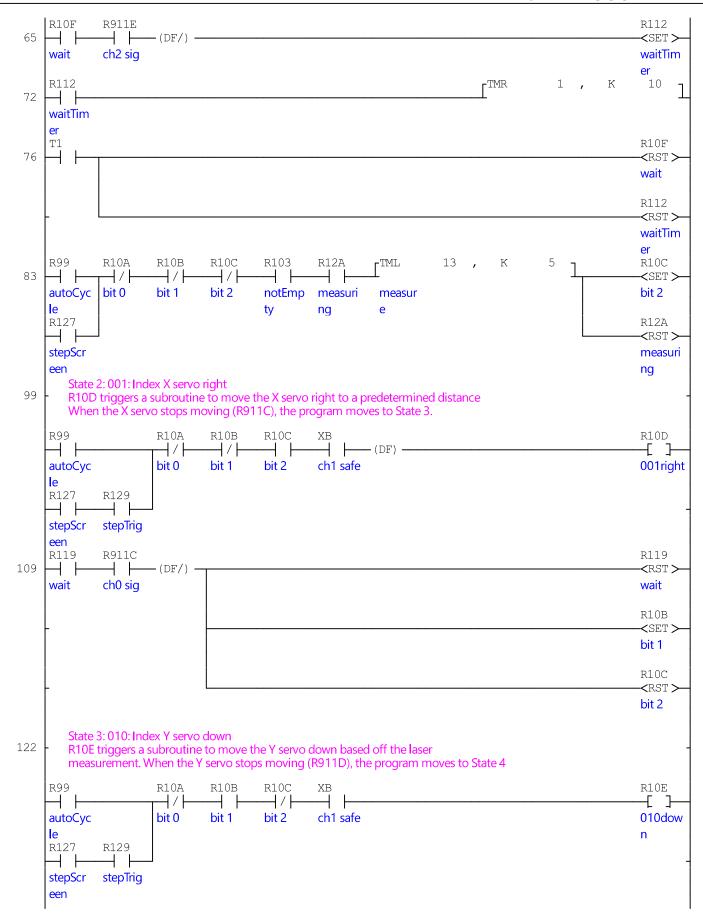
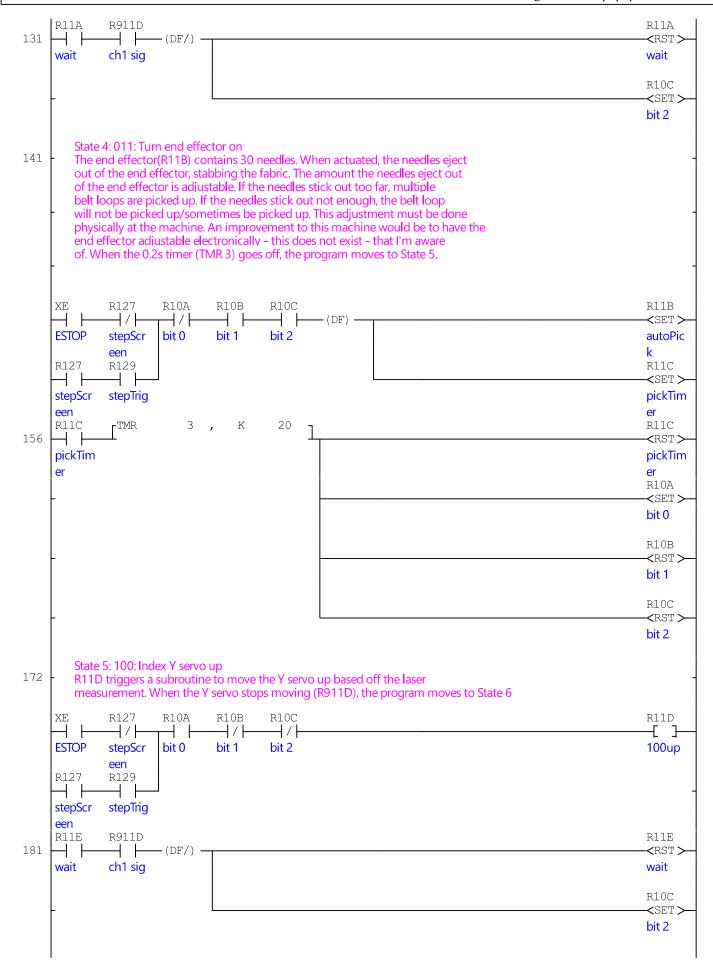
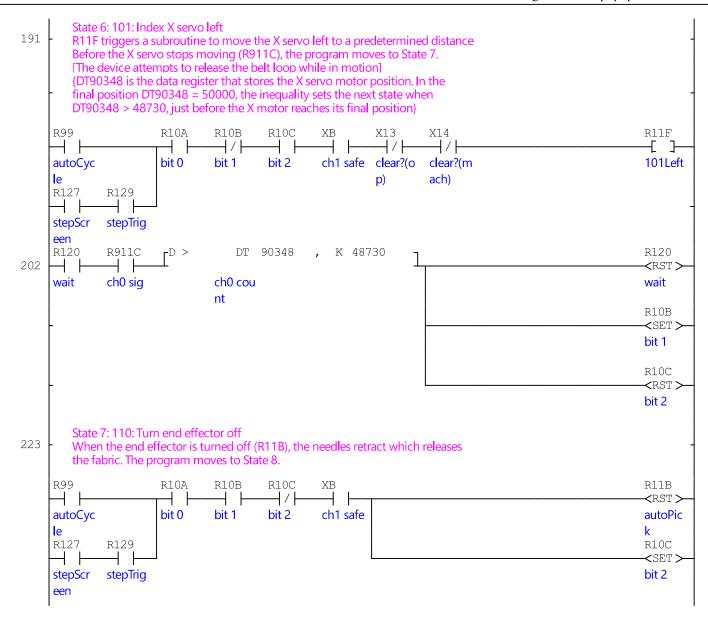
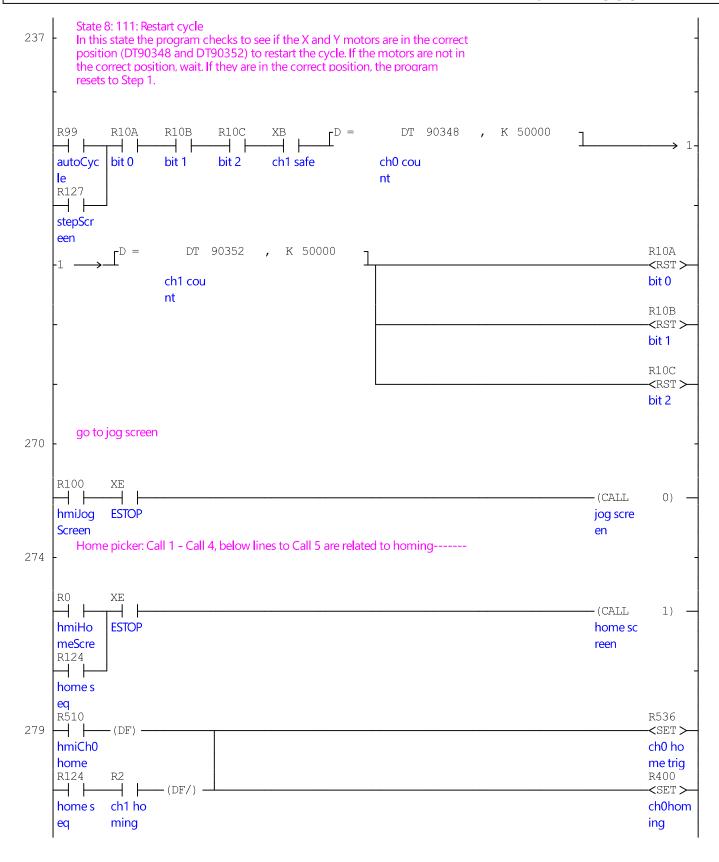


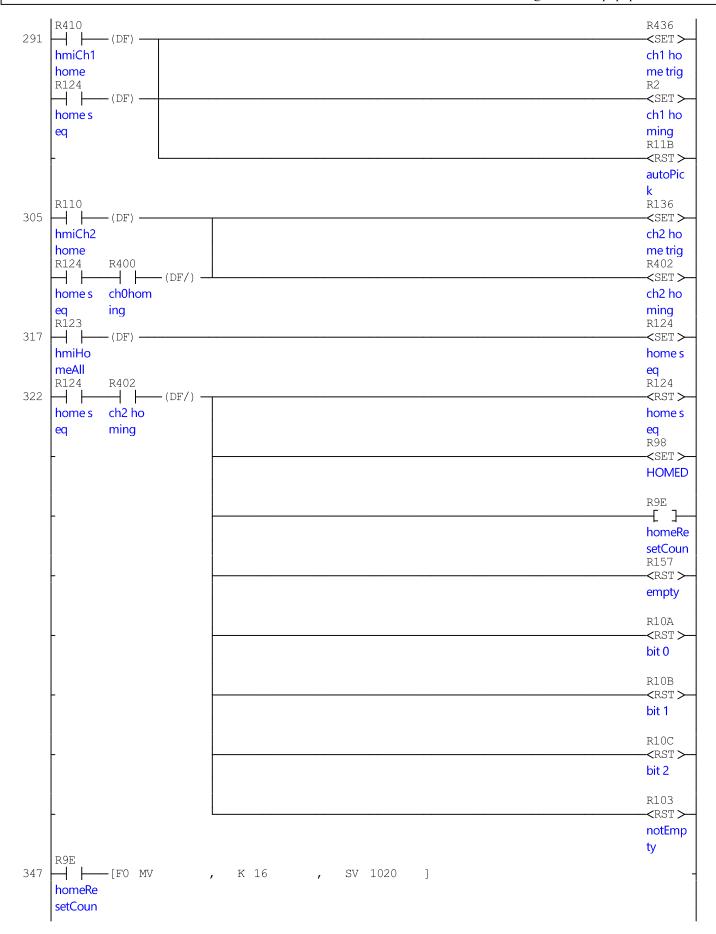
```
Pick and place cycle shown in the simulation.
32
        The pick and place cycle consist of 8 states. The cycle starts at state 1 and
        increments +1 to state 8 where the cycle ends and starts again at state 1.
        [state 1 -> state 2 -> ... -> state 8 -> state 1 -> state 2 -> ...]
        Each state is described using 3 relays (R10A, R10B, R10C).
        For example:
        R10A = off, R10B = off, R10C = off
        State 000: State 1
        R10A = off, R10B = off, R10C = on
        State 001: State 2
        If all relays are on (on, on, on = State 111 = State 8)
        The states follow this order: 000, 001, 010, 011, 100, 101, 110, 111
        A brief description of each state:
        000: Measure with laser the height of fabric, index magazine if it is empty
        001: Index X servo right
        010: Index Y servo down
        011: Turn end effector on
        100: Index Y servo up
        101: Index X servo left
        110: Turn end effector off
        111: Restart cycle
        From the HMI the cycle is started, there are 2 options on the HMI:
        automatic mode (R99)
        step mode (R127) [when R127 is on, another button is available on the HMI to step
                          through each state manually (R126)]
    R98
                                                                                                                         R99
                 <SET >
    HOMED hmiON
                                                                                                                         autoCyc
                                                                                                                         e
    C1022
                                                                                                                         R99
     \dashv \vdash
              - (DF) -
                                                                                                                         <RST >
    conEmp
                                                                                                                         autoCyc
    tyCount
                                                                                                                         le
    R128
      \dashv \vdash
             — (DF/) —
    hmiOFF
                                                                                                                         R129
               ─ (DF) -
    HOMED stepTrig
                                                                                                                         stepTrig
               Hmi
        State 1: 000: Measure with laser the height of fabric, index magazine if empty
51
        R94 sets off a series of events that measures the stack of fabric.
        -If the laser measurement is empty, the magazine is indexed 1 position, and R94
        is triggered again. This continues until a non empty measurement is taken or
        until every magazine cartridge has been checked. If all cartridges measure
        empty, the cycle shuts off and must be restarted by the operator.
        -If the laser measurement is not empty, bit 2(R10C) is set and the program moves
        to State 2.
