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;%_N_NC kod_MPF
N1 ; =====
N2 ; TAJMAC-ZPS MCV 1210 Siemens 840D
N3 ; PROJEKT : Diplomová práce - vrtací cykly 1. upnutí
N4 ; DATUM : 12.05.2023
N5 ; CAS : 10:28:26
N6 ; VYCHOZI PRAC.ROVINA : G54
N7 ; =====
N8 G71 G90 G64 G17
N9 G642
N10 FFWON
N11 TRAF00F
N12 CYCLE800()
N13 G0 A0.0 C0.0
N14 ; =====
N15 ; MSG ("D12_Navrtani")
N16 ; =====
N17 ; NAZEV NASTROJE : Středící navrtávák D4
N18 ; PRUMER NASTROJE : 4
N19 odjezd_Z ; MAKRO
N20 T="STŘEDÍCÍ NAVRTÁVÁK D4"
N21 G54
N22 R1=40 ; ZANOROVACI POSUV
N23 R2=405 ; PRACOVNI POSUV
N24 R3=3000 ; NEJKRATSI PREJEZDY
N25 S4775 M3
N26 ; =====
N27 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0.,0,0,-1)
N28 COMPON
N29 $MA_COMPRESS_POS_TOL[X]=0.1
N30 $MA_COMPRESS_POS_TOL[Y]=0.1
N31 $MA_COMPRESS_POS_TOL[Z]=0.1
N32 odjezd_Z ; MAKRO
N33 M8
N34 G0 X137.0 Y137.0 F=R3
N35 G0 Z10.0
N36 G0 X25.0 Y249.0 F=R3
N37 F405
N38 MCALL CYCLE81(10.0,0,2,-2,2)
N39 X25.0 Y249.0
N40 X249.0 Y249.0
N41 X249.0 Y25.0
N42 X25.0 Y25.0
N43 MCALL
N44 G0 Z10.0
N45 M5
N46 M9
N47 COMPOF
N48 odjezd_Z ; MAKRO
N49 ; =====
N50 ; =====
N51 ; MSG ("D12_Vrtani")
N52 M5
N53 M9

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N54 ; =====
N55 ; NAZEV NASTROJE : Vrták D 11,8 HSS
N56 ; PRUMER NASTROJE : 11.8
N57 odjezd_Z ; MAKRO
N58 T="VRTÁK D 11,8 HSS"
N59 G54
N60 R1=40 ; ZANOROVACI POSUV
N61 R2=405 ; PRACOVNI POSUV
N62 R3=3000 ; NEJKRATSI PREJEZDY
N63 S1619 M3
N64 ; =====
N65 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N66 COMPON
N67 $MA_COMPRESS_POS_TOL[X]=0.1
N68 $MA_COMPRESS_POS_TOL[Y]=0.1
N69 $MA_COMPRESS_POS_TOL[Z]=0.1
N70 odjezd_Z ; MAKRO
N71 M8
N72 G0 X137.0 Y137.0 F=R3
N73 G0 Z10.0
N74 G0 X25.0 Y249.0 F=R3
N75 G0 Z2.0
N76 F405
N77 MCALL CYCLE81(2.0,0,2,-66,66)
N78 X25.0 Y249.0
N79 MCALL
N80 G0
N81 G0 Z5.0
N82 G0 X249.0
N83 G0 Z2.0
N84 F405
N85 MCALL CYCLE81(2.0,0,2,-66,66)
N86 X249.0 Y249.0
N87 MCALL
N88 G0
N89 G0 Z5.0
N90 G0 Y25.0
N91 G0 Z2.0
N92 F405
N93 MCALL CYCLE81(2.0,0,2,-66,66)
N94 X249.0 Y25.0
N95 MCALL
N96 G0
N97 G0 Z5.0
N98 G0 X25.0
N99 G0 Z2.0
N100 F405
N101 MCALL CYCLE81(2.0,0,2,-66,66)
N102 X25.0 Y25.0
N103 MCALL
N104 G0
N105 G0 Z10.0
N106 M5
N107 M9
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N108 COMPOF
N109 odjezd_Z ; MAKRO
N110 ; =====
N111 ; =====
N112 ; MSG ("D12_Vystružení")
N113 M5
N114 M9
N115 ; =====
N116 ; NAZEV NASTROJE : Výstružník D12 H7
N117 ; PRUMER NASTROJE : 12
N118 odjezd_Z ; MAKRO
N119 T="VýSTRUŽNÍK D12 H7"
N120 G54
N121 R1=16 ; ZANOROVACI POSUV
N122 R2=160 ; PRACOVNI POSUV
N123 R3=3000 ; NEJKRATSI PREJEZDY
N124 S477 M3
N125 ; =====
N126 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N127 COMPON
N128 $MA_COMPRESS_POS_TOL[X]=0.1
N129 $MA_COMPRESS_POS_TOL[Y]=0.1
N130 $MA_COMPRESS_POS_TOL[Z]=0.1
N131 odjezd_Z ; MAKRO
N132 M8
N133 G0 X137.0 Y137.0 F=R3
N134 G0 Z10.0
N135 G0 X25.0 Y249.0 F=R3
N136 G0 Z2.0
N137 F160
N138 MCALL CYCLE85(2.0,0,2,0,18,-18,20, 1 ,0, 160, 160)
N139 X25.0 Y249.0
N140 MCALL
N141 G0
N142 G0 Z5.0
N143 G0 X249.0
N144 G0 Z2.0
N145 F160
N146 MCALL CYCLE85(2.0,0,2,0,18,-18,20, 1 ,0, 160, 160)
N147 X249.0 Y249.0
N148 MCALL
N149 G0
N150 G0 Z5.0
N151 G0 Y25.0
N152 G0 Z2.0
N153 F160
N154 MCALL CYCLE85(2.0,0,2,0,18,-18,20, 1 ,0, 160, 160)
N155 X249.0 Y25.0
N156 MCALL
N157 G0
N158 G0 Z5.0
N159 G0 X25.0
N160 G0 Z2.0
N161 F160

