
942 ;·MD·78·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
943 ;·L·DB10.DBD·80;·//·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
944 ;·L·DB10.DBD·88;·//·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
945 ;·L·DB10.DBD·92;·//·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
946 NETWORK
947 TITLE·=·CALCULATING·THE·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
948 L·DB10.DBD·84;·//·Z-AXIS·TOOL·GRIPPER·POSITION·FOR·T1
949 L·+·5.0E-03;
950 -R
951 T·MD·64;·//·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
952 NETWORK
953 TITLE·=·CALCULATING·THE·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
954 L·DB10.DBD·84;·//·Z-AXIS·TOOL·GRIPPER·POSITION·FOR·T1
955 L·+·7.5E-02;·//·75·MM

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956 +R
957 T·MD·74;·//·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
958 NETWORK
959 TITLE·=·CALCULATE·THE·Z-AXIS·1MM·UNDER·THE·SW·LIMIT·SWITCH
960 L·DB10.DBD·84;·//·Z-AXIS·TOOL·GRIPPER·POSITION·FOR·T1
961 L·+·1.4E-01;·//·140·MM
962 +R
963 T·MD·78;·//·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
964 ;·M·27.0·TOOL·RETRACTED
965 ;·M·27.1·TOOL·EXPRESSED
966 ;·M·53.0·M70·EXPRESS·TOOL
967 ;·PULL·IN·THE·M·53.1·M72·TOOL
968 ;·DB15.DBW·25·(IN·BITS·FROM·0·TO·8)·CLAMPED·TOOL·IN·THE·SETTING·DATA
969 NETWORK
970 TITLE·=·SET·ABORT·FLAG·FROM·THE·SETTING·DATA
971 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
972 U·DB15.DBX·20.0·//·SAVE·TOOL·ABORTED·IN·THE·SETTING·DATA
973 S·M·52.3·//·TOOL·CANCELED
974 NETWORK
975 TITLE·=·WZW·AFG·//·EFG·and·NC_START·VERR.
976 L·DB1.DBD·16·//·ABSOLUTE·AXIS·4·ACTUAL·POSITION
977 L·+·0.00E-00;
978 ==R
979 =·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
980 UN·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
981 U·DB1.DBX·134.4;·//·REFERENCE·POINT·TOOL·AXIS·ACTIVE
982 UN·DB10.DBX·100.0·//·SET·TOOL·MILL55·ENABLED
983 =·M·90.2;·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED·AFG·//·EFG
984 =·M·96.0;·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED·NC_START·LOCK.
985 NETWORK
986 TITLE·=·TOOL·ENABLE
987 U·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
988 U·M·120.2·//·TOOL·AXIS·0·DEGREES·REACHED
989 O·M·25.0·//·TOOL·0·PICK·UP·DONE
990 O·DB10.DBX·100.0·//·SET·TOOL·MILL55·ACTIVATED
991 UN·M·94.0;·//·AUX-ON·SFG
992 U·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
993 UN·M·52.0;·//·TOOL·TURNING·ACTIVE
994 UN·M·52.3·//·TOOL·ABORTED
995 UN·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
996 UN·DB3.DBX·7.0;·//·MESSAGE·7056·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
997 UN·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
998 UN·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
999 U·DB25.DBX·340.4;·//·AXLE·ENABLE·K1
1000 U·DB25.DBX·340.3;·//·READ·RELEASE
1001 K1
1002 =·M·27.5;·//·TOOL·ENABLE
1003 FP·M·52.1·//·FM·TOOL·ENABLE
1004 UN·M·27.5;·//·TOOL·ENABLE
1005 =·M·96.1·//·NC_START·VERR.
1006 U·M·52.1·//·FM·TOOL·ENABLE
1007 R·M·94.7;·//·SPINDLE·ENABLE·T-WORD·IS·VALID
1008 R·M·90.5;·//·AXLE·RELEASE·T-WORD·IS·VALID
1009 NETWORK
1010 TITLE·=·SET·TOOL·POSITION·FROM·THE·SETTING·DATA
1011 O(
1012 U·M·27.5;·//·TOOL·ENABLE
1013 U·DB20.DBX·182.0·//·NEW·T-WORD·(TOOL)
1014 )
1015 O·DB1.DBX·1370.0;·//·1st·PLC·LOOP
1016 CC·FC·52;·//·SET·TOOL·POSITION·FROM·THE·SETTING·DATA
1017 NETWORK
1018 CLEAR·TITLE·=·MESSAGE·"7000·WRONG·T-WORD"
1019 U·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED

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1020 R·DB3·DBX·0.0;·//·7000·WRONG·T-WORD
1021 NETWORK
1022 TITLE·=·CHECK·NEW·T-WORD
1023 U·M·27.5;·//·TOOL·ENABLE
1024 U·DB20·DBX·182.0·//·NEW·T-WORD·(TOOL)
1025 UN·M·20.2·//·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
1026 CC·FC·53;·//·CHECK·NEW·T-WORD·AND·DETERMINE·NEW·TOOL·DISC·POSITION
1027 NETWORK
1028 TITLE·=·T-WORD·IS·VALID·AND·STOP·THE·MAIN·SPINDLE
1029 U·M·27.5;·//·TOOL·ENABLE
1030 U·DB20·DBX·182.0·//·NEW·T-WORD·(TOOL)
1031 U·M·22.6·//·T-WORD·DOES·NOT·EQUAL·TOOLS
1032 UN·DB3·DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
1033 S·M·94.7;·//·SPINDLE·ENABLE·T-WORD·IS·VALID
1034 S·M·90.5;·//·AFG·/·EFG·T-WORD·IS·VALID
1035 S·M·20.6;·//·T-WORD·IS·VALID
1036 R·M·22.7·//·NEW·T-WORD·SAVED·FOR·MESSAGE·7001
1037 NETWORK
1038 TITLE·=·"7055·OPEN·TOOL·CLAMPING·SYSTEM"·AND·DELETE·"7057·TOOL·HOLDER·OCCUPIED"
1039 U·M·27.1·//·TOOL·EXPRESSED
1040 R·DB3·DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
1041 NETWORK
1042 TITLE·=·START·TOOL·TURNING·WHEN·THE·HS·SPEED·IS·LESS·20·RPM
1043 U·M·20.6;·//·T-WORD·IS·VALID
1044 U·M·114.3;·//·HA·ACTUAL·SPEED·LESS·THAN·20RPM
1045 S·M·20.7;·//·TOOL·TURNERS·START·FROM·VALID·T-WORD
1046 R·M·20.6;·//·T-WORD·IS·VALID
1047 NETWORK
1048 TITLE·=·CANCEL·TURNING·TOOL·IF·PROCESS·NOT·YET·STARTED
1049 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
1050 O·DB1·DBX·1440.0;·//·RESET·RELEASED
1051 U·M·20.6;·//·T-WORD·IS·VALID
1052 UN·M·20.7;·//·TOOL·TURNERS·START·FROM·VALID·T-WORD
1053 R·M·94.7;·//·SPINDLE·ENABLE·T-WORD·IS·VALID
1054 R·M·90.5;·//·AFG·/·EFG·T-WORD·IS·VALID
1055 R·M·20.6;·//·T-WORD·IS·VALID
1056 NETWORK
1057 TITLE·=·CLEAR·TOOL·CONE·CANCEL
1058 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
1059 O·DB1·DBX·1440.0;·//·RESET·RELEASED
1060 O·DB1·DBX·1366.3;·//·ALARM·ACTIVE
1061 O·DB3·DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
1062 R·A·6.1·//·BLOW·OFF·THE·TOOL·CONE
1063 NETWORK
1064 TITLE·=·TOOL·TURNING·STARTED·SAVE·IN·THE·SETTING·DATA
1065 U·M·20.7;·//·TOOL·TURNERS·START·FROM·VALID·T-WORD
1066 FP·M·52.4
1067 U·M·52.4
1068 S·DB15·DBX·20.0·//·SAVE·TOOL·ABORTED·IN·THE·SETTING·DATA
1069 =·DB20·DBX·348.3;·//·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1070 NETWORK
1071 TITLE·=·X·/·Y·-·AXIS·MOVE·OUT·WITH·ACTIVATED·ROUND·AXIS
1072 U·M·52.7·//·ROUND·AXIS·ACTIVATED
1073 SPBN·M111;
1074 NETWORK
1075 TITLE·=·X·/·Y·-·SAVE·AXIS·ACTUAL·POSITION
1076 U·M·20.7;·//·TOOL·TURNERS·START·FROM·VALID·T-WORD
1077 UN·M·23.7·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1078 UN·M·23.5·//·HM·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1079 SPBN·M002;
1080 L·DB1·DBD·4·//·Actual·position·for·axis·1·(Y)
1081 T·MD·56·//·Actual·position·for·axis·1·(Y)
1082 L·DB1·DBD·0·//·Actual·position·for·axis·1·(X)
1083 T·MD·60·//·Actual·position·for·axis·1·(X)

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1084 M002:·NOP·0;
1085 NETWORK
1086 TITLE·=·X·/·Y·-·MOVE·AXIS·TO·SOFTWARE·END·SWITCH
1087 U·M·20.7;·//·TOOL·TURNERS·START·FROM·VALID·T-WORD
1088 UN·M·23.7·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1089 UN·M·23.5·//·HM·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1090 SPBN·M003;
1091 S·M·23.7·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1092 ;·S·DB25.DBX·340.3;·//·READ-IN·ENABLE·K1
1093 ;·S·DB25.DBX·340.4;·//·AXLE·ENABLE·K1
1094 =·DB25.DBX·1.4;·//·SEND·NC·BLOCK
1095 =·DB25.DBX·548.7·//·G0·is·triggered
1096 =·DB25.DBX·548.5;·//·SET·EXACT·HOLD·MODE
1097 =·DB25.DBX·20.0;·//·POSITION·REQUEST·FOR·X-AXIS
1098 =·DB25.DBX·20.1;·//·POSITION·REQUEST·FOR·Y-AXIS
1099 L·DB20.DBD·482·//·MAX·SW·LIMIT·SWITCH·FOR·Y-AXIS·FLOAT·VALUE·IN·M
1100 T·DB25.DBD·26;·//·POSITION·VALUE·FOR·Y-AXIS
1101 L·DB20.DBD·414·//·MIN·SW·LIMIT·SWITCH·FOR·X-AXIS·FLOAT·VALUE·IN·M
1102 T·DB25.DBD·22;·//·POSITION·VALUE·FOR·X-AXIS
1103 M003:·NOP·0;
1104 U·DB25.DBX·332.0;·//·NC·BLOCK·DONE
1105 U·M·20.7;·//·TOOL·TURNERS·STARTED·FROM·VALID·T-WORD
1106 S·M·23.5·//·HM·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1107 R·M·23.7·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1108 NETWORK
1109 TITLE·=·X·/·Y·-·MOVE·AXIS·TO·LISTED·POSITION
1110 U·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
1111 U·M·21.5·//·STEP·5
1112 U·M·20.7;·//·TOOL·TURNERS·STARTED·FROM·VALID·T-WORD
1113 UN·M·21.6·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1114 SPBN·M004;
1115 S·M·21.6·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1116 ;·S·DB25.DBX
1117 340.3;·//·READ-IN·ENABLE·K1
1118 ;·S·DB25.DBX·340.4;·//·AXLE·ENABLE·K1
1119 =·DB25.DBX·1.4;·//·SEND·NC·BLOCK
1120 =·DB25.DBX·548.7·//·G0·is·triggered
1121 =·DB25.DBX·548.5;·//·SET·EXACT·HOLD·MODE
1122 =·DB25.DBX·20.0;·//·POSITION·REQUEST·FOR·X-AXIS
1123 =·DB25.DBX·20.1;·//·POSITION·REQUEST·FOR·Y-AXIS
1124 L·MD·56·//·Actual·position·for·axis·1·(Y)
1125 T·DB25.DBD·26;·//·POSITION·VALUE·FOR·Y-AXIS
1126 L·MD·60·//·Actual·position·for·axis·1·(X)
1127 T·DB25.DBD·22;·//·POSITION·VALUE·FOR·X-AXIS
1128 M004:·NOP·0;
1129 U·DB25.DBX·332.0;·//·NC·BLOCK·DONE
1130 U·M·20.7;·//·TOOL·TURNERS·STARTED·FROM·VALID·T-WORD
1131 U·M·21.6·//·Y-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
1132 S·M·26.2;·//·HM·X·/·Y-AXIS·TARGET·POSITION·REACHED
1133 U·M·26.2;·//·HM·X·/·Y-AXIS·TARGET·POSITION·REACHED
1134 L·S5TIME·#·500MS;
1135 SE·T·15;·//·T15·SWITCH-ON·DELAYED
1136 U·T·15;·//·T15·SWITCH-ON·DELAYED
1137 S·M·20.4·//·PICK·UP·TOOL·DONE
1138 R·M·26.2;·//·HM·X·/·Y-AXIS·TARGET·POSITION·REACHED
1139 M111:·NOP·0;
1140 NETWORK
1141 TITLE·=·RETURN·TOOL
1142 U·M·20.7;·//·TOOL·TURNERS·STARTED·FROM·VALID·T-WORD
1143 UN·M·20.3·//·RETURN·TOOL·DONE
1144 SPBN·M005;
1145 U·M·42.1·//·TOOL·1·CLAMPED
1146 CC·FC·54·//·RETURN·TOOL·1
1147 SPB·M005;

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1148 O·M·20.1·//·TOOL·EXPRESSED·AND·NO·TOOL·NUMBER·STORED
1149 O·M·42.0·//·TOOL·0·CLAMPED
1150 CC·FC·55·//·RETURN·TOOL·0·OR·NO·TOOL
1151 SPB·M005;
1152 CALL·FC·56·//·RETURN·TOOLS·2·TO·8
1153 M005:·NOP·0;
1154 NETWORK
1155 TITLE·=·PICK·UP·NEW·TOOL
1156 U·M·20.7;·//·TOOL·TURNERS·STARTED·FROM·VALID·T-WORD
1157 U·M·20.3·//·RETURN·TOOL·DONE
1158 UN·M·20.4·//·PICK·UP·TOOL·DONE
1159 SPBN·M006;
1160 U·M·40.1·//·TOOL·1·SELECTED
1161 CC·FC·57·//·PICK·UP·TOOL·1
1162 SPB·M006;
1163 U·M·40.0·//·TOOL·0·SELECTED
1164 CC·FC·58·//·PICK·UP·TOOL·0
1165 SPB·M006;
1166 CALL·FC·59·//·PICK·UP·TOOLS·2·TO·8
1167 M006:·NOP·0;
1168 NETWORK
1169 TITLE·=·END·TOOL·TURNING
1170 U·M·20.4·//·PICK·UP·TOOL·DONE
1171 O·M·26.1·//·NEW·T-WORD·IS·TOOLS
1172 SPBN·M007;
1173 L·DB20.DBW·184;·//·LOAD·T-WORD
1174 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1175 L·0
1176 T·MD·20
1177 R·DB15.DBX·20.0·//·SAVE·TOOL·ABORTED·IN·THE·SETTING·DATA
1178 L·MW·40·//·MW·40
1179 T·DB15.DBW·25;·//·CLAMPED·TOOL·IN·THE·SETTING·DATA
1180 =·DB20.DBX·348.3;·//·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1181 R·M·90.5;·//·AFG·/·EFG·T-WORD·IS·VALID
1182 R·M·94.7;·//·SPINDLE·ENABLE·T-WORD·IS·VALID
1183 M007:·NOP·0;
1184 NETWORK
1185 TITLE·=·TOOL·TURNING·ACTIVE
1186 L·MB·20;·//·STEP·CHAIN
1187 L·0;
1188 <>·I;
1189 =·M·52.0;·//·TOOL·TURNING·ACTIVE
1190 NETWORK
1191 TITLE·=·CANCEL·TOOL·TURNING
1192 U·M·52.0;·//·TOOL·TURNING·ACTIVE
1193 U·(
1194 ON·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
1195 O·DB2.DBX·0.0;·//·ALARM·EMERGENCY·STOP
1196 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
1197 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
1198 )
1199 O(
1200 U·E·16.4·//·REF·BERO·WZW
1201 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
1202 )
1203 O(
1204 U·E·16.4·//·REF·BERO·WZW
1205 U·M·120.5·//·FM·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
1206 )
1207 SPBN·M001;
1208 L·0
1209 T·MD·20·//·TOOL·STEP·MARKER
1210 S·M·52.3·//·TOOL·CANCELED
1211 R·M·94.7;·//·SPINDLE·ENABLE·T-WORD·IS·VALID

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1212 R·M·90.5;·//·AFG·//·EFG·T-WORD·IS·VALID
1213 R·M·26.2;·//·HM·X·//·Y-AXIS·TARGET·POSITION·REACHED
1214 M001:·NOP·0;
1215 NETWORK
1216 TITLE·=·MELDUNG·7058·AXES·RELEASE
1217 U·E·16.4·//·REF·BERO·WZW
1218 U·M·120.5·//·FM·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
1219 O(
1220 ON·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
1221 O·E·16.4·//·REF·BERO·WZW
1222 U·M·52.3·//·TOOL·ABORTED
1223 )
1224 O(;
1225 U·M·25.0·//·TOOL·0·DONE·DONE
1226 UN·DB10.DBX·75.2;·//·RETRACT·IN·THE·DISC·AT·T0·TOOL
1227 );
1228 FP·M·25.1
1229 U·M·25.1
1230 UN·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
1231 SPBN·M008;
1232 S·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
1233 S·DB15.DBX·20.0·//·SAVE·TOOL·ABORTED·IN·THE·SETTING·DATA
1234 =·DB20.DBX·348.3;·//·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1235 =·DB1.DBX·1440.0;·//·TRIGGER·NC·RESET
1236 M008:·NOP·0;
1237 NETWORK
1238 TITLE·=·MESSAGE·7058·DELETE·AXES·FREE·MOVEMENT
1239 U·I·16.2·//·REF·Z-axis·switch·(0-SIGNAL·IF·AXIS·UP·!!!!)
1240 FN·M·25.3
1241 U·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
1242 U·M·25.3
1243 SPBN·M2008;
1244 =·DB1.DBX·1440.0;·//·RESET·TRIPPED
1245 M2008:·NOP·0;
1246 UN·I·16.2·//·REF·Z-axis·switch·(0-SIGNAL·IF·AXIS·UP·!!!!)
1247 U·M·120.5·//·FM·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
1248 ;·ON·I·16.4·//·REF·BERO·WZW
1249 O·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
1250 FP·M·25.2
1251 U·M·52.3·//·TOOL·ABORTED
1252 UN·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
1253 O·M·25.2
1254 O·M·25.3
1255 ON·I·16.4·//·REF·BERO·WZW
1256 SPBN·M009;
1257 R·M·52.3
1258 //·TOOL·CANCELED
1259 R·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
1260 R·DB15.DBX·20.0·//·SAVE·TOOL·ABORTED·IN·THE·SETTING·DATA
1261 =·DB20.DBX·348.3;·//·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1262 M009:·NOP·0;
1263 END_FUNCTION
1264 FUNCTION·FC·54:·VOID
1265 NAME:·RETURN·TOOL·1
1266 BEGIN
1267 NETWORK
1268 TITLE·=·CHECK·THAT·TOOL·HOLDER·1·IS·FREE
1269 L·DB1.DBD·16
1270 L·+·0.70E-02;
1271 <R;
1272 U·E·4.2;·//·12mm·BERO·TOOL·EQUIPPED
1273 ;·S·M·46.1·//·TOOL·1·PRESENT
1274 S·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
1275 =·DB1.DBX·1440.0;·//·TRIGGER·NC·RESET
```

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1276 BEB
1277 NETWORK
1278 TITLE = STEP 0 Z-AXIS TOOL GRIPPER POSITION FOR T1
1279 UN M 23.0 /// STEP 0
1280 SPBN M001;
1281 L DB10.DBD 84; /// Z-AXIS TOOL GRIPPER POSITION FOR T1
1282 T MD 28 /// Z-AXIS TARGET POSITION
1283 CC FC 60 /// Z-AXIS TRAVEL TO TARGET POSITION
1284 U M 22.3 /// Z-AXIS IS ON TARGET POSITION
1285 S M 23.0 /// STEP 0
1286 R M 22.3 /// Z-AXIS IS ON TARGET POSITION
1287 M001: NOP 0;
1288 NETWORK
1289 TITLE = STEP 1 MOVE TOOL DISC TO RETURN POSITION
1290 U M 23.0 /// STEP 0
1291 UN M 23.1 /// STEP 1
1292 UN DB3.DBX 7.1; /// MESSAGE 7057 TOOL HOLDER OCCUPIED
1293 SPBN M002;
1294 S M 21.7 /// HM TOOL TURNING DISC MOVE WITH 20% RAPID SPEED
1295 S M 20.5 /// CHECK THAT THE TOOL AREA IS FREE
1296 L MD 32 /// A-AXIS POSITION FOR CLAMPED TOOL
1297 T MD 48 /// A-AXIS TARGET POSITION
1298 CC FC 61 /// MOVE A-AXIS TO TARGET POSITION
1299 U M 22.1 /// TOOL DISC VALID POSITION REACHED
1300 R M 20.5 /// CHECK THAT THE TOOL AREA IS FREE
1301 R M 22.1 /// TOOL DISC VALID POSITION REACHED
1302 R M 21.7 /// HM TOOL TURNER DISC MOVE WITH 20% RAPID SPEED
1303 S M 23.1 /// STEP 1
1304 M002: NOP 0;
1305 NETWORK
1306 TITLE = STEP 2 PRINT TOOL
1307 U M 23.1 /// STEP 1
1308 UN M 23.2 /// STEP 2
1309 UN M 27.1 /// TOOL EXPRESSED
1310 S M 53.0 /// M70 EXPRESS TOOL
1311 U M 23.1 /// STEP 1
1312 UN M 23.2 /// STEP 2
1313 U M 27.1 /// TOOL EXPRESSED
1314 S M 23.2 /// STEP 2
1315 NETWORK
1316 TITLE = Z-AXIS TOOL SWIVEL POSITION NO TOOL IN THE SPINDLE
1317 U M 23.2 /// STEP 2
1318 UN M 23.3 /// STEP 3
1319 SPBN M004;
1320 L MD 78; /// Z-AXIS 1MM UNDER SW LIMIT SWITCH
1321 U M 40.0 /// TOOL 0 SELECTED
1322 SPB M104;
1323 L MD 74; /// Z-AXIS TOOL SWIVEL POSITION NO TOOL IN THE SPINDLE
1324 M104: NOP 0;
1325 T MD 28 /// Z-AXIS TARGET POSITION
1326 CC FC 60 /// Z-AXIS TRAVEL TO TARGET POSITION
1327 U M 22.3 /// Z-AXIS IS ON TARGET POSITION
1328 S M 23.3 /// STEP 3
1329 S M 20.3 /// RETURN TOOL DONE
1330 R M 22.3 /// Z-AXIS IS ON TARGET POSITION
1331 M004: NOP 0;
1332 END_FUNCTION
1333 FUNCTION FC 57: VOID
1334 NAME: PICK UP TOOL 1
1335 BEGIN
1336 NETWORK
1337 TITLE = STEP 0 TOOL DISC ON NEW A-AXIS POSITION
1338 UN M 21.0 /// STEP 0
1339 SPBN M001;
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1340 L·MD·36·///·NEW·A-AXIS·POSITION
1341 T·MD·48·///·A-AXIS·TARGET·POSITION
1342 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1343 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1344 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1345 S·M·21.0·///·STEP·0
1346 M001:·NOP·0;
1347 NETWORK
1348 TITLE·=·STEP·2·Z-AXIS·TO·T1-T8·EXPRESSION·AND·MOVE·INTO·THE·INPUT·POSITION
1349 U·M·21.0·///·STEP·0
1350 UN·M·21.1·///·STEP·1
1351 SPBN·M002;
1352 S·A·6.1·///·BLOW·OFF·THE·TOOL·CONE
1353 L·MD·64;·///·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
1354 T·MD·28·///·Z-AXIS·TARGET·POSITION
1355 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1356 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1357 S·M·21.1·///·STEP·1
1358 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1359 R·A·6.1·///·BLOW·OFF·THE·TOOL·CONE
1360 M002:·NOP·0;
1361 NETWORK
1362 TITLE·=·STEP·3·PULL·IN·TOOL
1363 UN·M·21.2·///·STEP·2
1364 U·M·21.1·///·STEP·1
1365 UN·M·27.0·///·TOOL·RETRACTED
1366 S·M·53.1·///·M72·PULL·IN·TOOL
1367 UN·M·21.2·///·STEP·2
1368 U·M·21.1·///·STEP·1
1369 U·M·27.0·///·TOOL·DRAWN·IN
1370 S·M·21.2·///·STEP·2
1371 NETWORK
1372 TITLE·=·STEP·4·Z-AXIS·TOOL·GRIPPER·POSITION·FOR·T1
1373 U·M·21.2·///·STEP·2
1374 UN·M·21.3·///·STEP·3
1375 SPBN·M003;
1376 L·DB10.DBD·84;·///·Z-AXIS·TOOL·GRIPPER·POSITION·FOR·T1
1377 T·MD·28·///·Z-AXIS·TARGET·POSITION
1378 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1379 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1380 S·M·21.3·///·STEP·3
1381 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1382 M003:·NOP·0;
1383 NETWORK
1384 TITLE·=·STEP·5·TOOL·DISC·MOVE·TO·0·--·POSITION
1385 U·M·21.3·///·STEP·3
1386 UN·M·21.4·///·STEP·4
1387 SPBN·M004;
1388 S·M·21.7·///·HM·TOOL·TURNING·DISC·MOVE·WITH·20%·RAPID·SPEED
1389 L·0·///·A-AXIS·POSITION·0·DEGREES
1390 T·MD·48·///·A-AXIS·TARGET·POSITION
1391 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1392 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1393 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1394 R·M·21.7·///·HM·TOOL·TURNER·DISC·MOVE·WITH·20%·RAPID·SPEED
1395 S·M·21.4·///·STEP·4
1396 U·M·21.4·///·STEP·4
1397 UN·M·52.7·///·ROUND·AXLE·ACTIVATED
1398 S·M·20.4·///·PICK·UP·TOOL·DONE
1399 M004:·NOP·0;
1400 NETWORK
1401 TITLE·=·STEP·6·Z-AXIS·1MM·UNDER·THE·SW·LIMIT·SWITCH
1402 U·M·21.4·///·STEP·4
1403 UN·M·21.5·///·STEP·5
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1404 U·M·52.7·///·ROUND·AXIS·ACTIVATED
1405 SPBN·M005;
1406 L·MD·78;·///·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
1407 T·MD·28·///·Z-AXIS·TARGET·POSITION
1408 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1409 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1410 S·M·21.5·///·STEP·5
1411 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1412 M005:·NOP·0;
1413 END_FUNCTION
1414 FUNCTION·FC·59:·VOID
1415 NAME:·PICK·UP·TOOLS·2·TO·8
1416 BEGIN
1417 NETWORK
1418 TITLE·=·STEP·0·TOOL·DISC·ON·NEW·A-AXIS·POSITION
1419 UN·M·21.0·///·STEP·0
1420 SPBN·M001;
1421 L·MD·36·///·NEW·A-AXIS·POSITION
1422 T·MD·48·///·A-AXIS·TARGET·POSITION
1423 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1424 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1425 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1426 S·M·21.0·///·STEP·0
1427 M001:·NOP·0;
1428 NETWORK
1429 TITLE·=·STEP·2·Z-AXIS·TO·T1-T8·EXPRESSION·AND·MOVE·INTO·THE·INPUT·POSITION
1430 U·M·21.0·///·STEP·0
1431 UN·M·21.1·///·STEP·1
1432 SPBN·M002;
1433 S·A·6.1·///·BLOW·OFF·THE·TOOL·CONE
1434 L·MD·64;·///·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
1435 T·MD·28·///·Z-AXIS·TARGET·POSITION
1436 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1437 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1438 S·M·21.1·///·STEP·1
1439 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1440 R·A·6.1·///·BLOW·OFF·THE·TOOL·CONE
1441 M002:·NOP·0;
1442 NETWORK
1443 TITLE·=·STEP·3·PULL·IN·TOOL
1444 UN·M·21.2·///·STEP·2
1445 U·M·21.1·///·STEP·1
1446 UN·M·27.0·///·TOOL·RETRACTED
1447 S·M·53.1·///·M72·PULL·IN·TOOL
1448 UN·M·21.2·///·STEP·2
1449 U·M·21.1·///·STEP·1
1450 U·M·27.0·///·TOOL·DRAWN·IN
1451 S·M·21.2·///·STEP·2
1452 NETWORK
1453 TITLE·=·STEP·4·Z-AXIS·1MM·UNDER·THE·SW·LIMIT·SWITCH
1454 U·M·21.2·///·STEP·2
1455 UN·M·21.3·///·STEP·3
1456 SPBN·M003;
1457 L·MD·78;·///·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
1458 T·MD·28·///·Z-AXIS·TARGET·POSITION
1459 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1460 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1461 S·M·21.3·///·STEP·3
1462 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1463 M003:·NOP·0;
1464 NETWORK
1465 TITLE·=·STEP·5·TOOL·DISC·MOVE·TO·0·--·POSITION
1466 U·M·21.3·///·STEP·3
1467 UN·M·21.5·///·STEP·5
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1468 SPBN·M004;
1469 L·0·///·A-AXIS·POSITION·0·DEGREES
1470 T·MD·48·///·A-AXIS·TARGET·POSITION
1471 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1472 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1473 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1474 S·M·21.5·///·STEP·5
1475 U·M·21.5·///·STEP·5
1476 UN·M·52.7·///·ROUND·AXLE·ACTIVATED
1477 S·M·20.4·///·PICK·UP·TOOL·DONE
1478 M004:·NOP·0;
1479 END_FUNCTION
1480 FUNCTION·FC·55:·VOID
1481 NAME:·TOOL·0·OR·NO·TOOL·RETURNED
1482 BEGIN
1483 NETWORK
1484 TITLE·=·OPEN·TOOL·CLAMPING·DEVICE·TO·PICK·UP·A·TOOL
1485 UN·M·23.0·///·STEP·0
1486 UN·M·27.1·///·TOOL·EXPRESSED
1487 S·M·53.0·///·M70·EXPRESS·TOOL
1488 UN·M·23.0·///·STEP·0
1489 U·M·27.1·///·TOOL·EXPRESSED
1490 S·M·23.0·///·STEP·0
1491 NETWORK
1492 TITLE·=·MOVE·Z-AXIS·TO·TARGET·POSITION
1493 UN·M·23.1·///·STEP·1
1494 SPBN·M001;
1495 L·MD·78;·///·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
1496 ;;·L·DB10.DBD·88;·///·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
1497 T·MD·28·///·Z-AXIS·TARGET·POSITION
1498 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1499 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1500 S·M·23.1·///·STEP·1
1501 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1502 M001:·NOP·0;
1503 U·M·23.0·///·STEP·0
1504 U·M·23.1·///·STEP·1
1505 S·M·20.3·///·RETURN·TOOL·DONE
1506 END_FUNCTION
1507 FUNCTION·FC·56:·VOID
1508 NAME:·RETURN·TOOLS·2·THROUGH·8
1509 BEGIN
1510 NETWORK
1511 TITLE·=·STEP·0·Z-AXIS·1MM·UNDER·THE·SW·LIMIT·SWITCH
1512 UN·M·23.0·///·STEP·0
1513 SPBN·M001;
1514 L·MD·78;·///·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
1515 T·MD·28·///·Z-AXIS·TARGET·POSITION
1516 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1517 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1518 S·M·23.0·///·STEP·0
1519 M001:·NOP·0;
1520 NETWORK
1521 TITLE·=·STEP·1·MOVE·TOOL·DISC·TO·RETURN·POSITION
1522 U·M·23.0·///·STEP·0
1523 UN·M·23.1·///·STEP·1
1524 UN·DB3.DBX·7.1;·///·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
1525 SPBN·M002;
1526 S·M·20.5·///·CHECK·THAT·THE·TOOL·AREA·IS·FREE
1527 L·MD·32
1528 ///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1529 T·MD·48·///·A-AXIS·TARGET·POSITION
1530 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1531 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED

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1532 R·M·20.5·///·CHECK·THAT·THE·TOOL·AREA·IS·FREE
1533 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1534 S·M·23.1·///·STEP·1
1535 M002:·NOP·0;
1536 NETWORK
1537 TITLE·=·STEP·2·Z-AXIS·TO·T1-T8·EXPRESSION·AND·MOVE·INTO·THE·INPUT·POSITION
1538 U·M·23.1·///·STEP·1
1539 UN·M·23.2·///·STEP·2
1540 SPBN·M003;
1541 L·MD·64;·///·Z-AXIS·T1-T8·EXPRESSION·AND·INSERTION·POSITION
1542 T·MD·28·///·Z-AXIS·TARGET·POSITION
1543 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1544 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1545 S·M·23.2·///·STEP·2
1546 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1547 M003:·NOP·0;
1548 NETWORK
1549 TITLE·=·STEP·3·PRINT·TOOL
1550 U·M·23.2·///·STEP·2
1551 UN·M·23.3·///·STEP·3
1552 UN·M·27.1·///·TOOL·EXPRESSED
1553 S·M·53.0·///·M70·EXPRESS·TOOL
1554 U·M·23.2·///·STEP·2
1555 UN·M·23.3·///·STEP·3
1556 U·M·27.1·///·TOOL·EXPRESSED
1557 S·M·23.3·///·STEP·3
1558 NETWORK
1559 TITLE·=·MOVE·Z-AXIS·TO·TARGET·POSITION
1560 U·M·23.3·///·STEP·3
1561 UN·M·23.4·///·STEP·4
1562 SPBN·M004;
1563 L·MD·78;·///·Z-AXIS·1MM·UNDER·SW·LIMIT·SWITCH
1564 U·M·40.0·///·TOOL·0·SELECTED
1565 SPB·M104;
1566 L·MD·74;·///·Z-AXIS·TOOL·SWIVEL·POSITION·NO·TOOL·IN·THE·SPINDLE
1567 M104:·NOP·0;
1568 T·MD·28·///·Z-AXIS·TARGET·POSITION
1569 CC·FC·60·///·Z-AXIS·TRAVEL·TO·TARGET·POSITION
1570 U·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1571 S·M·23.4·///·STEP·4
1572 S·M·20.3·///·RETURN·TOOL·DONE
1573 R·M·22.3·///·Z-AXIS·IS·ON·TARGET·POSITION
1574 M004:·NOP·0;
1575 END_FUNCTION
1576 FUNCTION·FC·58:·VOID
1577 NAME:·PICK·UP·TOOL·0
1578 BEGIN
1579 NETWORK
1580 TITLE·=·STEP·1·MOVE·TOOL·DISC·TO·POSITION·8
1581 UN·DB10.DBX·75.2;·///·RETRACT·IN·THE·DISC·AT·T0·TOOL
1582 SPBN·M003;
1583 UN·M·21.0·///·STEP·0
1584 SPBN·M002;
1585 ;·L·0·///·A-AXIS·POSITION·0·DEGREES
1586 L·DB10.DBD·60·///·Position·for·tool·8·in·degrees
1587 T·MD·48·///·A-AXIS·TARGET·POSITION
1588 CC·FC·61·///·MOVE·A·AXIS·TO·TARGET·POSITION
1589 U·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1590 R·M·22.1·///·TOOL·DISC·VALID·POSITION·REACHED
1591 S·M·21.0·///·STEP·0
1592 S·M·21.1·///·STEP·1
1593 M002:·NOP·0;
1594 M003:·NOP·0;
1595 NETWORK

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1596 TITLE.=STEP.1.MOVE.TOOL.DISC.TO.POSITION.0
1597 U.DB10.DBX.75.2;///RETRACT.IN.THE.DISC.AT.T0.TOOL
1598 SPBN.M010;
1599 UN.M.21.0.///STEP.0
1600 SPBN.M011;
1601 L.0.///A-AXIS.POSITION.0.DEGREES
1602 T.MD.48.///A-AXIS.TARGET.POSITION
1603 CC.FC.61.///MOVE.A.AXIS.TO.TARGET.POSITION
1604 U.M.22.1.///TOOL.DISC.VALID.POSITION.REACHED
1605 R.M.22.1.///TOOL.DISC.VALID.POSITION.REACHED
1606 S.M.21.0.///STEP.0
1607 S.M.21.1.///STEP.1
1608 M011:.NOP.0;
1609 M010:.NOP.0;
1610 NETWORK
1611 TITLE.=STEP.2
1612 U.M.21.1.///STEP.1
1613 U.M.40.0.///TOOL.0.SELECTED
1614 S.M.20.4.///PICK.UP.TOOL.DONE
1615 S.M.25.0.///TOOL.0.PICK.UP.DONE
1616 END_FUNCTION
1617 FUNCTION.FC.61:.VOID
1618 NAME:.MOVE.A-AXIS.TO.TARGET.POSITION
1619 BEGIN
1620 NETWORK
1621 TITLE.=STEP.2.MOVE.TOOL.DISC.TO.VALID.POSITION
1622 UN.M.22.0.///PIVOTING.ACTIVE
1623 UN.M.22.1.///TOOL.DISC.VALID.POSITION.REACHED
1624 SPBN.M001;
1625 S.M.22.0.///PIVOTING.ACTIVE
1626 =.DB25.DBX.1.4;///SEND.NC.BLOCK
1627 =.DB25.DBX.548.5;///SET.EXACT.HOLD.MODE
1628 =.DB25.DBX.549.0;///G1.IS.TRIGGERED
1629 =.DB25.DBX.549.4;///FEED.RATE.IN.DEGREES./S.VALUE.IN.DBD556
1630 L.DB10.DBD.28;///FEED.VALUE.IN.DEGREES./SECONDS
1631 T.DB25.DBD.556;///F-VALUE.IN.M./S.OR.M./U
1632 S.DB25.DBX.21.4;///POSITION.REQUEST.FOR.CHANNEL.AXIS.C
1633 L.MD.48.///A-AXIS.TARGET.POSITION
1634 T.DB25.DBD.70;///POSITION.VALUE.FOR.CHANNEL.AXIS.C
1635 L.0.///DELETE.MW.46
1636 T.MW.46.///DELETE.MW.46
1637 U.E.4.2;///12mm.BERO.TOOL.EQUIPPED
1638 S.M.46.1.///TOOL.1.PRESENT
1639 U.M.21.7.///HM.TOOL.TURNER.DISC.MOVE.WITH.20%.RAPID.SPEED
1640 SPBN.M001;
1641 L.DB10.DBD.24;///T-1.ACCEPTANCE.FEED.VALUE.IN.DEGREES./SECONDS.FOR.TOOL.DISC
1642 T.DB25.DBD.556;///F-VALUE.IN.M./S.OR.M./U
1643 M001:.NOP.0;
1644 NETWORK
1645 TITLE.=CHECK.WHETHER.TOOL.SPACE.IS.FREE
1646 U.DB25.DBX.332.0;///NC.BLOCK.DONE
1647 U.M.22.0.///PIVOTING.ACTIVE
1648 R.DB25.DBX.332.0;///NC.BLOCK.DONE
1649 S.M.22.1.///TOOL.DISC.VALID.POSITION.REACHED
1650 R.M.22.0.///PIVOTING.ACTIVE
1651 U.M.22.1.///TOOL.DISC.VALID.POSITION.REACHED
1652 U.M.20.5.///CHECK.THAT.THE.TOOL.AREA.IS.FREE
1653 SPBN.M002;
1654 L.MW.46.///TOOL.EQUIPMENT
1655 L.MW.42.///CLAMPED.TOOL.FROM.THE.SETTING.DATA
1656 UW
1657 T.MW.44.///RESULTS.OF.TOOL.HOLDER.INSPECTION
1658 L.MW.44.///RESULTS.OF.TOOL.HOLDER.INSPECTION
1659 L.0

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1660  <>·I.