    R99
                          R10A
                                    R10B
                                               R10C
                                                                    R10F
                                                                                                                         R94
                                                         ΧB
                           ┤ / ├
                                      \dashv / \vdash
                                                                             — (DF) -
                                                                                                                          -[ ]-
                          bit 0
                                    bit 1
                                               bit 2
    autoCyc
                                                         ch1 safe wait
                                                                                                                         measur
    e
                                                                                                                         eTria
    R127
               R129
                                                                                                                         R12A
                                                                                                                         <SET >
    stepScr
              stepTrig
                                                                                                                         measuri
    een
                                                                                                                         ng
```

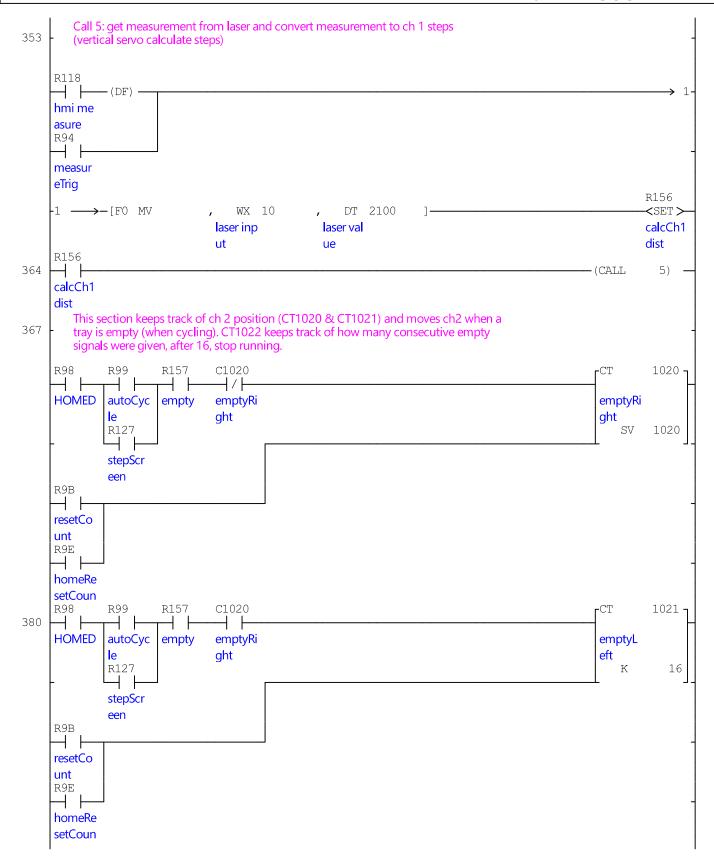






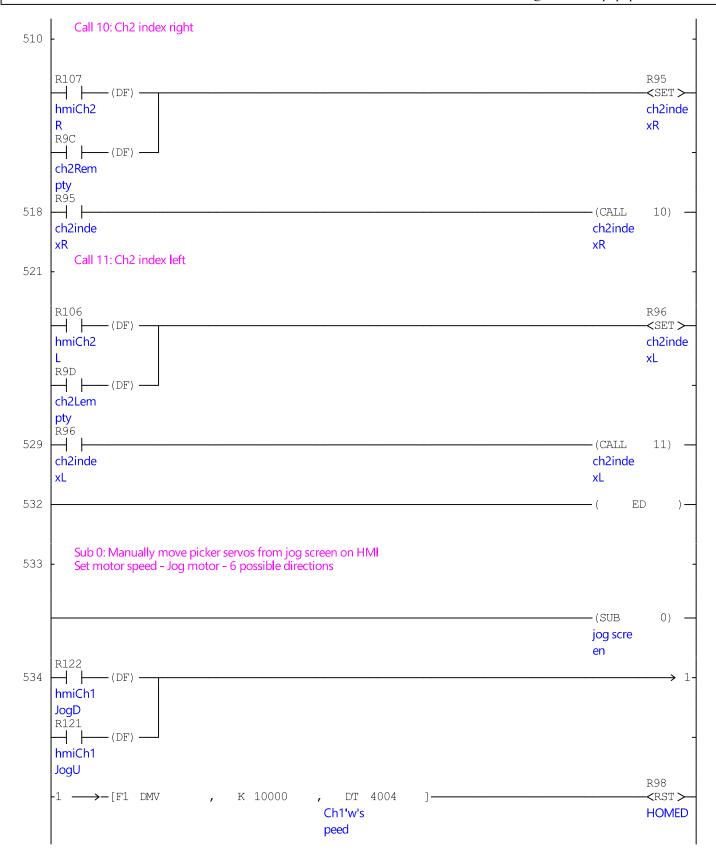






```
R99
     R98
                       R157
                                                                                                          1022 7
393
                                                                                                 conEmp
     HOMED
              autoCyc empty
              le
                                                                                                 tyCount
              R127
                                                                                                            30
                                                                                                    K
              \dashv
              stepScr
              een
     R103
             — (DF) –
     notEmp
     ty
R9E
      \dashv \vdash
     homeRe
     setCoun
     R9F
      \dashv \vdash
             — (DF) —
     hmiON
     R157
                                                                                                        R10F
408
     \dashv \vdash
                                                                                                         <SET >
     empty
                                                                                                        wait
     C1020
                                                                                                        R9A
     — (DF) -
412
                                                                                                         <SET >
                                                                                                         ch2right
     emptyRi
     ght
                                                                                                         Empty
     C1021
                                                                                                        R9A
418
      \dashv \vdash
             -(DF) -
                                                                                                         <RST >
                                                                                                         ch2right
     emptyL
     eft
                                                                                                         Empty
                                                                                                         R9B
                                                                                                         -[ ]-
                                                                                                         resetCo
                                                                                                         unt
     R9B
425
     , K 15
                                                 , SV 1020
                                                                 ]
     resetCo
     unt
     R98
              R99
                       R9A
                                R157
                                                                                                         R9C
                                                                                                         -[ ]-
                                HOMED | autoCyc | ch2right | empty
                                                                                                         ch2Rem
                       Empty
              e
                                                                                                         pty
              R127
                                                                                                         R157
                                                                                                         <RST >
              stepScr
                                                                                                         empty
              een
     R98
              R99
                       R157
                                                                                                         R9D
                                                                                                         <del>[</del>]
442
               \dashv \vdash
                               — (DF) -
     HOMED
              autoCyc empty
                                                                                                         ch2Lem
              le
                                                                                                        pty
R157
              R127
                                                                                                         <RST >
              stepScr
                                                                                                         empty
              een
```

```
Call 6: Ch1 index down (using laser measurement)
452
     R407
                                                                                                                 R90
      → (DF) -
                                                                                                                 <SET >
     hmiCh1i
                                                                                                                 indexDo
     ndD
                                                                                                                 wn
     R10E
                         R10E
                                                                                                                 R11A
      \dashv \vdash
              — (DF) -
                                                                                                                 <SET >
     010dow
                         010dow
                                                                                                                 wait
     n
     R90
464
                                                                                                                    6)
                                                                                                      — (CALL
     indexDo
         Call 7: Ch 1 index up (using laser measurement)
467
     R406
                                                                                                                 R91
      → (DF) -
                                                                                                                 <SET >
     hmiCh1
                                                                                                                 indexUp
     ndU
     R11D
                         R11D
                                                                                                                 R11E
       + \vdash
              — (DF) -
                                                                                                                 <SET >
      100up
                         100up
                                                                                                                 wait
     R91
479
      \dashv \vdash
                                                                                                                    7)
     indexUp
         Call 8: Ch0 index right
482
     R506
                                                                                                                 R92
      \dashv \vdash
              —(DF) -
                                                                                                                 <SET >
     hmiCh0
                                                                                                                 indexRi
     ndR
                                                                                                                 ght
     R10D
                         R10D
                                                                                                                 R119
       | |---- (DF) -
                                                                                                                 <SET >
     001right
                         001right
                                                                                                                 wait
     R92
494
                                                                                                       -(CALL
                                                                                                                   8)
     indexRi
     ght
         Call 9: Ch0 index left
497
      R507
                                                                                                                 R93
                                                                                                                 <SET >
      → (DF) -
     hmiCh0
                                                                                                                 indexLef
     ndL
     R11F
                         R11F
                                                                                                                 R120
      \dashv \vdash
                                                                                                                 <SET >
      101Left
                         101Left
                                                                                                                 wait
     R93
507
      \dashv \vdash
                                                                                                       -(CALL
                                                                                                                    9)
     indexLef
```



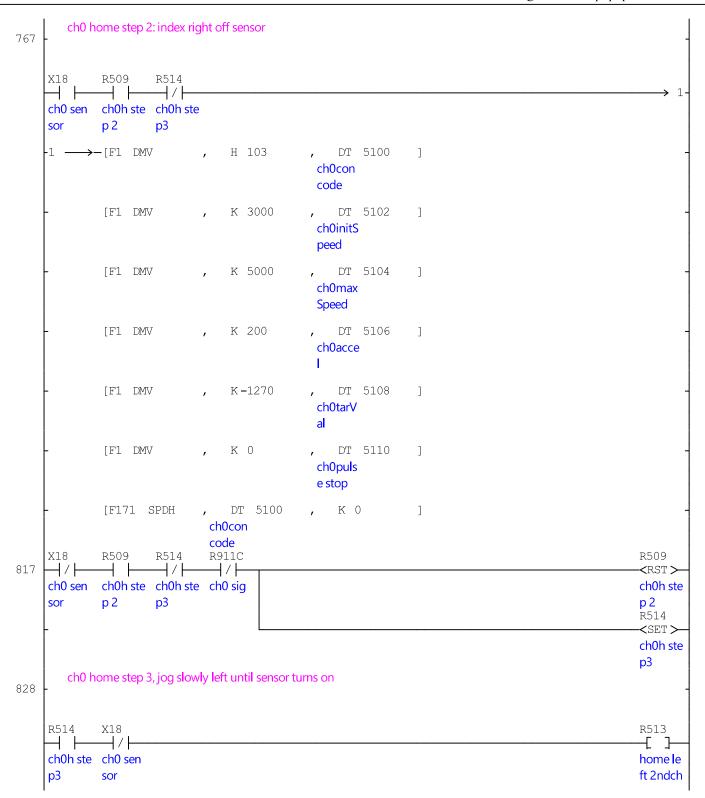
```
R502
549
    → (DF) -
    hmiCh0
    JoaL
    R501
    → (DF) --
    hmiCh0