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N162 MCALL CYCLE85(2.0,0,2,0,18,-18,20, 1 ,0, 160, 160)
N163 X25.0 Y25.0
N164 MCALL
N165 G0
N166 G0 Z10.0
N167 M5
N168 M9
N169 COMPOF
N170 odjezd_Z ; MAKRO
N171 ; =====
N172 ; =====
N173 ; MSG ("D6_navrtání")
N174 M5
N175 M9
N176 ; =====
N177 ; NAZEV NASTROJE : navrtavak
N178 ; PRUMER NASTROJE : 6
N179 odjezd_Z ; MAKRO
N180 T="NAVRTAVAK"
N181 G54
N182 R1=40 ; ZANOROVACI POSUV
N183 R2=405 ; PRACOVNI POSUV
N184 R3=3000 ; NEJKRATSI PREJEZDY
N185 S3183 M3
N186 ; =====
N187 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N188 COMPON
N189 $MA_COMPRESS_POS_TOL[X]=0.1
N190 $MA_COMPRESS_POS_TOL[Y]=0.1
N191 $MA_COMPRESS_POS_TOL[Z]=0.1
N192 odjezd_Z ; MAKRO
N193 M8
N194 G0 X137.0 Y137.0 F=R3
N195 G0 Z10.0
N196 G0 X197.0 Y182.0 F=R3
N197 F405
N198 MCALL CYCLE81(10.0,0,2,-2,2)
N199 X197.0 Y182.0
N200 X197.0 Y92.0
N201 X137.0 Y117.0
N202 X77.0 Y92.0
N203 X77.0 Y182.0
N204 MCALL
N205 G0
N206 M5
N207 M9
N208 COMPOF
N209 odjezd_Z ; MAKRO
N210 ; =====
N211 ; =====
N212 ; MSG ("D6_vrtání")
N213 M5
N214 M9
N215 ; =====

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N216 ; NAZEV NASTROJE : D6_HSS_Co_3
N217 ; PRUMER NASTROJE : 6
N218 odjezd_Z ; MAKRO
N219 T="D6_HSS_CO_3"
N220 G54
N221 R1=40 ; ZANOROVACI POSUV
N222 R2=405 ; PRACOVNI POSUV
N223 R3=3000 ; NEJKRATSI PREJEZDY
N224 S3183 M3
N225 ; =====
N226 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N227 COMPON
N228 $MA_COMPRESS_POS_TOL[X]=0.1
N229 $MA_COMPRESS_POS_TOL[Y]=0.1
N230 $MA_COMPRESS_POS_TOL[Z]=0.1
N231 odjezd_Z ; MAKRO
N232 M8
N233 G0 X137.0 Y137.0 F=R3
N234 G0 Z10.0
N235 G0 X197.0 Y182.0 F=R3
N236 G0 Z2.0
N237 F405
N238 MCALL CYCLE82(2.0,0,2,-41.732,41.732,-12,12, 1 ,1, 1 , 0 )
N239 X197.0 Y182.0
N240 MCALL
N241 G0
N242 G0 Z5.0
N243 G0 Y92.0
N244 G0 Z2.0
N245 F405
N246 MCALL CYCLE82(2.0,0,2,-41.732,41.732,-12,12, 1 ,1, 1 , 0 )
N247 X197.0 Y92.0
N248 MCALL
N249 G0
N250 G0 Z5.0
N251 G0 X137.0 Y117.0
N252 G0 Z2.0
N253 F405
N254 MCALL CYCLE82(2.0,0,2,-41.732,41.732,-12,12, 1 ,1, 1 , 0 )
N255 X137.0 Y117.0
N256 MCALL
N257 G0
N258 G0 Z5.0
N259 G0 X77.0 Y92.0
N260 G0 Z2.0
N261 F405
N262 MCALL CYCLE82(2.0,0,2,-41.732,41.732,-12,12, 1 ,1, 1 , 0 )
N263 X77.0 Y92.0
N264 MCALL
N265 G0
N266 G0 Z5.0
N267 G0 Y182.0
N268 G0 Z2.0
N269 F405

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N270 MCALL CYCLE82(2.0,0,2,-41.732,41.732,-12,12, 1 ,1, 1 , 0 )
N271 X77.0 Y182.0
N272 MCALL
N273 G0
N274 G0 Z10.0
N275 M5
N276 M9
N277 COMPOF
N278 odjezd_Z ; MAKRO
N279 ; =====
N280 ; =====
N281 ; MSG ("M10_Navrtání")
N282 M5
N283 M9
N284 ; =====
N285 ; NAZEV NASTROJE : navrtavak
N286 ; PRUMER NASTROJE : 6
N287 odjezd_Z ; MAKRO
N288 T="NAVRTAVAK"
N289 G54
N290 R1=40 ; ZANOROVACI POSUV
N291 R2=405 ; PRACOVNI POSUV
N292 R3=3000 ; NEJKRATSI PREJEZDY
N293 S3183 M3
N294 ; =====
N295 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,0,1)
N296 CYCLE800()
N297 COMPON
N298 $MA_COMPRESS_POS_TOL[X]=0.1
N299 $MA_COMPRESS_POS_TOL[Y]=0.1
N300 $MA_COMPRESS_POS_TOL[Z]=0.1
N301 odjezd_Z ; MAKRO
N302 M8
N303 ORIWKS
N304 TRAORI
N305 G0 A0.0 C0.0
N306 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3
N307 G0 X65.875 Y152.0 A-45.0 C90.0
N308 G0 X-5.25 Y167.0 A-90.0
N309 G0 Z0.0
N310 G1 Z-30.0 F=R1
N311 X-2.0
N312 F405
N313 MCALL CYCLE81(-30.0,-32,2,-34,2)
N314 X-2.0 Y167.0
N315 MCALL
N316 G0
N317 G0 X-5.25 F=R3
N318 G0 Z10.0
N319 G0 Y207.0
N320 G0 Z-30.0
N321 G0 X-2.0
N322 F405
N323 MCALL CYCLE81(-30.0,-32,2,-34,2)