1661  S·DB3.DBX·7.1;·//·MELDUN
1662  G·7057·TOOL·HOLDER·OCCUPIED
1663  =·DB1.DBX·1440.0;·//·TRIGGER·NC·RESET
1664  R·M·22.1·//·TOOL·DISC·VALID·POSITION·REACHED
1665  M002:·NOP·0;
1666  NETWORK
1667  TITLE·=·CHECK·TOOLS·IN·DISC
1668  U·E·4.2;·//·12mm·BERO·TOOL·EQUIPPED
1669  FP·M·27.4
1670  U·M·27.4
1671  U·M·22.0·//·PIVOTING·ACTIVE
1672  U·M·20.5·//·CHECK·THAT·THE·TOOL·AREA·IS·FREE
1673  SPBN·M003;
1674  ;·Filter·tool·1·Bero
1675  L·DB1.DBD·16
1676  L·+·0.70E-02;
1677  <R;
1678  BEB
1679  ;·Tool·2
1680  L·DB1.DBD·16
1681  L·+·2.10E-02;
1682  <R;
1683  S·M·46.2·//·TOOL·2·PRESENT
1684  BEB
1685  ;·Tool·3
1686  L·DB1.DBD·16
1687  L·+·3.20E-02;
1688  <R;
1689  S·M·46.3·//·TOOL·3·PRESENT
1690  BEB
1691  ;·Tool·4
1692  L·DB1.DBD·16
1693  L·+·4.90E-02;·-
1694  <R;
1695  S·M·46.4·//·TOOL·4·PRESENT
1696  BEB
1697  ;·Tool·5
1698  L·DB1.DBD·16
1699  L·+·6.30E-02;
1700  <R;
1701  S·M·46.5·//·TOOL·5·PRESENT
1702  BEB
1703  ;·Tool·6
1704  L·DB1.DBD·16
1705  L·+·7.70E-02;
1706  <R;
1707  S·M·46.6·//·TOOL·6·PRESENT
1708  BEB
1709  ;·Tool·7
1710  L·DB1.DBD·16
1711  L·+·9.10E-02;
1712  <R;
1713  S·M·46.7·//·TOOL·7·PRESENT
1714  BEB
1715  ;·Tool·8
1716  L·DB1.DBD·16
1717  L·+·1.05E-01;
1718  <R;
1719  S·M·47.0·//·TOOL·8·PRESENT
1720  BEB
1721  M003:·NOP·0;
1722  END_FUNCTION
1723  FUNCTION·FC·51:·VOID
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1724 NAME:·TOOL·CLAMPING·SYSTEM
1725 BEGIN
1726 UN·E·4.1·//·TOOL·EXPRESSED
1727 U·DB10.DBX·2.0;·//·ACTIVATE·AC·2000
1728 =·M·94.3;·//·SFG·TOOL·EXPRESSED
1729 NETWORK
1730 TITLE·=·EXPRESS·THE·TOOL·WITH·THE·"CTRL·+·1"·OR·"CTRL·+·^"·KEYS
1731 //·ALT·U·CTR·^·DB20.DBX·294.2·CHUCK·OPEN·/·CLOSE
1732 //·ALT·K·CTR·1·DB20.DBX·294.5·SWIVEL·TOOL·ONE·POSITION·FURTHER
1733 U·DB20.DBX·294.5·//·(CTRL·1·or·Alt·K)·Express·/·retract·tool
1734 FP·M·26.6·//·FP·M·(STRG·1·or·Alt·K)·Push·out·/·pull·in·tool
1735 U·DB20.DBX·294.2·//·(CTRL·^·or·ALT·U)·CHUCK·OPEN·/·CLOSE
1736 U·M·200.0·//·SET·TOOL·POSITIONS
1737 O(
1738 U·M·26.6·//·FP·M·(STRG·1·or·Alt·K)·Express·/·retract·tool
1739 UN·M·200.0·//·SET·TOOL·POSITIONS
1740 )
1741 U·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
1742 U·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
1743 UN·M·52.0;·//·TOOL·TURNING·ACTIVE
1744 U·M·27.2·//·EXPRESS·RELEASE·TOOL
1745 FP·M·27.3
1746 U·M·27.3
1747 SPBN·M101
1748 L·0
1749 T·MW·40·//·MW·40
1750 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1751 M101:·NOP·0
1752 NETWORK
1753 TITLE·=·EXPRESS·RELEASE·TOOL
1754 U·M·15.2;·//·EMERGENCY·STOP·SWITCH
1755 U·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
1756 =·M·27.2·//·EXPRESS·RELEASE·TOOL
1757 NETWORK
1758 TITLE·=·EXPRESS·TOOL
1759 O·M·27.3
1760 O·M·53.0;·//·EXPRESS·M70·TOOL
1761 UN·M·27.1·//·TOOL·EXPRESSED
1762 U·M·27.2·//·EXPRESS·RELEASE·TOOL
1763 S·A·6.0·//·TOOL·CLAMPING·MOTOR
1764 S·M·27.6·//·HM·TOOL·CLAMPING·MOTOR·EXPRESS
1765 S·M·94.1;·//·SFG·TOOL·EXPRESSED
1766 R·M·27.0·//·TOOL·RETRACTED
1767 O·M·27.6·//·HM·TOOL·CLAMPING·MOTOR·EXPRESS
1768 O·DB1.DBX·1370.0;·//·1st·PLC·LOOP
1769 UN·E·4.1·//·TOOL·EXPRESSED
1770 U·E·4.0·//·TOOL·DRAWN·IN
1771 O·M·70.0;·//·FM·EMERGENCY·OFF·PRESSED
1772 R·A·6.0·//·TOOL·CLAMPING·MOTOR
1773 R·M·27.6·//·HM·TOOL·CLAMPING·MOTOR·EXPRESS
1774 R·M·53.0;·//·EXPRESS·M70·TOOL
1775 S·M·27.1·//·TOOL·EXPRESSED
1776 SPBN·M102
1777 L·0
1778 T·DB15.DBW·25;·//·CLAMPED·TOOL·IN·THE·SETTING·DATA
1779 =·DB20.DBX·348.3;·//·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1780 U·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
1781 R·M·52.3·//·TOOL·CANCELED
1782 R·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
1783 M102:·NOP·0
1784 NETWORK
1785 TITLE·=·PULL·IN·TOOL
1786 O(
1787 U·M·27.3

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1788 U·M·200.0·///·SET·TOOL·POSITIONS
1789 )
1790 O·M·53.1;·///·PULL·IN·M72·TOOL
1791 UN·M·27.0·///·TOOL·RETRACTED
1792 UN·M·27.6·///·HM·TOOL·CLAMPING·MOTOR·EXPRESS
1793 U·M·27.2·///·EXPRESS·RELEASE·TOOL
1794 S·A·6.0·///·TOOL·CLAMPING·MOTOR
1795 S·M·27.7·///·PULL·IN·HM·TOOL·CLAMPING·MOTOR
1796 O·M·27.7·///·PULL·IN·HM·TOOL·CLAMPING·MOTOR
1797 O·DB1.DBX·1370.0;·///·1st·PLC·LOOP
1798 UN·E·4.0·///·TOOL·RETRACTED
1799 U·E·4.1·///·TOOL·EXPRESSED
1800 O·M·70.0;·///·FM·EMERGENCY·OFF·PRESSED
1801 R·A·6.0·///·TOOL·CLAMPING·MOTOR
1802 R·M·27.7·///·HM·PULL·IN·TOOL·CLAMPING·MOTOR
1803 R·M·53.1;·///·PULL·IN·M72·TOOL
1804 S·M·27.0·///·TOOL·RETRACTED
1805 R·M·27.1·///·TOOL·EXPRESSED
1806 U·M·27.0·///·TOOL·DRAWN·IN
1807 FP·M·53.2;·///·PULL·IN·THE·HM·M72·TOOL
1808 U·M·53.2;·///·PULL·IN·THE·HM·M72·TOOL
1809 UN·DB1.DBX·1370.0;·///·1st·PLC·LOOP
1810 SPBN·M103
1811 L·MW·40·///·MW·40
1812 T·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1813 =·DB20.DBX·348.3;·///·REQUEST·FOR·IMMEDIATE·SETTING·DATA·BACKUP
1814 M103·NOP·0
1815 U·M·27.1·///·TOOL·EXPRESSED
1816 S·M·94.1;·///·SFG·TOOL·EXPRESSED
1817 U·M·27.0·///·TOOL·ON
1818 DRAWN
1819 R·M·94.1;·///·SFG·TOOL·EXPRESSED
1820 END_FUNCTION
1821 FUNCTION·FC·52·VOID
1822 NAME·SET·TOOL·POSITION·FROM·THE·SETTING·DATA
1823 BEGIN
1824 NETWORK
1825 TITLE·=·SET·TOOL·POSITION·FROM·THE·SETTING·DATA
1826 ;·Determine·the·return·position·for·the·clamped·tool
1827 L·0;
1828 T·MW·42
1829 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1830 L·0;
1831 ==·I;
1832 =·M·20.0·///·NO·TOOL·NUMBER·STORED
1833 SPB·M001
1834 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1835 L·1
1836 ==·I.
1837 =·M·42.0·///·TOOL·0·CLAMPED
1838 SPB·M001
1839 L·DB10.DBD·32·///·Position·for·tool·1·in·degrees
1840 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1841 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1842 L·2
1843 ==·I.
1844 =·M·42.1·///·TOOL·1·CLAMPED
1845 SPB·M001
1846 L·DB10.DBD·36·///·Position·for·tool·2·in·degrees
1847 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1848 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1849 L·4
1850 ==·I.
1851 =·M·42.2·///·TOOL·2·CLAMPED

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1852 SPB·M001
1853 L·DB10.DBD·40·///·Position·for·tool·3·in·degrees
1854 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1855 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1856 L·8
1857 ==·I.
1858 =·M·42.3·///·TOOL·3·CLAMPED
1859 SPB·M001
1860 L·DB10.DBD·44·///·Position·for·tool·4·in·degrees
1861 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1862 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1863 L·16
1864 ==·I.
1865 =·M·42.4·///·TOOL·4·CLAMPED
1866 SPB·M001
1867 L·DB10.DBD·48·///·Position·for·tool·5·in·degrees
1868 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1869 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1870 L·32
1871 ==·I.
1872 =·M·42.5·///·TOOL·5·CLAMPED
1873 SPB·M001
1874 L·DB10.DBD·52·///·Position·for·tool·6·in·degrees
1875 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1876 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1877 L·64
1878 ==·I.
1879 =·M·42.6·///·TOOL·6·CLAMPED
1880 SPB·M001
1881 L·DB10.DBD·56·///·Position·for·tool·7·in·degrees
1882 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1883 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1884 L·128
1885 ==·I.
1886 =·M·42.7·///·TOOL·7·CLAMPED
1887 SPB·M001
1888 L·DB10.DBD·60·///·Position·for·tool·8·in·degrees
1889 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1890 L·DB15.DBW·25;·///·CLAMPED·TOOL·IN·THE·SETTING·DATA
1891 L·256
1892 ==·I.
1893 =·M·43.0·///·TOOL·8·CLAMPED
1894 SPB·M001
1895 L·0
1896 T·MD·32·///·A-AXIS·POSITION·FOR·CLAMPED·TOOL
1897 S·M·20.2·///·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
1898 =·DB3.DBX·7.0;·///·MESSAGE·7056·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
1899 =·DB1.DBX·1440.0;·///·TRIGGER·NC·RESET
1900 M001:·NOP·0
1901 NETWORK
1902 TITLE·=·TOOL·DRAWN·IN·AND·NO·TOOL·NUMBER·STORED·(BIG·PROBLEM)
1903 U·M·20.0·///·NO·TOOL·NUMBER·STORED
1904 U·M·27.0·///·TOOL·DRAWN·IN
1905 SPBN·M111
1906 S·DB3.DBX·6.7;·///·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
1907 =·DB1.DBX·1440.0;·///·TRIGGER·NC·RESET
1908 M111:·NOP·0
1909 NETWORK
1910 TITLE·=·TOOL·EXPRESSED·AND·NO·TOOL·NUMBER·STORED·(NO·PROBLEM)
1911 U·M·20.0·///·NO·TOOL·NUMBER·STORED
1912 U·M·27.1·///·TOOL·EXPRESSED
1913 S·M·20.1·///·TOOL·EXPRESSED·AND·NO·TOOL·NUMBER·STORED
1914 NETWORK
1915 TITLE·=·SET·TOOL·WHEN·STARTING·UP
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1916 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
1917 SPBN·M110;
1918 UN·M·42.1;
1919 SPB·M113
1920 L·1;
1921 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1922 M113:·NOP·0
1923 UN·M·42.2;
1924 SPB·M114
1925 L·2;
1926 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1927 M114:·NOP·0
1928 UN·M·42.3;
1929 SPB·M115
1930 L·3;
1931 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1932 M115:·NOP·0
1933 UN·M·42.4;
1934 SPB·M116
1935 L·4;
1936 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1937 M116:·NOP·0
1938 UN·M·42.5;
1939 SPB·M117
1940 L·5;
1941 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1942 M117:·NOP·0
1943 UN·M·42.6;
1944 SPB·M118
1945 L·6;
1946 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1947 M118:·NOP·0
1948 UN·M·42.7;
1949 SPB·M119
1950 L·7;
1951 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1952 M119:·NOP·0
1953 UN·M·43.0;
1954 SPB·M110
1955 L·8;
1956 T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
1957 M110:·NOP·0
1958 END_FUNCTION
1959 FUNCTION·FC·53:·VOID
1960 NAME:·CHECK·NEW·T-WORD·AND·DETERMINE·A·NEW·TOOL·DISC·POSITION
1961 BEGIN
1962 NETWORK
1963 TITLE·=·7000·INCORRECT·T-WORD·PROGRAMMED
1964 L·DB20.DBW·184;·//·LOAD·T-WORD
1965 L·8;·//·CHARGE·CONSTANT·DEC·8
1966 >·I;·//·COMPARISON·TO·LARGER
1967 =·M·22.4·//·T-WORD·GREATER·10
1968 L·DB20.DBW·184;·//·LOAD·T-WORD
1969 L·0;·//·LOAD·CONSTANT·DEC·0
1970 <·I;·//·COMPARISON·TO·SMALLER
1971 =·M·22.5·//·T-WORD·LOWER·0
1972 O·M·22.4·//·T-WORD·LARGER·8
1973 O·M·22.5·//·T-WORD·LOWER·0
1974 U·DB20.DBX·182.0·//·NEW·T-WORD·(TOOL)
1975 SPBN·M222
1976 S·DB3.DBX·0.0;·//·7000·WRONG·T-WORD
1977 =·DB1.DBX·1
1978 440.0;·//·TRIGGER·NC·RESET
1979 M222:·NOP·0
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1980 NETWORK
1981 TITLE.=.T-WORD.IS.VALID
1982 UN.DB3.DBX.0.0;./../7000.WRONG.T-WORD
1983 SPB.M002
1984 L.0./../DELETE.MW.40
1985 T.MW.40./../DELETE.MW.40
1986 L.DB20.DBW.184;./../T-WORD
1987 L.0
1988 ==.I.
1989 =.M.40.0./../TOOL.0.SELECTED.(RETURN.CLAMPED.TOOL
1990 ;.OR.PULL.IN.TOOL.CHIPPING.SYSTEM)
1991 SPB.M002
1992 L.DB10.DBD.32./../Position.for.tool.1.in.degrees
1993 T.MD.36./../NEW.A-AXIS.POSITION
1994 L.DB20.DBW.184;./../T-WORD
1995 L.1
1996 ==.I.
1997 =.M.40.1
1998 SPB.M002
1999 L.DB10.DBD.36./../Position.for.tool.2.in.degrees
2000 T.MD.36./../NEW.A-AXIS.POSITION
2001 L.DB20.DBW.184;./../T-WORD
2002 L.2
2003 ==.I.
2004 =.M.40.2
2005 SPB.M002
2006 L.DB10.DBD.40./../Position.for.tool.3.in.degrees
2007 T.MD.36./../NEW.A-AXIS.POSITION
2008 L.DB20.DBW.184;./../T-WORD
2009 L.3
2010 ==.I.
2011 =.M.40.3
2012 SPB.M002
2013 L.DB10.DBD.44./../Position.for.tool.4.in.degrees
2014 T.MD.36./../NEW.A-AXIS.POSITION
2015 L.DB20.DBW.184;./../T-WORD
2016 L.4
2017 ==.I.
2018 =.M.40.4
2019 SPB.M002
2020 L.DB10.DBD.48./../Position.for.tool.5.in.degrees
2021 T.MD.36./../NEW.A-AXIS.POSITION
2022 L.DB20.DBW.184;./../T-WORD
2023 L.5
2024 ==.I.
2025 =.M.40.5
2026 SPB.M002
2027 L.DB10.DBD.52./../Position.for.tool.6.in.degrees
2028 T.MD.36./../NEW.A-AXIS.POSITION
2029 L.DB20.DBW.184;./../T-WORD
2030 L.6
2031 ==.I.
2032 =.M.40.6
2033 SPB.M002
2034 L.DB10.DBD.56./../Position.for.tool.7.in.degrees
2035 T.MD.36./../NEW.A-AXIS.POSITION
2036 L.DB20.DBW.184;./../T-WORD
2037 L.7
2038 ==.I.
2039 =.M.40.7
2040 SPB.M002
2041 L.DB10.DBD.60./../Position.for.tool.8.in.degrees
2042 T.MD.36./../NEW.A-AXIS.POSITION
2043 L.DB20.DBW.184;./../T-WORD
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2044 L·8
2045 ==·I·
2046 =·M·41.0
2047 M002:·NOP·0
2048 L·MW·40·//·NEW·TOOL·FROM·VALID·T-WORD
2049 L·MW·42·//·CLAMPED·TOOL·FROM·THE·SETTING·DATA
2050 <>·I;·//·COMPARE·TO·INEQUAL
2051 =·M·22.6·//·T-WORD·NOT·EQUAL·TO·TOOL
2052 L·MW·40·//·NEW·TOOL·FROM·VALID·T-WORD
2053 L·MW·42·//·CLAMPED·TOOL·FROM·THE·SETTING·DATA
2054 ==·I;·//·COMPARE·TO·INEQUAL
2055 =·M·26.1·//·NEW·T-WORD·EQUALS·TOOLS
2056 END_FUNCTION
2057 FUNCTION·FC·60:·VOID
2058 NAME:·MOVE·Z-AXIS·TO·TARGET·POSITION
2059 BEGIN
2060 UN·M·22.2·//·Z-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
2061 SPBN·M001;
2062 S·M·22.2·//·Z-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
2063 R·M·22.3·//·Z-AXIS·IS·ON·TARGET·POSITION
2064 =·DB25.DBX·1.4;·//·SEND·NC·BLOCK
2065 =·DB25.DBX·548.7·//·G0·is·triggered
2066 =·DB25.DBX·20.2;·//·POSITION·REQUEST·FOR·Z-AXIS
2067 L·MD·28·//·Z-AXIS·TARGET·POSITION
2068 T·DB25.DBD·30;·//·POSITION·VALUE·FOR·Z-AXIS
2069 M001:·NOP·0;
2070 U·DB25.DBX·332.0;·//·NC·BLOCK·DONE
2071 U·M·22.2·//·Z-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
2072 R·M·22.2·//·Z-AXIS·MOVE·TO·TARGET·POSITION·ACTIVE
2073 S·M·22.3·//·Z-AXIS·IS·ON·TARGET·POSITION
2074 R·DB25.DBX·332.0;·//·NC·BLOCK·DONE
2075 END_FUNCTION
2076 FUNCTION·FC·23:·VOID
2077 NAME:·SAFETY·CIRCUIT·ACC
2078 BEGIN
2079 //·X6:·1·I·2.0·=·M·15.0·//·1st·door·limit·switch·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·
CONTACTOR·ON)
2080 //·Monitoring·whether·HA·contactors·have·dropped·out·(must·have·0·signal
2081 //·be·with·the·door·or·wheel·cover·open·or·the·EMERGENCY·STOP·pressed)
2082 //·X6:·2·I·2.1·=·M·15.1·//·1st·door·limit·switch·MACHINE·DOOR·OPEN
2083 //(0·signal·when·the·door·is·closed!)
2084 //·X6:·5·I·2.5·//·only·MILL55·ACC·2nd·door·limit·switch·MACHINE·DOOR·CLOSED·2nd·door·
limit·switch
2085 //(0·signal·when·the·door·is·closed!)
2086 //·X6:·10·A·3.4·//·only·MILL55·ACC·safety·output·for·relay·(category·3)
2087 NETWORK
2088 TITLE·=·SAFETY·CIRCUIT·DEFECTIVE·K1,·K2·OR·K3·STUCK
2089 UN·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2090 ;·U·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2091 ;·U·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2092 U·E·2.0;·//·K1,·K2,·or·K3·ON·(1·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2093 O(
2094 U·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2095 UN·E·2.0;·//·K1,·K2,·or·K3·ON·(1·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2096 )
2097 L·S5TIME·#·1S;
2098 SE·T·6;·//·T6·SWITCH-ON·DELAYED
2099 U·T·6;·//·T6
2100 S·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT
2101 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2102 R·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT
2103 NETWORK
2104 TITLE·=·MACHINE·DOOR·CLOSED
2105 U·(

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2106 O·DB1.DBX·1370.0;·//·1st·PLC·LOOP
2107 O·M·1.0·//·HM·MACHINE·DOOR·OPEN
2108 )
2109 UN·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2110 UN·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2111 UN·E·2.0;·//·K1,·K2,·or·K3·ON·(1·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2112 S·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2113 NETWORK
2114 TITLE·=·MACHINE·DOOR·OPEN
2115 O·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2116 O·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·CLOSED
2117 NER·DOOR)
2118 R·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2119 NETWORK
2120 SET·TITLE·=·HM·WITH·THE·MACHINE·DOOR·OPEN
2121 UN·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2122 U·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2123 U·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2124 UN·E·2.0;·//·K1,·K2,·or·K3·ON·(1·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2125 UN·M·1.0·//·HM·MACHINE·DOOR·OPEN
2126 S·M·1.1·//·HM·MACHINE·DOOR·OPEN
2127 NETWORK
2128 TITLE·=·10S·RECOVERY·TIME·FOR·LENDER
2129 U·M·1.1·//·HM·MACHINE·DOOR·OPEN
2130 L·S5TIME·#·10S;·//·10S
2131 SE·T·12;·//·SWITCH-ON·DELAY
2132 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
2133 U·M·1.1·//·HM·MACHINE·DOOR·OPEN
2134 O·T·12;·//·SWITCH-ON·DELAY
2135 S·M·1.0·//·HM·MACHINE·DOOR·OPEN
2136 R·M·1.1·//·HM·MACHINE·DOOR·OPEN
2137 NETWORK
2138 TITLE·=·MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
2139 UN·M·1.0·//·HM·MACHINE·DOOR·OPEN
2140 UN·E·2.1;·//·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2141 UN·E·2.5;·//·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2142 UN·E·2.0;·//·K1,·K2,·or·K3·ON·(1·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2143 UN·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2144 =·DB3.DBX·2.7;·//·MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
2145 =·M·90.0;·//·WAITING·TIME·MAIN·DRIVE·AFG·/·EFG
2146 =·M·96.2;·//·WAITING·TIME·MAIN·DRIVE·NC_START·VERR.
