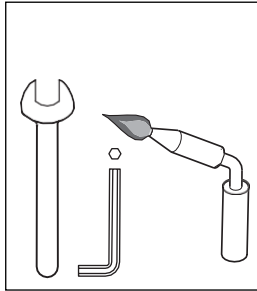


# resideo

## TLK, TLE(X) 0.5-4.5 TBEX / TOEX 0.5-4.5



<b>TLK</b> 	<b>TLE 0.5 - 4.5</b> 	<b>TLEX 0.5 - 4.5</b> 	
<b>TBEX-D 0.5 - 4.5</b> 	<b>TBEX-W 0.5 - 4.5</b> 	<b>TOEX-D 0.5 - 4.5</b> 	<b>TOEX-W 0.5 - 4.5</b> 

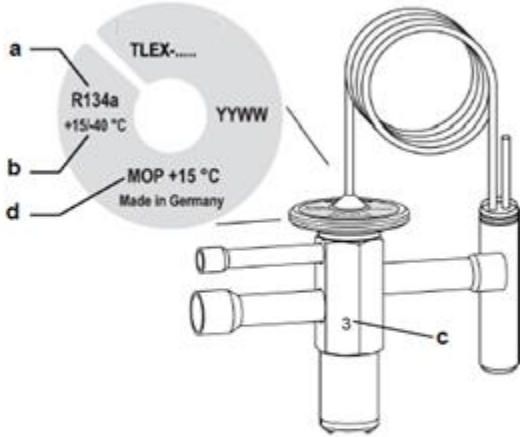


PS ⇒

PF ⇒

TS = max. 140°C  
 $\Delta t_{oh, stat} \approx 3 K$

§ EN 378  
EN 13313



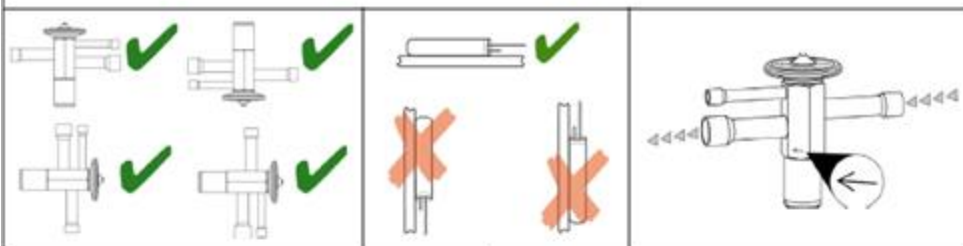
- a) R22, R23, R134a, R401A, R402A, R404A, R407A, R407B, R407C, R410A, R422D, R507A, R508A, R508B, ISC89



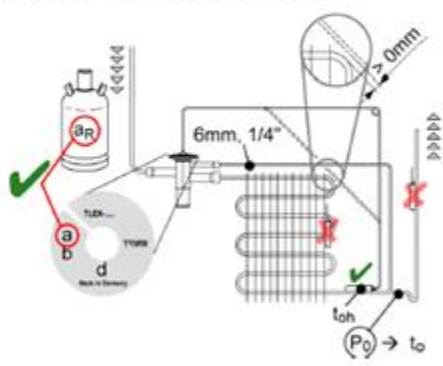
b)  $t_{0, \max} / t_{0, \min}$

c) 0.5...4.5 ⇒ **i**

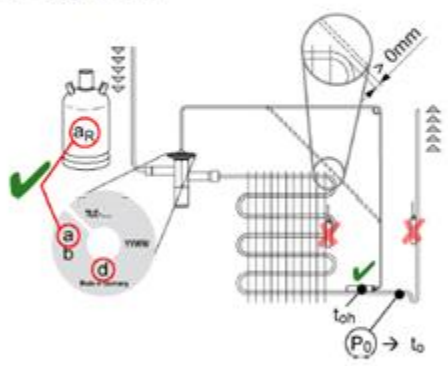
d) MOP Gas Charge  
 A } Adsorber Charge  
 MOP A }



### TLEX, TBEX, TOEX



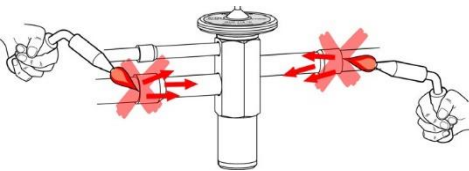
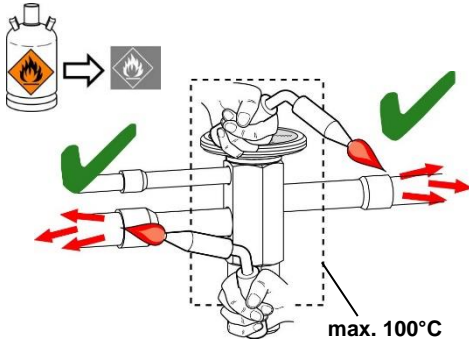
### TLE, TLK