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N324 X-2.0 Y207.0  
N325 MCALL  
N326 G0  
N327 G0 X-5.25  
N328 G0 Z10.0  
N329 G0 Y107.0  
N330 G0 Z-30.0  
N331 G0 X-2.0  
N332 F405  
N333 MCALL CYCLE81(-30.0, -32, 2, -34, 2)  
N334 X-2.0 Y107.0  
N335 MCALL  
N336 G0  
N337 G0 X-5.25  
N338 G0 Z10.0  
N339 G0 Y67.0  
N340 G0 Z-30.0  
N341 G0 X-2.0  
N342 F405  
N343 MCALL CYCLE81(-30.0, -32, 2, -34, 2)  
N344 X-2.0 Y67.0  
N345 MCALL  
N346 G0  
N347 G0 X-5.25  
N348 G0 Z10.0  
N349 G0 X42.375 Y30.875 C135.0  
N350 G0 X90.0 Y-5.25 C180.0  
N351 G0 Z-30.03  
N352 G0 Y-2.0  
N353 F405  
N354 MCALL CYCLE81(-30.03, -32.03, 2, -34.03, 2)  
N355 X90.0 Y-2.0  
N356 MCALL  
N357 G0  
N358 G0 Y-5.25  
N359 G0 Z10.0  
N360 G0 X184.0  
N361 G0 Z-30.0  
N362 G0 Y-2.0  
N363 F405  
N364 MCALL CYCLE81(-30.0, -32, 2, -34, 2)  
N365 X184.0 Y-2.0  
N366 MCALL  
N367 G0  
N368 G0 Y-5.25  
N369 G0 Z10.0  
N370 G0 X231.625 Y30.875 C225.0  
N371 G0 X279.25 Y67.0 C270.0  
N372 G0 Z-30.0  
N373 G0 X276.0  
N374 F405  
N375 MCALL CYCLE81(-30.0, -32, 2, -34, 2)  
N376 X276.0 Y67.0  
N377 MCALL

N378 G0  
N379 G0 X279.25  
N380 G0 Z10.0  
N381 G0 Y107.0  
N382 G0 Z-30.0  
N383 G0 X276.0  
N384 F405  
N385 MCALL CYCLE81(-30.0,-32,2,-34,2)  
N386 X276.0 Y107.0  
N387 MCALL  
N388 G0  
N389 G0 X279.25  
N390 G0 Z10.0  
N391 G0 Y167.0  
N392 G0 Z-30.0  
N393 G0 X276.0  
N394 F405  
N395 MCALL CYCLE81(-30.0,-32,2,-34,2)  
N396 X276.0 Y167.0  
N397 MCALL  
N398 G0  
N399 G0 X279.25  
N400 G0 Z10.0  
N401 G0 Y207.0  
N402 G0 Z-30.0  
N403 G0 X276.0  
N404 F405  
N405 MCALL CYCLE81(-30.0,-32,2,-34,2)  
N406 X276.0 Y207.0  
N407 MCALL  
N408 G0  
N409 G0 X279.25  
N410 G0 Z10.0  
N411 G0 X231.625 Y243.125 C315.0  
N412 G0 X184.0 Y279.25 C360.0  
N413 G0 Z-30.0  
N414 G0 Y276.0  
N415 F405  
N416 MCALL CYCLE81(-30.0,-32,2,-34,2)  
N417 X184.0 Y276.0  
N418 MCALL  
N419 G0  
N420 G0 Y279.25  
N421 G0 Z10.0  
N422 G0 X90.0  
N423 G0 Z-30.0  
N424 G0 Y276.0  
N425 F405  
N426 MCALL CYCLE81(-30.0,-32,2,-34,2)  
N427 X90.0 Y276.0  
N428 MCALL  
N429 G0  
N430 G0 Y279.25  
N431 G0 Z10.0



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N432 M5
N433 M9
N434 COMPOF
N435 odjezd_Z ; MAKRO
N436 TRAF00F
N437 G0 A0.0 C0.0
N438 ; =====
N439 ; =====
N440 ; MSG ("M10_Vrtání")
N441 M5
N442 M9
N443 ; =====
N444 ; NAZEV NASTROJE : Vrták D8,5 HSS
N445 ; PRUMER NASTROJE : 8.5
N446 odjezd_Z ; MAKRO
N447 T="VRTÁK D8,5 HSS"
N448 G54
N449 R1=40 ; ZANOROVACI POSUV
N450 R2=405 ; PRACOVNI POSUV
N451 R3=3000 ; NEJKRATSI PREJEZDY
N452 S2247 M3
N453 ; =====
N454 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,1)
N455 CYCLE800()
N456 COMPON
N457 $MA_COMPRESS_POS_TOL[X]=0.1
N458 $MA_COMPRESS_POS_TOL[Y]=0.1
N459 $MA_COMPRESS_POS_TOL[Z]=0.1
N460 odjezd_Z ; MAKRO
N461 M8
N462 ORIWKS
N463 TRAORI
N464 G0 A0.0 C0.0
N465 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3
N466 G0 X66.047 Y152.0 A-45.0 C90.0
N467 G0 X-4.906 Y167.0 A-90.0
N468 G1 Z-30.0 F=R1
N469 X-2.0
N470 F405
N471 MCALL CYCLE82(-30.0,-32,2,-134.454,102.454,-52,20, 1 ,2, 1 , 0 )
N472 X-2.0 Y167.0
N473 MCALL
N474 G0
N475 G0 X-4.906 F=R3
N476 G0 Y207.0
N477 G0 X-2.0
N478 F405
N479 MCALL CYCLE82(-30.0,-32,2,-134.454,102.454,-52,20, 1 ,2, 1 , 0 )
N480 X-2.0 Y207.0
N481 MCALL
N482 G0
N483 G0 X-4.906
N484 G0 Y107.0
N485 G0 X-2.0