2147 U·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2148 R·M·1.0·//·HM·MACHINE·DOOR·OPEN
2149 U·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2150 FP·M·120.5·//·FM·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2151 U·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2152 FN·M·120.6·//·NEGATIVE-FM·DOOR·OPEN
2153 UN·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2154 =·M·96.3;·//·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED·NC_START·LOCK.
2155 END_FUNCTION
2156 FUNCTION·FC·34:·VOID
2157 NAME:·ASSIGN·INPUTS·AC95·-·ACC
2158 BEGIN
2159 NETWORK
2160 TITLE·=·DOOR·SWITCH·ASSIGNMENT
2161 U·DB10.DBX·2.0;·//·ACTIVATE·AC·2000
2162 U·E·2.0;·//·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
2163 O
2164 UN·DB10.DBX·2.0;·//·ACTIVATE·AC·2000
2165 U·E·1.5;·//·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
2166 =·M·15.0;·//·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
2167 NETWORK
2168 TITLE·=·DOOR·SWITCH·ASSIGNMENT
2169 U·DB10.DBX·2.0;·//·ACTIVATE·AC·2000

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2170 UN·M·2.0·///·IDENTIFICATION·AC95·CONVERSION·TO·ACC
2171 UN·A·3.4;·///·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
2172 O(
2173 U·M·2.0·///·IDENTIFICATION·AC95·CONVERSION·TO·ACC
2174 U·E·2.1;·///·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2175 )
2176 O(
2177 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2178 U·E·1.6;·///·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
2179 )
2180 UN·DB1.DBX·1370.0;·///·1st·PLC·LOOP
2181 =·M·15.1;·///·MACHINE·DOOR·OPEN
2182 NETWORK
2183 TITLE·=·EMERGENCY·OFF·ASSIGNMENT
2184 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2185 U·E·2.2;·///·EMERGENCY·STOP·AC·2000
2186 O
2187 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2188 U·E·1.4;·///·EMERGENCY·STOP·AC·95
2189 =·M·15.2;·///·EMERGENCY·STOP·SWITCH
2190 U·M·15.2;·///·EMERGENCY·STOP·SWITCH
2191 FN·M·70.0;·///·FM·EMERGENCY·OFF·PRESSED
2192 NETWORK
2193 TITLE·=·WHEEL·COVER·LIMIT·SWITCH·ASSIGNMENT
2194 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2195 U·E·2.3;·///·WHEEL·COVER·LIMIT·SWITCH·(IN·SERIES·WITH·EMERGENCY·STOP!)
2196 O
2197 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2198 U·E·1.7;·///·WHEEL·COVER·LIMIT·SWITCH·(IN·SERIES·WITH·EMERGENCY·STOP!)
2199 =·M·15.6;·///·WHEEL·COVER·LIMIT·SWITCH·(IN·SERIES·WITH·EMERGENCY·STOP!)
2200 NETWORK
2201 TITLE·=·SERVO·READY·ASSIGNMENT
2202 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2203 U·E·0.0;·///·SERVO·READY·AXIS·0·(X)
2204 O
2205 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000·6
2206 U·E·1.0;·///·SERVO·READY·AXIS·0·(X)
2207 =·M·15.3;·///·SERVO·READY·AXIS·0·(X)
2208 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2209 U·E·0.1;·///·SERVO·READY·AXIS·1·(Y)
2210 O
2211 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2212 U·E·1.1;·///·SERVO·READY·AXIS·1·(Y)
2213 =·M·15.4;·///·SERVO·READY·AXIS·1·(Y)
2214 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2215 U·E·0.2;·///·SERVO·READY·AXIS·2·(Z)
2216 O
2217 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2218 U·E·1.2;·///·SERVO·READY·AXIS·2·(Z)
2219 =·M·15.5;·///·SERVO·READY·AXIS·2·(Z)
2220 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2221 U·E·0.3;·///·SERVO·READY·HA
2222 O
2223 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2224 U·E·1.3;·///·SERVO·READY·HA
2225 =·M·15.7;·///·SERVO·READY·HA
2226 NETWORK
2227 TITLE·=·N·=·0·FROM·LENZE·INVERTER·ASSIGNMENT
2228 U·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2229 U·E·2.4;·///·n·=·0·RELAY·FROM·LENZE·FU
2230 O
2231 UN·DB10.DBX·2.0;·///·ACTIVATE·AC·2000
2232 U·E·2.3;·///·n·=·0·RELAY·FROM·LENZE·FU
2233 =·M·16.0;·///·n·=·0·RELAY·FROM·LENZE·FU

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2234 END_FUNCTION
2235 FUNCTION FC 35: VOID
2236 NAME: ASSIGN THE OUTPUTS AC95 -- ACC
2237 BEGIN
2238 U DB10.DBX 2.0; // ACTIVATE AC 2000
2239 SPBN M001;
2240 // ASSIGN ACC KEY TO OPEN DOOR (MSTT)
2241 U DB1.DBX 1403.7; // Concept CAM
2242 U DB1.DBX 1374.0; // MACHINE KEYBOARD DOOR OPEN
2243 O(
2244 UN DB1.DBX 1403.7; // Concept CAM
2245 U DB1.DBX 13
2246 74.1; // MACHINE KEYBOARD DOOR CLOSED
2247 )
2248 = M 138.1; // HM MACHINE KEYBOARD DOOR OPEN
2249 // ASSIGN ACC KEY DOOR CLOSED (MSTT)
2250 U DB1.DBX 1403.7; // Concept CAM
2251 U DB1.DBX 1374.1; // MACHINE KEYBOARD DOOR CLOSED
2252 O(
2253 UN DB1.DBX 1403.7; // Concept CAM
2254 U DB1.DBX 1374.0; // MACHINE KEYBOARD DOOR OPEN
2255 )
2256 = M 138.2; // HM MACHINE KEYBOARD DOOR CLOSED
2257 // ACC BUTTON ASSIGN VICE ACC
2258 U DB20.DBX 294.3; // VICE CLOSE BUTTON (PC)
2259 UN DB20.DBX 294.4; // VICE OPEN BUTTON (PC)
2260 FP M 138.7; // FM BUTTON VICE CLOSED ACC
2261 // ACC BUTTON ASSIGN VICE TO ACC
2262 U DB20.DBX 294.4; // VICE OPEN BUTTON (PC)
2263 UN DB20.DBX 294.3; // VICE CLOSE BUTTON (PC)
2264 FP M 137.1; // FM BUTTON VICE ON ACC
2265 // ASSIGN ACC ENABLE AXES
2266 U M 17.0; // EXIT FLAG ENABLE AXES
2267 = A 3.0; // ENABLE SM MODULE A
2268 UN M 2.0; // IDENTIFICATION CONVERSION TO ACC
2269 SPBN M3501;
2270 U M 17.0; // EXIT FLAG ENABLE AXES
2271 U A 3.4; // EXIT FOR AUXILIARY RELAY DOOR CLOSED
2272 L S5TIME # 1500MS; // 1.5 S
2273 SE T 13; // SWITCH-ON DELAY
2274 U T 13; // SWITCH-ON DELAY
2275 = A 3.1; // ENABLE SM MODULE B
2276 ON A 3.1; // ENABLE SM MODULE B
2277 O E 0.5; // Servo Ready tool turret drive (physical axis 4)
2278 U M 52.5 // TOOL TURNER ACTIVATED
2279 O(
2280 ON A 3.1; // ENABLE SM MODULE B
2281 O E 0.4; // Servo Ready round axis drive (physical axis 5)
2282 U M 52.7 // ROUND AXIS ACTIVATED
2283 )
2284 = M 90.3; // ENABLE SM MODUL B AFG / EFG
2285 = M 96.4; // ENABLE SM MODUL B NC_START VERR.
2286 M3501: NOP 0;
2287 // ASSIGN ACC CONTROLLER ENABLE MAIN DRIVE
2288 U M 17.1; // INITIAL FLAG CONTROLLER ENABLE MAIN DRIVE
2289 = A 0.3; // CONTROLLER ENABLE MAIN DRIVE
2290 // ASSIGN ACC COOLANT (M8 = ON / M9 = OFF)
2291 U M 17.2; // EXIT FLAG COOLANT (M8 = ON / M9 = OFF)
2292 = A 3.3; // COOLANT (M8 = ON / M9 = OFF)
2293 // ASSIGN ACC MINIMUM LUBRICATION
2294 U M 18.0; // INITIAL FLAG MINIMAL LUBRICATION
2295 = A 4.0; // MINIMAL LUBRICATION
2296 // ASSIGN ACC BLOW-OUT VALVE
2297 U M 18.2; // EXIT FLAG BLOW-OUT VALVE

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2298 =·A·4.2;·//·EXHAUST·VALVE
2299 //·ASSIGN·ACC·DOOR·OPEN
2300 U·M·18.3;·//·EXIT·FLAG·DOOR·OPEN
2301 =·A·4.3;·//·OPEN·THE·DOOR
2302 //·ASSIGN·ACC·DOOR
2303 U·M·18.4;·//·EXIT·FLAG·DOOR·CLOSED
2304 =·A·4.4;·//·CLOSE·THE·DOOR
2305 //·ASSIGN·ACC·VICE·TO·CLAMP
2306 U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
2307 =·A·4.5;·//·CLAMPING·THE·VICE
2308 //·ASSIGN·ACC·TO·RELEASE·VICE
2309 U·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
2310 =·A·4.6;·//·RELEASE·THE·VICE
2311 //·ASSIGN·ACC·TO·SHARE·PARTS
2312 U·M·18.7;·//·SHARE·EXIT·FLAG·SUB-APPARATUS
2313 =·A·4.7;·//·SHARE·PARTIAL·APPLIANCE
2314 //·ASSIGN·ACC·ROBOTICS·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2315 U·M·19.0;·//·EXIT·FLAG·ROBOTICS·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2316 =·A·5.0;·//·ROBOTIC·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2317 //·ACC·ROBOTICS·AXES·ARE·AT·REF.·POINT.
2318 U·M·19.1;·//·ROBOTICS·AXES·ARE·AT·REF.·POINT.
2319 =·A·5.1;·//·ROBOTICS·AXES·ARE·AT·REF.·POINT.
2320 //·ACC·ROBOTICS·ASSIGN·THE·DOOR·OPEN
2321 U·M·19.3;·//·EXIT·FLAG·ROBOTICS·DOOR·OPEN
2322 =·A·5.3;·//·ROBOTICS·DOOR·OPEN
2323 //·ASSIGN·ACC·ROBOTICS·CLOSED·DOOR
2324 U·M·19.4;·//·EXIT·FLAG·ROBOTICS·DOOR·CLOSED
2325 =·A·5.4;·//·ROBOTIC·DOOR·CLOSED
2326 //·ASSIGN·ACC·ROBOTICS·REAR·VICE
2327 U·M·19.5;·//·INITIAL·FLAG·ROBOTICS·REAR·VICE
2328 =·A·5.5;·//·REAR·ROBOTIC·VICE
2329 //·ASSIGN·ACC·ROBOTICS·CLAMPED·VICE
2330 U·M·19.6;·//·EXIT·FLAG·ROBOTICS·VICE·CLAMPED
2331 =·A·5.6;·//·ROBOTIC·VICE·CLAMPED
2332 //·ASSIGN·ACC·ROBOTICS·ALARM·OUTPUT
2333 U·M·19.7;·//·EXIT·FLAG·ROBOTICS·ALARM·OUTPUT
2334 =·A·5.7;·//·ROBOTIC·ALARM·OUTPUT
2335 M001:·NOP·0;
2336 UN·DB10.DBX·2.0;·//·ACTIVATE·AC·2000
2337 SPBN·M002;
2338 //·AC95·ASSIGN·THE·OPEN·DOOR·KEY·(MSTT)
2339 U·DB1.DBX·1374.0;·//·MACHINE·KEYBOARD·DOOR·ON·AC95
2340 =·M·138.1;·//·HM·MACHINE·KEYBOARD·DOOR·OPEN
2341 //·AC95·ASSIGN·DOOR·CLOSED·KEY·(MSTT)
2342 U·DB1.DBX·1374.1;·//·MACHINE·KEYBOARD·DOOR·TO·AC95
2343 =·M·138.2;·//·HM·MACHINE·KEYBOARD·DOOR·CLOSED
2344 //·AC95·BUTTON·ASSIGN·VICE·AC95
2345 U·DB20.DBX·294.4;·//·VICE·CLOSE·BUTTON·(PC)
2346 UN·DB20.DBX·294.3;·//·VICE·OPEN·BUTTON·(PC)
2347 FP·M·138.7;·//·FM·KEY·VICE·TO·AC95
2348 //·AC95·BUTTON·ASSIGN·VICE·TO·AC95
2349 U·DB20.DBX·294.3;·//·VICE·OPEN·BUTTON·(PC)
2350 UN·DB20.DBX·294.4;·//·VICE·CLOSE·BUTTON·(PC)
2351 FP·M·137.1;·//·FM·BUTTON·VICE·ON·AC95
2352 //·AC95·RELEASE·ASSIGN·AXES
2353 U·M·17.0;·//·EXIT·FLAG·ENABLE·AXES
2354 =·A·0.1;·//·AXES·ENABLE
2355 //·ASSIGN·AC95·CONTROLLER·ENABLE·MAIN·DRIVE
2356 U·M·17.1;·//·INITIAL·FLAG·CONTROLLER·ENABLE·MAIN·DRIVE
2357 =·A·0.0;·//·CONTROLLER·ENABLE·MAIN·DRIVE
2358 EB
2359 //·AC95·COOLANT·ASSIGN·(M8·=·ON·/·M9·=·OFF)
2360 U·M·17.2;·//·EXIT·FLAG·COOLANT·(M8·=·ON·/·M9·=·OFF)
2361 =·A·0.4;·//·COOLANT·(M8·=·ON·/·M9·=·OFF)

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2362  //·ASSIGN·AC95·BLOW-OUT·VALVE
2363  U·M·18.2;·//·EXIT·FLAG·BLOW-OUT·VALVE
2364  =·A·4.2;·//·EXHAUST·VALVE
2365  //·AC95·ASSIGN·THE·DOOR·OPEN
2366  U·M·18.3;·//·EXIT·FLAG·DOOR·OPEN
2367  =·A·4.3;·//·OPEN·THE·DOOR
2368  //·ASSIGN·AC95·DOOR
2369  U·M·18.4;·//·EXIT·FLAG·DOOR·CLOSED
2370  =·A·4.4;·//·CLOSE·THE·DOOR
2371  //·AC95·ASSIGN·VICE·TO·CLAMP
2372  U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
2373  =·A·4.5;·//·CLAMPING·THE·VICE
2374  //·AC95·RELEASE·VICE·ASSIGN
2375  U·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
2376  =·A·4.6;·//·RELEASE·THE·VICE
2377  //·AC95·ASSIGN·SHARED·UNIT
2378  U·M·18.7;·//·SHARE·EXIT·FLAG·SUB-APPARATUS
2379  =·A·4.7;·//·SHARE·PARTIAL·APPLIANCE
2380  //·AC95·ASSIGN·ROBOTICS·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2381  U·M·19.0;·//·EXIT·FLAG·ROBOTICS·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2382  =·A·5.0;·//·ROBOTIC·PROGRAM·STOP·(M30,·M0,·M1,·M2)
2383  //·AC95·ROBOTIC·AXES·ARE·AT·REF·PKT.
2384  U·M·19.1;·//·ROBOTICS·AXES·ARE·AT·REF.·POINT.
2385  =·A·5.1;·//·ROBOTICS·AXES·ARE·AT·REF.·POINT.
2386  //·AC95·ASSIGN·ROBOTIC·DOOR·OPEN
2387  U·M·19.3;·//·EXIT·FLAG·ROBOTICS·DOOR·OPEN
2388  =·A·5.3;·//·ROBOTICS·DOOR·OPEN
2389  //·AC95·ASSIGN·ROBOTICS·CLOSED·DOOR
2390  U·M·19.4;·//·EXIT·FLAG·ROBOTICS·DOOR·CLOSED
2391  =·A·5.4;·//·ROBOTIC·DOOR·CLOSED
2392  //·AC95·ASSIGN·ROBOTICS·REAR·VICE
2393  U·M·19.5;·//·INITIAL·FLAG·ROBOTICS·REAR·VICE
2394  =·A·5.5;·//·REAR·ROBOTIC·VICE
2395  //·AC95·ASSIGN·ROBOTIC·VICE·CLAMPED
2396  U·M·19.6;·//·EXIT·FLAG·ROBOTICS·VICE·CLAMPED
2397  =·A·5.6;·//·ROBOTIC·VICE·CLAMPED
2398  //·AC95·ASSIGN·ROBOTICS·ALARM·OUTPUT
2399  U·M·19.7;·//·EXIT·FLAG·ROBOTICS·ALARM·OUTPUT
2400  =·A·5.7;·//·ROBOTIC·ALARM·OUTPUT
2401  M002:·NOP·0;
2402  END_FUNCTION
2403  FUNCTION·FC·0:·VOID
2404  NAME:·TOOL·TURNERS
2405  BEGIN
2406  NETWORK·1
2407  UN·DB20.DBX·182.0;·//·NEW·T-WORD
2408  SPB·M001;
2409  L·DB20.DBW·184;·//·T-WORD
2410  T·DB20.DBW·356;·//·ACTIVE·TOOL·IN·DB20
2411  M001:·NOP·0;
2412  NETWORK·2
2413  L·DB20.DBW·184;·//·T-WORD
2414  L·W·#·16·#·1;·//·HEX·1
2415  <I;·//·COMPARISON·TO·SMALLER
2416  U·DB20.DBX·182.0;·//·NEW·T-WORD
2417  =·M·125.1;·//·T-WORD·LOWER·1
2418  NETWORK·3
2419  L·DB20.DBW·184;·//·T-WORD
2420  L·W·#·16·#·63;·//·TOOL·NO.·99
2421  >·I;·//·COMPARISON·TO·LARGER
2422  U·DB20.DBX·182.0;·//·NEW·T-WORD
2423  =·M·125.2;·//·T-WORD·GREATER·99
2424  NETWORK·4
2425  O·M·125.1;·//·T-WORD·LOWER·1

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2426 O·M·125.2;·///·T·WORD·GREATER·99
2427 S·DB3·DBX·0.0;·///·T·WORD·INVALID
2428 O·DB1·DBX·1370.2;·///·ACKNOWLEDGMENT·KEY·PRESSED
2429 O·DB1·DBX·1370.3;·///·RESET·KEY·PRESSED
2430 R·DB3·DBX·0.0;
2431 END_FUNCTION
2432 FUNCTION·FC·1:·VOID
2433 NAME:·INITIALIZATIONS
2434 BEGIN
2435 NETWORK·1
2436 TITLE·=·M0,·M1·TRIP
2437 U·DB20·DBX·224.1;·///·M1·ACTIVE
2438 U·DB20·DBX·324.5;·///·CONDITIONAL·STOP·ACTIVE
2439 O·DB20·DBX·224.0·///·M0·ACTIVE
2440 =·M·0.0;·///·M0·/·M1·ACTIVE
2441 U·DB20·DBX·192.1;·///·M1·DYNAMIC
2442 U·DB20·DBX·324.5;·///·CONDITIONAL·STOP·ACTIVE
2443 O·DB20·DBX·192.0;·///·M0·DYNAMIC
2444 =·M·0.1;·///·HM·M0·/·M1·DYNAMIC
2445 O·DB20·DBX·192.0;·///·M0·DYNAMIC
2446 =·DB20·DBX·256.0;·///·REPORT·M0
2447 U·DB20·DBX·192.1;·///·M1·DYNAMIC
2448 U·DB20·DBX·324.5;·///·CONDITIONAL·STOP·ACTIVE
2449 =·DB20·DBX·256.1;·///·REPORT·M1
2450 NETWORK·2
2451 TITLE·=·DOOR·FEEDBACKS
2452 UN·DB10·DBX·75.0;·///·ACTIVATE·THE·AUTOMATIC·DOOR
2453 UN·M·15.1;·///·MACHINE·DOOR·OPEN
2454 =·DB1·DBX·1390.1;·///·PLC>·SURF.·DOOR·CLOSED
2455 UN·DB10·DBX·75.0;·///·ACTIVATE·THE·AUTOMATIC·DOOR
2456 UN·DB1·DBX·1390.1;·///·PLC>·SURF.·DOOR·CLOSED
2457 =·DB1·DBX·1390.0;·///·PLC>·SURF.·DOOR·OPEN
2458 NETWORK·3
2459 TITLE·=·PLC·/·OB·->·SINGLE·ITEM·ACTIVE
2460 UN·DB10·DBX·1.0;·///·PLC-MSD·CONTINUOUS·RUN·ACTIVE
2461 =·DB1·DBX·1390.3;·///·PLC·/·RM·->·SINGLE·ITEM·ACTIVE
2462 NETWORK·$·4
2463 TITLE·=·FEED·SWITCH·ON·0%
2464 L·DB20·DBW·358;·///·FEED·OVERRIDE·ACTUAL·VALUE
2465 L·W·#·16·#·0000;·///·LOAD·0
2466 ==·I;·///·COMPARISON·TO·EQUAL
2467 =·M·100.2;·///·FEED·SWITCH·ON·0%
2468 NETWORK·5
2469 TITLE·=·6008·MISSING·CAN·PART.
2470 O·DB10·DBX·75.0;·///·ACTIVATE·THE·AUTOMATIC·DOOR
2471 O·DB10·DBX·75.1;·///·tbsp.·ACTIVATE·VICE
2472 O·DB10·DBX·75.3;·///·ACTIVATE·THE·BLOW·DEVICE
2473 O·DB10·DBX·75.6;·///·ACTIVATE·SCHÄFER·PARTIAL·APPLIANCE
2474 O·DB10·DBX·75.7;·///·ACTIVATE·ROBOTICS·INTERFACE
2475 U·( ;
2476 ON·DB1·DBX·1414.0;·///·1st·CAN·INPUT·PORT·(CAN·ADDRESS·0)
2477 ON·DB1·DBX·1415.0;·///·1st·CAN·OUTPUT·PORT·(CAN·ADDRESS·7)
2478 );
2479 UN·DB10·DBX·2.0;·///·ACTIVATE·AC·2000
2480 =·DB2·DBX·1.0;·///·6008·MISSING·CAN·PART.
2481 NETWORK·6
2482 TITLE·=·SELECTION·OF·THE·FREQUENCY·INVERTER
2483 L·DB10·DBB·20;·///·HARWARE·COMPONENTS
2484 L·0
2485 ==·I;·///·COMPARISON·TO·EQUAL
2486 =·M·115.0;·///·FELDERER·FU
2487 L·DB10·DBB·20;·///·HARWARE·COMPONENTS
2488 L·1
2489 ==·I;·///·COMPARISON·TO·EQUAL

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2490   = M·115.1;·//·LENZE·FU
2491   END_FUNCTION
2492   FUNCTION·FC·2:·VOID
2493   NAME:·ITEM·COUNTER
2494   BEGIN
2495   NETWORK·1
2496   TITLE·=·PIECE·COUNTER
2497   UN·DB20.DBX·192.2;·//·M2·dyn
2498   UN·DB20.DBX·195.6;·//·M30·dyn
2499   O·DB20.DBX·324.2;·//·DRYRUN·ACTIVE
2500   SPB·M214;
2501   SET;
2502   L·DB15.DBD·4;·//·Counter
2503   L·DW·#·16·#·000F_423F;·//·999999·PIECES
2504   <>·D;
2505   SPB·M211;
2506   SET;
2507   L·DW·#·16·#·0000_0000;
2508   T·DB15.DBD·4;
2509   M211:·NOP·0;
2510   L·DB15.DBD·4;
2511   L·DW·#·16·#·0000_0001;
2512   +·D;·//·Piece·counter·+1·low
2513   T·DB15.DBD·4;
2514   L·DB15.DBD·8;·//·BATCH·COUNTER
2515   L·DW·#·16·#·000F_423F;·//·999999·PIECES
2516   <>·D;
2517   SPB·M213;
2518   SET;
2519   L·DW·#·16·#·0000_0000;
2520   T·DB15.DBD·8;
2521   M213:·NOP·0;
2522   L·DB15.DBD·8;
2523   L·DW·#·16·#·0000_0001;
2524   +·D;·//·Piece·counter·+1·low
2525   T·DB15.DBD·8;
2526   M214:·L·DB15.DBD·0;·//·target·number
2527   L·DW·#·16·#·0000_0000;
2528   <>·D;
2529   SPB·M202;
2530   SPA·M201;
2531   M202:·NOP·0;
2532   L·DB15.DBD·4;·//·Qty.
2533   L·DB15.DBD·0;·//·target·number
2534   <D;
2535   SPB·M201;
2536   SET;
2537   S·DB3.DBX·5.3;·//·7043·TARGET·QUANTITY·REACHED
2538   L·DW·#·16·#·0;
2539   T·DB15.DBD·4;
2540   M201:·NOP·0;
2541   NETWORK·2
2542   TITLE·=·NC·START·LOCKING
2543   U·DB3.DBX·5.3;·//·Message·target·quantity·reached
2544   =·M·96.6;·//·Message·target·quantity·reached·NC_START·VERR.
2545   O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
2546   O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2547   R·DB3.DBX·5.3;·//·Message·target·quantity·reached
2548   END_FUNCTION
2549   FUNCTION·FC·3:·VOID
2550   NAME:·MAIN·DRIVE·FELDERER·FU
2551   BEGIN
2552   //·OUTPUTS:
2553   //·*****·ACC·*****

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2554 U·DB10.DBX·2.0;·//·ACTIVATE·ACC
2555 SPBN·M001;
2556 NETWORK
2557 TITLE·=·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2558 O·DB20.DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2559 O·DB20.DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2560 S·M·145.2;
2561 U·M·145.2;
2562 U·M·104.2;·//·SUM·SFG
2563 O
2564 UN·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
2565 U·M·145.7·//·HM·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2566 =·A·3.1·//·AXES·ENABLE·B·=·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2567 S·M·145.7·//·HM·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2568 NETWORK
2569 TITLE·=·SET·OUTPUT·FOR·PUL·UP
2570 UN·A·3.4
2571 S·A·3.4
2572 M001:·NOP·0;
2573 NETWORK·1
2574 TITLE·=·FELDERER·MAIN·DRIVE·READY·TO·OPERATE
2575 UN·M·15.7;·//·HA·READY·TO·OPERATE
2576 =·M·94.2;·//·SFG
2577 NETWORK·2
2578 TITLE·=·FIELDS·MONITORING·HA·SHARP
2579 U·M·110.0;·//·AUX-ON
2580 L·S5TIME·#·2S;·//·2S
2581 SE·T·2;·//·SWITCH-ON·DELAY
2582 NETWORK·3
2583 TITLE·=·FELDERER·6013·MAIN·DRIVE·NOT·READY
2584 UN·DB10.DBX·2.0;·//·ACTIVATE·AC·2000
2585 UN·M·15.7;·//·HA·SERVO-READY
2586 L·S5TIME·#·200MS;·//·0.2S
2587 SE·T·3;·//·SWITCH-ON·DELAY
2588 U·T·2;
2589 U·T·3;
2590 S·DB2.DBX·1.5;·//·MAIN·DRIVE·NOT·READY·6013
2591 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
2592 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2593 R·DB2.DBX·1.5;
2594 NETWORK·4
2595 TITLE·=·FELDERER·FM·BUTTON·SPINDLE·START·(MSST)
2596 O·DB20.DBX·295.4;·//·SPINDLE·START·BUTTON
2597 UN·M·200.0·//·SET·TOOL·POSITIONS
2598 FP·M·132.5;·//·FM·BUTTON·SPINDLE·START
2599 NETWORK·5
2600 TITLE·=·FELDERER·FM·KEY·SPINDLE·STOP·(MSST)
2601 O·DB20.DBX·295.3;·//·KEY·SPINDLE·HOLD
2602 UN·M·200.0·//·SET·TOOL·POSITIONS
2603 FP·M·132.7;·//·FM·KEY·SPINDLE·STOP
2604 NETWORK·6
2605 TITLE·=·FIELDS·CHANGE·DIRECTION·OF·ROTATION·WITH·THE·START·BUTTON
2606 U·M·106.7;·//·M3·/·M4·SPINDLE·START·ENABLE
2607 UN·DB20.DBX·324.0;·//·PROGRAM·RUNNING
2608 U·M·132.5;·//·FM·BUTTON·SPINDLE·START
2609 S·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2610 L·S5TIME·#·1S;·//·1·SECOND
2611 SV·T·44;·//·LONGER·PULSE
2612 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2613 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
2614 R·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2615 NETWORK·7
2616 TITLE·=·FELDERER·NEGATIVE·FLANKENMERKER
2617 U·T·44;·//·EXTENDED·PULSE·M3·/·M4

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2618 FN·M·108.2; /// FM· / ·SPINDLE·START·BUTTON
