```
select_append_back  THM

⊢  ∀as,bs:T List, i:{||as||..(||as||+||bs||)⁻}.
|  (as @ bs)[i] = bs[(i-||as||)]  by UnivCD
|
1. T : Type
2. as : T List
3. bs : T List
4. i : {||as||..(||as||+||bs||)⁻}
⊢  (as @ bs)[i] = bs[(i-||as||)]
| by ListInd 2 THEN AbReduce 0 THEN Analyze 0
|
|\
| 4. i : ℕ(0+||bs||)
| ⊢  bs[i] = bs[(i-0)]  by Auto
|
.\
. 4. u : T
. 5. v : T List
. 6. ∀i:{||v||..(||v||+||bs||)⁻}. (v @ bs)[i] = bs[(i-||v||)]
. 7. i : {(||v||+1)..(||v||+1+||bs||)⁻}
. ⊢  (u.(v @ bs))[i] = bs[(i-(||v||+1))]
. | by RWH
. |    (LemmaC
. |     Thm* ∀a:T, as:T List, i:ℤ.
. |          0<i ⇒ i≤||as|| ⇒ (a.as)[i] = as[(i-1)]
. |     {select_cons_tl})
. |    0
. |
. ⊢  (v @ bs)[(i-1)] = bs[(i-(||v||+1))]  by Witness6 i-1
. |
. 6. i : {(||v||+1)..(||v||+1+||bs||)⁻}
. 7. (v @ bs)[(i-1)] = bs[(i-1-||v||)]
. ⊢  (v @ bs)[(i-1)] = bs[(i-(||v||+1))]  by HypSubst 7 0
END
```