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N486 F405  
N487 MCALL CYCLE82(-30.0,-32,2,-132,100,-52,20, 1 ,2, 1 , 0 )  
N488 X-2.0 Y107.0  
N489 MCALL  
N490 G0  
N491 G0 X-4.906  
N492 G0 Y67.0  
N493 G0 X-2.0  
N494 F405  
N495 MCALL CYCLE82(-30.0,-32,2,-134.454,102.454,-52,20, 1 ,2, 1 , 0 )  
N496 X-2.0 Y67.0  
N497 MCALL  
N498 G0  
N499 G0 X-73.957  
N500 G0 X8.021 Y-14.979 Z-30.015 C135.0  
N501 G0 X90.0 Y-96.957 Z-30.03 C180.0  
N502 G0 Y-2.0  
N503 F405  
N504 MCALL CYCLE82(-30.03,-32.03,2,-147.03,115,-52.03,20, 1 ,2, 1 , 0 )  
N505 X90.0 Y-2.0  
N506 MCALL  
N507 G0  
N508 G0 Y-4.906  
N509 G0 X184.0 Z-30.0  
N510 G0 Y-2.0  
N511 F405  
N512 MCALL CYCLE82(-30.0,-32,2,-147,115,-52,20, 1 ,2, 1 , 0 )  
N513 X184.0 Y-2.0  
N514 MCALL  
N515 G0  
N516 G0 Y-96.957  
N517 G0 X265.979 Y-14.979 C225.0  
N518 G0 X347.957 Y67.0 C270.0  
N519 G0 X276.0  
N520 F405  
N521 MCALL CYCLE82(-30.0,-32,2,-132,100,-52,20, 1 ,2, 1 , 0 )  
N522 X276.0 Y67.0  
N523 MCALL  
N524 G0  
N525 G0 X278.906  
N526 G0 Y107.0  
N527 G0 X276.0  
N528 F405  
N529 MCALL CYCLE82(-30.0,-32,2,-134.454,102.454,-52,20, 1 ,2, 1 , 0 )  
N530 X276.0 Y107.0  
N531 MCALL  
N532 G0  
N533 G0 X278.906  
N534 G0 Y167.0  
N535 G0 X276.0  
N536 F405  
N537 MCALL CYCLE82(-30.0,-32,2,-132,100,-52,20, 1 ,2, 1 , 0 )  
N538 X276.0 Y167.0  
N539 MCALL

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N540 G0
N541 G0 X278.906
N542 G0 Y207.0
N543 G0 X276.0
N544 F405
N545 MCALL CYCLE82(-30.0,-32,2,-132,100,-52,20, 1 ,2, 1 , 0 )
N546 X276.0 Y207.0
N547 MCALL
N548 G0
N549 G0 X347.957
N550 G0 X265.979 Y288.979 C315.0
N551 G0 X184.0 Y370.957 C360.0
N552 G0 Y276.0
N553 F405
N554 MCALL CYCLE82(-30.0,-32,2,-149.454,117.454,-52,20, 1 ,2, 1 , 0 )
N555 X184.0 Y276.0
N556 MCALL
N557 G0
N558 G0 Y278.906
N559 G0 X90.0
N560 G0 Y276.0
N561 F405
N562 MCALL CYCLE82(-30.0,-32,2,-147,115,-52,20, 1 ,2, 1 , 0 )
N563 X90.0 Y276.0
N564 MCALL
N565 G0
N566 G0 Y278.906
N567 G0 Z10.0
N568 M5
N569 M9
N570 COMPOF
N571 odjezd_Z ; MAKRO
N572 TRAF00F
N573 G0 A0.0 C0.0
N574 ; =====
N575 ; =====
N576 ; MSG ("M10_Zahloubení")
N577 M5
N578 M9
N579 ; =====
N580 ; NAZEV NASTROJE : Kuželový záhlubník 90° pro M10
N581 ; PRUMER NASTROJE : 19
N582 odjezd_Z ; MAKRO
N583 T="KUŽELOVÝ ZÁHLUBNÍK 90° PRO M10"
N584 G54
N585 R1=12 ; ZANOROVACI POSUV
N586 R2=121 ; PRACOVNI POSUV
N587 R3=3000 ; NEJKRATSI PREJEZDY
N588 S670 M3
N589 ; =====
N590 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,1)
N591 CYCLE800()
N592 COMPON
N593 $MA_COMPRESS_POS_TOL[X]=0.1

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N594 \$MA\_COMPRESS\_POS\_TOL[Y]=0.1  
N595 \$MA\_COMPRESS\_POS\_TOL[Z]=0.1  
N596 odjezd\_Z ; MAKRO  
N597 M8  
N598 ORIWKS  
N599 TRAORI  
N600 G0 A0.0 C0.0  
N601 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3  
N602 G0 X65.875 Y152.0 A-45.0 C90.0  
N603 G0 X-5.25 Y167.0 A-90.0  
N604 G0 Z0.0  
N605 G1 Z-30.0 F=R1  
N606 X-2.0  
N607 X0.5 F=R2  
N608 G0 X-2.0 F=R3  
N609 G0 X-5.25  
N610 G0 Y207.0  
N611 G0 X-2.0  
N612 G1 X0.5 F=R2  
N613 G0 X-2.0 F=R3  
N614 G0 X-5.25  
N615 G0 Y107.0  
N616 G0 X-2.0  
N617 G1 X0.5 F=R2  
N618 G0 X-2.0 F=R3  
N619 G0 X-5.25  
N620 G0 Y67.0  
N621 G0 X-2.0  
N622 G1 X0.5 F=R2  
N623 G0 X-2.0 F=R3  
N624 G0 X-73.992  
N625 G0 X8.004 Y-14.996 Z-30.015 C135.0  
N626 G0 X90.0 Y-96.992 Z-30.03 C180.0  
N627 G0 Y-2.0  
N628 G1 Y0.5 F=R2  
N629 G0 Y-2.0 F=R3  
N630 G0 Y-5.25  
N631 G0 X184.0 Z-30.0  
N632 G0 Y-2.0  
N633 G1 Y0.5 F=R2  
N634 G0 Y-2.0 F=R3  
N635 G0 Y-96.992  
N636 G0 X265.996 Y-14.996 C225.0  
N637 G0 X347.992 Y67.0 C270.0  
N638 G0 X276.0  
N639 G1 X273.5 F=R2  
N640 G0 X276.0 F=R3  
N641 G0 X279.25  
N642 G0 Y107.0  
N643 G0 X276.0  
N644 G1 X273.5 F=R2  
N645 G0 X276.0 F=R3  
N646 G0 X279.25  
N647 G0 Y167.0