    JogR
                                                                                R98
                                     , DT 5004 ]—
   -1 →-[F1 DMV
                   , K 10000
                                                                                ≺RST >
                                      Ch0'w's
                                                                                HOMED
                                      peed
    R102
   — (DF) —
564
    hmiCh2
    JogR
    R101
    → (DF) →
    hmiCh2
    JogL
                                                                                R98
    -1 \longrightarrow -[F1 DMV]
                       , K 10000
                                     , DT 2004
                                                   ] —
                                                                                <RST >
                                      Ch2'w's
                                                                                HOMED
                                      peed
    R121
579
   , н 122
                                      , DT 4000
                                                  ]
    hmiCh1
                                      Ch1 con
    JogU
                                       code
                        , DT 4004
                                      , DT 4002
           [F1 DMV
                                                  ]
                        Ch1'w's
                                      Ch1'r'sp
                        peed
                                      eed
           [F172 PLSH
                        , DT 4000
                                      , K 1
                                                   ]
                        Ch1 con
                        code
    R122
                                      , DT 4000
599
    ─ F1 DMV
                        , н 113
                                                   1
    hmiCh1
                                      Ch1 con
    JogD
                                      code
                        , DT 4004
                                      , DT 4002
           [F1 DMV
                        Ch1'w's
                                      Ch1'r'sp
                        peed
                                      eed
                        , DT 4000
                                      , K 1
           [F172 PLSH
                                                   1
                        Ch1 con
                        code
    R502
    — [F1 DMV
                        , н 113
                                     , DT 5000
619
                                                   ]
    hmiCh0
                                      Ch0 con
    JogL
                                      code
                        , DT 5004
                                      , DT 5002
           [F1 DMV
                                                 ]
                        Ch0'w's
                                      Ch0'r'sp
                        peed
                                      eed
           [F172 PLSH
                        , DT 5000
                                     , K 0 ]
                        Ch0 con
                         code
```

```
R501
639

        → [F1 DMV]

                             , Н 122
                                             , DT 5000
                                                             ]
     hmiCh0
                                              Ch0 con
     JogR
                                              code
                             , DT 5004
                                             , DT 5002
             [F1 DMV
                              Ch0'w's
                                              Ch0'r'sp
                             peed
                                              eed
                             , DT 5000
                                             , K 0
             [F172 PLSH
                                                              ]
                              Ch0 con
                              code
    R102
659
     \dashv \vdash
           —[F1 DMV
                             , н 1113
                                             , DT 2000
                                                              ]
     hmiCh2
                                              Ch2 con
    JogR
                                              code
                                              , DT 2002
             [F1 DMV
                             , DT 2004
                                                              ]
                             Ch2'w's
                                              Ch2'r'sp
                             peed
                                              eed
                             , DT 2000
                                             , K 2
             [F172 PLSH
                                                              ]
                              Ch2 con
                              code
    R101
679
    ─ [F1 DMV
                             , Н 1122
                                             , DT 2000
                                                              ]
    hmiCh2
                                              Ch2 con
    JogL
                                               code
                                             , DT 2002
             [F1 DMV
                             , DT 2004
                                                             ]
                              Ch2'w's
                                              Ch2'r'sp
                             peed
                                              eed
             [F172 PLSH
                             , DT 2000
                                             , K 2
                                                             ]
                             Ch2 con
                              code
699
                                                                                             RET
        Sub 1: Home screen
700
        --Inside Sub 1:
        - Sub 2: Ch0 home
        - Sub 3: Ch1 home
        - Sub 4: Ch2 home
                                                                                       - (SUB
                                                                                                  1) -
    R400
701
     \dashv \vdash
                                                                                        -(CALL
                                                                                                  2) -
     ch0hom
                                                                                        ch0Hom
    ing
                                                                                        eSeq
    R2
704
                                                                                        -(CALL
                                                                                                  3) -
    ch1 ho
                                                                                        ch1Hom
    ming
                                                                                        eSeq
    R402
707
      - H
                                                                                        (CALL
                                                                                                  4) -
     ch2 ho
                                                                                        ch2Hom
    ming
                                                                                        eSeq
```

```
sub 2: homing sequence - ch0
710
        R511: step 1 jog left, hit sensor
        R509: step 2 index right
        R514: step 3 jog slower left, hit sensor end
        R515: step 4 move to offset set by hmi -> DT32714
        R517: step 5 set default values
                                                                                                  (SUB
                                                                                                             2)
                                                                                                  ch0Hom
                                                                                                  eSeq
     R536
711
     \dashv \vdash
            —[F1 DMV
                                    K 5000
                                                  , DT 5004
                                                                    ]
     ch0 ho
                                                   Ch0'w's
     me trig
                                                   peed
     R536
                                                                                                           R511
719
     \dashv
                                                                                                           <SET >
     ch0 ho
                                                                                                           ch0h ste
                                                                                                           p1
     me trig
                                                                                                           R536
                                                                                                           <RST >
                                                                                                           ch0 ho
                                                                                                           me trig
     R511
              X18
                       R509
                                                                                                           R504
                                                                                                            -[ ]-
726
               \dashv / \vdash
                        \dashv / \vdash
     ch0h ste ch0 sen ch0h ste
                                                                                                           Ch0Jog
                                                                                                           L
     p1
                        p 2
              sor
     R504
730
                                                  , DT 5000
             —[F1 DMV
                                    Н 113
                                                                     ]
     Ch0Jog
                                                   Ch0 con
     L
                                                    code
                                    DT 5004
                                                       DT 5002
               [F1 DMV
                                                                     ]
                                 Ch0'w's
                                                   Ch0'r'sp
                                 peed
                                                   eed
                                , DT 5000
               [F172 PLSH
                                                  , K 0
                                                                     ]
                                 Ch0 con
                                 code
              R511
                        R509
                                                                                                           R509
750
                        <SET >
              ch0h ste ch0h ste
                                                                                                           ch0h ste
     ch0 sen