2619 NETWORK·8
2620 TITLE·=·FELDERER
2621 U·M·104.2; /// SUM·SFG
2622 UN·M·131.7; /// AXES·IN·MOVEMENT
2623 UN·M·114.3; /// ACTUAL·SPEED·LESS·THAN·20RPM
2624 U·M·132.7; /// FM·KEY·SPINDLE·STOP
2625 S·M·132.1; /// SPINDLE·STOP·ACTIVE
2626 S·M·95.7; /// SFG
2627 S·M·91.7; /// AFG,·EFG
2628 U·M·106.7; /// OPERATION·MANUAL·AND·INC1·UP·TO·10000
2629 R·M·91.7; /// AFG,·EFG
2630 U·M·110.0; /// AUX·ON
2631 U·M·132.5; /// FM·BUTTON·SPINDLE·START
2632 O·DB1.DBX·1370.3; /// RESET·KEY·PRESSED
2633 O·DB1.DBX·1440.0; /// RESET·TRIPPED
2634 R·M·132.1; /// SPINDLE·STOP·ACTIVE
2635 R·M·95.7; /// SFG
2636 R·M·91.7; /// AFG,·EFG
2637 NETWORK·9
2638 TITLE·=·FELDERER
2639 UN·M·110.0; /// AUX-ON
2640 =·M·95.0; /// SPINDLE·ENABLE
2641 NETWORK·10
2642 TITLE·=·FIELDS·SUM·SFG
2643 L·MW·94; /// WORD·SFG·(SPINDLE·ENABLE)
2644 L·W·#·16·#·0; /// H·0
2645 ==·I; /// COMPARISON·TO·EQUAL
2646 =·M·104.2; /// SUM·SFG
2647 NETWORK·11
2648 TITLE·=·FELDERER·MAIN·DRIVE·ENABLE
2649 U·M·104.2; /// SUM·SFG
2650 UN·DB1.DBX·1440.0; /// RESET·TRIPPED
2651 =·M·114.0; /// MAIN·DRIVE·ENABLE
2652 NETWORK·12
2653 TITLE·=·FIELDS·SELECTION·MAIN·DRIVE·M3
2654 U·M·114.0; /// HA·RELEASE
2655 U·( ;
2656 UN·DB10.DBX·1.6; /// SPINDLE·START·AFTER·M0
2657 U·M·104.3; /// SUM·NC-STARTVERR.
2658 U·M·101.0; /// NC·START·MEMORY
2659 U·M·100.6; /// M3·MEMORY
2660 O;
2661 U·DB20.
2662 DBX·192.3; /// M3·DYN.
2663 O;
2664 U·T·44; /// EXTENDED·PULSE·M3· / ·M4
2665 UN·DB20.DBX·295.4; /// SPINDLE·START·BUTTON
2666 );
2667 =·DB20.DBX·256.3; /// RELEASE·M3
2668 S·DB20.DBX·340.0; /// SPINDLE·ON·IN·THE·CLOCKWISE
2669 R·DB20.DBX·340.1; /// SPINDLE·ONE·COUNTERCLOCKWISE
2670 R·M·100.6; /// M3·MEMORY
2671 NETWORK·13
2672 TITLE·=·FIELDS·SELECTION·MAIN·DRIVE·M4
2673 U·M·114.0; /// HA·RELEASE
2674 U·( ;
2675 UN·DB10.DBX·1.6; /// SPINDLE·START·AFTER·M0
2676 U·M·104.3; /// SUM·NC-STARTVERR.
2677 U·M·101.0; /// NC·START·MEMORY
2678 U·M·100.7; /// M4·MEMORY
2679 O;
2680 U·DB20.DBX·192.4; /// M4·DYN.
2681 O;

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2682 U·M·108.2;·//·FM·/·T44·M3·/·M4
2683 U·DB20.DBX·295.4;·//·SPINDLE·START·BUTTON
2684 );
2685 =·DB20.DBX·256.4;·//·TRIGGER·M4
2686 S·DB20.DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2687 R·DB20.DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2688 R·M·100.7;·//·M4·MEMORY
2689 NETWORK·14
2690 TITLE·=·FIELDS·SELECTION·MAIN·DRIVE·M5
2691 U·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2692 U·(·;
2693 O·M·132.7;·//·FM·KEY·SPINDLE·STOP
2694 ON·M·106.7;·//·M3·/·M4·SPINDLE·START·ENABLE
2695 );
2696 O·DB1.DBX·1370.0;·//·1st·PLC·LOOP
2697 O·DB20.DBX·192.5;·//·M5·DYNAMIC
2698 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
2699 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2700 O·DB20.DBX·324.2;·//·DRYRUN·ACTIVE
2701 =·M·114.5;·//·M5·HM
2702 NETWORK·15
2703 TITLE·=·FIELDS·M3,·M4·SAVE·AT·M0,·M1
2704 U·M·0.1;·//·HM·M0·/·M1·STATIC
2705 UN·DB10.DBX·1.6;·//·SPINDLE·START·AFTER·M0
2706 U·DB20.DBX·224.3;·//·M3·STATIC
2707 S·M·100.6;·//·M3·MEMORY
2708 U·M·0.1;·//·HM·M0·/·M1·STATIC
2709 UN·DB10.DBX·1.6;·//·SPINDLE·START·AFTER·M0
2710 U·DB20.DBX·224.4;·//·M4·STATIC
2711 S·M·100.7;·//·M4·MEMORY
2712 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
2713 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
2714 R·M·100.6;·//·M3·MEMORY
2715 R·M·100.7;·//·M4·MEMORY
2716 NETWORK·16
2717 TITLE·=·FIELDS·M5·OF·M0,·M1·AND·M5·HM
2718 U·M·0.1;·//·HM·M0·/·M1·STATIC
2719 U·(·;
2720 O·DB20.DBX·224.3;·//·M3·STATIC
2721 O·DB20.DBX·224.4;·//·M4·STATIC
2722 );
2723 O·M·114.5;·//·M5·HM
2724 UN·M·101.0;·//·NC·START·MEMORY
2725 O·DB20.DBX·195.6;·//·M30·DYN.
2726 O·DB20.DBX·192.2;·//·M2·DYN.
2727 =·DB20.DBX·256.5;·//·TRIP·M5
2728 R·DB20.DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2729 R·DB20.DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2730 R·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2731 R·M·145.2
2732 NETWORK·17
2733 TITLE·=·FELDERER·SPINDLE·ENABLE
2734 U·M·114.0;·//·HA·RELEASE
2735 =·DB20.DBX·340.5;·//·SPINDLE·ENABLE
2736 //·END·OF·THE·BUILDING
2737 NETWORK·18
2738 TITLE·=·FELDERER·MAIN·DRIVE·IS·ON
2739 O·DB20.DBX·224.5;·//·M5·STATIC
2740 ON·M·114.0;·//·HA·RELEASE
2741 =·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
2742 END_FUNCTION
2743 FUNCTION·FC·33:·VOID
2744 NAME:·MAIN·DRIVE·LENZE·FU
2745 BEGIN

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2746 NETWORK·1  
2747 TITLE·=·LENZE·MAIN·DRIVE·READY·TO·OPERATE  
2748 UN·M·15.7;·//·SERVO·READY·HA  
2749 =·M·94.2;·//·SFG  
2750 =·M·96.7;·//·SERVO·READY·MAIN·DRIVE·NC\_START·VERR.  
2751 NETWORK·2  
2752 TITLE·=·LENZE·MONITORING·HA·SHARP  
2753 U·M·110.0;·//·AUX-ON  
2754 L·S5TIME·#·4S;·//·4S  
2755 SE·T·2;·//·SWITCH-ON·DELAY  
2756 NETWORK·3  
2757 TITLE·=·LENZE·6013·MAIN·DRIVE·NOT·READY  
2758 ;·UN·DB10.DBX·2.0;·//·ACTIVATE·AC·2000  
2759 UN·M·15.7;·//·SERVO·READY·HA  
2760 L·S5TIME·#·200MS;·//·0.2S  
2761 SE·T·3;·//·INPUT·FILTER  
2762 U·T·2;  
2763 U·T·3;  
2764 S·DB2.DBX·1.5;·//·MAIN·DRIVE·NOT·READY·6013  
2765 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED  
2766 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
2767 R·DB2.DBX·1.5;  
2768 NETWORK·4  
2769 TITLE·=·LENZE·FM·BUTTON·SPINDLE·START·(MSST)  
2770 O·DB20.DBX·295.4;·//·SPINDLE·START·BUTTON  
2771 UN·M·200.0·//·SET·TOOL·POSITIONS  
2772 FP·M·132.5;·//·FM·BUTTON·SPINDLE·START  
2773 NETWORK·5  
2774 TITLE·=·LENZE·FM·BUTTON·SPINDLE·HOLD·(MSST)  
2775 O·DB20.DBX·295.3;·//·KEY·SPINDLE·HOLD  
2776 UN·M·200.0·//·SET·TOOL·POSITIONS  
2777 FP·M·132.7;·//·FM·KEY·SPINDLE·STOP  
2778 NETWORK·6  
2779 TITLE·=·LENZE  
2780 U·M·106.7;·//·M3·//·M4·SPINDLE·START·ENABLE  
2781 UN·DB20.DBX·324.0;·//·PROGRAM·RUNNING  
2782 U·M·132.5;·//·FM·BUTTON·SPINDLE·START  
2783 S·M·108.3;·//·HM·SPINDLE·SWITCHED·ON  
2784 L·S5TIME·#·1S;·//·1·SECOND  
2785 SV·T·44;·//·LONGER·PULSE  
2786 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
2787 O·DB1.DBX·1440.0;·//·RESET·TRIPPED  
2788 R·M·108.3;·//·HM·SPINDLE·SWITCHED·ON  
2789 NETWORK·7  
2790 TITLE·=·LENZE·NEGATIVE·FLANKENMERKER  
2791 U·T·44;·//·EXTENDED·PULSE·M3·//·M4  
2792 FN·M·108.2;·//·FM·//·SPINDLE·START·BUTTON  
2793 NETWORK·8  
2794 TITLE·=·LENZE  
2795 U·M·104.2;·//·SUM·SFG  
2796 UN·M·131.7;·//·AXES·IN·MOVEMENT  
2797 UN·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM  
2798 U·M·132.7;·//·FM·KEY·SPINDLE·STOP  
2799 S·M·132.1;·//·SPINDLE·STOP·ACTIVE  
2800 S·M·95.7;·//·SFG  
2801 S·M·91.7;·//·AFG,·EFG·KEY·SPINDLE·HOLD  
2802 U·M·106.7;·//·OPERATION·MANUAL·AND·INC1·UP·TO·10000  
2803 R·M·91.7;·//·AFG,·EFG  
2804 U·M·110.0;·//·AUX·ON  
2805 U·M·132.5;·//·FM·BUTTON·SPINDLE·START  
2806 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
2807 O·DB1.DBX·1440.0;·//·RESET·TRIPPED  
2808 R·M·132.1;·//·SPINDLE·STOP·ACTIVE  
2809 R·M·95.7;·//·SFG

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2810 R·M·91.7;·//·AFG,·EFG
2811 NETWORK·9
2812 TITLE·=·LENZE
2813 UN·M110.0;·//·AUX-ON
2814 =·M·95.0;·//·SPINDLE·ENABLE
2815 NETWORK·10
2816 TITLE·=·LENZE·SUM·SFG
2817 ;·U·M·95.0;·//·AUX-ON
2818 ;·U·M·95.1;·//·SPN·IN·MOTION·(SFG)
2819 ;·U·M·95.2;·//·SFG·MELDUNG·7050·NO·PART·CLOSED
2820 ;·U·M·94.1;·//·SFG·TOOL·EXPRESSED
2821 ;·U·M·94.3;·//·SFG·TOOL·EXPRESSED
2822 L·MW·94;·//·WORD·SFG·(SPINDLE·ENABLE)
2823 L·W·#·16·#·0;·//·H·0
2824 ==·I;·//·COMPARISON·TO·EQUAL
2825 =·M·104.2;·//·SUM·SFG
2826 NETWORK·11
2827 TITLE·=·LENZE·MAIN·DRIVE·ENABLE
2828 U·M·104.2;·//·SUM·SFG
2829 UN·DB1.DBX·1440.0;·//·RESET·TRIPPED
2830 =·M·114.0;·//·MAIN·DRIVE·ENABLE
2831 NETWORK·12
2832 TITLE·=·LENZE·SELECT·MAIN·DRIVE·M3
2833 U·M·114.0;·//·HA·RELEASE
2834 U·( ;
2835 UN·DB10.DBX·1.6;·//·SPINDLE·START·AFTER·M0
2836 U·M·104.3;·//·SUM·NC-STARTVERR.
2837 U·M·101.0;·//·NC·START·MEMORY
2838 U·M·100.6;·//·M3·MEMORY
2839 O;
2840 U·DB20.DBX·192.3;·//·M3·DYN.
2841 O;
2842 U·T·44;·//·EXTENDED·PULSE·M3·/·M4
2843 UN·DB20.DBX·295.4;·//·SPINDLE·START·BUTTON
2844 );
2845 S·M·114.1
2846 U·M·114.1
2847 L·S5T·#·0S300MS;
2848 SE·T·0;
2849 U·M·114.1
2850 U·T·1;
2851 O·T·0;
2852 =·DB20.DBX·256.3;·//·RELEASE·M3
2853 S·DB20.DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2854 R·DB20.DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2855 R·M·100.6;·//·M3·MEMORY
2856 R·M·114.1
2857 NETWORK·13
2858 TITLE·=·LENZE·SELECTION·MAIN·DRIVE·M4
2859 U·M·114.0;·//·HA·RELEASE
2860 U·( ;
2861 UN·DB10.DBX·1.6;·//·SPINDLE·START·AFTER·M0
2862 U·M·104.3;·//·SUM·NC-STARTVERR.
2863 U·M·101.0;·//·NC·START·MEMORY
2864 U·M·100.7;·//·M4·MEMORY
2865 O;
2866 U·DB20.DBX·192.4;·//·M4·DYN.
2867 O;
2868 U·M·108.2;·//·FM·/·T44·M3·/·M4
2869 U·DB20.DBX·295.4;·//·SPINDLE·START·BUTTON
2870 );
2871 S·M·114.2
2872 U·M·114.2
2873 L·S5T·#·0S300MS;
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2874 SE·T·1;
2875 U·M·114.2
2876 U·T·0;
2877 O·T·1;
2878 =·DB20·DBX·256.4;·//·TRIGGER·M4
2879 S·DB20·DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2880 R·DB20·DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2881 R·M·100.7;·//·M4·MEMORY
2882 R·M·114.2
2883 NETWORK·14
2884 TITLE·=·LENZE·SELECTION·MAIN·DRIVE·M5
2885 U·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2886 U·( ;
2887 O·M·132.7;·//·FM·KEY·SPINDLE·STOP
2888 ON·M·106.7;·//·M3·/·M4·SPINDLE·START·ENABLE
2889 );
2890 O·DB1·DBX·1370.0;·//·1st·PLC·LOOP
2891 O·DB20·DBX·192.5;·//·M5·DYNAMIC
2892 O·DB1·DBX·1440.0;·//·RESET·TRIPPED
2893 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
2894 O·DB20·DBX·324.2;·//·DRYRUN·ACTIVE
2895 =·M·114.5;·//·M5·HM
2896 NETWORK·15
2897 TITLE·=·LENZE·M3,·M4·SAVE·AT·M0,·M1
2898 U·M·0.1;·//·HM·M0·/·M1·DYNAMIC
2899 UN·DB10·DBX·1.6;·//·SPINDLE·START·AFTER·M0
2900 U·DB20·DBX·224.3;·//·M3·STATIC
2901 S·M·100.6;·//·M3·MEMORY
2902 U·M·0.1;·//·HM·M0·/·M1·DYNAMIC
2903 UN·DB10·DBX·1.6;·//·SPINDLE·START·AFTER·M0
2904 U·DB20·DBX·224.4;·//·M4·STATIC
2905 S·M·100.7;·//·M4·MEMORY
2906 O·DB1·DBX·1440.0;·//·RESET·TRIPPED
2907 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
2908 R·M·100.6;·//·M3·MEMORY
2909 R·M·100.7;·//·M4·MEMORY
2910 NETWORK·16
2911 TITLE·=·LENZE·M5·FROM·M0,·M1,·M2,·M30·AND·M5·HM
2912 U·M·0.1;·//·HM·M0·/·M1·DYNAMIC
2913 U·( ;
2914 O·DB20·DBX·224.3;·//·M3·STATIC
2915 O·DB20·DBX·224.4;·//·M4·STATIC
2916 );
2917 O·M·114.5;·//·M5·HM
2918 UN·M·101.0;·//·NC·START·MEMORY
2919 O·DB20·DBX·195.6;·//·M30·DYN.
2920 O·DB20·DBX·192.2;·//·M2·DYN.
2921 =·DB20·DBX·256.5;·//·REPORT·M5
2922 R·DB20·DBX·340.0;·//·SPINDLE·ON·IN·THE·CLOCKWISE
2923 R·DB20·DBX·340.1;·//·SPINDLE·ONE·COUNTERCLOCKWISE
2924 R·M·108.3;·//·HM·SPINDLE·SWITCHED·ON
2925 R·M·114.1
2926 R·M·114.2
2927 R·M·114.4
2928 NETWORK·17
2929 TITLE·=·LENZE·SPINDLE·ENABLE
2930 U·M·114.0;·//·HA·RELEASE
2931 =·DB20·DBX·340.5;·//·SPINDLE·ENABLE
2932 NETWORK·18
2933 TITLE·=·LENZE·MAIN·DRIVE·IS·ON
2934 U·M·16.0;·//·n·=·0·RELAY·FROM·LENZE-FU
2935 ON·M·15.7;·//·HA·SERVO-READY
2936 =·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
2937 R·M·114.6·//·HM·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
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2938 NETWORK·19
2939 TITLE·=·LENZE·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2940 O·M·114.1;·//·REQUIREMENT·M3
2941 O·M·114.2;·//·REQUIREMENT·M4
2942 =·M·90.7;·//·TAKE·AWAY·AFG·AND·EFG
2943 S·M·114.4;·//·HM
2944 U·M·114.4;·//·HM
2945 U·M·104.2;·//·SUM·SFG
2946 O
2947 UN·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
2948 U·M·114.6;·//·HM·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2949 =·M·17.1;·//·INITIAL·FLAG·CONTROLLER·ENABLE·MAIN·DRIVE
2950 S·M·114.6;·//·HM·CONTROLLER·ENABLE·FOR·MAIN·DRIVE
2951 END_FUNCTION
2952 FUNCTION·FC·4:·VOID
2953 NAME:·OPERATING·MODES
2954 BEGIN
2955 NETWORK·1
2956 TITLE·=·SUM·SPINDLE·ON·/·OFF
2957 UN·DB20.DBX·327.2;·//·REFERENCE·OPERATING·MODE
2958 UN·DB20.DBX·326.4;·//·AUTOMATIC·MODE
2959 UN·DB20.DBX·326.2;·//·OPERATING·MODE·MDI
2960 UN·DB20.DBX·326.1;·//·EDIT·MODE
2961 UN·DB20.DBX·326.3;·//·OPERATING·MODE·REPOS
2962 UN·DB20.DBX·327.4;·//·PRESET·OPERATING·MODE
2963 =·M·106.7;·//·M3·/·M4·SPINDLE·ENABLE·IN·THE·-
2964 //·OPERATING·MODE·JOG·AND·INC
2965 END_FUNCTION
2966 FUNCTION·FC·5:·VOID
2967 NAME:·AXES·READINESS
2968 BEGIN
2969 NETWORK·0
2970 TITLE·=·RELEASE·AXES
2971 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
2972 L·S5TIME·#·100MS;·//·1S
2973 SS·T·4;·//·SWITCH-ON·DELAY·(STORING)
2974 U·M·115.1;·//·LENZE·FU
2975 U·T
2976 4;·//·SWITCH-ON·DELAY·(STORING)
2977 =·M·17.0;·//·EXIT·FLAG·ENABLE·AXES
2978 NETWORK·1
2979 TITLE·=·AXES·READY·FOR·OPERATION
2980 UN·M·15.3;·//·X-AXIS·SERVO-READY
2981 UN·M·15.4;·//·Y-AXIS·SERVO-READY
2982 UN·M·15.5;·//·Z-AXIS·SERVO-READY
2983 =·M·111.0;·//·AXES·READINESS
2984 NETWORK·2
2985 TITLE·=·AXES·READY·FOR·OPERATION·AFG·/·EFG
2986 UN·M·111.0;·//·AXES·READY·TO·OPERATE
2987 =·M·90.1;·//·AXES·READY·FOR·OPERATION·AFG·/·EFG
2988 NETWORK·3·8·*****
2989 TITLE·=·SURVEILLANCE·AXES·SHARP
2990 U·M·110.0;·//·AUX_ON
2991 L·S5TIME·#·1S500MS;·//·15X0.1S
2992 SE·T·5;·//·START·T5·AS·SWITCH-ON·DELAY.
2993 NETWORK·4
2994 TITLE·=·ALARM·DRIVE·X-AXIS·DEFECTIVE
2995 U·M·15.3;·//·X-AXIS·SERVO-READY
2996 U·T·5;·//·MONITORING·AXES·SHARP
2997 S·DB2.DBX·1.2;·//·ALARM·DRIVE·X-AXIS·DEFECTIVE
2998 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
2999 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3000 R·DB2.DBX·1.2;·//·ALARM·DRIVE·X-AXIS·DEFECTIVE
3001 NETWORK·5

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3002 TITLE = ·ALARM·DRIVE·Y-AXIS·DEFECTIVE
3003 U·M·15.4;·//·Y-AXIS·SERVO·READY
3004 U·T·5;·//·MONITORING·AXES·SHARP
3005 S·DB2.DBX·1.3;·//·ALARM·DRIVE·Y-AXIS·DEFECTIVE
3006 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
3007 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3008 R·DB2.DBX·1.3;·//·ALARM·DRIVE·Y-AXIS·DEFECTIVE
3009 NETWORK·6
3010 TITLE = ·ALARM·DRIVE·Z-AXIS·DEFECTIVE
3011 U·M·15.5;·//·Z-AXIS·SERVO-READY
3012 U·T·5;·//·MONITORING·AXES·SHARP
3013 L·S5TIME·#·500MS;
3014 SE·T·31;
3015 U·T·31;
3016 S·DB2.DBX·1.4;·//·ALARM·DRIVE·Z-AXIS·DEFECTIVE
3017 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
3018 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3019 R·DB2.DBX·1.4;·//·ALARM·DRIVE·Z-AXIS·DEFECTIVE
3020 NETWORK·6
3021 TITLE = ·ALARM·DRIVE·TOOL·AXIS·DEFECTIVE·8·*****
3022 ;·U·M·15.xxx;·//·TOOL-AXIS·SERVO-READY
3023 ;·U·T·5;·//·MONITORING·AXES·SHARP
3024 ;·S·DB2.DBX·1.xxx;·//·ALARM·DRIVE·Z-AXIS·DEFECTIVE
3025 ;
3026 ;·O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
3027 ;·O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3028 ;·R·DB2.DBX·1.4;·//·ALARM·DRIVE·Z-AXIS·DEFECTIVE
3029 END_FUNCTION
3030 FUNCTION·FC·6:·VOID
3031 NAME:·AXES_JOG
3032 BEGIN
3033 NETWORK·1
3034 TITLE = ·ACHSEN_JOG·ENABLE
3035 U·DB20.DBX·340.4;·//·AXLE·ENABLE
3036 =·M·112.0;·//·ACHSEN_JOG·ENABLE
3037 NETWORK·2
3038 TITLE = ·ACHSEN_JOG·/·STARTVERR.
3039 U·DB20.DBX·1.2;·//·FC·JOG_REQUIREMENT
3040 UN·M·112.0;·//·ACHSEN_JOG·ENABLE
3041 R·DB20.DBX·1.2;·//·FC·JOG_REQUIREMENT
3042 NETWORK
3043 TITLE = ·JOG·A-AXIS·/·STARTVERL.
3044 U·DB20.DBX·1.2;·//·FC·JOG·AXES
3045 U·(
3046 O·DB20.DBX·11.2;·//·JOG·CHANNEL·AXIS·A·IN·POS.·DIRECTION
3047 O·DB20.DBX·13.2;·//·JOG·CHANNEL·AXIS·A·IN·NEGATIVE·DIRECTION
3048 UN·A·3.4;·//·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
3049 )
3050 R·DB20.DBX·1.2;·//·FC·JOG·AXES
3051 NETWORK
3052 TITLE = ·AXES·INC·/·STARTVERR.
3053 ON·M·112.0;·//·ACHSEN_JOG·ENABLE
3054 O·M·100.2;·//·FEED·SWITCH·ON·0%
3055 U·DB20.DBX·1.3;·//·FC·INC·REQUEST
3056 R·DB20.DBX·1.3;·//·FC·INC·REQUEST
3057 END_FUNCTION
3058 FUNCTION·FC·32:·VOID
3059 NAME:·AUTOMATICALLY·SWITCH·TO·BA·REF
3060 BEGIN
3061 NETWORK
3062 TITLE = ·PREVENT·AUTOMATICALLY·SWITCHING·TO·BA·REF·WITH·THE·AUX-ON·BUTTON·(TO·DRIVE·FREE·
!!)
3063 UN·M·121.0
3064 UN·M·121.2

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3065 UN·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3066 U·DB1.DBX·1374.4·//·AUX·ON·BUTTON
3067 UN·M·200.0·//·SET·TOOL·POSITIONS
3068 S·M·121.1
3069 S·M·121.0
3070 U·DB1.DBX·1374.4·//·AUX·ON·BUTTON
3071 UN·M·200.0·//·SET·TOOL·POSITIONS
3072 UN·M·121.1
3073 =·M·121.2
3074 R·M·121.0
3075 UN·DB1.DBX·1374.4·//·AUX·ON·BUTTON
3076 R·M·121.1
3077 NETWORK
3078 TITLE·=·AUTOMATICALLY·SWITCH·TO·BA·REF
3079 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
3080 S·DB100.DBX500.0;·//·BIT·FOR·BA·JOG
3081 L·DB20.DBW·288·//·BA·SELECTION
3082 L·0
3083 ==·I.
3084 SPB·M0011
3085 L·DB20.DBW·288·//·BA·SELECTION
3086 T·DB100.DBW·500
3087 M0011:·NOP·0
3088 UN·M·52.3·//·TOOL·ABORTED
3089 UN·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
3090 UN·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
3091 UN·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3092 UN·M·121.0
3093 ;·U·M·110.0;·//·AUX-ON
3094 SPBN·M0012
3095 L·W·#·16·#·0400·//·SET·BIT·BA·REF
3096 T·DB20.DBW·288·//·BA·SELECTION
3097 SPA·M0013
3098 M0012:·NOP·0
3099 L·DB100.DBW·500
3100 T·DB20.DBW·288·//·BA·SELECTION
3101 M0013:·NOP·0
3102 L·DB20.DBW·326
3103 L·DB20.DBW·288
3104 <>·I.
