```
MACHINE
    TimeTriggered_desolve_M
REFINES
    TimeTriggered_M
SEES
    Desolve
    Theorems
VARIABLES
    t
    plantV
    ctrlV
    exec
INVARIANTS
    inv1   :   ∀x· x∈ dom(plantV)⇒prop(plantV(x))=TRUE
EVENTS
    INITIALISATION   ≙
      extended
    STATUS
      ordinary
    BEGIN
      act1   :   t≔Rzero
      act2   :   plantV ≔{Rzero↦plantV0}
      act3   :   ctrlV :∈ RReal
      act4   :   exec ≔ ctrl
    END

    Progress_time   ≙
      extended
    STATUS
      ordinary
    REFINES
      Progress_time
    ANY
      t1
    WHERE
      grd1   :   exec=prg
      grd2   :   t1 ∈ TIME ∧ (t ↦ t1 ∈ lt ∧ minus(t1↦t) ↦ sigma ∈ geq)
      grd3   :   ∀x· x∈ PROP ⇒
                   (ctrlV∉ prop_evade_values(x)⇒
                        (prop_evt_trig(x))(plantV(t)↦minus(t1↦t)↦ctrlV) = TRUE)
      grd4   :   t1 ∈ TIME ∧ (t ↦ t1 ∈ lt) ∧ minus(t1↦t) ↦ sigma ∈ geq ∧ minus(t1↦t) ↦ epsilon ∈ leq
    THEN
      act1   :   t≔t1
      act2   :   exec ≔ plant
    END

    Plant_time_desolve   ≙
    STATUS
      ordinary
    REFINES
      Plant_time
    ANY
      plant1
      lastTime
    WHERE
      grd1   :   exec=plant
      grd2   :   lastTime∈ TIME ∧ dom(plantV)=Closed2Closed(Rzero,lastTime)
      grd3   :   plant1 =B_desolve(1 ↦ ctrlV ↦ plantV ↦ t ↦ (lastTime↦plantV(lastTime)))
      grd4   :   plant1 ∈ Closed2Closed(Rzero, t)\dom(plantV) ⟶ RReal
      grd5   :   ode(f_evol_plantV(ctrlV),plant1(t),t) ∈ DE(RReal)
      grd6   :   Solvable(Closed2Closed(Rzero, t)\dom(plantV),
                          ode(f_evol_plantV(ctrlV),plant1(t),t))
      grd7   :   AppendSolutionBAP(ode(f_evol_plantV(ctrlV),plant1(t),t),
                 Closed2Closed(Rzero, t)\dom(plantV),
                 Closed2Closed(Rzero, t)\dom(plantV), plant1)
      grd8   :   ∀xx· xx∈ dom(plant1)⇒ prop(plant1(xx))=TRUE
    THEN
      act1   :   plantV≔plantV⩤plant1
      act2   :   exec≔ctrl
```

```
    END

    Ctrl   ≙
      extended
    STATUS
      ordinary
    REFINES
      Ctrl
    ANY
      value
    WHERE
      grd1   :   exec = ctrl
      grd2   :   value∈RReal
                 ∀x· x∈ PROP ⇒
      grd3   :     (value∉ prop_evade_values(x)
                 ⇒(prop_safe(x))(plantV(t)↦value) = TRUE)
                 ∀x· x∈ PROP ⇒
      grd4   :           (value∉ prop_evade_values(x)
                 ⇒(prop_safeEpsilon(x))(plantV(t)↦value) = TRUE)
    THEN
      act1   :   ctrlV ≔value
      act2   :   exec ≔ prg
    END

END
```