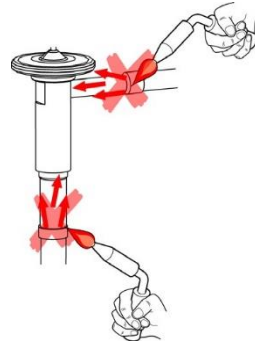
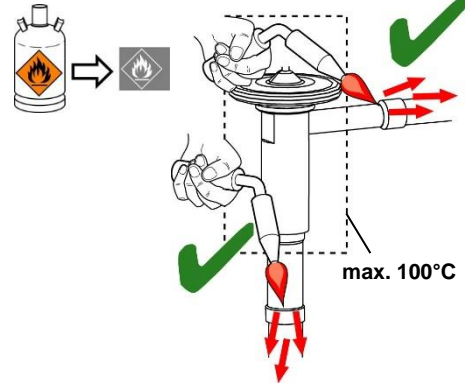
$\Delta t_{oh} = t_{oh} - t_0$   
 $\Delta t_{oh} \neq ok \Rightarrow$   $a = a_R$    
 $a \neq a_R \Rightarrow$   $d = A \text{ or } MOP A$



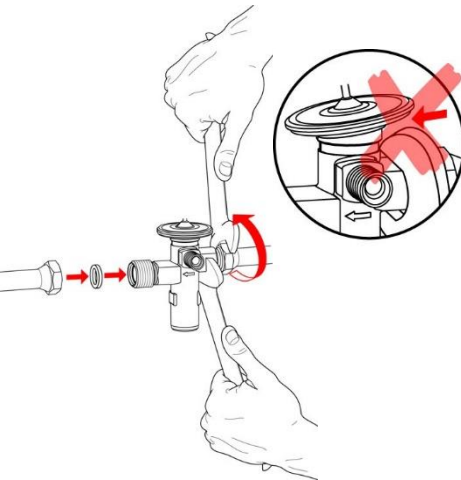
## ❶ TLE, TLEX



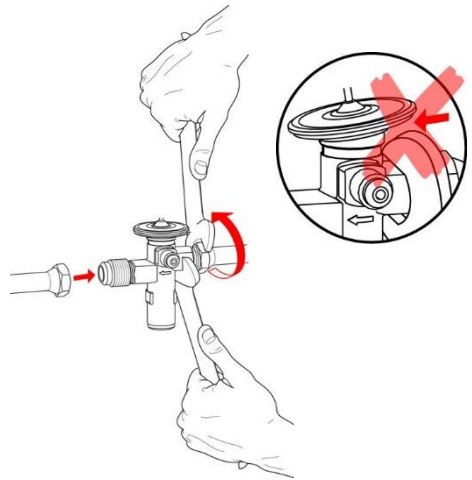
## ❶ TLK

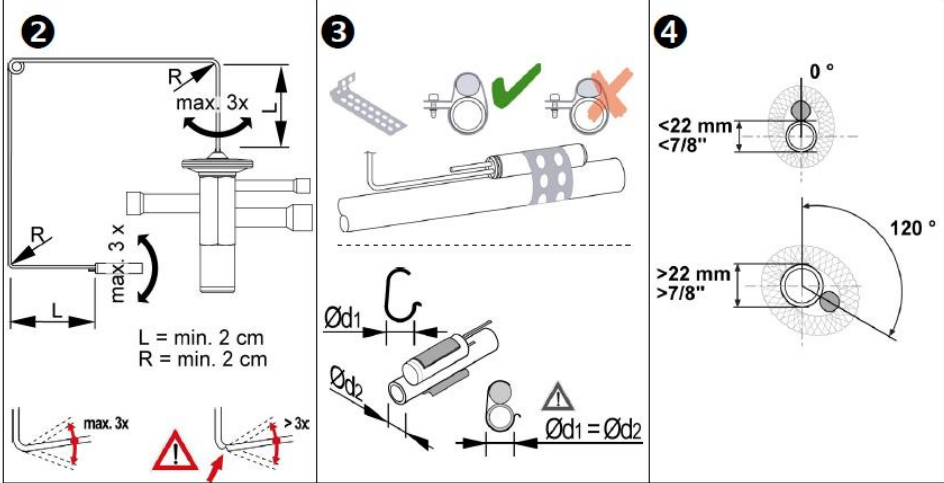


## ❶ TOEX



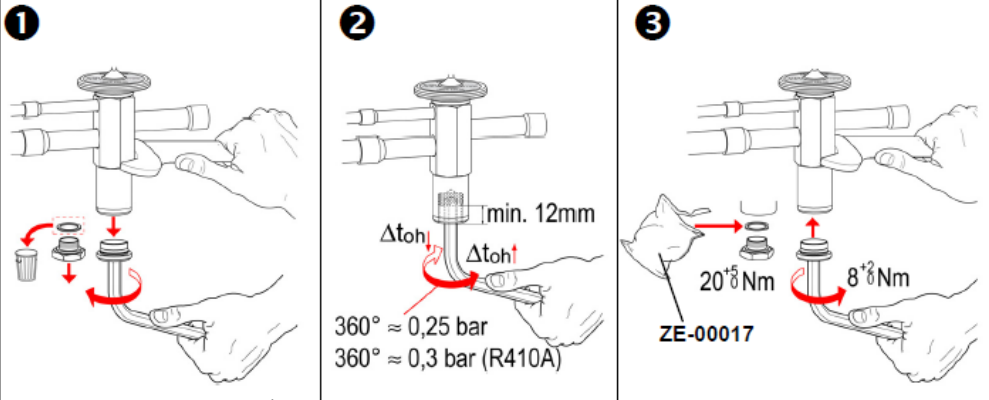
## ❶ TBEX





$\Delta t_{oh} \neq ok$

## TLE(X), TBEX-D, TOEX-D



$\Delta t_{oh} > 0$

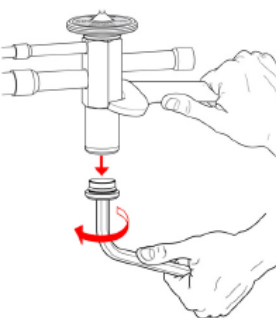


$\Delta t_{oh} \uparrow \Rightarrow MOP \downarrow$

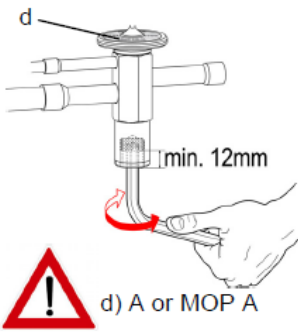
$\Delta t_{oh} \downarrow \Rightarrow MOP \uparrow$

# TLE(X), TBEX-D, TOEX-D

**1**












**2**



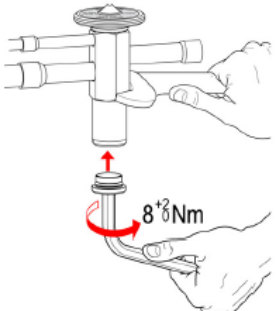
d

min. 12mm

! d) A or MOP A