3105 =·DB20.DBX·0.0·//·BA·CHANGE·REQUEST
3106 END_FUNCTION
3107 FUNCTION·FC·7:·VOID
3108 NAME:·AXES_REFERENCING
3109 BEGIN
3110 NETWORK·1
3111 TITLE·=·REFERENCE·RELEASE
3112 U·M·104.0;·//·SUM·AFG
3113 U·M·110.0;·//·AUX_ON·AUTO
3114 UN·M·100.2;·//·FEED·SWITCH·ON·0%
3115 UN·M·52.3·//·TOOL·ABORTED
3116 UN·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
3117 UN·DB3.DBX·7.0;·//·MESSAGE·7056·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
3118 UN·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
3119 UN·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
3120 =·M·120.0;·//·REFERENCE·RELEASE
3121 NETWORK·2
3122 TITLE·=·APPROACH·REFERENCE·POINT·CANCEL·(TRIGGER·RESET)
3123 U·DB20.DBX·327.2;·//·REFERENCE·OPERATING·MODE
3124 U·M·15.1;·//·MACHINE·DOOR·OPEN
3125 U·M·131.7;
3126 //·AXES·IN·MOVEMENT
3127 SPBN·M001;
3128 =·DB1.DBX·1440.0;·//·TRIGGER·NC·RESET

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3129 M001:·NOP·0
3130 NETWORK
3131 TITLE·=·REFPKT.X,·Y,·Z,·APPROACH·FROM·MST·AT·THE·SAME·TIME
3132 U·DB20.DBX·830.4;·//·REFERENCE·ALL·AXES·FROM·MST
3133 U·DB20.DBX·327.2;·//·REFERENCE·OPERATING·MODE
3134 U·M·120.0;·//·REFERENCE·RELEASE
3135 UN·M·121.3;·//·REFPKT.X,·Z,·APPROACH·AT·THE·SAME·TIME
3136 FP·M·121.4·//·FM·REFPKT.X,·Z,·APPROACH·FROM·MST·AT·THE·SAME·TIME
3137 U·M·121.4·//·FM·REFPKT.X,·Z,·AT·THE·SAME·TIME·APPROACH·FROM·MST
3138 SPBN·M331;
3139 =·DB20.DBX·8.0;·//·REFERENCE·X-AXIS
3140 =·DB20.DBX·8.1;·//·REFERENCE·Y-AXIS
3141 =·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3142 =·DB20.DBX·1.1;·//·APPROACH·REFERENCE·POINT·(DEFLECTION)
3143 M331:·NOP·0
3144 NETWORK·4
3145 TITLE·=·REFPKT.X,·Y,·Z,·APPROACH·AT·THE·SAME·TIME
3146 U·M·120.0;·//·REFERENCE·RELEASE
3147 UN·M·121.3;·//·REFPKT.X,·Z,·APPROACH·AT·THE·SAME·TIME
3148 U·DB20.DBX·8.0;·//·REFERENCE·X-AXIS
3149 U·DB20.DBX·8.1;·//·REFERENCE·Y-AXIS
3150 U·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3151 S·M·121.3;·//·REFPKT.X,·Y,·Z,·APPROACH·AT·THE·SAME·TIME
3152 FP·M·121.5;·//·FM·REFPKT.X,·Z,·APPROACH·AT·THE·SAME·TIME
3153 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3154 O·DB1.DBX·1440.0·//·TRIGGER·NC·RESET
3155 O·M·122.5;·//·FM·REFERENCE·POINT·ACTIVE
3156 O·M·52.6·//·FM·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3157 R·M·121.3;·//·REFPKT.X,·Z,·APPROACH·AT·THE·SAME·TIME
3158 ;·8·((((U·M·120.4;·//·REFERENCE·POINT·X·&·Y·&·Z-AXIS·ACTIVE
3159 ;·U·M·121.3;·//·REFPKT.X,·Y,·Z,·APPROACH·AT·THE·SAME·TIME
3160 ;·R·DB20.DBX·8.0;·//·REFERENCE·X-AXIS
3161 ;·R·DB20.DBX·8.1;·//·REFERENCE·Y-AXIS
3162 ;·R·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3163 ;·R·M·121.3;·//·REFPKT.X,·Y,·Z,·APPROACH·AT·THE·SAME·TIME
3164 NETWORK·5
3165 TITLE·=·DISABLE·REFERENCE·POINT
3166 U·DB1.DBX·134.0;·//·REFERENCE·POINT·X-AXIS·ACTIVE
3167 U·DB1.DBX·134.1;·//·REFERENCE·POINT·Y-AXIS·ACTIVE
3168 U·DB1.DBX·134.2;·//·REFERENCE·POINT·Z-AXIS·ACTIVE
3169 =·M·120.4;·//·REFERENCE·POINT·X·&·Y·&·Z·AXIS·ACTIVE
3170 O·M·120.6·//·NEGATIVE·FM·DOOR·OPEN
3171 O·M·120.5·//·FM·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
3172 O·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
3173 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3174 O·DB1.DBX·1440.0·//·TRIGGER·NC·RESET
3175 U·(
3176 ON·M·26.0·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED
3177 O·E·16.4·//·REF·BERO·WZW
3178 )
3179 O(
3180 U·DB20.DBX·9.2;·//·REFERENCING·CHANNEL·AXIS·A
3181 U·DB10.DBX·100.0·//·SET·TOOL·TURNERS·ACTIVATED
3182 O·M·121.5;·//·APPROACH·FM·REFPKT·XYZ·AT·THE·SAME·TIME
3183 U·M·120.0;·//·REFERENCE·RELEASE
3184 U·M·23.6;·//·Z-AXIS·IN·THE·SAFE·AREA
3185 )
3186 O·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
3187 U·M·52.5·//·TOOL·TURNER·ACTIVATED
3188 FP·M·121.6
3189 U·M·121.6
3190 SPBN·M111;
3191 =·DB20.DBX·348.4;·//·DISABLE·CHANNEL0·REFERENCE·POINT·OF·THE·ROUND·AXES
3192 =·DB25.DBX·348.4;·//·DISABLE·CHANNEL1·REFERENCE·POINT·OF·THE·ROUND·AXES

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3193 R·M·120.2·//·TOOL·AXIS·0·DEGREES·REACHED
3194 R·M·120.3·//·HM·TOOL·AXIS·0·DEGREES·REACHED
3195 R·M·25.0·//·TOOL·0·PICK·UP·DONE
3196 M111:·NOP·0
3197 U·M·121.5;·//·APPROACH·FM·REFPKT·XYZ·AT·THE·SAME·TIME
3198 ;·8·(((·(UN·M·52.5·//·TOOL·TURNER·ACTIVATED
3199 ;·UN·M·52.7·//·ROUND·AXLE·ACTIVATED
3200 O·DB2.DBX·1.2;·//·ALARM·X-AXIS·DEFECTIVE
3201 O·DB2.DBX·1.3;·//·ALARM·Y-AXIS·DEFECTIVE
3202 O·DB2.DBX·1.4;·//·ALARM·Z-AXIS·DEFECTIVE
3203 O·DB2.DBX·1.5;·//·ALARM·TOOL·AXIS·DEFECTIVE·8·*****
3204 O·DB2.DBX·0.0;·//·ALARM·EMERGENCY·STOP
3205 FP·M·121.7
3206 U·M·121.7
3207 SPBN·M221;
3208 =·DB20.DBX·348.0;·//·DISABLE·CHANNEL0·REFERENCE·POINT
3209 =·DB25.DBX·348.0;·//·DISABLE·CHANNEL1·REFERENCE·POINT
3210 =·DB20.DBX·348.4;·//·DISABLE·CHANNEL0·REFERENCE·POINT·OF·THE·ROUND·AXES
3211 =·DB25.DBX·348.4;·//·DISABLE·CHANNEL1·REFERENCE·POINT·OF·THE·ROUND·AXES
3212 U·M·121.5;·//·APPROACH·FM·REFPKT·XYZ·AT·THE·SAME·TIME
3213 S·M·121.3;·//·REFPKT·X,·Y,·Z,·APPROACH·AT·THE·SAME·TIME
3214 R·M·120.4;·//·REFERENCE·POINT·X·&·Y·&·Z·AXIS·ACTIVE
3215 =·DB20.DBX·348.4;·//·DISABLE·CHANNEL0·REFERENCE·POINT·OF·THE·ROUND·AXES
3216 =·DB25.DBX·348.4;·//·DISABLE·CHANNEL1·REFERENCE·POINT·OF·THE·ROUND·AXES
3217 R·M·120.2·//·TOOL·AXIS·0·DEGREES·REACHED
3218 R·M·120.3·//·HM·TOOL·AXIS·0·DEGREES·REACHED
3219 R·M·25.0·//·TOOL·0·PICK·UP·DONE
3220 M221:·NOP·0
3221 NETWORK·6
3222 TITLE·=·DISABLE·APPROACH·TO·REFERENCE
3223 U·DB20.DBX·1.1;·//·APPROACH·REFERENCE·POINT·(DEFLECTION)
3224 UN·M·120.0;·//·REFERENCE·RELEASE
3225 R·DB20.DBX·1.1;·//·APPROACH·REFERENCE·POINT·(DEFLECTION)
3226 S·DB20.DBX·318.7;·//·NEG·ACKNOWLEDGMENT·DNC
3227 NETWORK·7
3228 TITLE·=·REFERENCE·Z-AXIS·(FC-CODE)
3229 U·M·121.5;·//·FM·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
3230 U·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3231 UN·M·120.4;·//·REFERENCE·POINT·X·&·Y·&·Z·AXIS·ACTIVE
3232 O(;
3233 U·M·120.0;·//·REFERENCE·RELEASE
3234 UN·M·121.3;·//·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
3235 U·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3236 );
3237 O(
3238 U·M·121.5;·//·FM·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
3239 UN·M·52.5·//·TOOL·TURNER·ACTIVATED
3240 UN·M·52.7·//·ROUND·AXLE·ACTIVATED
3241 )
3242 =·DB20.DBX·8.2;·//·REFERENCING·Z-AXIS
3243 NETWORK·8
3244 TITLE·=·FM·REFERENZPOINT·Z-AXIS·ACTIVE
3245 U·DB1.DBX·134.2;·//·REFERENCE·POINT·Z-AXIS·ACTIVE
3246 FP·M·120.7;·//·FM·REFERENCE·POINT·Z-AXIS·ACTIVE
3247 NETWORK·9
3248 TITLE·=·REFERENCE·X-AXIS·(FC-CODE)
3249 U·M·121.3;·//·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
3250 U·M·120.7;·//·FM·REFERENCE·POINT·Z-AXIS·ACTIVE
3251 O(;
3252 U·M·120.0;·//·REFERENCE·RELEASE
3253 UN·M·121.3;·//·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
3254 U·DB20.DBX·1.1;·//·APPROACH·REFERENCE·POINT·(DEFLECTION)
3255 U·DB20.DBX·8.0;·//·REFERENCE·X-AXIS
3256 );

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3257   = DB20.DBX.8.0; /// REFERENCE X-AXIS
3258   R DB20.DBX.8.2; /// REFERENCING Z-AXIS
3259   SPBN M002;
3260   = DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3261   M002: NOP 0;
3262   NETWORK 10
3263   TITLE = REFERENCE Y-AXIS (FC-CODE)
3264   U M 121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3265   U M 120.7; /// FM REFERENCE POINT Z-AXIS ACTIVE
3266   O(
3267   U M 120.0; /// REFERENCE RELEASE
3268   UN M 121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3269   U DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3270   U DB20.DBX.8.1; /// REFERENCE Y-AXIS
3271   );
3272   = DB20.DBX.8.1; /// REFERENCE Y-AXIS
3273   NETWORK 8
3274   TITLE = FM X, Y, Z REFERENCE POINT ACTIVE
3275   U M 120.4; /// REFERENCE POINT X & Y & Z AXIS ACTIVE
3276   FP M 120.1; /// FM REFERENCE POINT X, Y and Z-AXIS ACTIVE
3277   R M 121.0
3278   U DB1.DBX.134.0; /// REFERENCE POINT X-AXIS ACTIVE
3279   U DB1.DBX.134.1; /// REFERENCE POINT Y-AXIS ACTIVE
3280   U DB1.DBX.134.2; /// REFERENCE POINT Z-AXIS ACTIVE
3281   U (
3282   O DB1.DBX.134.4; /// REFERENCE POINT TOOL AXIS ACTIVE
3283   ON M 52.5 /// TOOL TURNER ACTIVATED
3284   )
3285   U (
3286   O DB1.DBX.134.5; /// REFERENCE POINT A-AXIS ACTIVE
3287   ON M 52.7 /// ROUND AXIS ACTIVATED
3288   )
3289   = M 52.2 /// REFERENCE POINT X, Y, Z AND TOOL C-AXIS ACTIVE
3290   FP M 52.6 /// FM REFERENCE POINT X, Y, Z AND TOOL C-AXIS ACTIVE
3291   NETWORK 8
3292   TITLE = REFERENCE TOOL
3293   U M 52.5 /// TOOL TURNER ACTIVATED
3294   SPBN M003;
3295   NETWORK 10
3296   TITLE = Z-AXIS IN THE SAFE AREA
3297   L DB1.DBD 8; /// Z-AXIS IS POSITION
3298   L MD 74; /// Z-AXIS TOOL SWIVEL POSITION NO TOOL IN THE SPINDLE
3299   > = R
3300   = M 23.6; /// Z-AXIS IN THE SAFE AREA
3301   NETWORK 10
3302   TITLE = REFERENCE TOOL AXIS (FC CODE)
3303   U M 121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3304   U M 120.7; /// FM REFERENCE POINT Z-AXIS ACTIVE
3305   ; 8 ((( O (
3306   ; U M 120.4; /// REFERENCE POINT X & Y & Z AXIS ACTIVE
3307   ; U M 121.5; /// APPROACH FM REFPKT.XYZ AT THE SAME TIME
3308   ; )
3309   O(
3310   UN M 121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3311   U DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3312   U DB20.DBX.9.2; /// REFERENCING CHANNEL AXIS A
3313   U DB10.DBX.100.0 /// SET TOOL TURNERS ACTIVATED
3314   )
3315   U (
3316   O DB10.DBX.100.0 /// SET TOOL TURNERS ENABLED
3317   O M 23.6; /// Z-AXIS IN THE SAFE AREA
3318   )
3319   U M 120.0; /// REFERENCE RELEASE
3320   SPBN M004;

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3321 = DB25.DBX.9.4; /// REFERENCING CHANNEL AXIS C
3322 = DB25.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3323 R.M.120.2 /// TOOL AXIS 0 DEGREES REACHED
3324 R.M.120.3 /// HM TOOL AXIS 0 DEGREES REACHED
3325 M004: NOP 0;
3326 NETWORK 10
3327 TITLE = TOOL AXIS REFERENCE FROM AXIS KEY (THE KEY IS ONLY EFFECTIVE IN SETTING MODE !!)
3328 U.DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3329 U.DB20.DBX.9.2; /// REFERENCING CHANNEL AXIS A
3330 U.DB10.DBX.100.0 /// SET TOOL TURNERS ACTIVATED
3331 R.DB20.DBX.9.2; /// REFERENCING CHANNEL AXIS A
3332 R.DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3333 NETWORK
3334 TITLE = MOVE TOOL AXIS TO 0 °
3335 U.DB1.DBX.134.4; /// REFERENCE POINT TOOL AXIS ACTIVE
3336 FP.M.122.0 /// FM REFERENCE POINT TOOL AXIS ACTIVE
3337 UN.DB10.DBX.100.0 /// SET TOOL MILL55 ENABLED
3338 O(
3339 U.DB10.DBX.100.0 /// SET TOOL MILL55 ACTIVATED
3340 U.M.200.0 /// SET TOOL POSITIONS
3341 )
3342 U.M.122.0 /// FM REFERENCE POINT TOOL AXIS ACTIVE
3343 UN.M.120.2 /// TOOL AXIS 0 DEGREES REACHED
3344 UN.M.120.3 /// HM TOOL AXIS 0 DEGREES REACHED
3345 U.M.120.0; /// REFERENCE RELEASE
3346 U.(
3347 O.DB10.DBX.100.0 /// SET TOOL TURNERS ENABLED
3348 O.M.23.6; /// Z-AXIS IN THE SAFE AREA
3349 )
3350 SPBN.M006;
3351 S.M.120.3 /// HM TOOL AXIS 0 DEGREES REACHED
3352 = DB25.DBX.1.4; /// SEND NC BLOCK
3353 = DB25.DBX.548.5; /// SET EXACT HOLD MODE
3354 = DB25.DBX.549.0; /// G1 IS TRIGGERED
3355 = DB25.DBX.549.4; /// FEED RATE IN DEGREES / S VALUE IN DBD556
3356 L.DB10.DBD.28; /// FEED VALUE IN DEGREES / SECONDS
3357 T.DB25.DBD.556; /// F-VALUE IN M / S OR M / U
3358 S.DB25.DBX.21.4; /// POSITION REQUEST FOR CHANNEL AXIS C
3359 L.+ 0.00E0;
3360 T.DB25.DBD.70; /// POSITION VALUE FOR CHANNEL AXIS C
3361 L 0
3362 T.MW.46
3363 M006: NOP 0;
3364 U.M.120.3 /// HM TOOL AXIS 0 DEGREES REACHED
3365 U.DB25.DBX.332.0; /// NC BLOCK DONE
3366 SPBN.M007;
3367 S.M.120.2 /// TOOL AXIS 0 DEGREES REACHED
3368 R.M.120.3 /// HM TOOL AXIS 0 DEGREES REACHED
3369 R.DB25.DBX.332.0; /// NC BLOCK DONE
3370 U.E.4.2; /// 12mm BERO TOOL EQUIPPED
3371 S.M.46.1 /// TOOL 1 PRESENT
3372 M007: NOP 0;
3373 M003: NOP 0;
3374 U.M.52.7 /// ROUND AXIS ACTIVATED
3375 SPBN.M008;
3376 NETWORK 10
3377 TITLE = ROUND AXIS A REFERENCE (FC CODE)
3378 U.M.121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3379 U.M.120.7; /// FM REFERENCE POINT Z-AXIS ACTIVE
3380 O( ;
3381 UN.M.121.3; /// REFPKT.X, Y, Z, APPROACH AT THE SAME TIME
3382 U.DB20.DBX.1.1; /// APPROACH REFERENCE POINT (DEFLECTION)
3383 U.DB20.DBX.9.2; /// REFERENCING CHANNEL AXIS A
3384 );

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3385 O(
3386 U·M·120.4;·//·REFERENCE·POINT·X·&·Y·&·Z·AXIS·ACTIVE
3387 U·M·121.5;·//·APPROACH·FM·REFPKT·XYZ·AT·THE·SAME·TIME
3388 )
3389 ;·O(
3390 ;·U·M·120.5·//·FM·OUTPUT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
3391 ;·U·DB1.DBX·134.2;·//·REFERENCE·POINT·Z·AXIS·ACTIVE
3392 ;·U·M·120.0;·//·REFERENCE·RELEASE
3393 ;·)
3394 U·M·120.0;·//·REFERENCE·RELEASE
3395 SPBN·M005;
3396 =·DB20.DBX·9.2;·//·REFERENCING·CHANNEL·AXIS·A
3397 =·DB20.DBX·1.1;·//·APPROACH·REFERENCE·POINT·(DEFLECTION)
3398 M005:·NOP·0;
3399 M008:·NOP·0;
3400 NETWORK·11
3401 TITLE·=·FM·REFERENCE·POINT·ACTIVE
3402 U·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3403 FP·M·122.5;·//·FM·REFERENCE·POINT·ACTIVE
3404 UN·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3405 =·M·96.5;·//·REFERENCE·POINT·INACTIVE·NC_START·LOCK.
3406 NETWORK·13
3407 TITLE·=·MELDUNG·7017·REFERENZP.·APPROACH
3408 UN·DB3.DBX·6.2;·//·MESSAGE·NO·PART·TENSIONED
3409 UN·DB3.DBX·5.0;·//·MESSAGE·MACHINE·DOOR·OPEN
3410 UN·DB3.DBX·6.7;·//·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
3411 UN·DB3.DBX·7.1;·//·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
3412 UN·DB3.DBX·7.2;·//·MESSAGE·7058·AXES·RELEASE
3413 UN·M·52.2·//·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
3414 UN·DB3.DBX·2.7;·//·MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
3415 =·DB3.DBX·2.1;·//·7017·APPROACH·REFERENCE·POINT
3416 END_FUNCTION
3417 FUNCTION·FC·8:·VOID
3418 NAME:·AUX_ON·AC95
3419 BEGIN
3420 NETWORK·1
3421 TITLE·=·ALARM·NOT_AUS·AC95
3422 UN·M·15.2;·//·EMERGENCY·STOP·SWITCH
3423 S·DB2.DBX·0.0;·//·ALARM·EMERGENCY·STOP
3424 =·DB1.DBX·1390.5;·//·PLC>·SURF.·EMERGENCY·STOP·SWITCH
3425 O·DB1.DBX·1370.0;·//·1st·PLC·LOOP
3426 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
3427 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3428 R·DB2.DBX·0.0;·//·ALARM·EMERGENCY·STOP
3429 NETWORK·2
3430 TITLE·=·MESSAGE·MACHINE·DOOR·OPEN·AC95
3431 U·M·15.1;·//·MACHINE·DOOR·OPEN
3432 UN·DB3.DBX·6.2;·//·NO·PART·CLAMPED·(M7050)
3433 UN·DB1.DBX·1370.0;·//·1st·PLC·LOOP
3434 UN·DB3.DBX·2.7;·//·MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
3435 UN·DB3.DBX·0.2;·//·7002·change·tool
3436 =·DB3.DBX·5.0;·//·MACHINE·DOOR·OPEN·(7040)
3437 NETWORK·3
3438 TITLE·=·6024·DOOR·OPEN·ALARM·AC95
3439 O·M·131.7;·//·AXES·IN·MOVEMENT
3440 O·M·92.0;·//·ROUND·AXIS·IN·MOVEMENT
3441 U·DB20.DBX·326.4;·//·AUTO·OPERATING·MODE
3442 =·M·102.0;·//·HM
3443 U·M·131.7;·//·AXES·IN·MOVEMENT
3444 U·DB20.DBX·327.2;·//·REFERENCE·OPERATING·MODE
3445 =·M·102.1;·//·HM
3446 U·DB20.DBX·324.0;·//·PROGRAM·RUNNING
3447 UN·DB20.DBX·324.1;·//·STOP·STATE
3448 U·DB20.DBX·326.4;·//·AUTO·OPERATING·MODE

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3449 =M·102.2;·//·HM
3450 UN·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
3451 =M·102.3;·//·HM
3452 O·M·102.0;·//·HM
3453 O·M·102.1;·//·HM
3454 O·M·102.2;·//·HM
3455 O·M·102.3;·//·HM
3456 =M·110.2;·//·HM·DOOR·ALARM
3457 U·M·110.2;·//·HM·DOOR·ALARM
3458 U·M·15.1;·//·MACHINE·DOOR·OPEN
3459 S·DB2.DBX·3.0;·//·6024·ALARM·DOOR·OPEN
3460 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
3461 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3462 R·DB2.DBX·3.0;·//·6024·ALARM·DOOR·OPEN
3463 NETWORK·4
3464 TITLE·=·SUM·ALARMS·1·AC95
3465 L·DB2.DBW·0;·//·WORD·ALARMS·1
3466 L·W·#·16·#·0;
3467 <>·I;
3468 =M·105.0;·//·SUM·ALARMS1
3469 NETWORK·5
3470 TITLE·=·SUM·ALARMS·2·AC95
3471 L·DB2.DBW·2;·//·WORD·ALARMS·2
3472 L·W·#·16·#·0;
3473 <>·I;
3474 =M·105.1;·//·SUM·ALARMS·2
3475 NETWORK·6
3476 TITLE·=·SUM·THERMAL·ALARMS·AC95
3477 L·DB2.DBW·4;·//·BYTE·/·THERM·ALARMS
3478 L·W·#·16·#·0;
3479 <>·I;
3480 =M·105.2;·//·SUM·THERM·ALARMS
3481 NETWORK·7
3482 TITLE·=·SELECTION·AUX_ON·AC95
3483 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
3484 S·M·110.1;·//·AUX_ON·ON
3485 U·M·110.1;·//·AUX_ON·ON
3486 =·DB1.DBX·1390.2;·//·PLC>·SURFACE·AUX-ON
3487 S·M·110.0;·//·AUX_ON·AUTO
3488 S·M·110.3;·//·AUX-ON·MANUAL
3489 NETWORK·8
3490 TITLE·=·DESELECT·AUX_ON·AC95
3491 O·M·105.0;·//·SUM·ALARMS·1
3492 O·M·105.1;·//·SUM·ALARMS·2
3493 O·M·105.2;·//·SUM·THERM·ALARMS
3494 O·DB1.DBX·1366.3;·//·ALARM·ACTIVE
3495 R·M·110.3;·//·AUX-ON·MANUAL
3496 UN·M·110.3;·//·AUX-ON·MANUAL
3497 O·M·15.1;·//·MACHINE·DOOR·OPEN
3498 O·M·18.3;·//·EXIT·FLAG·DOOR·OPEN
3499 O·DB1.DBX·1366.3;·//·ALARM·ACTIVE
3500 R·M·110.0;·//·AUX-ON·AUTO
3501 NETWORK·9
3502 TITLE·=·HW·CHECK·DOOR·OPEN·AC95·(ALARM·6009)
3503 U·M·15.1;·//·MACHINE·DOOR·OPEN
3504 L·S5TIME·#·1S;·//·10X0.1S
3505 SE·T·6;·//·T6·SWITCH-ON·DELAYED
3506 U·T·6;·//·T6
3507 U·M·15.0;·//·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
3508 S·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT
3509 NETWORK·10
3510 TITLE·=·HW·CHECK·CLOSE·DOOR·AC95
3511 UN·DB1.DBX·1370.0;·//·1st·PLC·LOOP
3512 UN·M·15.1;·//·MACHINE·DOOR·OPEN
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3513 U·M·15.2; ///·EMERGENCY·STOP·SWITCH
3514 U·M·15.6; ///·WHEEL·COVER·CLOSED
3515 L·S5TIME·#·1S; ///·10X0.1S
3516 SE·T·11; ///·T11·SWITCH-ON·TV.
3517 U·T·11; ///·T11
3518 UN·M·15.0; ///·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
3519 S·DB2.DBX·1.1; ///·HW·ERROR·SAFETY·CIRCUIT
3520 O·DB1.DBX·1370.2; ///·ACKNOWLEDGMENT·KEY·PRESSED
3521 O·DB1.DBX·1370.3; ///·RESET·KEY·PRESSED
3522 R·DB2.DBX·1.1; ///·HW·ERROR·SAFETY·CIRCUIT
3523 END_FUNCTION
3524 FUNCTION·FC·9:·VOID
3525 NAME:·AUX_ON·ACC
3526 BEGIN
3527 NETWORK·1
3528 TITLE·=·ENABLE·DIFFERENTIAL·LINE·DRIVER·ON·ACC·MOTHERBOARD
3529 U·M·110.3; ///·AUX-ON·MANUAL
3530 S·A·3.7; ///·ENABLE·DIFFERENTIAL·LINE·DRIVER·CYCLES·FOR·SM
3531 UN·M·110.3; ///·AUX-ON·MANUAL
3532 L·S5TIME·#·1S; ///·10X0.1S
3533 SE·T·10;
3534 U·T·10;
3535 R·A·3.7; ///·ENABLE·DIFFERENTIAL·LINE·DRIVER·CYCLES·FOR·SM
3536 NETWORK·1
3537 TITLE·=·ALARM·NOT_AUS·ACC
3538 UN·M·15.2; ///·EMERGENCY·STOP·SWITCH
3539 S·DB2.DBX·0.0; ///·ALARM·EMERGENCY·STOP
3540 =·DB1.DBX·1390.5; ///·PLC>·SURF·EMERGENCY·STOP·SWITCH
3541 O·DB1.DBX·1370.0; ///·1st·PLC·LOOP
3542 O·DB1.DBX·1370.2; ///·ACKNOWLEDGMENT·KEY·PRESSED
3543 O·DB1.DBX·1370.3; ///·RESET·KEY·PRESSED
3544 R·DB2.DBX·0.0; ///·ALARM·EMERGENCY·STOP
3545 NETWORK·2
3546 TITLE·=·MESSAGE·MACHINE·DOOR·OPEN·ACC
3547 U·M·15.1; ///·MACHINE·DOOR·OPEN
3548 UN·DB3.DBX·6.2; ///·NO·PART·CLAMPED·(M7050)
3549 UN·DB1.DBX·1370.0; ///·1st·PLC·LOOP
3550 UN·DB3.DBX·6.7; ///·MESSAGE·7055·OPEN·TOOL·CLAMPING·SYSTEM
3551 UN·DB3.DBX·7.0; ///·MESSAGE·7056·ILLEGAL·TOOL·NUMBER·IN·THE·SETTING·DATA
3552 UN·DB3.DBX·7.1; ///·MESSAGE·7057·TOOL·HOLDER·OCCUPIED
3553 UN·DB3.DBX·7.2; ///·MESSAGE·7058·AXES·RELEASE
3554 UN·DB3.DBX·2.7; ///·MESSAGE·7023·WAITING·TIME·MAIN·DRIVE
3555 UN·DB3.DBX·0.2; ///·7002·change·tool
3556 =·DB3.DBX·5.0; ///·MACHINE·DOOR·OPEN·(7040)
3557 NETWORK
3558 TITLE·=·AXES·IN·MOTION
3559 L·DB1.DBB·1358; ///·AXES·IN·MOVEMENT
3560 L·B·#·16·#·0; ///·LOAD·CONSTANT·HEX·0
3561 <>·I; ///·COMPARE·TO·INEQUAL
3562 =·M·131.7; ///·AXES·IN·MOVEMENT
3563 NETWORK·3
3564 TITLE·=·6024·ALARM·DOOR·OPEN·ACC
3565 O·M·131.7; ///·AXES·IN·MOVEMENT
3566 O·M·92.0; ///·ROUND·AXIS·IN·MOVEMENT
3567 U·DB20.DBX·326.4; ///·AUTO·OPERATING·MODE
3568 =·M·102.0; ///·HM
3569 U·M·131.7; ///·AXES·IN·MOVEMENT
3570 U·DB20.DBX·327.2; ///·REFERENCE·OPERATING·MODE
3571 =·M·102.1; ///·HM
3572 U·DB20.DBX·324.0; ///·PROGRAM·RUNNING
3573 UN·DB20.DBX·324.1; ///·STOP·STATE
3574 U·(
3575 O·DB20.DBX·326.4; ///·AUTO·OPERATING·MODE
3576 O·DB20.DBX·326.2; ///·OPERATING·MODE·MDI

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3577 )
3578 = M·102.2; /// HM
3579 UN·M·114.3; /// ACTUAL·SPEED·LESS·THAN·20RPM
3580 = M·102.3; /// HM
3581 O·M·102.0; /// HM
3582 O·M·102.1; /// HM
3583 O·M·102.2; /// HM
3584 O·M·102.3; /// HM
3585 = M·110.2; /// HM·DOOR·ALARM
3586 U·M·110.2; /// HM·DOOR·ALARM
3587 U·M·15.1; /// MACHINE·DOOR·OPEN
3588 S·DB2·DBX·3.0; /// 6024·ALARM·DOOR·OPEN
3589 O·DB1·DBX·1370.2; /// ACKNOWLEDGMENT·KEY·PRESSED
3590 O·DB1·DBX·1370.3; /// RESET·KEY·PRESSED
3591 R·DB2·DBX·3.0; /// 6024·ALARM·DOOR·OPEN
3592 NETWORK·4
3593 TITLE·=·SUM·ALARMS·1·ACC
3594 L·DB2·DBW·0; /// WORD·ALARMS·1
3595 L·W·#·16·#·0;
3596 <>·I;
3597 = M·105.0; /// SUM·ALARMS1
3598 NETWORK·5
3599 TITLE·=·SUM·ALARMS·2·ACC
3600 L·DB2·DBW·2; /// WORD·ALARMS·2
3601 L·W·#·16·#·0;
3602 <>·I;
3603 = M·105.1; /// SUM·ALARMS·2
3604 NETWORK·5
3605 TITLE·=·SUM·ALARMS·3·ACC
3606 L·DB2·DBW·3; /// WORD·ALARMS·3
3607 L·W·#·16·#·0;
3608 <>·I;
3609 = M·105.3; /// SUM·ALARMS·3
3610 NETWORK·6
3611 TITLE·=·SUM·THERMAL·ALARMS·ACC
3612 L·DB2·DBW·4; /// BYTE·/·THERM·ALARMS
3613 L·W·#·16·#·0;
3614 <>·I;
3615 = M·105.2; /// SUM·THERM·ALARMS
3616 NETWORK·7
3617 TITLE·=·SELECTION·AUX_ON·ACC
3618 U·DB1·DBX·1370.0; /// 1st·PLC·LOOP
3619 S·M·110.1; /// AUX_ON·ON
3620 U·M·110.1; /// AUX_ON·ON
3621 = DB1·DBX·1390.2; /// PLC>·SURFACE·AUX-ON
3622 S·M·110.0; /// AUX_ON·AUTO
3623 S·M·110.3; /// AUX-ON·MANUAL
3624 NETWORK·8
3625 TITLE·=·DESELECT·AUX_ON·ACC
3626 O·M·105.0; /// SUM·ALARMS·1
3627 O·M·105.1; /// SUM·ALARMS·2
3628 O·M·105.3; /// SUM·ALARMS·3
3629 O·M·105.2; /// SUM·THERM·ALARMS
3630 O·DB1·DBX·1366.3; /// ALARM·ACTIVE
3631 R·M·110.3; /// AUX-ON·MANUAL
3632 UN·M·110.3; /// AUX-ON·MANUAL
3633 ON·A·3.4; /// EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
3634 O·M·18.3; /// EXIT·FLAG·DOOR·OPEN
3635 O·DB1·DBX·1366.3; /// ALARM·ACTIVE
3636 R·M·110.0; /// AUX-ON·AUTO
3637 END_FUNCTION
3638 FUNCTION·FC·13:·VOID
3639 NAME:·NC-STARTVERR·AND·CONTROL·BUTTONS
3640 BEGIN

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3641 NETWORK
3642 TITLE = FM CYCLE START BUTTON FROM CONTROL PANEL AND RAFITAS BUTTON
3643 O DB20.DBX.831.5; // CYCLE START KEY FROM CONTROL PANEL
3644 FP M.105.5; // FM CYCLE START BUTTON FROM CONTROL PANEL
3645 U M.105.5; // FM CYCLE START BUTTON FROM CONTROL PANEL
3646 = DB20.DBX.3.6; // NC START REQUEST
3647 NETWORK
3648 TITLE = FM NC STOP BUTTON FROM CONTROL PANEL or HM M0 / M1 DYNAMIC
3649 O DB20.DBX.831.4; // NC STOP KEY FROM CONTROL PANEL
3650 FP M.105.6; // FM NC STOP BUTTON FROM THE CONTROL PANEL
3651 O M.105.6; // FM NC STOP BUTTON FROM THE CONTROL PANEL
3652 O M.0.1; // HM M0 / M1 DYNAMIC
3653 O DB20.DBX.0.1; // NC STOP REQUEST
3654 = DB20.DBX.0.1; // NC STOP REQUEST
3655 NETWORK
3656 TITLE = FM RESET BUTTON FROM THE CONTROL PANEL
3657 O DB20.DBX.828.6; // RESET BUTTON FROM CONTROL PANEL
3658 FP M.105.7; // FM RESET BUTTON FROM CONTROL PANEL
3659 O M.105.7; // FM RESET BUTTON FROM THE CONTROL PANEL
3660 O DB20.DBX.4.0; // RESET REQUEST
3661 = DB20.DBX.4.0; // RESET REQUIREMENT
3662 NETWORK 1
3663 TITLE = AUX_ON / WORT NC_START VERR.
3664 UN M.96.2; // WAITING TIME MAIN DRIVE NC_START VERR.
3665 UN M.96.3; // OUTPUT FOR AUXILIARY RELAY DOOR CLOSED NC_START LOCK.
3666 UN M.96.4; // ENABLE SM MODUL B NC_START VERR.
3667 UN M.96.6; // Message target quantity reached NC_START VERR.
3668 UN M.96.7; // SERVO READY MAIN DRIVE NC_START VERR.
3669 UN M.97.2; // MESSAGE 7050 NO PART CLAMPED NC_START LOCK.
3670 UN M.97.3; // SPN IN MOVEMENT NC_START LOCK.
3671 UN M.97.4; // PART IN MOVEMENT NC_START LOCK.
3672 = M.104.4; // SUM NC_START LOCKED WITHOUT REFERENCE POINT INACTIVE
3673 UN M.96.5; // REFERENCE POINT INACTIVE NC_START LOCK.
3674 UN M.96.0; // ABSOLUTE AXIS 4 (TOOL) 0 DEGREES REACHED NC_START LOCK.
3675 UN M.96.1; // TOOL ENABLE NC_START VERR.
3676 U M.104.4; // SUM NC_START LOCKED WITHOUT REFERENCE POINT INACTIVE
3677 = M.104.3; // SUM NC_START VERR.
