```
s-effect-rule0  THM

⊢  ∀i,x:Id, a:Knd, T,A:Type, f:(A→T→A).
   @i: ma-single-effect0(x;A;a;T;f) ∈ Dsys
   & (∀D:Dsys.
      @i: ma-single-effect0(x;A;a;T;f) ⊆ D
      ⇒
      D
      realizes es.(vartype(i;x) ⊆r A)
                  & (∀e:E.
                     loc(e) = i ⇒ kind(e) = a ⇒ (valtype(e) ⊆r T))
                  & (∀e:E.
                     loc(e) = i
                     ⇒
                     kind(e) = a
                     ⇒
                     (x after e) = f((x when e),val(e))))
  by Unfold `ma-single-effect0` 0 THEN UnivCD
     THEN
     AssertBY (x : A ∈ x:Id fp-> Type) Auto
     THEN
     AssertBY (a : T ∈ k:Knd fp-> Type) Auto
     THEN
     Inst Thm: s_DASH_effect_DASH_rule
     [i;x;a;x : A;a : T;λs,v. f(s(x),v)]
     THENA
     Try
     (Complete
      (Try (Unfolds [`ma-valtype`] 0 THEN Reduce 0)
       THEN
       Fold `ma-state` 0))
     THEN
     ExRepD
     THEN
     BetterSplitAndConcl
     THEN
     Try Trivial
     THEN
     All Reduce
     THEN
     ParallelOp -2
     THEN
     RepeatFor 7 (ParallelOp -1)
     THEN
     Unfold `ma-valtype` -1
     THEN
     Reduce -1
     THEN
     ExRepD
     THEN
     BetterSplitAndConcl
     THEN
     Try Trivial
     THEN
     AllHyps (λh.InstHyp [x] h THEN Reduce -1 THEN Complete Auto)
```

```
     THEN
     AllHyps
     (λh.
      ParallelOp h THEN ThinTrivial THEN WeakSubstFor kind(e) -1
      THEN
      Reduce -1
      THEN
      Complete Auto)
END
```