Inference at $*$
of proof for Lemma order_split:

$\vdash \forall T$:Type, R:($T \rightarrow T \rightarrow \mathbb{P}$).
Order(T;x,y.R(x,y))
$\Rightarrow$ ($\forall x$, y:T. Dec($x = y$))
$\Rightarrow$ ($\forall a$, b:T. R(a,b) $\iff$ (strict_part(x,y.R(x,y);a;b) $\vee$ ($a = b$)))
by ((((Unfold ‘strict_part‘ 0)
CollapseTHEN (AGenRepD [”compound”;”basic”]))·)

CollapseTHENA ((Auto_aux (first_nat 1:n) ((first_nat 1:n),(first_nat 3:n)) (first_tok :t) inil_term)))·

1:

1. T : Type
2. R : $T \rightarrow T \rightarrow \mathbb{P}$
3. $\forall a$:T. R(a,a)
4. $\forall a$, b, c:T. R(a,b) $\Rightarrow$ R(b,c) $\Rightarrow$ R(a,c)
5. $\forall x$, y:T. R(x,y) $\Rightarrow$ R(y,x) $\Rightarrow$ ($x = y$)
6. $\forall x$, y:T. Dec($x = y$)
7. a : T
8. b : T
9. R(a,b)

$\vdash$ (R(a,b) & ($\neg R$(b,a))) $\vee$ ($a = b$)

2:

1. T : Type
2. R : $T \rightarrow T \rightarrow \mathbb{P}$
3. $\forall a$:T. R(a,a)
4. $\forall a$, b, c:T. R(a,b) $\Rightarrow$ R(b,c) $\Rightarrow$ R(a,c)
5. $\forall x$, y:T. R(x,y) $\Rightarrow$ R(y,x) $\Rightarrow$ ($x = y$)
6. $\forall x$, y:T. Dec($x = y$)
7. a : T
8. b : T
9. (R(a,b) & ($\neg R$(b,a))) $\vee$ ($a = b$)

$\vdash$ R(a,b)

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