3678 NETWORK 3
3679 O M.100.6; // M3 MEMORY
3680 O M.100.7; // M4 MEMORY
3681 UN DB10.DBX.1.6; // SPINDLE START AFTER M0
3682 U DB20.DBX.0.2; // FC NC-START
3683 U M.104.3; // SUM NC_START VERR.
3684 S M.101.0; // NC START MEMORY
3685 NETWORK
3686 TITLE = AUTOMATIC AND MDI OPERATING MODE
3687 ; UN DB20.DBX.326.2; // OPERATING MODE MDI
3688 ; UN DB20.DBX.326.4; // AUTOMATIC MODE
3689 UN DB20.DBX.326.0; // JOG MODE
3690 UN DB20.DBX.326.1; // EDIT MODE
3691 UN DB20.DBX.326.3; // OPERATING MODE REPOS
3692 UN DB20.DBX.326.5; // OPERATING MODE INC 1
3693 UN DB20.DBX.326.6; // OPERATING MODE INC 10
3694 UN DB20.DBX.326.7; // OPERATING MODE INC 100
3695 UN DB20.DBX.327.0; // OPERATING MODE INC 1000
3696 UN DB20.DBX.327.1; // OPERATING MODE INC 10000
3697 UN DB20.DBX.327.2; // REFERENCE OPERATING MODE
3698 UN DB20.DBX.327.3; // OPERATING MODE INC VAR
3699 UN DB20.DBX.327.4; // PRESET OPERATING MODE
3700 O DB1.DBX.1402.5; // HEIDENHAIN TNC355 ACTIVE
3701 = M.103.0; // AUTOMATIC AND MDI OPERATING MODE
3702 NETWORK 4
3703 TITLE = NC_START / STARTVERR.
3704 ON M.103.0; // AUTOMATIC AND MDI OPERATING MODE

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3705 ON·M·104.3;·///·SUM·NC·START·VERR.
3706 O·M·101.0;·///·NC·START·MEMORY
3707 O·DB1.DBX·1366.3;·///·ALARM·ACTIVE
3708 U·DB20.DBX·0.2;·///·FC·NC_START
3709 R·DB20.DBX·0.2;·///·FC·NC_START
3710 =·DB20.DBX·319.0;·///·NEG.·ACKNOWLEDGMENT·DNC
3711 END_FUNCTION
3712 FUNCTION·FC·10:·VOID
3713 NAME:·AT_PROGRAM_ENDE_RESET_ODER_NEUSTART
3714 BEGIN
3715 NETWORK·1
3716 TITLE·=·PROGRAM·END·TO·NC
3717 O·M·10.1;·///·HM
3718 UN·DB10.DBX·1.0;·///·SPS-MSD·(CONTINUOUS·RUN)
3719 R·M·10.1;·///·HM
3720 =·DB20.DBX·348.1;·///·PROGRAM·RUNNING·WILL·BE·RESET
3721 NETWORK·2
3722 TITLE·=·PROGRAM·END·AND·RESTART·(CONTINUOUS·RUN)·ON·NC
3723 O·M·10.1;·///·HM
3724 U·DB10.DBX·1.0;·///·SPS-MSD·(CONTINUOUS·RUN)
3725 R·M·10.1;·///·HM
3726 =·DB20.DBX·348.2;·///·PROGRAM·RUNNING·WILL·BE·RESET·AND·STARTED
3727 NETWORK·3
3728 TITLE·=·ACTUAL·SPEED·LESS·THAN·20RPM
3729 O·DB20.DBX·192.2;·///·M2·DYN.
3730 O·DB20.DBX·195.6;·///·M30·DYN.
3731 S·M·10.0;·///·HM
3732 U·M·10.0;·///·HM
3733 U·M·114.3;·///·ACTUAL·SPEED·LESS·THAN·20RPM
3734 S·M·10.1;·///·HM
3735 R·M·10.0;·///·HM
3736 NETWORK·3
3737 TITLE·=·M2·and·M30·FEEDBACK·FROM·M2,·M30·AND·RESET
3738 O·DB20.DBX·348.1;·///·PROGRAM·RUNNING·WILL·BE·RESET
3739 O·DB20.DBX·348.2;·///·PROGRAM·RUNNING·WILL·BE·RESET·AND·STARTED
3740 O·DB1.DBX·1370.3;·///·RESET·KEY·PRESSED
3741 O·DB1.DBX·1440.0;·///·RESET·TRIPPED
3742 R·M·10.0;·///·HM
3743 R·M·10.1;·///·HM
3744 =·DB20.DBX·259.6;·///·REPORT·M30
3745 =·DB20.DBX·256.2;·///·REPORT·M2
3746 END_FUNCTION
3747 FUNCTION·FC·11:·VOID
3748 NAME:·NC_START_UND_NC_STOP_VON_M0_ODER_M1
3749 BEGIN
3750 NETWORK·2
3751 TITLE·=·FC·NC·START
3752 UN·DB10.DBX·1.6;·///·Start·of·the·spindle·after·M0
3753 U·M·101.0;·///·NC·start·memory
3754 U·( ;
3755 O·DB20.DBX·224.3;·///·M3·Static
3756 O·DB20.DBX·224.4;·///·M4·Static
3757 );
3758 ;·O·E·2.4·///·External·CYCLE·Start·8·****·foot·switch·for·Andi's·PCM50
3759 O·M·150.1;·///·FM·ROBOTICS·INTERFACE·NC·START
3760 S·DB20.DBX·0.2;·///·FC·NC-START
3761 U·DB20.DBX·0.2;·///·FC·NC-START
3762 R·M·101.0;·///·NC·start·memory
3763 END_FUNCTION
3764 FUNCTION·FC·12:·VOID
3765 NAME:·AFG_EFG
3766 BEGIN
3767 NETWORK·1
3768 TITLE·=·FM·KEY·FEED·START

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3769 U·DB20.DBX·295.2;·//·FEED·START·BUTTON
3770 UN·DB20.DBX·295.1;·//·FEED·HOLD·KEY
3771 UN·M·200.0·//·SET·TOOL·POSITIONS
3772 FP·M·133.5;·//·FM·KEY·FEED·START
3773 NETWORK·2
3774 TITLE·=·FM·KEY·FEED·HOLD
3775 U·DB20.DBX·295.1;·//·FEED·HOLD·KEY
3776 UN·DB20.DBX·295.2;·//·FEED·START·BUTTON
3777 UN·M·200.0·//·SET·TOOL·POSITIONS
3778 FP·M·133.7;·//·FM·KEY·FEED·STOP
3779 NETWORK
3780 TITLE·=·FEED·STOP·/·START·ENABLE
3781 U·M·104.0;·//·SUM·AFG
3782 =·M·133.0;·//·FEED·STOP·/·START·ENABLE
3783 NETWORK·3
3784 TITLE·=·FEED·STOP·ACTIVE
3785 O·DB20.DBX·326.4;·//·AUTOMATIC·MODE
3786 O·DB20.DBX·326.2;·//·OPERATING·MODE·MDI
3787 O·DB20.DBX·327.2;·//·REFERENCE·OPERATING·MODE
3788 U·(
3789 U·M·133.0;·//·FEED·STOP·/·START·ENABLE
3790 U·M·133.7;·//·FM·KEY·FEED·STOP
3791 UN·M·15.1;·//·MACHINE·DOOR·OPEN
3792 U·M·131.7;·//·AXES·IN·MOVEMENT
3793 )
3794 S·M·91.6;·//·AFG,·EFG·FEED·STOP·ACTIVE
3795 U·M·133.5;·//·FM·BUTTON·PREVIEW
3796 B·START
3797 UN·M·132.1;·//·SPINDLE·STOP·ACTIVE
3798 UN·M·15.1;·//·MACHINE·DOOR·OPEN
3799 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
3800 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
3801 R·M·91.6;·//·AFG,·EFG
3802 NETWORK·4
3803 TITLE·=·SUM·MELDUNGEN·AFG·/·EFG
3804 L·DB3.DBW·0;·//·WORD·/·MESSAGES·AFG·/·EFG
3805 L·W·#·16·#·0;·//·LOAD·CONSTANT·HEX·0
3806 <>·I;·//·COMPARE·TO·INEQUAL
3807 =·M·91.0;·//·SUM·MESSAGES·AFG·/·EFG
3808 NETWORK·5
3809 TITLE·=·SUM·AFG·K0
3810 UN·M·90.1;·//·AXES·READY·FOR·OPERATION·AFG·/·EFG
3811 UN·M·90.4;·//·SPM·ON·THE·MOVE
3812 UN·M·90.5;·//·AFG·/·EFG·T-WORD·IS·VALID
3813 UN·M·90.7;·//·TAKE·AWAY·AFG·AND·EFG
3814 UN·M·91.0;·//·SUM·MESSAGES·AFG·/·EFG
3815 UN·M·91.2;·//·AFG·MELDUNG·7050·NO·PART·CLAMPED
3816 UN·M·91.5;·//·VICE·MOV.·ACTIVE·AFG·/·EFG
3817 UN·M·91.6;·//·AFG,·EFG·FEED·STOP·ACTIVE
3818 UN·M·91.7;·//·AFG,·EFG·KEY·SPINDLE·HOLD
3819 =·M·104.0;·//·SUM·AFG
3820 NETWORK·5
3821 TITLE·=·SUM·EFG·K0
3822 UN·M·90.1;·//·AXES·READY·FOR·OPERATION·AFG·/·EFG
3823 UN·M·90.2;·//·ABSOLUTE·AXIS·4·(TOOL)·0·DEGREES·REACHED·AFG·/·EFG
3824 UN·M·90.4;·//·SPM·ON·THE·MOVE
3825 UN·M·90.5;·//·AFG·/·EFG·T-WORD·IS·VALID
3826 UN·M·90.7;·//·TAKE·AWAY·AFG·AND·EFG
3827 UN·M·91.0;·//·SUM·MESSAGES·AFG·/·EFG
3828 UN·M·91.2;·//·AFG·MELDUNG·7050·NO·PART·CLAMPED
3829 UN·M·91.5;·//·VICE·MOV.·ACTIVE·AFG·/·EFG
3830 UN·M·91.6;·//·AFG,·EFG·FEED·STOP·ACTIVE
3831 UN·M·91.7;·//·AFG,·EFG·KEY·SPINDLE·HOLD
3832 =·M·104.1;·//·SUM·EFG

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3833 NETWORK·6
3834 TITLE·=·AFG·/·EFG
3835 UN·DB20·DBX·327.2;·//·REFERENCE·OPERATING·MODE
3836 UN·DB20·DBX·326.4;·//·AUTOMATIC·MODE
3837 UN·DB20·DBX·326.2;·//·OPERATING·MODE·MDI
3838 UN·DB20·DBX·326.1;·//·EDIT·MODE
3839 UN·DB20·DBX·326.3;·//·OPERATING·MODE·REPOS
3840 UN·DB20·DBX·327.4;·//·PRESET·OPERATING·MODE
3841 U·M·110.3;·//·AUX-ON·MANUAL
3842 O;
3843 UN·DB20·DBX·326.0;·//·JOG·MODE
3844 UN·DB20·DBX·326.1;·//·EDIT·MODE
3845 UN·DB20·DBX·326.3;·//·OPERATING·MODE·REPOS
3846 UN·DB20·DBX·327.4;·//·PRESET·OPERATING·MODE
3847 U·M·110.0;·//·AUX-ON·AUTO
3848 =·M·110.7;·//·HM·OPERATING·MODES
3849 U·M·110.7;·//·HM·OPERATING·MODES
3850 U·M·104.0;·//·SUM·AFG
3851 =·DB20·DBX·340.4;·//·AXIS·ENABLE·K0
3852 U·M·110.7;·//·HM·OPERATING·MODES
3853 U·M·104.1;·//·SUM·EFG
3854 =·DB20·DBX·340.3;·//·READ-IN·ENABLE·K0
3855 NETWORK·5
3856 TITLE·=·AFG·K1
3857 UN·M·90.1;·//·AXES·READY·FOR·OPERATION·AFG·/·EFG
3858 UN·M·90.3;·//·ENABLE·SM·MODUL·B·AFG·/·EFG
3859 UN·M·90.4;·//·SPM·ON·THE·MOVE
3860 UN·M·90.7;·//·TAKE·AWAY·AFG·AND·EFG
3861 UN·M·91.0;·//·SUM·MESSAGES·AFG·/·EFG
3862 UN·M·91.2;·//·AFG·MELDUNG·7050·NO·PART·CLAMPED
3863 UN·M·91.5;·//·VICE·MOV··ACTIVE·AFG·/·EFG
3864 UN·M·91.6;·//·AFG,·EFG·FEED·STOP·ACTIVE
3865 UN·M·91.7;·//·AFG,·EFG·KEY·SPINDLE·HOLD
3866 U·M·110.7;·//·HM·OPERATING·MODES
3867 =·DB25·DBX·340.4;·//·AXLE·ENABLE·K1
3868 NETWORK·6
3869 TITLE·=·EFG·K1
3870 UN·M·90.1;·//·AXES·READY·FOR·OPERATION·AFG·/·EFG
3871 UN·M·90.3;·//·ENABLE·SM·MODUL·B·AFG·/·EFG
3872 UN·M·90.4;·//·SPM·ON·THE·MOVE
3873 UN·M·90.7;·//·TAKE·AWAY·AFG·AND·EFG
3874 UN·M·91.0;·//·SUM·MESSAGES·AFG·/·EFG
3875 UN·M·91.2;·//·AFG·MELDUNG·7050·NO·PART·CLAMPED
3876 UN·M·91.5;·//·VICE·MOV··ACTIVE·AFG·/·EFG
3877 UN·M·91.6;·//·AFG,·EFG·FEED·STOP·ACTIVE
3878 UN·M·91.7;·//·AFG,·EFG·KEY·SPINDLE·HOLD
3879 U·M·110.7;·//·HM·OPERATING·MODES
3880 =·DB25·DBX·340.3;·//·READ-IN·ENABLE·K1
3881 NETWORK
3882 TITLE·=·enables·for·Repos·operating·mode
3883 U·DB20·DBX·324.0;·//·PROGRAM·RUNNING
3884 U·DB20·DBX·324.1;·//·PROGRAM·STOPPED
3885 U·DB20·DBX·326.3;·//·OPERATING·MODE·REPOS
3886 SPBN·M1302;
3887 =·DB25·DBX·340.3;·//·READ-IN·ENABLE·K1
3888 =·DB25·DBX·340.4;·//·AXLE·ENABLE·K1
3889 M1302:·NOP·0;
3890 END_FUNCTION
3891 FUNCTION·FC·14:·VOID
3892 NAME:·ALARM·STATUS
3893 BEGIN
3894 NETWORK·1
3895 TITLE·=
3896 U·DB1·DBX·1366.3;·//·ALARM·ACTIVE

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3897 = M.19.7; /// EXIT FLAG ROBOTICS ALARM OUTPUT
3898 END_FUNCTION
3899 FUNCTION FC.16: VOID
3900 NAME: PLC_OBERFLAECHEN_SIGNALE
3901 BEGIN
3902 NETWORK 1
3903 U.DB10.DBX.75.0; /// ACTIVATE THE AUTOMATIC DOOR
3904 = DB1.DBX.1418.0; /// AUT. DOOR
3905 O.DB10.DBX.75.4; /// Activate pneumatic vice
3906 O.DB10.DBX.75.1; /// Activate the electric vice
3907 = DB20.DBX.382.1; /// Clamping device available
3908 U.DB10.DBX.75.3;
3909 = DB20.DBX.382.4; /// BLOW DEVICE
3910 U.DB10.DBX.75.6;
3911 = DB20.DBX.382.5; /// PARTIAL APPARATUS
3912 END_FUNCTION
3913 FUNCTION FC.17: VOID
3914 NAME: AUTOMATIC DOOR
3915 BEGIN
3916 NETWORK 1
3917 TITLE = RELEASE OPEN THE DOOR
3918 ; UN.M.110.2; /// HM DOOR ALARM
3919 NETWORK 1
3920 TITLE = FM.PC.KEY DOOR
3921 U.DB1.DBX.1374.2; /// DOOR BUTTON
3922 U.M.139.6 /// HM DOOR OPEN FROM EXIT FLAG DOOR OPEN
3923 UN.M.139.5; /// HM OPEN THE DOOR
3924 UN.M.110.2; /// HM DOOR ALARM
3925 S.M.139.2; /// HM CLOSE THE DOOR BY PC KEY
3926 R.M.139.6 /// HM DOOR OPEN FROM EXIT FLAG DOOR OPEN
3927 UN.DB1.DBX.1374.2; /// DOOR BUTTON
3928 R.M.139.2; /// HM CLOSE THE DOOR BY PC KEY
3929 NETWORK 4
3930 TITLE = REQUEST DOOR OPEN
3931 U.DB1.DBX.1374.2; /// DOOR BUTTON
3932 UN.M.139.2; /// HM CLOSE THE DOOR BY PC KEY
3933 O;
3934 U.DB1.DBX.1370.0; /// 1st PLC LOOP
3935 UN.M.18.3; /// EXIT FLAG DOOR OPEN
3936 UN.M.18.4; /// EXIT FLAG DOOR CLOSED
3937 U.M.15.1; /// MACHINE DOOR OPEN
3938 U.E.4.4; /// DOOR OPEN, AUTOMATIC DOOR
3939 ; O.DB1.DBX.1382.0; /// DNC REQUIREMENT DOOR OPEN
3940 O.M.138.1; /// HM MACHINE KEYBOARD DOOR OPEN
3941 O.M.149.1; /// HM ROBOT INTERFACE
3942 = M.139.5; /// HM OPEN THE DOOR
3943 O.M.0.1; /// HM M0 // M1 DYNAMIC
3944 O.DB20.DBX.195.6; /// M30 DYNAMIC
3945 O.DB20.DBX.192.2; /// M2 DYNAMIC
3946 O.DB1.DBX.1382.0; /// DNC REQUIREMENT DOOR OPEN
3947 UN.DB10.DBX.1.0; /// PLC-MSD CONTINUOUS RUN ACTIVE
3948 S.M.139.3; /// OPEN MARKER DOOR
3949 NETWORK 5
3950 TITLE = REQUEST DOOR CLOSED
3951 U.DB1.DBX.1382.1; /// DNC REQUIREMENT DOOR CLOSED
3952 S.M.136.1 /// HM DNC REQUIREMENT DOOR CLOSED
3953 UN.M.15.1; /// MACHINE DOOR OPEN
3954 O.DB1.DBX.1382.0; /// DNC REQUIREMENT DOOR OPEN
3955 O.DB1.DBX.1382.2; /// DNC REQUEST DOOR STOP
3956 O.DB1.DBX.1370.3; /// RESET KEY PRESSED
3957 O.DB1.DBX.1440.0; /// RESET TRIPPED
3958 R.M.136.1 /// HM DNC REQUIREMENT DOOR CLOSED
3959 U.M.138.2; /// HM MACHINE KEYBOARD DOOR CLOSED
3960 U.M.139.6 /// HM DOOR OPEN FROM EXIT FLAG DOOR OPEN

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3961 S·M·139.7
3962 R·M·139.6; //·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
3963 UN·M·138.2; //·HM·MACHINE·KEYBOARD·DOOR·CLOSED
3964 R·M·139.7
3965 O·M·139.2; //·HM·CLOSE·THE·DOOR·BY·PC·KEY
3966 O·M·136.1; //·HM·DNC·REQUIREMENT·DOOR·CLOSED
3967 O·M·139.7
3968 O·M·149.0; //·HM·ROBOT·INTERFACE
3969 ;·O( ;
3970 ;·U·DB1.DBX·1370.0; //·1st·PLC·LOOP
3971 ;·UN·M·18.3; //·EXIT·FLAG·DOOR·OPEN
3972 ;·UN·M·18.4; //·EXIT·FLAG·DOOR·CLOSED
3973 ;·UN·M·15.1; //·MACHINE·DOOR·OPEN
3974 ;;·U·M·15.0; //·MACHINE·DOOR·CLOSED·(MAIN·MOTOR·CONTACTOR·ON)
3975 ;·UN·E·4.4; //·DOOR·OPEN,·AUTOMATIC·DOOR
3976 ;·);
3977 =·M·139.4; //·FLAG·CLOSE·THE·DOOR
3978 NETWORK·6
3979 TITLE·=·ABORT·CONDITION
3980 O(
3981 U·M·139.6; //·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
3982 UN·E·4.4; //·DOOR·OPEN,·AUTOMATIC·DOOR
3983 )
3984 O(
3985 UN·M·15.1; //·MACHINE·DOOR·OPEN
3986 U·E·4.4; //·DOOR·OPEN,·AUTOMATIC·DOOR
3987 )
3988 L·S5TIME·#·1S; //·1·p
3989 SE·T·27; //·SWITCH·ON·DELAY
3990 U·T·27;
3991 S·DB2.DBX·3.3; //·DOOR·SWITCH·DEF.·(ALARM·6027)
3992 ;·R·M·139.6; //·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
3993 R·M·110.1; //·AUX-ON·ON
3994 R·M·110.0; //·AUX-ON·AUTO
3995 R·M·110.3; //·AUX-ON·MANUAL
3996 O·DB1.DBX·1370.2; //·ACKNOWLEDGMENT·KEY·PRESSED
3997 O·DB1.DBX·1370.3; //·RESET·KEY·PRESSED
3998 R·DB2.DBX·3.3; //·DOOR·SWITCH·DEF.
3999 O·DB1.DBX·1382.2; //·DNC·REQUEST·DOOR·STOP
4000 O·DB2.DBX·3.4; //·DOOR·MONITORING·PERIOD.
4001 ON·M·110.1; //·AUX-ON·ON
4002 ON·M·15.2; //·EMERGENCY·STOP·SWITCH
4003 R·M·136.1; //·HM·DNC·REQUIREMENT·DOOR·CLOSED
4004 R·M·18.3; //·EXIT·FLAG·DOOR·OPEN
4005 R·M·18.4; //·EXIT·FLAG·DOOR·CLOSED
4006 R·M·139.2; //·HM·CLOSE·THE·DOOR·BY·PC·KEY
4007 R·M·139.3; //·OPEN·MARKER·DOOR
4008 NETWORK·7
4009 TITLE·=·OPEN·THE·DOOR
4010 O·M·139.3; //·OPEN·MARKER·DOOR
4011 O·M·139.5; //·OPEN·MARKER·DOOR
4012 O·M·400.0; //·OPEN·MARKER·DOOR
4013 UN·M·110.2; //·HM·DOOR·ALARM
4014 O(
4015 ON·E·2.1; //·S1·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
4016 ON·E·2.5; //·S2·DOOR·SWITCH·(0·SIGNAL·WHEN·THE·DOOR·IS·CLOSED)
4017 U·M·18.3; //·EXIT·FLAG·DOOR·OPEN
4018 )
4019 S·M·18.3; //·EXIT·FLAG·DOOR·OPEN
4020 R·M·18.4; //·EXIT·FLAG·DOOR·CLOSED
4021 R·M·139.1; //·EXIT·FLAG·DOOR·CLOSED
4022 O·M·18.3; //·EXIT·FLAG·DOOR·OPEN
4023 O·DB1.DBX·1370.0; //·1st·PLC·LOOP
4024 U·E·4.4; //·DOOR·OPEN,·AUTOMATIC·DOOR

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4025 S·M·139.6·///·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
4026 U·M·139.6·///·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
4027 S·M·18.3;·///·EXIT·FLAG·DOOR·OPEN
4028 R·M·139.3;·///·OPEN·MARKER·DOOR
4029 U·M·18.3;·///·EXIT·FLAG·DOOR·OPEN
4030 UN·E·4.4;·///·DOOR·OPEN,·AUTOMATIC·DOOR
4031 =·M·139.0;·///·DOOR·IN·MOVEMENT
4032 L·S5TIME·#·10S;·///·10·SECONDS
4033 SE·T·20;·///·START·T20·SWITCH-ON·DELAY.
4034 NETWORK·8
4035 TITLE·=·CLOSE·THE·DOOR
4036 U·M·139.4;·///·FLAG·CLOSE·THE·DOOR
4037 UN·M·90.4;·///·SPM·ON·THE·MOVE
4038 O·M·400.1·///·KEEPER·CLOSE·THE·DOOR
4039 =·M·18.4;·///·EXIT·FLAG·DOOR·CLOSED
4040 R·M·18.3;·///·EXIT·FLAG·DOOR·OPEN
4041 R·M·139.4;·///·FLAG·CLOSE·THE·DOOR
4042 R·M·139.6·///·HM·DOOR·OPEN·FROM·EXIT·FLAG·DOOR·OPEN
4043 U·M·18.4;·///·EXIT·FLAG·DOOR·CLOSED
4044 U·M·15.1;·///·MACHINE·DOOR·OPEN
4045 =·M·139.0;·///·DOOR·IN·MOVEMENT
4046 L·S5TIME·#·10S;·///·10·SECONDS
4047 SE·T·21;·///·START·T21·SWITCH-ON·DELAY.
4048 U·M·18.4;·///·EXIT·FLAG·DOOR·CLOSED
4049 UN·M·15.1;·///·MACHINE·DOOR·OPEN
4050 O·M·120.5·///·FM·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
4051 S·M·139.1;·///·EXIT·FLAG·DOOR·CLOSED
4052 U·M·139.1;·///·EXIT·FLAG·DOOR·CLOSED
4053 S·M·18.4;·///·EXIT·FLAG·DOOR·CLOSED
4054 NETWORK·9
4055 O·T·20;·///·T20
4056 O·T·21;·///·T21
4057 UN·DB2.DBX·3.3;·///·DOOR·SHEET
4058 OLD·DEF.·(ALARM·6027)
4059 S·DB2.DBX·3.4;·///·DOOR·TIME·ABGEL.·(ALARM·6028)
4060 O·DB1.DBX·1370.2;·///·ACKNOWLEDGMENT·KEY·PRESSED
4061 O·DB1.DBX·1370.3;·///·RESET·KEY·PRESSED
4062 R·DB2.DBX·3.4;
4063 NETWORK·10
4064 TITLE·=·DNC·STATUS·REPORTING·DOOR
4065 UN·M·15.1;·///·MACHINE·DOOR·OPEN
4066 UN·E·4.4;·///·DOOR·OPEN,·AUTOMATIC·DOOR
4067 U·M·104.4;·///·SUM·NC_START·LOCKED·WITHOUT·REFERENCE·POINT·INACTIVE
4068 =·M·148.0;·///·HM·ROBOT·INTERFACE
4069 =·DB1.DBX·1390.1;·///·PLC>·SURF.·DOOR·CLOSED
4070 U·M·15.1;·///·MACHINE·DOOR·OPEN
4071 U·E·4.4;·///·DOOR·OPEN,·AUTOMATIC·DOOR
4072 =·M·148.1;·///·HM·ROBOT·INTERFACE
4073 =·DB1.DBX·1390.0;·///·PLC>·SURF.·DOOR·OPEN
4074 U·DB1.DBX·1382.0;·///·DNC·DOOR·OPEN
4075 UN·M·18.3;·///·EXIT·FLAG·DOOR·OPEN
4076 S·DB1.DBX·1398.0;·///·NEG.·ACKNOWLEDGMENT·DNC
4077 U·DB1.DBX·1382.1;·///·DNC·DOOR·CLOSED
4078 UN·M·18.4;·///·EXIT·FLAG·DOOR·CLOSED
4079 S·DB1.DBX·1398.0;·///·NEG.·ACKNOWLEDGMENT·DNC
4080 END_FUNCTION
4081 FUNCTION·FC·18:·VOID
4082 NAME:·EL_VICE
4083 BEGIN
4084 NETWORK·1
4085 TITLE·=·SPN·SPANNEN
4086 U·(·;
4087 ON·DB20.DBX·324.0;·///·PROGRAM·RUNNING
4088 O·DB20.DBX·324.1;·///·STATE·STOP
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4089 );
4090 U·DB20·DBX·294.4;·//·PC·KEY·PINOL·FORWARD
4091 O·DB20·DBX·195.2;·//·CLAMP·M26·SPM·(DYN.)
4092 O·M·149.3;·//·ROBOTICS·/·FM·VICE·CLOSED
4093 O·DB20·DBX·302.2;·//·CLAMP·DNC·INTRFACE·SPM
4094 U·M·140.2;·//·SPN·ENABLE
4095 S·M·140.0;·//·CLAMPING
4096 =·DB20·DBX·259.2;·//·TRIP·M26
4097 R·M·140.1;·//·RELAX·IN·SPN
4098 NETWORK·2
4099 TITLE·=·SPN·RELAX
4100 U·( ;
4101 ON·DB20·DBX·324.0;·//·PROGRAM·RUNNING
4102 O·DB20·DBX·324.1;·//·STATE·STOP
4103 );
