

```

1 MACHINE
2   ControlledSystem
3 REFINES
4   StateSystem
5 SEES
6   ControlledSystemCtx
7 VARIABLES  $t, x_p, x_s$ 
8 EVENTS
9   INITIALISATION
10  THEN
11    act1:  $t := Rzero$ 
12    act2:  $x_p \in RRealPlus \rightarrow S$ 
13    act3:  $x_s \in STATES$ 
14  END
15
16 Progress
17 REFINES Progress
18 THEN
19   act1:  $t :| t' \in RRealPlus \wedge (t \mapsto t' \in lt)$ 
20 END
21
22 Behave
23 REFINES Behave
24 ANY  $e$ 
25 WHERE
26   grd1:  $e \in DE(S)$ 
27   grd2:  $Solvable(Closed2Infinity(t), e)$ 
28 THEN
29   act1:  $x_p :| x_p' \in RRealPlus \rightarrow S \wedge AppendSolutionBAP(e, RRealPlus, Closed2Open(Rzero, t), Closed2Infinity(t), x_p, x_p')$ 
30 END
31
32 Actuate
33 REFINES Behave
34 ANY  $e, s$ 
35 WHERE
36   grd1:  $e \in DE(S)$ 
37   grd2:  $Solvable(Closed2Infinity(t), e)$ 
38   grd3:  $s \subseteq STATES$ 
39   grd4:  $x_s \in s$ 
40 THEN
41   act1:  $x_p :| x_p' \in RRealPlus \rightarrow S \wedge AppendSolutionBAP(e, RRealPlus, Closed2Open(Rzero, t), Closed2Infinity(t), x_p, x_p')$ 
42 END
43
44 Transition
45 REFINES Transition
46 ANY  $s$ 
47 WHERE
48   grd1:  $s \in \mathbb{P}1(STATES)$ 
49 THEN
50   act1:  $x_s \in s$ 
51 END
52
53 Sense
54 REFINES Transition
55 ANY  $s, p$ 
56 WHERE
57   grd1:  $s \in \mathbb{P}1(STATES)$ 
58   grd2:  $p \in \mathbb{P}(STATES \times RReal \times S)$ 
59   grd3:  $(x_s \mapsto t \mapsto x_p(t)) \in p$ 
60 THEN
61   act1:  $x_s \in s$ 
62 END
63
64 END

```