              p1
                        p 2
                                                                                                           p 2
     sor
                                                                                                           R511
                                                                                                           <RST >
                                                                                                           ch0h ste
                                                                                                           p1
     R509
759
     ─ F1 DMV
                                    K 500
                                                  , DT 5004
                                                                     ]
     ch0h ste
                                                   Ch0'w's
     p 2
                                                   peed
```



```
jog command 'up' channel1
831
     R513
                                               , DT 5000

        → [F1 DMV]

                                Н 113
                                                                ]
     home le
                                                Ch0 con
     ft 2ndch
                                                 code
                                 DT 5004
              [F1 DMV
                                               , DT 5002
                               Ch0'w's
                                                Ch0'r'sp
                               peed
                                                eed
                              , DT 5000
              [F172 PLSH
                                               , K 0
                               Ch0 con
                               code
     R514
             X18
                                                                                                    R514
851
                                                                                                    <RST >
     ch0h ste ch0 sen
                                                                                                    ch0h ste
     p3
                                                                                                    p3
             sor
                                                                                                    R515
                                                                                                    <SET >
                                                                                                    ch0 step
                                                                                                    4
        ch0 home step 4: move to home offset position,
859
        position set using hmi in 'SET HOME' screen
     R515 X18
             \dashv
     ch0 step ch0 sen
             sor
     DT 32714
                                               , DT 5118
                               ch0hmi
                                                ch0inde
                               Offset
                                                xDist
        If no comparison, axis will not home when on home sensor
868
     R515
             X18
                      rD <
                                  DT 32714 , K 5
      \dashv \vdash
     ch0 step ch0 sen
                               ch0hmi
             sor
                               Offset
                                              , DT 5118
     -1 \longrightarrow -[F1 DMV]
                                  K 5
                                                                ]
                                                ch0inde
                                                xDist
     R515
                                          5
              -TMR
                                  K
886
     ch0 step
           →-[F3 DMV/
                              , DT 5118
                                               , DT 5118
                                                ch0inde
                               ch0inde
                               xDist
                                                xDist
                                                                                                    R516
              [F23 D+
                                DT 5118
                                               , K 1
                                                                  DT 5118
                                                                 ch0inde
                                                                                                    ch0hom
                               ch0inde
                               xDist
                                                                 xDist
                                                                                                    eOffset
```

```
math above: DT5118 -> -DT5118
909
    R516 X18
    ch0hom ch0 sen
    eOffset sor
                                         , DT 5100 ]
    -1 →-[F1 DMV
                          , н 103
                                          ch0con
                                          code
            [F1 DMV
                              K 3000
                                         , DT 5102
                                          ch0initS
                                          peed
                              K 5000
                                         , DT 5104
            [F1 DMV
                                          ch0max
                                          Speed
                                         , DT 5106
            [F1 DMV
                            K 200
                                          ch0acce
            [F1 DMV
                          , DT 5118
                                         , DT 5108
                                                        ]
                          ch0inde
                                          ch0tarV
                           xDist
                                          a
            [F1 DMV
                          , K 0
                                         , DT 5110
                                                      ]
                                          ch0puls
                                          e stop
                         , DT 5100
                                       , K 0 ]
            [F171 SPDH
                           ch0con
                           code
    R516
           X18
                 R911C
                                                                                        R515
    \dashv \vdash
            -1/-
                   \dashv / \vdash
958
                                                                                        -<RST >
    ch0hom ch0 sen ch0 sig
                                                                                       ch0 step
    eOffset sor
                                                                                       R517
                                                                                        <SET >
                                                                                       ch0h ste
                                                                                        p 5
```

```
ch0 home step 5, set default values for index pos/speed/accel
 968
       R517

        → [F1 DMV]

                                       K 10000
                                                      , DT 5112
                                                                         ]
       ch0h ste
                                                       ch0initS
      p 5
                                                       peed
                 [F1 DMV
                                       K 15000
                                                           DT 5114
                                                                         ]
                                                       ch0max
                                                       Speed
                 [F1 DMV
                                       K 300
                                                      , DT 5116
                                                       ch0acc/
                                                       deac
                 [F1 DMV
                                       K 8000
                                                           DT 5118
                                                                         ]
                                                       ch0inde
                                                       xDist
                                       K 50000
                                                          DT 90348
                 [F1 DMV
                                                       ch0 cou
                                                       nt
      R517
                 -TMR
                                       K
                                                5
                                                                                                                 R517
1004
       \dashv \vdash
                                                                                                                 <RST>
       ch0h ste
                                                                                                                 ch0h ste
      p 5
                                                                                                                 p 5
                                                                                                                 R400
                                                                                                                 <RST >
                                                                                                                 ch0hom
                                                                                                                 ing
1014
                                                                                                              RET
          Above 'ret': end of sub2, ch0 homed
1015
          Below sub 3: homing sequence - ch1
          R411: step 1 jog left, hit sensor
          R409: step 2 index right
          R414: step 3 jog slower left, hit sensor end
          R415: step 4 move to offset set by hmi -> DT32712
          R417: step 5 set default values
                                                                                                        ·(SUB
                                                                                                                    3)
                                                                                                        ch1Hom
                                                                                                        eSeq
      R436
1016
        ┥┝
               —[F1 DMV
                                       K 5000
                                                      , DT 4004
                                                                         ]
       ch1 ho
                                                       Ch1'w's
       me trig
                                                       peed
      R436
                                                                                                                 R411
1024
       ⊣ ŀ
                                                                                                                  <SET >
       ch1 ho