4104 U·DB20·DBX·294.3;·//·PC·BUTTON·QUILL·BACK
4105 O·DB20·DBX·195.1;·//·M25·SPM·RELAX·(DYN.)
4106 O·M·149.2;·//·ROBOTICS·/·FM·VICE·ON
4107 O·DB20·DBX·302.1;·//·RELAX·DNC·INTERFACE·SPM
4108 U·M·140.2;·//·SPN·ENABLE
4109 S·M·140.1;·//·RELAX·IN·SPN
4110 =·DB20·DBX·259.1;·//·TRIP·M25
4111 R·M·140.0;·//·CLAMPING
4112 NETWORK·3
4113 TITLE·=·RELEASE·SPN
4114 U·M·110.3;·//·AUX-ON·MANUAL
4115 U·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
4116 UN·M·131.7;·//·AXES·IN·MOVEMENT
4117 UN·M·106.6;·//·EDIT·MODE·OPERATING·MODE
4118 =·M·140.2;·//·SPN·ENABLE
4119 NETWORK·4
4120 TITLE·=·SPN·ON·THE·MOVE
4121 U·M·140.0;·//·CLAMPING
4122 UN·E·4.5;·//·TENSIONED
4123 O;
4124 U·M·140.1;·//·RELAX·IN·SPN
4125 UN·E·4.1;·//·REAR·SPN
4126 =·M·90.4;·//·SPN·IN·MOTION·(AFG,·EFG)
4127 =·M·95.1;·//·SPN·IN·MOTION·(SFG)
4128 =·M·97.3;·//·SPN·IN·MOVEMENT·(NC·START·LOCK)
4129 L·S5TIME·#·30S;·//·30S
4130 SE·T·24;
4131 UN·DB2·DBX·3.6;·//·NO·PART·CLAMPED·(ALARM·6030)
4132 U·T·24;
4133 S·DB2·DBX·2.3;·//·SPN·TIME·MONITOR·(ALARM·6019)
4134 O·DB1·DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4135 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
4136 R·DB2·DBX·2.3;·//·SPN·TIME·MONITOR·(ALARM·6019)
4137 NETWORK·5
4138 TITLE·=·MELDUNG·7050·NO·PART·CLOSED
4139 UN·DB1·DBX·1370.0;·//·1st·PLC·LOOP
4140 UN·E·4.5;·//·TENSIONED
4141 UN·E·4.1;·//·REAR·SPN
4142 O·E·4.0;·//·BERO·FRONT
4143 =·M·91.2;·//·AFG·MELDUNG·7050·NO·PART·CLAMPED
4144 =·M·95.2;·//·SFG·MELDUNG·7050·NO·PART·CLOSED
4145 =·M·97.2;·//·NC·START·INTERLOCK·MESSAGE·7050·NO·PART·CLAMPED
4146 =·DB3·DBX·6.2;·//·NO·PART·CLAMPED·(7050)
4147 U·E·4.0;·//·BERO·FRONT
4148 U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4149 S·DB2·DBX·3.6;·//·NO·PART·CLAMPED·(ALARM·6030)
4150 O·DB1·DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4151 O·DB1·DBX·1370.3;·//·RESET·KEY·PRESSED
4152 R·DB2·DBX·3.6;·//·NO·PART·CLAMPED·(ALARM·6030)

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4153 NETWORK·6
4154 TITLE·=·SPN·SPANNEN
4155 U·M·140.0;·//·CLAMPING
4156 L·S5TIME·#·700MS;·//·0.1·S
4157 SE·T·22;
4158 R·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4159 U·M·140.0;·//·CLAMPING
4160 U·T·22;
4161 S·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4162 NETWORK·7
4163 TITLE·=·SPN·RELAX
4164 U·M·140.1;·//·RELAX·IN·SPN
4165 L·S5TIME·#·700MS;·//·0.1·S
4166 SE·T·23;·//·T23
4167 R·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4168 U·M·140.1;·//·RELAX·IN·SPN
4169 U·T·23;·//·T23
4170 S·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4171 NETWORK·8
4172 TITLE·=·ABORT·CONDITION
4173 U·M·90.4;·//·SPN·ON·THE·MOVE
4174 U·(·;
4175 ON·M·15.2;·//·EMERGENCY·STOP·SWITCH
4176 O·DB1.DBX·1440.0;·//·RESET·TRIPPED
4177 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
4178 );
4179 O·DB2.DBX·2.4;·//·VICE·FAILED·(A6020)
4180 O·DB2.DBX·2.6;·//·SPN·BOARD·DEFECTIVE·(ALARM·6022)
4181 O·DB2.DBX·2.3;·//·VICE·TIME·OVER·(A6019)
4182 O·DB2.DBX·3.6;·//·NO·PART·CLAMPED·(A6030)
4183 R·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4184 R·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4185 R·M·140.0;·//·CLAMPING
4186 R·M·140.1;·//·RELAX·IN·SPN
4187 O·E·4.1;·//·REAR·SPN
4188 R·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4189 R·M·140.1;·//·RELAX·IN·SPN
4190 NETWORK·9
4191 TITLE·=·MONITORING·SPN·BOARD
4192 U·E·4.5;·//·TENSIONED
4193 UN·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4194 UN·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4195 L·S5TIME
4196 #·2S;·//·200·*·0.01·=·2·SECONDS
4197 SE·T·30;·//·SWITCH·ON·DELAY
4198 U·T·30;
4199 S·DB2.DBX·2.6;·//·SPN·BOARD·DEFECTIVE·(ALARM·6022)
4200 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4201 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
4202 R·DB2.DBX·2.6;·//·SPN·BOARD·DEFECTIVE·(ALARM·6022)
4203 NETWORK·10
4204 TITLE·=·MONITORING·SPM
4205 U·M·140.4;·//·SPM·CLOSED
4206 S·M·140.7;·//·HM·SPM
4207 UN·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4208 R·M·140.7;·//·HM·SPM
4209 U·M·140.7;·//·HM·SPM
4210 UN·E·4.5;·//·SPM·CLOSED
4211 S·DB2.DBX·2.4;·//·SPM·FAILED·(ALARM·6020)
4212 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4213 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
4214 R·DB2.DBX·2.4;·//·SPM·FAILED·(ALARM·6020)
4215 NETWORK·11
4216 TITLE·=·ROBOTIC·INTERFACE
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4217 U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4218 U·E·4.5;·//·SPM·CLOSED
4219 =·M·140.4;·//·SPM·CLOSED
4220 =·M·138.5;·//·VICE·CLAMPED
4221 =·DB20.DBX·310.2;·//·PLC>·SURFACE·VICE·CLAMPED
4222 U·E·4.1;·//·REAR·SPM
4223 =·M·138.4;·//·VICE·RELEASED
4224 =·DB20.DBX·310.1;·//·PLC>·REAR·SURFACE·VICE
4225 NETWORK·12
4226 TITLE·=·NEG.Acknowledgment·DNC
4227 U·DB20.DBX·302.2;·//·CLAMPING·THE·DNC·VICE
4228 UN·M·140.0;·//·CLAMPING·THE·SPM
4229 S·DB20.DBX·318.1;·//·NEG··ACKNOWLEDGMENT·DNC
4230 U·DB20.DBX·302.1;·//·RELEASE·DNC·VICE
4231 UN·M·140.1;·//·RELAX·SPM
4232 S·DB20.DBX·318.1;·//·NEG··ACKNOWLEDGMENT·DNC
4233 END_FUNCTION
4234 *****
4235 FUNCTION·FC·30:·VOID
4236 NAME:·PNEUM_VICE
4237 BEGIN
4238 NETWORK
4239 TITLE·=·VICE·CLOSED·/·OPEN·ENABLE
4240 U·M·110.3;·//·AUX-ON·MANUAL
4241 U·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
4242 UN·M·131.7;·//·AXES·IN·MOVEMENT
4243 UN·M·106.6;·//·EDIT·MODE·OPERATING·MODE
4244 O·DB1.DBX·1370.0;·//·PLC-1st·LOOP
4245 =·M·138.0;·//·ENABLE·VICE·CLOSED·/·OPEN
4246 NETWORK
4247 TITLE·=·HM·VICE·CLOSED·(M26)
4248 U·DB20.DBX·324.0;·//·PROGRAM·RUNNING
4249 U·DB20.DBX·195.2;·//·M26·DYN.
4250 O(
4251 U·DB15.DBX·20.2·//·VICE·CLAMPED·SAVE·IN·THE·SETTING·DATA
4252 U·DB1.DBX·1370.0;·//·PLC-1st·LOOP
4253 )
4254 S·M·137.5;·//·HM·VICE·CLOSED·(M26)
4255 NETWORK
4256 TITLE·=·PERFORMANCE·VICE·CLOSED
4257 U·M·138.0;·//·ENABLE·VICE·CLOSED·/·OPEN
4258 U·( ;
4259 U·M·138.7;·//·FM·BUTTON,·VICE·CLOSED
4260 UN·M·137.1;·//·FM·BUTTON,·VICE·OPEN
4261 O·DB20.DBX·195.2;·//·M26·DYN.
4262 O( ;
4263 O·M·149.3;·//·ROBOTICS·/·FM·VICE·CLOSED
4264 O·DB20.DBX·302.2;·//·DNC·/·VICE·CLOSED
4265 );
4266 U·( ;
4267 ON·DB20.DBX·324.0;·//·PROGRAM·RUNNING
4268 O·DB20.DBX·324.1;·//·CORE·/·STOP
4269 );
4270 O( ;
4271 U·M·137.5;·//·HM·VICE·CLOSED·(M26)
4272 UN·M·131.7;·//·AXES·IN·MOVEMENT
4273 );
4274 );
4275 S·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4276 R·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4277 =·DB20.DBX·259.2;·//·TRIP·M26
4278 S·M·137.7;·//·HM·M26·STATIC
4279 R·M·137.6;·//·HM·M25·STATIC
4280 NETWORK

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4281 TITLE = BACK · HM · VICE · CLOSED · (M26)
4282 U · M · 137.5 ; // HM · VICE · CLOSED · (M26)
4283 UN · M · 131.7 ; // AXES · IN · MOVEMENT
4284 R · M · 137.5 ; // HM · VICE · CLOSED · (M26)
4285 NETWORK
4286 TITLE = HM · VICE · OPEN · (M25)
4287 U · DB20.DBX · 324.0 ; // PROGRAM · RUNNING
4288 U · DB20.DBX · 195.1 ; // M25 · DYN.
4289 O (
4290 U · DB15.DBX · 20.1 // VICE · RELEASED · SAVE · IN · THE · SETTING · DATA
4291 U · DB1.DBX · 1370.0 ; // PLC-1st · LOOP
4292 )
4293 S · M · 137.4 ; // HM · VICE · ON · (M26)
4294 NETWORK
4295 TITLE = PERFORMANCE · VICE · ON
4296 U · M · 137.1 ; // FM · BUTTON , VICE · OPEN
4297 UN · M · 138.7 ; // FM · BUTTON , VICE · CLOSED
4298 O · DB20.DBX · 195.1 ; // M25 · DYN.
4299 O ( ;
4300 O · M · 149.2 ; // ROBOTICS / FM · VICE · ON
4301 O · DB20.DBX · 302.1 ; // DNC / VICE · ON
4302 ) ;
4303 U · ( ;
4304 ON · DB20.DBX · 324.0 ; // PROGRAM · RUNNING
4305 O · DB20.DBX · 324.1 ; // CORE / STOP
4306 ) ;
4307 O ( ;
4308 U · M · 137.4 ; // HM · VICE · ON · (M25)
4309 UN · M · 131.7 ; // AXES · IN · MOVEMENT
4310 ) ;
4311 U · M · 138.0 ; // ENABLE · VICE · CLOSED / OPEN
4312 S · M · 18.6 ; // RELEASE · THE · EXIT · FLAG · VICE
4313 R · M · 18.5 ; // EXIT · FLAG · CLAMP · VICE
4314 = DB20.DBX · 259.1 ; // TRIP · M25
4315 S · M · 137.6 ; // HM · M25 · STATIC
4316 R · M · 137.7 ; // HM · M26 · STATIC
4317 NETWORK
4318 TITLE = BACK · HM · VICE · OPEN · (M26)
4319 U · M · 137.4 ; // HM · VICE · ON · (M26)
4320 UN · M · 131.7 ; // AXES · IN · MOVEMENT
4321 R · M · 137.4 ; // HM · VICE · ON · (M26)
4322 NETWORK
4323 TITLE = VICE · CLAMPED
4324 U · M · 18.5 ; // EXIT · FLAG · CLAMP · VICE
4325 U · E · 4.5 ; // PRESSURE · SWITCH · VICE
4326 = M · 138.5 ; // VICE · CLAMPED
4327 FP · M · 26.3
4328 NETWORK
4329 TITLE = VICE · RELEASED
4330 U · M · 18.6 ; // RELEASE · THE · EXIT · FLAG · VICE
4331 UN · E · 4.5 ; // PRESSURE · SWITCH · VICE
4332 = M · 138.4 ; // VICE · RELEASED
4333 FP · M · 26.4
4334 NETWORK
4335 SAVE · TITLE = VICE · IN · SETTING · DATA
4336 O · M · 26.3
4337 O · M · 26.4
4338 SPBN · M001 ;
4339 U · M · 138.4 ; // VICE · RELEASED
4340 = DB15.DBX · 20.1 // VICE · RELEASED · SAVE · IN · THE · SETTING · DATA
4341 U · M · 138.5 ; // VICE · CLAMPED
4342 = DB15.DBX · 20.2 // VICE · CLAMPED · IN · THE · SETTING · DATA
4343 SAVE · TEN
4344 = DB20.DBX · 348.3 ; // REQUEST · FOR · IMMEDIATE · SETTING · DATA · BACKUP

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4345 M001:·NOP·0;
4346 NETWORK
4347 TITLE·=·VICE·MOV··ACTIVE·AFG·/·EFG
4348 U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4349 UN·E·4.5;·//·PRESSURE·SWITCH·VICE
4350 O;
4351 U·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4352 U·E·4.5;·//·PRESSURE·SWITCH·VICE
4353 O·M·137.5;·//·HM·VICE·CLOSED·(M26)
4354 O·M·137.4;·//·HM·VICE·ON·(M25)
4355 =·M·91.5;·//·VICE·MOV··ACTIVE·AFG·/·EFG
4356 NETWORK
4357 TITLE·=·6072·VICE·NOT·READY
4358 U·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4359 L·S5TIME·#·1S;·//·10X0.1S
4360 SE·T·32;·//·START·T32·AS·SWITCH-ON·DELAY.
4361 UN·E·4.5;·//·PRESSURE·SWITCH·VICE
4362 L·S5TIME·#·200MS;·//·2X0.1S
4363 SE·T·33;·//·START·T33·AS·SWITCH-ON·DELAY.
4364 U·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4365 L·S5TIME·#·1S;·//·10X0.1S
4366 SE·T·34;·//·START·T34·AS·SWITCH-ON·DELAY.
4367 U·E·4.5;·//·PRESSURE·SWITCH·VICE
4368 L·S5TIME·#·200MS;·//·2X0.1S
4369 SE·T·35;·//·START·T35·AS·SWITCH-ON·DELAY.
4370 U·T·32;·//·SCREW·TO·/·SUPERV··SHARP
4371 U·T·33;·//·PRESSURE·SWITCH·SCREW·(0.2S)
4372 O;
4373 U·T·34;·//·SCREW·ON·/·MONITOR·SHARP
4374 U·T·35;·//·PRESSURE·SWITCH·SCREW·(0.2S)
4375 O;
4376 UN·M·138.5;·//·VICE·CLAMPED
4377 U·( ;
4378 O·DB20.DBX·224.3;·//·M3·STATIC
4379 O·DB20.DBX·224.4;·//·M4·STATIC
4380 );
4381 S·DB2.DBX·9.0;·//·6072·VICE·NOT·READY
4382 U·DB2.DBX·9.0;·//·6072·VICE·NOT·READY
4383 U·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
4384 R·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4385 R·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4386 UN·M·18.5;·//·EXIT·FLAG·CLAMP·VICE
4387 UN·M·18.6;·//·RELEASE·THE·EXIT·FLAG·VICE
4388 U·(
4389 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4390 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
4391 )
4392 R·DB2.DBX·9.0;·//·6072·VICE·NOT·READY
4393 NETWORK
4394 TITLE·=·6050·M25·/·M26·WHILE·HA
4395 UN·M·114.3;·//·ACTUAL·SPEED·LESS·THAN·20RPM
4396 U·DB20.DBX·195.1;·//·M25·DYN.
4397 S·DB2.DBX·6.2;·//·6050·M25·WHILE·HA
4398 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED
4399 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED
4400 R·DB2.DBX·6.2;·//·6050·M25·WHILE·HA
4401 NETWORK
4402 TITLE·=·7054·CLOSE·VICE
4403 UN·M·138.5;·//·VICE·CLAMPED
4404 UN·DB3.DBX·5.2;·//·7042·MACHINE·DOOR·INIT.
4405 UN·DB3.DBX·2.4;·//·7020·SPECIAL·OPERATION·ACTIVE
4406 UN·DB3.DBX·5.0;·//·7040·MACHINE·DOOR·OPEN
4407 UN·DB3.DBX·2.0;·//·7016·SWITCH·ON·AUXILIARY·DRIVES
4408 UN·DB3.DBX·2.1;·//·7017·APPROACH·REFERENCE·POINT

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4409 UN·DB3.DBX·2.6;·//·7022·INITIALIZE·TOOL·TURNER
4410 =·DB3.DBX·6.6;·//·7054·CLOSE·THE·VICE
4411 NETWORK
4412 TITLE·=·PLC·/·OB·->·VICE·CLAMPED
4413 U·M·138.5;·//·VICE·CLAMPED
4414 =·DB20.DBX·310.2;·//·PLC·/·OB·->·VICE·CLAMPED
4415 NETWORK
4416 TITLE·=·PLC·/·OB·->·VICE·RELEASED
4417 U·M·138.4;·//·VICE·RELEASED
4418 =·DB20.DBX·310.1;·//·PLC·/·OB·->·VICE·RELEASED
4419 NETWORK
4420 TITLE·=·VICE·/·FC·DNC·ACKNOWLEDGMENT
4421 U·DB1.DBX·1366.0;·//·DNC·OPERATION·ACTIVE
4422 U·( ;
4423 U·DB20.DBX·302.2;·//·DNC·/·VICE·CLOSED
4424 UN·M·137.7;·//·HM·M26·STATIC
4425 O;
4426 U·DB20.DBX·302.1;·//·DNC·/·VICE·ON
4427 UN·M·137.6;·//·HM·M25·STATIC
4428 );
4429 S·DB20.DBX·318.1;·//·VICE·/·FC·DNC·ACKNOWLEDGMENT
4430 END_FUNCTION
4431 FUNCTION·FC·21·VOID
4432 NAME·:·PARTIAL·APPLIANCE
4433 BEGIN
4434 NETWORK·1
4435 TITLE·=·PARTIAL·APPLIANCE·SWITCH-ON·CONDITION
4436 UN·E·4.7;·//·DONE·TO·SHARE
4437 UN·DB1.DBX·1370.0;·//·PLC-1st·LOOP
4438 UN·M·144.0;·//·PARTIAL·APPLIANCE·SHARE·ACTIVE
4439 =·DB3.DBX·6.3;·//·PARTIAL·APPARATUS·NOT·LOCKED·(M7051)
4440 U·E·4.7;·//·DONE·TO·SHARE
4441 U·DB1.DBX·1370.0;·//·PLC-1st·LOOP
4442 S·M·144.4;·//·READY·TO·SHARE·AND·LOCKED
4443 NETWORK·2
4444 TITLE·=·SHARE·PARTIAL·APPLIANCE
4445 O·DB20.DBX·294.1;·//·PARTIAL·APPLIANCE·SHARE·KEYBOARD
4446 O·DB20.DBX·303.3;·//·DNC-INTRF·TEILAPPARAT·SHARE
4447 UN·DB20.DBX·324.0;·//·PROGRAM·RUNNING
4448 O·DB20.DBX·195.3;·//·M27·PARTIAL·APPLIANCE·SHARE·(DYN)
4449 U·M·144.7;·//·PARTIAL·APPARATUS·RELEASE
4450 UN·M·200.0·//·SET·TOOL·POSITIONS
4451 =·M·143.0;·//·SHARE·PARTIAL·APPLIANCE
4452 =·DB20.DBX·259.3;·//·TRIP·M27
4453 NETWORK·3
4454 TITLE·=·RELEASE·PARTIAL·APPLIANCE
4455 U·M·110.3;·//·AUX-ON·MANUAL
4456 UN·M·106.6;·//·EDIT·MODE·OPERATING·MODE
4457 =·M·144.7;·//·SHARE·PARTIAL·APPLIANCE·RELEASE
4458 NETWORK·4
4459 TITLE·=·STARTING·EDGE·FLAG
4460 U·M·143.0;·//·SHARE·PARTIAL·APPLIANCE
4461 UN·M·144.5;·//·HM·START
4462 =·M·144.6;·//·FM·START
4463 U·M·143.0;·//·SHARE·PARTIAL·APPLIANCE
4464 =·M·144.5;·//·HM·START
4465 NETWORK·5
4466 TITLE·=·PARTIAL·APPLIANCE·STEP·1
4467 U·M·144.6;·//·FM·START
4468 UN·M·144.0;·//·PARTIAL·APPLIANCE·SHARE·ACTIVE
4469 S·M·144.0;·//·PARTIAL·APPLIANCE·SHARE·ACTIVE
4470 S·M·144.1;·//·PARTIAL·APPARATUS·STEP1
4471 S·M·18.7;·//·SHARE·EXIT·FLAG·SUB-APPARATUS
4472 R·M·144.4;·//·READY·TO·SHARE·AND·LOCKED
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4473 L·DB10.DBW·4;·//·UNLOAD·TIME  
4474 SPS-MSD  
4475 ITB;·//·CONVERTING·AN·INTEGER·INTO·A·BCD·VALUE  
4476 T·MW·160;·//·TRANSFER·IN·MW160  
4477 SET;  
4478 =·M·161.4;·//·SET·TIME·GRID·0.1S  
4479 U·M·144.0;·//·PARTIAL·APPLIANCE·SHARE·ACTIVE  
4480 L·MW·160;  
4481 SE·T·7;·//·SHARE·MONITORING·TIME  
4482 U·T·7;·//·SHARE·MONITORING·TIME  
4483 S·DB2.DBX·6.0;·//·DIVISION·TIME·EXPIRED·(A·6048)  
4484 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED  
4485 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
4486 R·DB2.DBX·6.0;  
4487 NETWORK·6  
4488 TITLE·=·PARTIAL·APPARATUS·STEP·2  
4489 U·M·144.1;·//·PARTIAL·EQUIPMENT·STEP·1  
4490 UN·E·4.7;·//·PARTIAL·APPLIANCE·DONE  
4491 S·M·144.2;·//·PARTIAL·EQUIPMENT·STEP·2  
4492 R·M·144.1;·//·PARTIAL·EQUIPMENT·STEP·1  
4493 L·DB10.DBW·6;·//·DIVISION·TIME·FROM·SPS-MSD  
4494 ITB;·//·CONVERTING·AN·INTEGER·INTO·A·BCD·VALUE  
4495 T·MW·162;  
4496 SET;  
4497 =·M·163.4;·//·SET·TIME·GRID·0.1S  
4498 U·M·144.2;·//·PARTIAL·EQUIPMENT·STEP·2  
4499 L·MW·162;  
4500 SE·T·8;·//·TIME·FOR·DIVISION  
4501 NETWORK·7  
4502 TITLE·=·PARTIAL·APPLIANCE·STEP·3  
4503 U·T·8;  
4504 U·M·144.2;·//·PARTIAL·EQUIPMENT·STEP·2  
4505 R·M·18.7;·//·SHARE·EXIT·FLAG·SUB-APPARATUS  
4506 S·M·144.3;·//·PARTIAL·EQUIPMENT·STEP·3  
4507 R·M·144.2;·//·PARTIAL·EQUIPMENT·STEP·2  
4508 L·DB10.DBW·8;·//·LOCKING·TIME·FROM·SPS-MSD  
4509 ITB;·//·CONVERTING·AN·INTEGER·INTO·A·BCD·VALUE  
4510 T·MW·164;  
4511 SET;  
4512 =·M·165.4;·//·SET·TIME·GRID·0.1S  
4513 U·M·144.3;·//·PARTIAL·EQUIPMENT·STEP·3  
4514 L·MW·164;  
4515 SE·T·9;  
4516 U·T·9;  
4517 S·DB2.DBX·6.1;·//·LOCKING·TIME·ENDED·(A·6049)  
4518 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED  
4519 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
4520 R·DB2.DBX·6.1;·//·LOCKING·TIME·ENDED·(A·6049)  
4521 NETWORK·8  
4522 TITLE·=·PARTIAL·APPLIANCE·DONE·DONE  
4523 U·M·144.3;·//·PARTIAL·EQUIPMENT·STEP·3  
4524 U·E·4.7;·//·DONE·TO·SHARE  
4525 S·M·144.4;·//·READY·TO·SHARE·AND·LOCKED  
4526 R·M·144.3;·//·PARTIAL·EQUIPMENT·STEP·3  
4527 R·M·144.0;·//·PARTIAL·APPLIANCE·PARTS·ACTIVE  
4528 NETWORK·9  
4529 TITLE·=·PARTIAL·APPARATUS·ON·THE·MOVE  
4530 O·M·144.0;·//·PARTIAL·APPLIANCE·SHARE·ACTIVE  
4531 ON·E·4.7;·//·DONE·TO·SHARE  
4532 =·M·92.0;·//·PART·APPARATUS·IN·MOVEMENT·(EFG)  
4533 =·M·97.4;·//·PART·IN·MOTION·(NC·START·LOCK)  
4534 NETWORK·10  
4535 TITLE·=·ABORT·CONDITION  
4536 O·DB2.DBX·6.0;·//·DIVISION·TIME·EXPIRED·(A·6048)

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4537 O·DB2.DBX·6.1;·///·LOCKING·TIME·ENDED·(A·6049)
4538 O·DB2.DBX·6.2;·///·PARTIAL·UNIT·FAILED·(A·6050)
4539 R·M·18.7;·///·SHARE·EXIT·FLAG·SUB-APPARATUS
4540 R·M·144.0;·///·PARTIAL·APPLIANCE·SHARE·ACTIVE
4541 R·M·144.1;·///·PARTIAL·EQUIPMENT·STEP·1
4542 R·M·144.2;·///·PARTIAL·EQUIPMENT·STEP·2
4543 R·M·144.3;·///·PARTIAL·EQUIPMENT·STEP·3
4544 R·M·144.4;·///·READY·TO·SHARE·AND·LOCKED
4545 NETWORK·11
4546 TITLE·=·MONITORING·PART·UNIT
4547 U·M·144.4;·///·READY·TO·SHARE·AND·LOCKED
4548 UN·E·4.7;·///·DONE·TO·SHARE
4549 S·DB2.DBX·6.2;·///·PARTIAL·APPLIANCE·FAILED·(A·6050)
4550 O·DB1.DBX·1370.2;·///·ACKNOWLEDGMENT·KEY·PRESSED
4551 O·DB1.DBX·1370.3;·///·RESET·KEY·PRESSED
4552 R·DB2.DBX·6.2;·///·PARTIAL·APPLIANCE·FAILED·(A·6050)
4553 NETWORK·12
4554 TITLE·=·NEG.Acknowledgment·DNC
4555 U·DB20.DBX·303.3;·///·DNC-INTRF·TEILAPPARAT·SHARE
4556 UN·M·144.0;·///·PARTIAL·APPLIANCE·SHARE·ACTIVE
4557 S·DB20.DBX·318.5;·///·NEG·ACKNOWLEDGMENT·DNC
4558 U·M·144.4;·///·READY·TO·SHARE·AND·LOCKED
4559 =·DB20.DBX·311.0;·///·SPLIT·PLC·SURFACE·FINISHED·AND·LOCKED
4560 END_FUNCTION
4561 FUNCTION·FC·22:·VOID
4562 NAME:·BLOW·OUT
4563 BEGIN
4564 NETWORK·1
4565 TITLE·=·BLOW·OUT·FM·KEY
4566 O·DB20.DBX·294.6;·///·BLOW·OUT·PC·KEY
4567 UN·M·200.0·///·SET·TOOL·POSITIONS
4568 FP·M·142.7;·///·BLOW·OUT·FM·BUTTON
4569 NETWORK·2
4570 TITLE·=·BLOW·OUT·ON
4571 U·M·142.7;·///·BLOW·OUT·FM
4572 UN·M·142.2;·///·BLOW·OUT
4573 =·M·142.1;·///·HM
4574 S·M·142.2;·///·BLOW·OUT
4575 NETWORK·3
4576 TITLE·=·BLOW·OUT
4577 U·M·142.7;·///·BLOW·OUT·FM
4578 U·M·142.2;·///·BLOW·OUT
4579 UN·M·142.1;·///·HM
4580 R·M·142.2;·///·BLOW·OUT
4581 NETWORK·4
4582 TITLE·=·EXHAUST·VALVE·ON
4583 U·( ;
4584 U·M·142.7;·///·BLOW·OUT·FM
4585 U·M·142.2;·///·BLOW·OUT
4586 O·DB20.DBX·200.7;·///·M71·BLOW·OUT·ON
4587 O·DB20.DBX·303.0;·///·BLOW-OUT·DNC
4588 );
4589 U·M·110.3;·///·AUX·ON·MANUAL
4590 S·M·18.2;·///·EXIT·FLAG·BLOW-OUT·VALVE
4591 S·M·142.2;·///·BLOW·OUT
4592 =·DB20.DBX·264.7;·///·TRIP·M71
4593 S·DB20.DBX·310.7;·///·PLC>·BLOW·OUT·SURFACE·ACTIVE
4594 NETWORK·5
4595 TITLE·=·EXHAUST·VALVE·OFF
4596 U·M·142.7;·///·BLOW·OUT·FM
4597 UN·M·142.2;·///·BLOW·OUT
4598 O·DB20.DBX·201.0;·///·BLOW·OUT·M72
4599 O·DB1.DBX·1370.3;·///·RESET·KEY·PRESSED
4600 O·DB1.DBX·1440.0;·///·RESET·TRIPPED

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4601 O·DB20·DBX·302.7;·//·BLOW·OUT·DNC
4602 ON·M·110.3;·//·AUX·ON·MANUAL
4603 R·M·18.2;·//·EXIT·FLAG·BLOW-OUT·VALVE
4604 R·M·142.2;·//·BLOW·OUT
4605 R·DB20·DBX·310.7;·//·PLC>·BLOW·OUT·SURFACE·ACTIVE
4606 =·DB20·DBX·265.0;·//·TRIP·M72
4607 NETWORK·6
4608 TITLE·=·DNC·COMMANDS·AND·FEEDBACK
4609 U·DB20·DBX·303.0;·//·BLOW-OUT·DNC
4610 UN·DB20·DBX·264.7;·//·TRIP·M71
4611 S·DB20·DBX·318.4;·//·NEG··ACKNOWLEDGMENT·DNC
4612 U·DB20·DBX·302.7;·//·BLOW·OUT·DNC
4613 AND
4614 B20·DBX·265.0;·//·TRIP·M72
4615 S·DB20·DBX·318.4;·//·NEG··ACKNOWLEDGMENT·DNC
4616 END_FUNCTION
4617 FUNCTION·FC·26:·VOID
4618 NAME:·COOLANT
4619 BEGIN
4620 NETWORK
4621 TITLE·=·FM·KEY·COOLANT·(MSTT·/·PC)
4622 UN·DB10·DBX·75.3;·//·BLOW·DEVICE·ACTIVATED
4623 UN·M·15.1;·//·MACHINE·DOOR·OPEN
4624 UN·M·200.0·//·SET·TOOL·POSITIONS
4625 U·(
4626 O·DB20·DBX·294.6;·//·COOLANT·BUTTON·(PC)
4627 O·DB20·DBX·831.1·//·COOLANT·KEY·(MSTT)
4628 )
