```
switch_inv_rel_closure_send  THM

⊢  ∀E:EventStruct, tr:|E| List, ls,i:ℕ||tr||.
|  is-send(E)(tr[ls]) ⇒ (i (switchR(tr)^*) ls) ⇒ is-send(E)(tr[i])
| by Auto
|
1. E : EventStruct
2. tr : |E| List
3. ls : ℕ||tr||
4. i : ℕ||tr||
5. is-send(E)(tr[ls])
6. i (switchR(tr)^*) ls
⊢  is-send(E)(tr[i])
| by InstLemma `rel_star_closure` [ℕ||tr||;switchR(tr);λi,j.
|    is-send(E)(tr[i])] THENA Auto

|    THEN Try (Unfolds ``trans refl``  0 THEN ReduceSOAps 0 THEN Auto)
|
THEN All  ReduceSOAps
THEN All Reduce
|
|\
| 1. E : EventStruct
| 2. tr : |E| List
| 3. ls : ℕ||tr||
| 4. i : ℕ||tr||
| 5. is-send(E)(tr[ls])
| 6. i (switchR(tr)^*) ls
| 7. x : ℕ||tr||
| 8. y : ℕ||tr||
| 9. x switchR(tr) y
| ⊢  is-send(E)(tr[x])
|   by ...
|
.\
. 1. E : EventStruct
. 2. tr : |E| List
. 3. ls : ℕ||tr||
. 4. i : ℕ||tr||
. 5. is-send(E)(tr[ls])
. 6. i (switchR(tr)^*) ls
. 7. ∀x,y:ℕ||tr||. (x (switchR(tr)^*) y) ⇒ is-send(E)(tr[x]) ∨ x = y
. ⊢  is-send(E)(tr[i])
. | by InstHyp [i;ls] (-1) THEN Auto THEN SplitOrHyps THEN Auto
. |
. 1. E : EventStruct
. 2. tr : |E| List
. 3. ls : ℕ||tr||
. 4. i : ℕ||tr||
. 5. is-send(E)(tr[ls])
. 6. i (switchR(tr)^*) ls
. 7. ∀x,y:ℕ||tr||. (x (switchR(tr)^*) y) ⇒ is-send(E)(tr[x]) ∨ x = y
. 8. i = ls
. ⊢  is-send(E)(tr[i])  by HypSubst (-1) 0 THEN Auto
END
```