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N648 G0 X276.0
N649 G1 X273.5 F=R2
N650 G0 X276.0 F=R3
N651 G0 X279.25
N652 G0 Y207.0
N653 G0 X276.0
N654 G1 X273.5 F=R2
N655 G0 X276.0 F=R3
N656 G0 X347.992
N657 G0 X265.996 Y288.996 C315.0
N658 G0 X184.0 Y370.992 C360.0
N659 G0 Y276.0
N660 G1 Y273.5 F=R2
N661 G0 Y276.0 F=R3
N662 G0 Y279.25
N663 G0 X90.0
N664 G0 Y276.0
N665 G1 Y273.5 F=R2
N666 G0 Y276.0 F=R3
N667 G0 Y279.25
N668 G0 Z10.0
N669 M5
N670 M9
N671 COMPOF
N672 odjezd_Z ; MAKRO
N673 TRAF00F
N674 G0 A0.0 C0.0
N675 ; =====
N676 ; =====
N677 ; MSG ("M10_Závit")
N678 M5
N679 M9
N680 ; =====
N681 ; NAZEV NASTROJE : ZT50100T M10 6GX
N682 ; PRUMER NASTROJE : 10
N683 odjezd_Z ; MAKRO
N684 T="ZT50100T M10 6GX"
N685 G54
N686 R1=57 ; ZANOROVACI POSUV
N687 R2=570 ; PRACOVNI POSUV
N688 R3=3000 ; NEJKRATSI PREJEZDY
N689 S380 M3
N690 ; =====
N691 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,0,1)
N692 CYCLE800()
N693 COMPON
N694 $MA_COMPRESS_POS_TOL[X]=0.1
N695 $MA_COMPRESS_POS_TOL[Y]=0.1
N696 $MA_COMPRESS_POS_TOL[Z]=0.1
N697 odjezd_Z ; MAKRO
N698 M8
N699 ORIWKS
N700 TRAORI
N701 G0 A0.0 C0.0

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N702 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3  
N703 G0 X65.906 Y152.0 A-45.0 C90.0  
N704 G0 X-5.188 Y167.0 A-90.0  
N705 G0 Z0.0  
N706 G1 Z-30.0 F=R1  
N707 X-2.0  
N708 F570  
N709 MCALL CYCLE84(-30.0, -32,2, -50,18,0,1.5,380,570)  
N710 X-2.0 Y167.0  
N711 MCALL  
N712 G0  
N713 G0 X-4.922 F=R3  
N714 G0 Y207.0  
N715 G0 X-2.0  
N716 F570  
N717 MCALL CYCLE84(-30.0, -32,2, -50,18,0,1.5,380,570)  
N718 X-2.0 Y207.0  
N719 MCALL  
N720 G0  
N721 G0 X-4.922  
N722 G0 Y107.0  
N723 G0 X-2.0  
N724 F570  
N725 MCALL CYCLE84(-30.0, -32,2, -50,18,0,1.5,380,570)  
N726 X-2.0 Y107.0  
N727 MCALL  
N728 G0  
N729 G0 X-4.922  
N730 G0 Y67.0  
N731 G0 X-2.0  
N732 F570  
N733 MCALL CYCLE84(-30.0, -32,2, -50,18,0,1.5,380,570)  
N734 X-2.0 Y67.0  
N735 MCALL  
N736 G0  
N737 G0 X-74.563  
N738 G0 X7.719 Y-15.281 Z-30.015 C135.0  
N739 G0 X90.0 Y-97.563 Z-30.03 C180.0  
N740 G0 Y-2.0  
N741 F570  
N742 MCALL CYCLE84(-30.03, -32.03,2, -50.03,18,0,1.5,380,570)  
N743 X90.0 Y-2.0  
N744 MCALL  
N745 G0  
N746 G0 Y-4.922  
N747 G0 X184.0 Z-30.0  
N748 G0 Y-2.0  
N749 F570  
N750 MCALL CYCLE84(-30.0, -32,2, -50,18,0,1.5,380,570)  
N751 X184.0 Y-2.0  
N752 MCALL  
N753 G0  
N754 G0 Y-97.563  
N755 G0 X266.281 Y-15.281 C225.0

N756 G0 X348.563 Y67.0 C270.0  
N757 G0 X276.0  
N758 F570  
N759 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N760 X276.0 Y67.0  
N761 MCALL  
N762 G0  
N763 G0 X278.922  
N764 G0 Y107.0  
N765 G0 X276.0  
N766 F570  
N767 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N768 X276.0 Y107.0  
N769 MCALL  
N770 G0  
N771 G0 X278.922  
N772 G0 Y167.0  
N773 G0 X276.0  
N774 F570  
N775 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N776 X276.0 Y167.0  
N777 MCALL  
N778 G0  
N779 G0 X278.922  
N780 G0 Y207.0  
N781 G0 X276.0  
N782 F570  
N783 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N784 X276.0 Y207.0  
N785 MCALL  
N786 G0  
N787 G0 X348.563  
N788 G0 X266.281 Y289.281 C315.0  
N789 G0 X184.0 Y371.563 C360.0  
N790 G0 Y276.0  
N791 F570  
N792 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N793 X184.0 Y276.0  
N794 MCALL  
N795 G0  
N796 G0 Y278.922  
N797 G0 X90.0  
N798 G0 Y276.0  
N799 F570  
N800 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N801 X90.0 Y276.0  
N802 MCALL  
N803 G0  
N804 G0 Y279.188  
N805 G0 Z10.0  
N806 M5  
N807 M9  
N808 COMPOF  
N809 odjezd\_Z ; MAKRO