                                                                                                                 ch1h ste
      me trig
                                                                                                                 p1
                                                                                                                 R436
                                                                                                                 <RST >
                                                                                                                 ch1 ho
                                                                                                                 me trig
                          R409
       R411
                X17
                                                                                                                 R404
                                                                                                                  -[ ]-
1031
                --| / |-
                          \dashv / \vdash
       ch1h ste ch1 sen
                          ch1h ste
                                                                                                                 Ch1Jog
      p1
                                                                                                                 U
                          p 2
                sor
```

```
R404
1035
     ─ F1 DMV
                          , Н 122
                                          , DT 4000
                                                       ]
                                          Ch1 con
     Ch1Jog
     U
                                          code
                           , DT 4004
                                         , DT 4002
             [F1 DMV
                           Ch1'w's
                                          Ch1'r'sp
                           peed
                                          eed
                          , DT 4000
             [F172 PLSH
                                         , K 1
                                                       ]
                            Ch1 con
                            code
            R411 R409
     X17
                                                                                       R409
1055
             \dashv \vdash
                    \dashv / \vdash
                                                                                       <SET >
     ch1 sen ch1h ste ch1h ste
                                                                                       ch1h ste
            p1
                    p 2
                                                                                       p 2
                                                                                       R411
                                                                                       ≺RST >
                                                                                       ch1h ste
                                                                                       p1
     R409
     ├─ [F1 DMV , K 500
1064
                                         , DT 4004 ]
     ch1h ste
                                          Ch1'w's
     p 2
                                          peed
       ch1 home step 2: move off sensor, set index parameters
1072
           R409
                  R414
     X17
            ch1 sen ch1h ste ch1h ste
     sor p 2 p3
                                         , DT 4100
     -1 \longrightarrow -[F1 DMV , H 103]
                                                      ]
                                          ch1Con
                                          Code
             [F1 DMV
                              K 3000
                                         , DT 4102
                                                        ]
                                          ch1initS
                                          peed
                                          , DT 4104
             [F1 DMV
                              K 5000
                                                        ]
                                          ch1max
                                          Speed
                                          , DT 4106
             [F1 DMV
                              K 200
                                          ch1acce
                                         , DT 4108
             [F1 DMV
                              K 1270
                                                        ]
                                          ch1tarV
                                         , DT 4110
             [F1 DMV
                              K 0
                                                        ]
                                          ch1puls
                                          e stop
             [F171 SPDH
                          , DT 4100
                                         , K 1
                           ch1Con
                           Code
```

```
R409
                       R414
                                R911D
                                                                                                       R409
1122
      -1/-
               \dashv \vdash
                       -1/-
                                ---| / |-
                                                                                                       ≺RST>
      ch1 sen ch1h ste ch1h ste ch1 sig
                                                                                                       ch1h ste
               p 2
                       p3
                                                                                                       p 2
                                                                                                       R414
                                                                                                       <SET >
                                                                                                       ch1h ste
                                                                                                       p3
         ch1 home step 3, jog slowly up until sensor turns on
1133
            X17
      R414
                                                                                                       R413
       -[ ]-
      ch1h ste ch1 sen
                                                                                                       home U
                                                                                                       p 2ndch
              sor
        jog command 'up' channel1
1136
      R413

        → [F1 DMV]

                                                 , DT 4000
                                   Н 122
      home U
                                                  Ch1 con
      p 2ndch
                                                  code
                                                 , DT 4002
               [F1 DMV
                                    DT 4004
                                                                  ]
                                Ch1'w's
                                                  Ch1'r'sp
                                peed
                                                  eed
                               , DT 4000
                                                 , K 1
               [F172 PLSH
                                Ch1 con
                                 code
      R414
              X17
                                                                                                       R414
      \dashv \vdash
1156
               <RST>
      ch1h ste ch1 sen
                                                                                                       ch1h ste
      p3
                                                                                                       p3
               sor
                                                                                                       R415
                                                                                                       <SET >
                                                                                                       ch1 step
         ch1 home step 4: move to home offset position,
1164
         position set using hmi in 'SET HOME' screen
             X17
      R415
       + \vdash
      ch1 step ch1 sen
               sor
                                  DT 32712 , DT 4118
      -1 \longrightarrow -[F1 DMV]
                                                                  ]
                                                  ch1inde
                                                  xDist
         If no comparison, axis will not home when on home sensor
1173
      R415
            X17
                        r□ <
                                    DT 32712 , K 5
       ┨┤
      ch1 step ch1 sen
               sor
      -1 →-[F1 DMV
                                   K 5
                                                 , DT 4118
                                                                 ]
                                                  ch1inde
                                                  xDist
```

```
R415
                                                                                    R416
1191
     \vdash\vdash\vdash
                                                                                    -[ ]-
     ch1 step
                                                                                    ch1hom
                                                                                    eOffset
     R416 X17
                                                                                    → 1-
     \dashv \vdash \vdash \vdash
1193
     ch1hom ch1 sen
     eOffset sor
     , н 103
                                       , DT 4100 ]
                                         ch1Con
                                        Code
                                        , DT 4102
            [F1 DMV
                            K 3000
                                        ch1initS
                                        peed
            [F1 DMV
                             K 5000
                                        , DT 4104
                                                    ]
                                        ch1max
                                        Speed
                         , K 200
                                        , DT 4106
            [F1 DMV
                                                    ]
                                        ch1acce
                                        1
                                       , DT 4108
            [F1 DMV
                         , DT 4118
                                                    ]
                          ch1inde
                                        ch1tarV
                          xDist
            [F1 DMV
                         , K 0
                                        , DT 4110 ]
                                        ch1puls
                                        e stop
                       , DT 4100
            [F171 SPDH
                                       , K 1
                          ch1Con
                          Code
    R416 X17 R911D
                                                                                   R415
1242
                                                                                    <RST >
     ch1hom ch1 sen ch1 sig
