```
homo_init  THM

⊢  ∀Auto:Automata(Alph;St)
|  , g:((x,y:Alph*//(x LangOf(Auto)-induced Equiv y))→𝔹)
|  , c:(St→Alph*).
|  (∀q:St. (Result(Auto)c(q)) = q) ⇒
|  c(InitialState(Auto))
|  =
|  nil
|  ∈ x,y:Alph*//(x LangOf(Auto)-induced Equiv y)
| by Analyze 0 THEN Analyze 0 THEN Analyze 0
|
1. Alph : Type
2. St : Type
3. Auto : Automata(Alph;St)
⊢  ∀g:((x,y:Alph*//(x LangOf(Auto)-induced Equiv y))→𝔹)
|  , c:(St→Alph*).
|  (∀q:St. (Result(Auto)c(q)) = q) ⇒ c(InitialState(Auto)) = nil
| by Inst
|    Thm* ∀L:LangOver(A). EquivRel x,y:A*. x L-induced Equiv y
|    {lang_rel_equi}
|    [Alph;LangOf(Auto)]
|
4. EquivRel x,y:Alph*. x LangOf(Auto)-induced Equiv y
⊢   by UnivCD
|
5. (x,y:Alph*//(x LangOf(Auto)-induced Equiv y))→𝔹
6. c : St→Alph*
7. ∀q:St. (Result(Auto)c(q)) = q
⊢  c(InitialState(Auto)) = nil
| by Assert ((Result(Auto)c(InitialState(Auto))) = (Result(Auto)nil))
|
|\
| .....assertion .....
| ⊢  (Result(Auto)c(InitialState(Auto))) = (Result(Auto)nil)
| | by RWH (HypC 7) 0
| |
| ⊢  InitialState(Auto) = (Result(Auto)nil)
|   by RecUnfold `compute_list` 0 THEN Reduce 0
|
.\
. 8. (Result(Auto)c(InitialState(Auto))) = (Result(Auto)nil)
. ⊢
. | by Inst
. |    Thm* ∀Auto:Automata(Alph;St)
. |         , g:((x,y:Alph*//(x LangOf(Auto)-induced Equiv y))→𝔹).
. |         Auto ⊆ A(g)
. |    {lang_auto_is_min}
. |    [Alph;St;Auto;g]
. |
. 9. Auto ⊆ A(g)
. ⊢   by Unfold `refine` 9
. |
. 9. ∀x,y:Alph*.
. |  (Result(Auto)x) = (Result(Auto)y) ⇒
```

```
. |  (Result(A(g))x) = (Result(A(g))y)
. ⊢   by FwdThru 9 [8]
. |
. 10. (Result(A(g))c(InitialState(Auto))) = (Result(A(g))nil)
. ⊢
. | by RWH
. |    (LemmaC
. |     Thm* ∀L:LangOver(Alph)
. |          , g:((x,y:Alph*//(x L-induced Equiv y))→𝔹), l:Alph*.
. |          (Result(A(g))l) = l ∈ x,y:Alph*//(x L-induced Equiv y)
. |     {lang_auto_compute})
. |    10
. |
. 10. c(InitialState(Auto)) = nil
. ⊢   by Auto
END
```