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N810 TRAFOOF
N811 G0 A0.0 C0.0
N812 ; =====
N813 ; =====
N814 ; MSG ("M10_Zahloubení")
N815 M5
N816 M9
N817 ; =====
N818 ; NAZEV NASTROJE : Kuželový záhlubník 90° pro M10
N819 ; PRUMER NASTROJE : 19
N820 odjezd_Z ; MAKRO
N821 T="KUŽELOVÝ ZÁHLUBNÍK 90° PRO M10"
N822 G54
N823 R1=12 ; ZANOROVACI POSUV
N824 R2=121 ; PRACOVNI POSUV
N825 R3=3000 ; NEJKRATSI PREJEZDY
N826 S670 M3
N827 ; =====
N828 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,1)
N829 CYCLE800()
N830 COMPON
N831 $MA_COMPRESS_POS_TOL[X]=0.1
N832 $MA_COMPRESS_POS_TOL[Y]=0.1
N833 $MA_COMPRESS_POS_TOL[Z]=0.1
N834 odjezd_Z ; MAKRO
N835 M8
N836 ORIWKS
N837 TRAORI
N838 G0 A0.0 C0.0
N839 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3
N840 G0 X65.875 Y152.0 A-45.0 C90.0
N841 G0 X-5.25 Y167.0 A-90.0
N842 G0 Z0.0
N843 G1 Z-30.0 F=R1
N844 X-2.0
N845 X0.5 F=R2
N846 G0 X-2.0 F=R3
N847 G0 X-5.25
N848 G0 Y207.0
N849 G0 X-2.0
N850 G1 X0.5 F=R2
N851 G0 X-2.0 F=R3
N852 G0 X-5.25
N853 G0 Y107.0
N854 G0 X-2.0
N855 G1 X0.5 F=R2
N856 G0 X-2.0 F=R3
N857 G0 X-5.25
N858 G0 Y67.0
N859 G0 X-2.0
N860 G1 X0.5 F=R2
N861 G0 X-2.0 F=R3
N862 G0 X-73.992
N863 G0 X8.004 Y-14.996 Z-30.015 C135.0

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N864 G0 X90.0 Y-96.992 Z-30.03 C180.0  
N865 G0 Y-2.0  
N866 G1 Y0.5 F=R2  
N867 G0 Y-2.0 F=R3  
N868 G0 Y-5.25  
N869 G0 X184.0 Z-30.0  
N870 G0 Y-2.0  
N871 G1 Y0.5 F=R2  
N872 G0 Y-2.0 F=R3  
N873 G0 Y-96.992  
N874 G0 X265.996 Y-14.996 C225.0  
N875 G0 X347.992 Y67.0 C270.0  
N876 G0 X276.0  
N877 G1 X273.5 F=R2  
N878 G0 X276.0 F=R3  
N879 G0 X279.25  
N880 G0 Y107.0  
N881 G0 X276.0  
N882 G1 X273.5 F=R2  
N883 G0 X276.0 F=R3  
N884 G0 X279.25  
N885 G0 Y167.0  
N886 G0 X276.0  
N887 G1 X273.5 F=R2  
N888 G0 X276.0 F=R3  
N889 G0 X279.25  
N890 G0 Y207.0  
N891 G0 X276.0  
N892 G1 X273.5 F=R2  
N893 G0 X276.0 F=R3  
N894 G0 X347.992  
N895 G0 X265.996 Y288.996 C315.0  
N896 G0 X184.0 Y370.992 C360.0  
N897 G0 Y276.0  
N898 G1 Y273.5 F=R2  
N899 G0 Y276.0 F=R3  
N900 G0 Y279.25  
N901 G0 X90.0  
N902 G0 Y276.0  
N903 G1 Y273.5 F=R2  
N904 G0 Y276.0 F=R3  
N905 G0 Y279.25  
N906 G0 Z10.0  
N907 M5  
N908 M9  
N909 COMPOF  
N910 odjezd\_Z ; MAKRO  
N911 TRAF00F  
N912 G0 A0.0 C0.0  
N913 ; =====  
N914 ; =====  
N915 ; MSG ("M10\_Závit")  
N916 M5  
N917 M9

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N918 ; =====
N919 ; NAZEV NASTROJE : ZT50100T M10 6GX
N920 ; PRUMER NASTROJE : 10
N921 odjezd_Z ; MAKRO
N922 T="ZT50100T M10 6GX"
N923 G54
N924 R1=57 ; ZANOROVACI POSUV
N925 R2=570 ; PRACOVNI POSUV
N926 R3=3000 ; NEJKRATSI PREJEZDY
N927 S380 M3
N928 ; =====
N929 CYCLE800(1,"STUL",0,57,0,0,0,0,0,0,0,0,1)
N930 CYCLE800()
N931 COMPON
N932 $MA_COMPRESS_POS_TOL[X]=0.1
N933 $MA_COMPRESS_POS_TOL[Y]=0.1
N934 $MA_COMPRESS_POS_TOL[Z]=0.1
N935 odjezd_Z ; MAKRO
N936 M8
N937 ORIWKS
N938 TRAORI
N939 G0 A0.0 C0.0
N940 G0 X137.0 Y137.0 Z10.0 A0.0 C0.0 F=R3
N941 G0 X65.906 Y152.0 A-45.0 C90.0
N942 G0 X-5.188 Y167.0 A-90.0
N943 G0 Z0.0
N944 G1 Z-30.0 F=R1
N945 X-2.0
N946 F570
N947 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)
N948 X-2.0 Y167.0
N949 MCALL
N950 G0
N951 G0 X-4.922 F=R3
N952 G0 Y207.0
N953 G0 X-2.0
N954 F570
N955 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)
N956 X-2.0 Y207.0
N957 MCALL
N958 G0
N959 G0 X-4.922
N960 G0 Y107.0
N961 G0 X-2.0
N962 F570
N963 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)
N964 X-2.0 Y107.0
N965 MCALL
N966 G0
N967 G0 X-4.922
N968 G0 Y67.0
N969 G0 X-2.0
N970 F570
N971 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)