4629 FP·M·107.7;·//·FM·BUTTON·COOLANT
4630 NETWORK
4631 TITLE·=·COOLANT·SELECTION·ON
4632 UN·M·107.1;·//·COOLANT·ON
4633 U·M·107.7;·//·FM·BUTTON·COOLANT
4634 O;
4635 U·DB20·DBX·225.1;·//·M9·STATIC
4636 U·DB20·DBX·193.0;·//·M8·DYN.
4637 UN·DB20·DBX·192.7;·//·M7·DYN.
4638 O·DB20·DBX·302.6;·//·DNC·/·COOLANT·ON
4639 S·M·107.1;·//·COOLANT·ON
4640 S·M·117.1;·//·M7·MINIMAL·LUBRICATION·ON
4641 =·M·107.2;·//·HM·COOLANT·ON
4642 =·DB20·DBX·257.0;·//·TRIP·M8
4643 NETWORK
4644 TITLE·=·SELECT·MINIMAL·LUBRICATION·ON
4645 U·DB20·DBX·225.1;·//·M9·STATIC
4646 U·DB20·DBX·192.7;·//·M7·DYN.
4647 UN·DB20·DBX·193.0;·//·M8·DYN.
4648 S·M·117.1;·//·M7·MINIMAL·LUBRICATION·ON
4649 =·DB20·DBX·256.7;·//·TRIP·M7
4650 NETWORK
4651 TITLE·=·COOLANT·PROGRAMMED
4652 U·DB20·DBX·326.4;·//·KERN·/·BA·AUTO
4653 U·DB20·DBX·257.0;·//·TRIP·M8
4654 U·DB20·DBX·193.0;·//·M8·DYN.
4655 S·M·107.3;·//·COOLANT·PROGRAMMED
4656 NETWORK
4657 TITLE·=·COOLANT·SELECTION·ON
4658 U·M·107.1;·//·COOLANT·ON
4659 UN·M·107.2;·//·HM·COOLANT·ON
4660 U·M·107.7;·//·FM·BUTTON·COOLANT
4661 UN·M·107.3;·//·COOLANT·PROGRAMMED
4662 O;
4663 U·DB20·DBX·193.1;·//·M9·DYN.
4664 O·DB20·DBX·302.5;·//·DNC·/·COOLANT·OFF

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4665 O;
4666 U·M·107.4; /// COOLANT·INTERRUPTION
4667 UN·DB20.DBX·326.4; /// KERN· / ·BA·AUTO
4668 O·DB1.DBX·1370.0; /// 1st·PLC·LOOP
4669 O·DB1.DBX·1440.0; /// RESET·TRIPPED
4670 O·DB1.DBX·1370.3; /// RESET·KEY·PRESSED
4671 ON·M·110.3; /// AUX-ON·MANUAL
4672 R·M·107.1; /// COOLANT·ON
4673 R·M·117.1; /// M7·MINIMAL·LUBRICATION·ON
4674 R·M·107.3; /// COOLANT·PROGRAMMED
4675 =·DB20.DBX·257.1; /// TRIP·M9
4676 NETWORK
4677 TITLE· = ·INTERRUPT·COOLANT·WITH·KEY
4678 U·M·107.3; /// COOLANT·PROGRAMMED
4679 UN·M·107.4; /// COOLANT·INTERRUPTION
4680 U·M·107.7; /// FM·BUTTON·COOLANT
4681 S·M·107.4; /// COOLANT·INTERRUPTION
4682 =·M·107.5; /// HM·COOLANT·INTERRUPTION
4683 U·M·107.4; /// COOLANT·INTERRUPTION
4684 UN·M·107.5; /// HM·COOLANT·INTERRUPTION
4685 U·M·107.7; /// FM·BUTTON·COOLANT
4686 ON·M·107.1; /// COOLANT·ON
4687 R·M·107.4; /// COOLANT·INTERRUPTION
4688 NETWORK
4689 TITLE· = ·COOLANT·RELEASE
4690 U·( ;
4691 ON·M·15.1; /// MACHINE·DOOR·OPEN
4692 O·DB20.DBX·294.6; /// COOLANT·BUTTON·( PC )
4693 );
4694 UN·M·107.4; /// COOLANT·INTERRUPTED
4695 UN·M·0.0; /// M0· / ·M1·ACTIVE
4696 UN·DB20.DBX·324.2; /// DRYRUN
4697 UN·M·200.0 /// SET·TOOL·POSITIONS
4698 UN·M·52.0; /// TOOL·TURNING·ACTIVE
4699 =·M·107.0; /// COOLANT·RELEASE
4700 NETWORK
4701 TITLE· = ·COOLANT·PERFORMANCE
4702 U·M·107.1; /// COOLANT·ON
4703 U·M·107.0; /// COOLANT·RELEASE
4704 =·M·17.2; /// EXIT·FLAG·COOLANT·( M8· = ·ON· / ·M9· = ·OFF )
4705 NETWORK
4706 TITLE· = ·MINIMAL·LUBRICATION·PERFORMANCE
4707 U·M·117.1; /// M7·MINIMAL·LUBRICATION·ON
4708 U·M·107.0; /// COOLANT·RELEASE
4709 =·M·18.0; /// INITIAL·FLAG·MINIMAL·LUBRICATION
4710 NETWORK
4711 TITLE· = ·PLC· / ·OB· -> ·COOLANT·ON
4712 U·M·107.1; /// COOLANT·ON
4713 =·DB20.DBX·310.5; /// PLC· / ·OB· -> ·COOLANT·ON
4714 NETWORK
4715 TITLE· = ·PLC· / ·OB· -> ·COOLANT·INJECT
4716 U·M·17.2; /// EXIT·FLAG·COOLANT·( M8· = ·ON· / ·M9· = ·OFF )
4717 =·DB20.DBX·310.6; /// PLC· / ·OB· -> ·COOLANT·INJECT
4718 NETWORK
4719 TITLE· = ·COOLANT· / ·FC·DNC·ACKNOWLEDGMENT
4720 U·DB1.DBX·1366.0; /// DNC·OPERATION·ACTIVE
4721 U·( ;
4722 U·DB20.DBX·302.6; /// DNC· / ·COOLANT·ON
4723 UN·DB20.DBX·225.0; /// M8·STATIC
4724 O;
4725 U·DB20.DBX·302.5; /// DNC· / ·COOLANT·OFF
4726 UN·DB20.DBX·225.1; /// M9·STATIC
4727 );
4728 S·DB20.DBX·318.3; /// COOLANT· / ·FC·DNC·ACKNOWLEDGMENT

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4729 END_FUNCTION
4730 FUNCTION FC 40: VOID
4731 NAME: ROBOTICS_INTERFACE
4732 BEGIN
4733 NETWORK
4734 TITLE = robotics axes are at the reference point
4735 L DB1.DBD 70; // REF-POSITION X
4736 L -0.5E-03; // 0.5MM
4737 + R;
4738 L DB1.DBD 0; // IS POSITION X
4739 < R;
4740 = M 168.0
4741 L DB1.DBD 74; // REF-POSITION Y
4742 L -0.5E-03; // 0.5MM
4743 + R;
4744 L DB1.DBD 4; // IS POSITION Y
4745 < R;
4746 = M 168.1
4747 L DB1.DBD 78; // REF-POSITION Z
4748 L -0.5E-03; // 0.5MM
4749 + R;
4750 L DB1.DBD 8; // IS POSITION Z
4751 < R;
4752 = M 168.2
4753 U M 168.0
4754 U M 168.1
4755 U M 168.2
4756 U DB1.DBX 134.0; // REFERENCE POINT X-AXIS ACTIVE
4757 U DB1.DBX 134.1; // REFERENCE POINT Y-AXIS ACTIVE
4758 U DB1.DBX 134.2; // REFERENCE POINT Z-AXIS ACTIVE
4759 = M 19.1; // ROBOTICS AXES ARE AT REF. POINT.
4760 NETWORK 1
4761 TITLE = DOOR OPEN / CLOSE
4762 ; U E 5.0; // ORDER THE DOOR TO CLOSE
4763 ; FP M 152.0; // FM DOOR CLOSED
4764 ; U E 5.1; // ORDER DOOR OPEN
4765 ; FP M 152.1; // FM DOOR OPEN
4766 ; U M 152.0; // FM DOOR CLOSED
4767 U E 5.0; // ORDER THE DOOR TO CLOSE
4768 UN E 5.1; // OPEN THE DOOR
4769 = M 149.0; // HAND-OVER MARKER DOOR CLOSED
4770 ; U M 152.1;
4771 // FM DOOR OPEN
4772 U E 5.1; // ORDER DOOR OPEN
4773 UN E 5.0; // CLOSE THE DOOR
4774 = M 149.1; // HANDOVER MARK DOOR OPEN
4775 NETWORK 2
4776 TITLE = SPM FORWARD / BACK
4777 U E 5.2; // COMMAND SPM BACK
4778 FP M 152.2; // FM SPM BACK
4779 U E 5.3; // COMMAND SPM FORWARD
4780 FP M 152.3; // FM SPM BEFORE
4781 U M 152.2; // FM SPM BACK
4782 UN E 5.3; // SPM BEFORE
4783 = M 149.2; // ROBOTICS / FM VICE ON
4784 U M 152.3; // FM SPM BEFORE
4785 UN E 5.2; // SPM BACK
4786 = M 149.3; // ROBOTICS / FM VICE CLOSED
4787 NETWORK 3
4788 TITLE = CYCLE START
4789 U E 5.6; // COMMAND CYCLE START
4790 FP M 150.1; // FM CYCLE START
4791 NETWORK 4
4792 TITLE = FEEDHOLD ROBOTICS INTERFACE

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4793 U·E·5.7;·//·COMMAND·FEEDHOLD
4794 =·DB3.DBX·0.7;·//·AFG,·EFG·FEEDHOLD·(MESSAGE·7007)
4795 NETWORK·5
4796 TITLE·=·OUTPUTS·ROBOTICS·INTERFACE
4797 U·M·148.1;
4798 =·M·19.3;·//·EXIT·FLAG·ROBOTICS·DOOR·OPEN
4799 U·M·148.0;
4800 =·M·19.4;·//·EXIT·FLAG·ROBOTICS·DOOR·CLOSED
4801 U·M·138.4;·//·VICE·RELEASED
4802 =·M·19.5;·//·INITIAL·FLAG·ROBOTICS·REAR·VICE
4803 U·M·138.5;·//·VICE·CLAMPED
4804 =·M·19.6;·//·EXIT·FLAG·ROBOTICS·VICE·CLAMPED
4805 NETWORK·6
4806 TITLE·=·PROGRAM·STANDING
4807 O·M·0.0;·//·M0·/·M1·ACTIVE
4808 O·DB20.DBX·224.2;·//·M2·STATIC
4809 O·DB20.DBX·227.6;·//·M30·STATIC
4810 =·M·19.0;·//·EXIT·FLAG·ROBOTICS·PROGRAM·STOP·(M30,·M0,·M1,·M2)
4811 END_FUNCTION
4812 FUNCTION·FC·63:·VOID
4813 NAME:·WARNING·LIGHT
4814 BEGIN
4815 NETWORK
4816 TITLE·=·FLASHING·LIGHT·PULSE·DURATION
4817 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
4818 SPBN·M001
4819 L·DB10.DBW·10;·//·LOADING·TIME·FROM·SPS-MSD
4820 ITB;·//·CONVERTING·AN·INTEGER·INTO·A·BCD·VALUE
4821 T·MW·70;·//·TRANSFER·IN·MW30
4822 SET;
4823 R·M·71.4;·//·SET·TIME·GRID·0.01S
4824 R·M·71.5;·//·SET·TIME·GRID·0.01S
4825 M001:·NOP·0
4826 UN·T·48;·//·PAUSE·DURATION
4827 L·MW·70;·//·LOAD·MW30
4828 SV·T·47;·//·START·AS·AN·EXTENDED·PULSE
4829 NETWORK
4830 TITLE·=·FLASHING·LIGHT·PAUSE·DURATION
4831 U·DB1.DBX·1370.0;·//·1st·PLC·LOOP
4832 SPBN·M002
4833 L·DB10.DBW·12;·//·LOADING·TIME·FROM·SPS-MSD
4834 ITB;·//·CONVERTING·AN·INTEGER·INTO·A·BCD·VALUE
4835 T·MW·72;·//·TRANSFER·IN·MW32·(TIME·GRID·IS·0.01S)
4836 SET;
4837 R·M·73.4;·//·SET·TIME·GRID·0.01S
4838 R·M·73.5;·//·SET·TIME·GRID·0.01S
4839 M002:·NOP·0
4840 UN·T·47;·//·PULSE·DURATION
4841 L·MW·72;·//·LOAD·MW30
4842 SV·T·48;·//·START·AS·AN·EXTENDED·PULSE
4843 END_FUNCTION
4844 FUNCTION·FC·62:·VOID
4845 NAME:·LED·CONTROL
4846 BEGIN
4847 NETWORK
4848 TITLE·=·LAMP·TEST
4849 ;·U·DB20.DBX·294.7·//·8·*****
4850 ;·S·DB20.DBX·846.0·//·SKIP
4851 ;·S·DB20.DBX·846.1·//·DRYRUN
4852 ;·S·DB20.DBX·847.0·//·CLOSE·THE·DOOR
4853 ;·S·DB20.DBX·847.1·//·OPEN·THE·DOOR
4854 ;·S·DB20.DBX·847.3·//·1X·KEY
4855 ;·S·DB20.DBX·847.4·//·OPT.STOP·(M1)
4856 ;·S·DB20.DBX·848.4·//·CHUCK

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4857 ; S·DB20·DBX·848.6·///·RESET
4858 ; S·DB20·DBX·848.7·///·SINGLE·BLOCK
4859 ; S·DB20·DBX·849.6·///·QUILL·BACK
4860 ; S·DB20·DBX·849.7·///·QUILL·FORE
4861 ; S·DB20·DBX·850.0·///·TOOL·TURNING
4862 ; S·DB20·DBX·850.4·///·APPROACH·REFERENCE·POINT
4863 ; S·DB20·DBX·851.1·///·COOLANT
4864 ; S·DB20·DBX·851.4·///·PROGRAM·STOP
4865 ; S·DB20·DBX·851.5·///·PROGRAM·START
4866 ; S·DB20·DBX·851.6·///·FEED·RATE·STOP
4867 ; S·DB20·DBX·852.0·///·FEED·RATE·START
4868 ; S·DB20·DBX·852.1·///·SPINDLE·STOP
4869 ; S·DB20·DBX·852.3·///·SPINDLE·START
4870 ; S·DB20·DBX·852.4·///·AUX·OFF
4871 ; S·DB20·DBX·852.6·///·AUX·ON
4872 ; ROBOTICS·TEST
4873 ;
4874 ; R·DB20·DBX·846.0·///·SKIP
4875 ; R·DB20·DBX·846.1·///·DRYRUN
4876 ; R·DB20·DBX·847.0·///·CLOSE·THE·DOOR
4877 ; R·DB20·DBX·847.1·///·OPEN·THE·DOOR
4878 ; R·DB20·DBX·847.3·///·1X·KEY
4879 ; R·DB20·DBX·847.4·///·OPT·STOP·(M1)
4880 ; R·DB20·DBX·848.4·///·CHUCK
4881 ; R·DB20·DBX·848.6·///·RESET
4882 ; R·DB20·DBX·848.7·///·SINGLE·BLOCK
4883 ; R·DB20·DBX·849.6·///·QUILL·BACK
4884 ; R·DB20·DBX·849.7·///·QUILL·FORE
4885 ; R·DB20·DBX·850.0·///·TOOL·TURNING
4886 ; R·DB20·DBX·850.4·///·APPROACH·REFERENCE·POINT
4887 ; R·DB20·DBX·851.1·///·COOLANT
4888 ; R·DB20·DBX·851.4·///·PROGRAM·STOP
4889 ; R·DB20·DBX·851.5·///·PROGRAM·START
4890 ; R·DB20·DBX·851.6·///·FEED·RATE·STOP
4891 ; R·DB20·DBX·852.0·///·FEED·RATE·START
4892 ; R·DB20·DBX·852.1·///·SPINDLE·STOP
4893 ; R·DB20·DBX·852.3·///·SPINDLE·START
4894 ; R·DB20·DBX·852.4·///·AUX·OFF
4895 ; R·DB20·DBX·852.6·///·AUX·ON
4896 ; U·T·47;·///·BLINK·PULSE
4897 ; =·DB20·DBX·851.0
4898 ;
4899 ;
4900 ; U·T·48;·///·START·AS·AN·EXTENDED·PULSE
4901 ; =·DB20·DBX·850.6
4902 NETWORK
4903 TITLE·=
4904 ;
4905 ;
4906 NETWORK
4907 TITLE·=·COOLANT
4908 U·M·18.0;·///·INITIAL·FLAG·MINIMAL·LUBRICATION
4909 =·DB20·DBX·851.1·///·LED·COOLANT
4910 NETWORK
4911 TITLE·=·DRYRUN·ACTIVE
4912 U·DB20·DBX·324.2·///·DRYRUN·active
4913 ; U·M·94.x;·///·DRYRUN·SFG
4914 =·DB20·DBX·846.1·///·LED·DRYRUN
4915 NETWORK
4916 TITLE·=·FADE-OUT·SET·SKIP
4917 U·DB20·DBX·324.6·///·Skip·block·(SKIP)·active
4918 =·DB20·DBX·846.0·///·LED·SKIP
4919 NETWORK
4920 TITLE·=·optional·stop·M1·active

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4921 U·DB20·DBX·324.5·///·Optional·stop·M1·active
4922 =·DB20·DBX·847.4·///·LED·OPT·STOP·(M1)
4923 NETWORK
4924 TITLE·=·SINGLE·SENTENCE
4925 U·DB20·DBX·324.7·///·Single·block·(SINGLE)·active
4926 =·DB20·DBX·848.7·///·LED·SINGLE·BLOCK
4927 NETWORK
4928 TITLE·=·AUX·ON·LIGHT,·AUX·OFF·FLASHING
4929 ;·U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4930 O·M·110.0;·///·AUX-ON
4931 =·DB20·DBX·852.6·///·LED·AUX·ON
4932 NETWORK
4933 TITLE·=·APPROACH·REFERENCE·POINT
4934 U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4935 U·M·110.0;·///·AUX-ON
4936 O·M·121.3;·///·REFPKT·X,·Z,·APPROACH·AT·THE·SAME·TIME
4937 UN·M·52.2·///·REFERENCE·POINT·X,·Y,·Z·AND·TOOL·C-AXIS·ACTIVE
4938 ;·UN·DB20·DBX·324.4;·///·REFERENCE·POINT·ACTIVE
4939 ;·UN·DB3·DBX·2.6;·///·7022·INITIALIZE·TOOL·TURNER
4940 =·DB20·DBX·850.4·///·LED·APPROACH·REFERENCE·POINT
4941 ;·NETWORK
4942 ;·TITLE·=·TOOL·TURNING·ACTIVE
4943 ;
4944 ;·U·DB3·DBX·2.6;·///·7022·INITIALIZE·TOOL·TURNER
4945 ;·U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4946 ;·O·M·152.0;·///·TOOL·TURNING·ACTIVE
4947 ;·=·DB20·DBX·850.0·///·LED·TOOL·TURNING
4948 NETWORK
4949 TITLE·=·SPINDLE·STOP·ACTIVE
4950 U·M·132.1;·///·SPINDLE·STOP·ACTIVE
4951 U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4952 =·DB20·DBX·852.3·///·LED·SPINDLE·START
4953 NETWORK
4954 TITLE·=·FEED·STOP·ACTIVE
4955 ;·U·M·133.1;·///·FEED·STOP·ACTIVE
4956 U·M·91.6;·///·AFG,·EFG·FEED·STOP·ACTIVE
4957 U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4958 =·DB20·DBX·852.0·///·LED·FEED·START
4959 NETWORK
4960 TITLE·=·LED·PROGRAM·STOP·ACTIVE
4961 U·DB20·DBX·324.0;·///·program·is·running
4962 U·DB20·DBX·324.1;·///·STOP·STATE
4963 U·T·47;·///·START·AS·AN·EXTENDED·PULSE
4964 =·DB20·DBX·851.5·///·PROGRAM·START
4965 NETWORK
4966 TITLE·=·VICE·CLAMPED
4967 O·M·138.5;·///·VICE·CLAMPED
4968 O·T·47;·///·START·AS·AN·EXTENDED·PULSE
4969 U·DB10·DBX·75.4;·///·ACTIVATE·PNEUMATIC·CLAMPING·DEVICE
4970 =·DB20·DBX·849.6·///·LED·VICE·CLAMPED
4971 NETWORK
4972 TITLE·=·DOOR·CLOSED·AUTOMATIC·DOOR
4973 O·T·47;·///·START·AS·AN·EXTENDED·PULSE
4974 O·A·3.4;·///·EXIT·FOR·AUXILIARY·RELAY·DOOR·CLOSED
4975 U·DB10·DBX·75.0;·///·ACTIVATE·THE·AUTOMATIC·DOOR
4976 =·DB20·DBX·847.0·///·CLOSE·THE·DOOR
4977 NETWORK
4978 TITLE·=·END·PROGRAM·AND·CLEAR·LED
4979 ;·U·DB1·DBX·1440.1;·///·EXIT·PROGRAM
4980 ;·U·M·110.0;·///·AUX-ON
4981 ;·R·DB1·DBX·1440.1;·///·EXIT·PROGRAM
4982 U·DB1·DBX·1440.1;·///·EXIT·PROGRAM
4983 UN·M·110.0;·///·AUX-ON
4984 SPBN·M001

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4985 L·W·#·16·#·0;·//·LOAD·CONSTANT·HEX·0
4986 T·DB20·DBW·846·//·CLEAR·LED·IN·CONTROL·PANEL
4987 T·DB20·DBW·848·//·CLEAR·LED·IN·CONTROL·PANEL
4988 T·DB20·DBW·850·//·CLEAR·LED·IN·CONTROL·PANEL
4989 T·DB20·DBW·852·//·CLEAR·LED·IN·CONTROL·PANEL
4990 M001:·NOP·0
4991 END_FUNCTION
4992 FUNCTION·FC·75:·VOID
4993 SURNAME:
4994 BEGIN
4995 U·A·3.4;·//·MACHINE·DOOR·CLOSED
4996 L·S5TIME·#·5S;·//·2S
4997 SE·T·14;·//·SWITCH-ON·DELAY
4998 U·T·14;·//·SWITCH-ON·DELAY
4999 S·M·400.0·//·OPEN·FLAG·DOOR
5000 R·M·400.1·//·FLAG·CLOSE·THE·DOOR
5001 FP·M·400.2
5002 U·M·400.2
5003 SPBN·M001;
5004 L·MD·410
5005 L·1.
5006 +·R
5007 T·MD·410
5008 M001:·NOP·0;
5009 U·E·4.4;·//·DOOR·OPEN,·AUTOMATIC·DOOR
5010 S·M·400.1·//·MARKER·CLOSE·THE·DOOR
5011 R·M·400.0·//·OPEN·FLAG·DOOR
5012 END_FUNCTION
5013 ORGANIZATION_BLOCK·OB·1
5014 NAME:·ORGANIZATIONAL·BLOCK
5015 BEGIN
5016 U·DB10·DBX·2.0;·//·ACTIVATE·AC·2000
5017 U·E·3.0·//·INPUT·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5018 =·M·2.0·//·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5019 O·DB10·DBX·100.1·//·STANDARD·MACHINE·ACTIVATED
5020 O·DB10·DBX·100.2·//·STANDARD·MACHINE·WITH·ROUND·AXIS·ACTIVATED
5021 O·M·2.0·//·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5022 ON·DB10·DBX·2.0;·//·ACTIVATE·AC·2000
5023 U·(
5024 O·DB1·DBX·1403.7·//·CAM·Concept·surface
5025 O·DB1·DBX·1406.0·//·EASY·CYCLE·surface
5026 )
5027 CC·FC·64·//·M0·RELEASE·WITH·TXX·AND·CAMCONCEPT
5028 O·DB10·DBX·100.1·//·STANDARD·MACHINE·ACTIVATED
5029 O·DB10·DBX·100.2·//·STANDARD·MACHINE·WITH·ROUND·AXIS·ACTIVATED
5030 O·M·2.0·//·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5031 U·DB1·DBX·1406.1·//·WinNc·for·Sinumeric·Operate
5032 CC·FC·65·//·TRIP·M0·and·move·up·the·Z-axis·with·TXX·and·Sinumeric·Operate
5033 CALL·FC·34;·//·ASSIGN·THE·INPUTS·AC·95·-·ACC
5034 U·DB10·DBX·2.0;·//·ACTIVATE·AC·2000
5035 UN·M·2.0·//·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5036 CC·FC·23·//·SAFETY·CIRCUIT·ACC
5037 CALL·FC·1;·//·INITIALIZATIONS
5038 O·DB10·DBX·100.1·//·STANDARD·MACHINE·ACTIVATED
5039 O·DB10·DBX·100.2·//·STANDARD·MACHINE·WITH·ROUND·AXIS·ACTIVATED
5040 UN·DB10·DBX·100.0·//·SET·TOOL·TURNERS·ENABLED
5041 UN·DB10·DBX·100.3·//·TOOL·TURNER·ACTIVATED
5042 UN·DB10·DBX·100.4·//·TOOL·TURNER·AND·ROUND·AXLE·ACTIVATED
5043 ON·DB10·DBX·2.0;·//·ACTIVATE·AC·2000
5044 O·M·2.0·//·IDENTIFICATION·AC95·CONVERSION·TO·ACC
5045 CC·FC·0;·//·SIMULATE·TOOL·TURNERS
5046 U·DB1·DBX·1426.1;·//·ROBOTICS·INTERFACE·ACTIVATED·WITH·DISKETTE
5047 U·DB10·DBX·75.7;·//·ROBOTICS·INTERFACE·ACTIVATED·WITH·WINCONFIG
5048 CC·FC·40;·//·ROBOTICS·INTERFACE

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5049 CALL FC 10; /// AT PROGRAM END, RESET OR RESTART
5050 CALL FC 11; /// NC START AND NC STOP FROM M0 OR M1
5051 CALL FC 5; /// AXES READINESS
5052 O M 115.0; /// FELDERER FU
5053 CC FC 3; /// MAIN DRIVE FELDERER FU
5054 O M 115.1; /// LENZE FU
5055 CC FC 33; /// MAIN DRIVE LENZE FU
5056 CALL FC 4; /// OPERATING MODES
5057 UN DB10.DBX 2.0; /// ACTIVATE AC 2000
5058 CC FC 8; /// AUX_ON AC95
5059 U DB10.DBX 2.0; /// ACTIVATE AC 2000
5060 UN M 2.0 /// IDENTIFICATION AC95 CONVERSION TO ACC
5061 CC FC 9; /// AUX_ON ACC
5062 U M 2.0 /// IDENTIFICATION AC95 CONVERSION TO ACC
5063 CC FC 88 /// AUX_ON AC95 CONVERSION TO ACC
5064 CALL FC 6; /// AXES JOG
5065 CALL FC 32; /// AUTOMATICALLY SWITCH TO BA REF
5066 CALL FC 7; /// REFERENCE AXES
5067 CALL FC 16; /// PLC-> OBEFL.SIGNALE
5068 CALL FC 14; /// ALARM STATUS
5069 U DB10.DBX 75.0; /// ACTIVATE THE AUTOMATIC DOOR
5070 CC FC 17; /// AUTOMATIC DOOR
5071 U DB10.DBX 75.1; /// tbsp. ACTIVATE VICE
5072 UN DB10.DBX 75.4; /// ACTIVATE PNEUMATIC CLAMPING DEVICE
5073 U (
5074 ON DB10.DBX 2.0; /// ACTIVATE AC 2000
5075 O M 2.0 /// IDENTIFICATION AC95 CONVERSION TO ACC
5076 )
5077 CC FC 18; /// tbsp. VICE
5078 U DB10.DBX 75.4; /// ACTIVATE PNEUMATIC CLAMPING DEVICE
5079 UN DB10.DBX 75.1; /// ACTIVATE EL.VICE
5080 CC FC 30; /// PNEUM.CLAMPING DEVICE
5081 UN DB10.DBX 75.4; /// ACTIVATE PNEUMATIC CLAMPING DEVICE
5082 UN DB10.DBX 75.1; /// ACTIVATE EL.VICE
5083 S M 18.6; /// RELEASE THE EXIT FLAG VICE
5084 R M 18.5; /// EXIT FLAG CLAMP VICE
5085 FP M 26.5
5086 U M 26.5
5087 SPBN M001;
5088 R DB15.DBX 20.2 /// VICE CLAMPED SAVE IN THE SETTING DATA
5089 = DB15.DBX 20.1 /// VICE RELEASED SAVE IN THE SETTING DATA
5090 = DB20.DBX 348.3; /// REQUEST FOR IMMEDIATE SETTING DATA BACKUP
5091 M001: NOP 0;
5092 U DB10.DBX 75.6; /// ACTIVATE SCHÄFER PARTIAL APPLIANCE
5093 CC FC 21; /// PARTIAL APPARATUS
5094 U DB10.DBX 75.3; /// ACTIVATE THE BLOW DEVICE
5095 CC FC 22; /// BLOW OUT
5096 CALL FC 26; /// COOLANT (M8 / M9)
5097 CALL FC 2; /// ITEM COUNTER
5098 O DB10.DBX 100.4 /// TOOL TURNER AND ROUND AXIS ACTIVATED
5099 O DB10.DBX 100.2 /// STANDARD MACHINE WITH ROUND AXIS ACTIVATED
5100 U DB10.DBX 2.0; /// ACTIVATE AC 2000
5101 UN M 2.0 /// IDENTIFICATION AC95 CONVERSION TO ACC
5102 = M 52.7 /// ROUND AXIS ACTIVATED
5103 O DB10.DBX 100.0 /// SET TOOL TURNERS ENABLED
5104 O DB10.DBX 100.3 /// TOOL TURNER ACTIVATED
5105 O DB10.DBX 100.4 /// TOOL TURNER AND ROUND AXIS ACTIVATED
5106 UN DB10.DBX 100.1 /// STANDARD MACHINE ACTIVATED
5107 UN DB10.DBX 100.2 /// STANDARD MACHINE WITH ROUND AXLE ACTIVATED
5108 U DB10.DBX 2.0; /// ACTIVATE AC 2000
5109 UN M 2.0 /// IDENTIFICATION AC95 CONVERSION TO ACC
5110 = M 52.5 /// TOOL TURNER ACTIVATED
5111 U M 52.5 /// TOOL TURNER ACTIVATED
5112 CC FC 51; /// TOOL CLAMPING SYSTEM

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5113 U·M·52.5·//·TOOL·TURNER·ACTIVATED  
5114 CC·FC·50;·//·TOOL·TURNERS  
5115 U·M·200.0·//·SET·TOOL·POSITIONS  
5116 U·DB10.DBX·100.0·//·SET·TOOL·TURNERS·ACTIVATED  
5117 CC·FC·49·//·ENTER·TOOL·POSITIONS·IN·MILL55\_ACC.MSD  
5118 CALL·FC·12;·//·AFG·/·EFG  
5119 CALL·FC·13;·//·NC·START·VERR.·AND·CONTROL·BUTTONS  
5120 U·M·300.0·//  
5121 CC·FC·75;·//  
5122 O·DB1.DBX·1370.2;·//·ACKNOWLEDGMENT·KEY·PRESSED  
5123 O·DB1.DBX·1370.3;·//·RESET·KEY·PRESSED  
5124 O·DB2.DBX·1.1;·//·HW·ERROR·SAFETY·CIRCUIT  
5125 R·M·300.0·//  
5126 R·M·400.0·//·OPEN·FLAG·DOOR  
5127 R·M·400.1·//·FLAG·CLOSE·THE·DOOR  
5128 CALL·FC·62;·//·LED·CONTROL  
5129 CALL·FC·63;·//·WARNING·LIGHT  
5130 CALL·FC·41;·//·RENISHAW·PROBE  
5131 U·DB10.DBX·2.0;·//·ACTIVATE·ACC  
5132 CC·FC·66;·//·HANDWHEEL  
5133 CALL·FC·35;·//·ASSIGN·THE·OUTPUTS·AC95·-·ACC  
5134 ;·DB10.DBX·B100·=;·Bit·0·1·(MILL55\_.MSD)·SET·TOOL·TURNING·ACTIVATED  
5135 ;·DB10.DBX·B100·=;·Bit·1·2·(MILL55A.MSD)·STANDARD·MACHINE·ACTIVATED  
5136 ;·DB10.DBX·B100·=;·Bit·2·4·(MILL55B.MSD)·STANDARD·MACHINE·WITH·ROUND·AXIS·ACTIVATED  
5137 ;·DB10.DBX·B100·=;·Bit·3·8·(MILL55C.MSD)·TOOL·TURNER·ACTIVATED  
5138 ;·DB10.DBX·B100·=;·Bit·4·16·(MILL55D.MSD)·TOOL·TURNER·AND·ROUND·AXIS·ACTIVATED  
5139 ;·U·DB10.DBX·100.0·//·SET·TOOL·TURNERS·ACTIVATED  
5140 ;·U·DB10.DBX·100.1·//·STANDARD·MACHINE·ACTIVATED  
5141 ;·U·DB10.DBX·100.2·//·STANDARD·MACHINE·WITH·ROUND·AXIS·ACTIVATED  
5142 ;·U·DB10.DBX·100.3·//·TOOL·TURNER·ACTIVATED  
5143 ;·U·DB10.DBX·100.4·//·TOOL·TURNERS·AND·ROUND·AXES·ACTIVATED  
5144 U·DB25.DBX·332.0;·//·NC·BLOCK·DONE  
5145 R·DB25.DBX·332.0;·//·NC·BLOCK·DONE  
5146 END\_ORGANIZATION\_BLOCK