                                                                                   ch1 step
     eOffset sor
                                                                                   4
                                                                                   R417
                                                                                    <SET >
                                                                                    ch1h ste
                                                                                   p 5
```

```
ch1 home step 5, set default values for index pos/speed/accel
1252
       R417

        → [F1 DMV]

                                       K 10000
                                                      , DT 4112
                                                                        ]
       ch1h ste
                                                       ch1initS
      p 5
                                                       peed
                [F1 DMV
                                       K 15000
                                                          DT 4114
                                                                        ]
                                                       ch1max
                                                       Speed
                 [F1 DMV
                                       K 300
                                                      , DT 4116
                                                                         ]
                                                       ch1acc/
                                                       deacc
                 [F1 DMV
                                       K 8000
                                                          DT 4118
                                                                        ]
                                                       ch1inde
                                                       xDist
                                       K 50000
                                                          DT 90352
                 [F1 DMV
                                                       ch1 cou
                                                       nt
      R417
                 -TMR
                                                5
                              0
                                       K
                                                                                                                R417
1288
       \dashv \vdash
                                                                                                                 <RST>
       ch1h ste
                                                                                                                ch1h ste
      p 5
                                                                                                                p 5
                                                                                                                R2
                                                                                                                 <RST >
                                                                                                                ch1 ho
                                                                                                                ming
1298
                                                                                                             RET
                                                                                                                      ) –
          Above 'ret': end of sub 3, ch1 homed
1299
          Below: homing sequence - ch2
          R111: step 1 jog left, hit sensor
          R109: step 2 index right
          R114: step 3 jog slower left, hit sensor end
          R115: step 4 move to offset set by hmi -> DT32710
          R117: step 5 set default values
                                                                                                       ·(SUB
                                                                                                                   4)
                                                                                                       ch2Hom
                                                                                                       eSeq
      R136
1300
        ┥┝
               —[F1 DMV
                                       K 5000
                                                      , DT 2004
                                                                        ]
       ch2 ho
                                                       Ch2'w's
       me trig
                                                       peed
      R136
                                                                                                                R111
1308
       \dashv \vdash
                                                                                                                 <SET >
       ch2 ho
                                                                                                                ch2h ste
                                                                                                                p1
      me trig
                                                                                                                R136
                                                                                                                 <RST >
                                                                                                                ch2 ho
                                                                                                                me trig
                          R109
       R111
                X16
                                                                                                                R104
                                                                                                                 -[ ]-
1315
                --| / ⊦
                                                                                                                Ch2Jog
       ch2h ste ch2 sen
                         ch2h ste
      p1
                                                                                                                L
                          p 2
                sor
```

```
R104
1319
     — [F1 DMV
                          , Н 1122
                                         , DT 2000
                                                       ]
                                          Ch2 con
     Ch2Jog
                                          code
                           , DT 2004
                                         , DT 2002
             [F1 DMV
                           Ch2'w's
                                          Ch2'r'sp
                           peed
                                          eed
                          , DT 2000
                                         , K 2
             [F172 PLSH
                                                       ]
                            Ch2 con
                            code
            R111 R109
     X16
                                                                                       R109
1339
             \dashv \vdash
                    \dashv / \vdash
                                                                                       <SET >
     ch2 sen ch2h ste ch2h ste
                                                                                       ch2h ste
            p1
                    p 2
                                                                                       p 2
                                                                                       R111
                                                                                       ≺RST >
                                                                                       ch2h ste
                                                                                       p1
     R109
     ├─ [F1 DMV , K 500
1348
                                         , DT 2004 ]
     ch2h ste
                                          Ch2'w's
     p 2
                                          peed
      ch2 home step 2: move off sensor, set index parameters
1356
           R109 R114
     X16
            ch2 sen ch2h ste ch2h ste
     sor p 2 p3
                                        , DT 3000
     -1 \longrightarrow -[F1 DMV , H 1103]
                                                      ]
                                          ch2Con
                                          Code
                                         , DT 3002
             [F1 DMV
                              K 3000
                                                        ]
                                          ch2initS
                                          peed
                                          , DT 3004
             [F1 DMV
                              K 5000
                                                        ]
                                          ch2max
                                          Speed
                                          , DT 3006
             [F1 DMV
                              K 200
                                          ch2acce
                                          , DT 3008
             [F1 DMV
                              K 1270
                                                        ]
                                          ch2tarV
                                         , DT 3010
             [F1 DMV
                             K 0
                                                        ]
                                          ch2puls
                                          e stop
             [F171 SPDH
                          , DT 3000
                                         , K 2 ]
                           ch2Con
                           Code
```

ch2hom eOffset

1475

ch2 step

```
R116 X16
1477
     \dashv \vdash \vdash
                                                                                               → 1-
     ch2hom ch2 sen
     eOffset sor
                            , Н 1103
     -1 \longrightarrow -[F1 DMV]
                                           , DT 3000 ]
                                            ch2Con
                                            Code
                               K 3000
                                           , DT 3002
             [F1 DMV
                                            ch2initS
                                            peed
                                            , DT 3004
             [F1 DMV
                               K 5000
                                            ch2max
                                            Speed
                                            , DT 3006
             [F1 DMV
                            , K 200
                                                           ]
                                            ch2acce
                                            1
                                            , DT 3008
             [F1 DMV
                            , DT 3018
                                                         ]
                             ch2inde
                                            ch2tarV
                             xDist
                                            a
                            , K 0
                                           , DT 3010 ]
             [F1 DMV