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N972 X-2.0 Y67.0  
N973 MCALL  
N974 G0  
N975 G0 X-74.563  
N976 G0 X7.719 Y-15.281 Z-30.015 C135.0  
N977 G0 X90.0 Y-97.563 Z-30.03 C180.0  
N978 G0 Y-2.0  
N979 F570  
N980 MCALL CYCLE84(-30.03,-32.03,2,-50.03,18,0,1.5,380,570)  
N981 X90.0 Y-2.0  
N982 MCALL  
N983 G0  
N984 G0 Y-4.922  
N985 G0 X184.0 Z-30.0  
N986 G0 Y-2.0  
N987 F570  
N988 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N989 X184.0 Y-2.0  
N990 MCALL  
N991 G0  
N992 G0 Y-97.563  
N993 G0 X266.281 Y-15.281 C225.0  
N994 G0 X348.563 Y67.0 C270.0  
N995 G0 X276.0  
N996 F570  
N997 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N998 X276.0 Y67.0  
N999 MCALL  
N1000 G0  
N1001 G0 X278.922  
N1002 G0 Y107.0  
N1003 G0 X276.0  
N1004 F570  
N1005 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N1006 X276.0 Y107.0  
N1007 MCALL  
N1008 G0  
N1009 G0 X278.922  
N1010 G0 Y167.0  
N1011 G0 X276.0  
N1012 F570  
N1013 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N1014 X276.0 Y167.0  
N1015 MCALL  
N1016 G0  
N1017 G0 X278.922  
N1018 G0 Y207.0  
N1019 G0 X276.0  
N1020 F570  
N1021 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)  
N1022 X276.0 Y207.0  
N1023 MCALL  
N1024 G0  
N1025 G0 X348.563

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N1026 G0 X266.281 Y289.281 C315.0
N1027 G0 X184.0 Y371.563 C360.0
N1028 G0 Y276.0
N1029 F570
N1030 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)
N1031 X184.0 Y276.0
N1032 MCALL
N1033 G0
N1034 G0 Y278.922
N1035 G0 X90.0
N1036 G0 Y276.0
N1037 F570
N1038 MCALL CYCLE84(-30.0,-32,2,-50,18,0,1.5,380,570)
N1039 X90.0 Y276.0
N1040 MCALL
N1041 G0
N1042 G0 Y279.188
N1043 G0 Z10.0
N1044 M5
N1045 M9
N1046 COMPOF
N1047 odjezd_Z ; MAKRO
N1048 TRAFOOF
N1049 G0 A0.0 C0.0
N1050 ; =====
N1051 ; =====
N1052 ; MSG ("M12_Navrtání")
N1053 M5
N1054 M9
N1055 ; =====
N1056 ; NAZEV NASTROJE : navrtavak
N1057 ; PRUMER NASTROJE : 6
N1058 odjezd_Z ; MAKRO
N1059 T="NAVRTAVAK"
N1060 G54
N1061 R1=40 ; ZANOROVACI POSUV
N1062 R2=405 ; PRACOVNI POSUV
N1063 R3=3000 ; NEJKRATSI PREJEZDY
N1064 S3183 M3
N1065 ; =====
N1066 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0.,0,0,0,-1)
N1067 COMPON
N1068 $MA_COMPRESS_POS_TOL[X]=0.1
N1069 $MA_COMPRESS_POS_TOL[Y]=0.1
N1070 $MA_COMPRESS_POS_TOL[Z]=0.1
N1071 odjezd_Z ; MAKRO
N1072 M8
N1073 G0 X137.0 Y137.0 F=R3
N1074 G0 Z10.0
N1075 G0 Y237.0 F=R3
N1076 G0 Z2.0
N1077 F405
N1078 MCALL CYCLE81(2.0,0,2,-2,2)
N1079 X137.0 Y237.0

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N1080 MCALL
N1081 G0
N1082 G0 Z5.0
N1083 G0 X237.0 Y137.0
N1084 G0 Z2.0
N1085 F405
N1086 MCALL CYCLE81(2.0,0,2,-2,2)
N1087 X237.0 Y137.0
N1088 MCALL
N1089 G0
N1090 G0 Z5.0
N1091 G0 X137.0 Y37.0
N1092 G0 Z2.0
N1093 F405
N1094 MCALL CYCLE81(2.0,0,2,-2,2)
N1095 X137.0 Y37.0
N1096 MCALL
N1097 G0
N1098 G0 Z5.0
N1099 G0 X37.0 Y137.0
N1100 G0 Z2.0
N1101 F405
N1102 MCALL CYCLE81(2.0,0,2,-2,2)
N1103 X37.0 Y137.0
N1104 MCALL
N1105 G0
N1106 G0 Z10.0
N1107 M5
N1108 M9
N1109 COMPOF
N1110 odjezd_Z ; MAKRO
N1111 ; =====
N1112 ; =====
N1113 ; MSG ("M12_Vrtání")
N1114 M5
N1115 M9
N1116 ; =====
N1117 ; NAZEV NASTROJE : Vrták D10,2
N1118 ; PRUMER NASTROJE : 10.2
N1119 odjezd_Z ; MAKRO
N1120 T="VRTÁK D10,2"
N1121 G54
N1122 R1=40 ; ZANOROVACI POSUV
N1123 R2=405 ; PRACOVNI POSUV
N1124 R3=3000 ; NEJKRATSI PREJEZDY
N1125 S1872 M3
N1126 ; =====
N1127 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N1128 COMPON
N1129 $MA_COMPRESS_POS_TOL[X]=0.1
N1130 $MA_COMPRESS_POS_TOL[Y]=0.1
N1131 $MA_COMPRESS_POS_TOL[Z]=0.1
N1132 odjezd_Z ; MAKRO
N1133 M8