                                            ch2puls
                                            e stop
             [F171 SPDH , DT 3000
                                           , K 2 ]
                             ch2Con
                             Code
     R116
           X16 R911E
                                                                                            R115
1526
     \dashv \vdash
             --|/|-----|/|-
                                                                                            <RST >
     ch2hom ch2 sen ch2 sig
                                                                                            ch2 step
                                                                                            4
     eOffset sor
                                                                                            R117
                                                                                            <SET >
                                                                                            ch2h ste
                                                                                            p 5
       ch2 home step 5, set default values for index pos/speed/accel
1536
     R117

        → [F1 DMV]

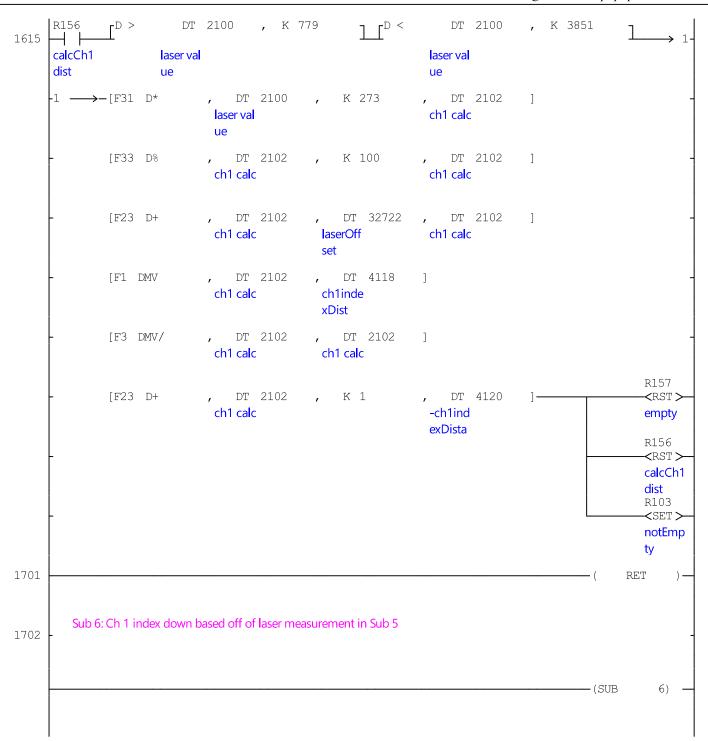
                            , K 10000
                                            , DT 3012
                                                         1
     ch2h ste
                                            ch2initS
     p 5
                                            peed
                                K 15000
                                            , DT 3014
             [F1 DMV
                                                         ]
                                            ch2max
                                            Speed
                                            , DT 3016
             [F1 DMV
                                K 300
                                                         ]
                                            ch2acc/
                                            deacc
             [F1 DMV
                              K 5080
                                            , DT 3018 ]
                                            ch2inde
                                            xDist
                            , K 50000
             [F1 DMV
                                            , DT 90356 ]
                                            ch2 cou
                                            nt
```

dist

ue

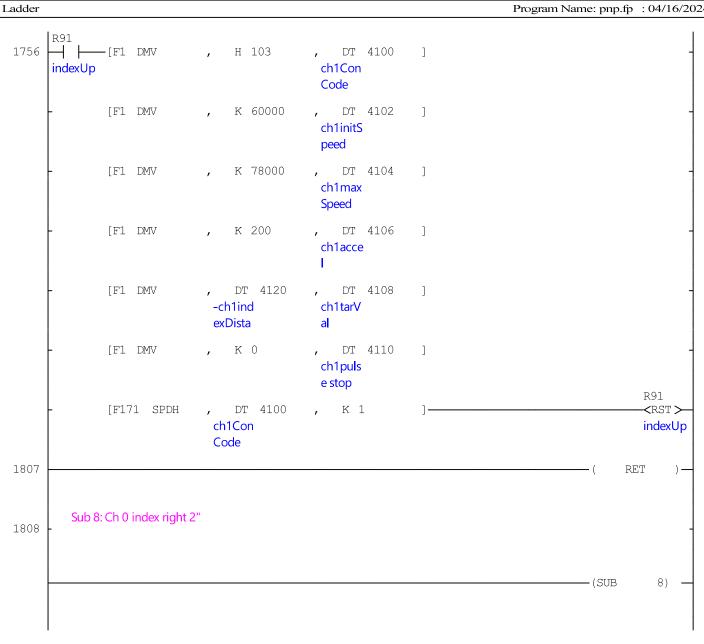
FP-XH C30,40,60T/P 24-40K Author: Page 27

dist R103 <RST >notEmp ty



```
R90
1703
                          , н 103
     ─ F1 DMV
                                         , DT 4100
                                                      ]
     indexDo
                                          ch1Con
     wn
                                          Code
            [F1 DMV
                              K 60000
                                         , DT 4102
                                          ch1initS
                                          peed
                                         , DT 4104
             [F1 DMV
                              K 78000
                                                        ]
                                          ch1max
                                          Speed
                             K 200
                                         , DT 4106
             [F1 DMV
                                          ch1acce
                                          1
            [F1 DMV
                          , DT 4118
                                         , DT 4108
                                                        ]
                           ch1inde
                                          ch1tarV
                           xDist
                                          a
                          , K 0
                                         , DT 4110
            [F1 DMV
                                                      ]
                                          ch1puls
                                          e stop
                                                                                       R90
            [F171 SPDH
                          , DT 4100
                                         , K 1 ]—
                                                                                       ≺RST >
                           ch1Con
                                                                                       indexDo
                           Code
                                                                                      wn
1754
                                                                                    RET
                                                                                          ) —
        Sub 7: Ch 1 index up based off of laser measurement in Sub 5
1755
                                                                               — (SUB
                                                                                        7) -
```

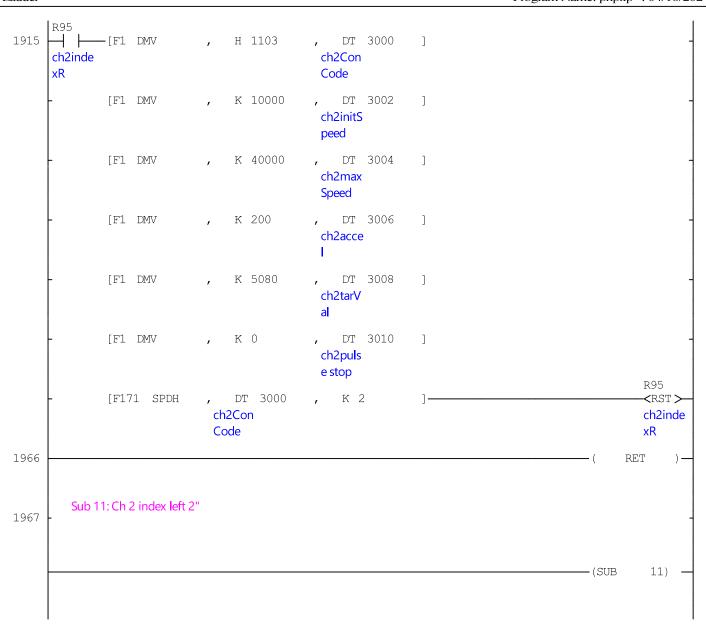
Program Name: pnp fp	. 04/16/2024 00:42



```
R92
1809
     ─ [F1 DMV
                          , H 103
                                         , DT 5100
                                                     ]
     indexRi
                                         ch0con
     ght
                                         code
            [F1 DMV
                              K 20000
                                         , DT 5102
                                          ch0initS
                                         peed
                                         , DT 5104
            [F1 DMV
                              K 95000
                                                       ]
                                          ch0max
                                          Speed
                              K 450
                                         , DT 5106
            [F1 DMV
                                                       ]
                                          ch0acce
                                         1
            [F1 DMV
                              K-5080
                                         , DT 5108
                                                       ]
                                         ch0tarV
                                         a
            [F1 DMV
                            K 0
                                         , DT 5110
                                                     ]
                                          ch0puls
                                         e stop
                                                                                      R92
            [F171 SPDH
                          , DT 5100
                                         , K 0 ]—
                                                                                      ≺RST >
                                                                                      indexRi
                           ch0con
                           code
                                                                                      ght
1860
                                                                                   RET )-
       Sub 9: Ch 0 index left 2"
1861
                                                                              — (SUB
                                                                                        9) -
```

Program Name: pnp.fp : 04/16/2024 00:42

```
ch0 index left
1862
     , DT 5100 ]
                           Н 103
     indexLef
                                        ch0con
                                        code
                                        , DT 5102
            [F1 DMV
                             K 10000
                                        ch0initS
                                        peed
                                       , DT 5104
            [F1 DMV
                             K 95000
                                        ch0max
                                        Speed
                                        , DT 5106
            [F1 DMV
                             K 450
                                        ch0acce
                                       , DT 5108
            [F1 DMV
                             K 5080
                                        ch0tarV
                                        a
            [F1 DMV
                         , K 0
                                       , DT 5110
                                                    ]
                                        ch0puls
                                        e stop
                                                                                   R93
            [F171 SPDH
                         , DT 5100
                                       , K 0 ]—
                                                                                   -<RST >
                          ch0con
                                                                                   indexLef
                          code
1913
                                                                                RET )-
       Sub 10: Ch 2 index right 2"
1914
                                                                        —— (SUB
                                                                                    10) -
```



```
R96
1968
     ─ F1 DMV
                         , Н 1103
                                      , DT 3000
                                                  ]
     ch2inde
                                       ch2Con
     хL
                                       Code
           [F1 DMV
                            K 10000
                                      , DT 3002
                                       ch2initS
                                       peed
                                      , DT 3004
            [F1 DMV
                            K 40000
                                                    ]
                                       ch2max
                                       Speed
            [F1 DMV
                            K 200
                                       , DT 3006
                                       ch2acce
                                       [F1 DMV
                            K-5080
                                       , DT 3008
                                                    ]
                                       ch2tarV
                                       a
            [F1 DMV
                          K 0
                                      , DT 3010
                                                  ]
                                       ch2puls
                                       e stop
                                                                                 R96
            [F171 SPDH
                        , DT 3000
                                      , K 2 ]—
                                                                                 ≺RST >
                         ch2Con
                                                                                 ch2inde
                         Code
                                                                                 хL
2019
                                                                              RET
                                                                                    ) —
```