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N1134 G0 X137.0 Y137.0 F=R3
N1135 G0 Z10.0
N1136 G0 Y237.0 F=R3
N1137 G0 Z2.0
N1138 F405
N1139 MCALL CYCLE81(2.0,0,2,-20,20)
N1140 X137.0 Y237.0
N1141 MCALL
N1142 G0
N1143 G0 Z5.0
N1144 G0 X237.0 Y137.0
N1145 G0 Z2.0
N1146 F405
N1147 MCALL CYCLE81(2.0,0,2,-20,20)
N1148 X237.0 Y137.0
N1149 MCALL
N1150 G0
N1151 G0 Z5.0
N1152 G0 X137.0 Y37.0
N1153 G0 Z2.0
N1154 F405
N1155 MCALL CYCLE81(2.0,0,2,-20,20)
N1156 X137.0 Y37.0
N1157 MCALL
N1158 G0
N1159 G0 Z5.0
N1160 G0 X37.0 Y137.0
N1161 G0 Z2.0
N1162 F405
N1163 MCALL CYCLE81(2.0,0,2,-20,20)
N1164 X37.0 Y137.0
N1165 MCALL
N1166 G0
N1167 G0 Z10.0
N1168 M5
N1169 M9
N1170 COMPOF
N1171 odjezd_Z ; MAKRO
N1172 ; =====
N1173 ; =====
N1174 ; MSG ("M12_Zahloubení")
N1175 M5
N1176 M9
N1177 ; =====
N1178 ; NAZEV NASTROJE : Kuželový záhlubník 90° M12
N1179 ; PRUMER NASTROJE : 23
N1180 odjezd_Z ; MAKRO
N1181 T="KUŽELOVÝ ZÁHLUBNÍK 90° M12"
N1182 G54
N1183 R1=12 ; ZANOROVACI POSUV
N1184 R2=121 ; PRACOVNI POSUV
N1185 R3=3000 ; NEJKRATSI PREJEZDY
N1186 S554 M3
N1187 ; =====

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N1188 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N1189 COMPON
N1190 $MA_COMPRESS_POS_TOL[X]=0.1
N1191 $MA_COMPRESS_POS_TOL[Y]=0.1
N1192 $MA_COMPRESS_POS_TOL[Z]=0.1
N1193 odjezd_Z ; MAKRO
N1194 M8
N1195 G0 X137.0 Y137.0 F=R3
N1196 G0 Z10.0
N1197 G0 Y237.0 F=R3
N1198 G0 Z2.0
N1199 G1 Z-0.5 F=R2
N1200 G0 Z10.0 F=R3
N1201 G0 X237.0 Y137.0 F=R3
N1202 G0 Z2.0 F=R3
N1203 G1 Z-0.5
N1204 G0 Z10.0 F=R3
N1205 G0 X137.0 Y37.0 F=R3
N1206 G0 Z2.0 F=R3
N1207 G1 Z-0.5
N1208 G0 Z10.0 F=R3
N1209 G0 X37.0 Y137.0 F=R3
N1210 G0 Z2.0 F=R3
N1211 G1 Z-0.5
N1212 G0 Z10.0 F=R3
N1213 M5
N1214 M9
N1215 COMPOF
N1216 odjezd_Z ; MAKRO
N1217 ; =====
N1218 ; =====
N1219 ; MSG ("M12_Závit")
N1220 M5
N1221 M9
N1222 ; =====
N1223 ; NAZEV NASTROJE : M12 6H HSSE 3500_1
N1224 ; PRUMER NASTROJE : 12
N1225 odjezd_Z ; MAKRO
N1226 T="M12 6H HSSE 3500_1"
N1227 G54
N1228 R1=47.7 ; ZANOROVACI POSUV
N1229 R2=477 ; PRACOVNI POSUV
N1230 R3=3000 ; NEJKRATSI PREJEZDY
N1231 S318 M3
N1232 ; =====
N1233 CYCLE800(1,"STUL",0,57,0.,0.,0.,0.,0.,0,0,0,-1)
N1234 COMPON
N1235 $MA_COMPRESS_POS_TOL[X]=0.1
N1236 $MA_COMPRESS_POS_TOL[Y]=0.1
N1237 $MA_COMPRESS_POS_TOL[Z]=0.1
N1238 odjezd_Z ; MAKRO
N1239 M7
N1240 G0 X137.0 Y137.0 F=R3
N1241 G0 Z10.0

```

```

N1242 G0 Y237.0 F=R3
N1243 G0 Z2.5
N1244 F477
N1245 MCALL CYCLE84(2.5,0.5,1.5,-14,14.5,2,1.75,318,477)
N1246 X137.0 Y237.0
N1247 MCALL
N1248 G0
N1249 G0 Z5.313
N1250 G0 X237.0 Y137.0
N1251 G0 Z2.5
N1252 F477
N1253 MCALL CYCLE84(2.5,0.5,1.5,-14,14.5,2,1.75,318,477)
N1254 X237.0 Y137.0
N1255 MCALL
N1256 G0
N1257 G0 Z5.313
N1258 G0 X137.0 Y37.0
N1259 G0 Z2.5
N1260 F477
N1261 MCALL CYCLE84(2.5,0.5,1.5,-14,14.5,2,1.75,318,477)
N1262 X137.0 Y37.0
N1263 MCALL
N1264 G0
N1265 G0 Z5.313
N1266 G0 X37.0 Y137.0
N1267 G0 Z2.5
N1268 F477
N1269 MCALL CYCLE84(2.5,0.5,1.5,-14,14.5,2,1.75,318,477)
N1270 X37.0 Y137.0
N1271 MCALL
N1272 G0
N1273 G0 Z10.0
N1274 M5
N1275 M9
N1276 COMPOF
N1277 odjezd_Z ; MAKRO
N1278 ; =====
N1279 M5
N1280 FFWOF
N1281 TRAF00F
N1282 G0 A0.0 C0.0
N1283 CYCLE800()
N1284
N1285 G0 A0.0 C0.0
N1286 $MA_COMPRESS_POS_TOL[X]=0.015
N1287 $MA_COMPRESS_POS_TOL[Y]=0.015
N1288 $MA_COMPRESS_POS_TOL[Z]=0.015
N1289 ; -----KONEC-----

```