a	a <sub>R</sub>	
R134a	R401A	0 
	R12	1/2 = 180° 
R22	R407C	1 = 360° 
	R407A	1/2 = 180° 
	R422D	1/2 = 180° 
R404A	R507A	1/4 = 90° 
	R402A	1/4 = 90° 
	R407B	1 = 360° 
	R502	1/4 = 90° 

**3**



8 1/2 Nm

## i

C	Q <sub>0</sub> [kW]														
	R22	R23	R134a	R401A	R402A	R404A	R407A	R407B	R407C	R410A	R422D	R507A	R508A	R508B	ISC89
0.3	0.52	0.55	0.36	0.42	0.38	0.36	0.51	0.40	0.50	0.58	0.36	0.36	0.38	0.38	0.17
0.5	0.99	1.1	0.69	0.79	0.71	0.68	0.96	0.79	0.95	1.1	0.67	0.69	0.71	0.71	0.35
0.7	1.4	1.5	1.0	1.1	0.98	0.97	1.3	1.0	1.3	1.5	0.92	0.98	1.0	1.0	0.45
1.0	2.0	2.2	1.4	1.6	1.5	1.4	1.9	1.5	1.9	2.2	1.3	1.4	1.4	1.4	0.65
1.5	3.2	3.5	2.2	2.5	2.3	2.2	3.1	2.5	3.1	3.5	2.2	2.3	2.3	2.3	1.1
2.0	4.0	4.5	2.9	3.3	2.9	2.8	3.9	3.2	3.9	4.4	2.7	2.9	2.9	2.9	1.4
2.5	5.8	6.4	4.0	4.6	4.2	4.1	5.6	4.6	5.6	6.4	3.9	4.1	4.2	4.2	1.9
3.0	9.3	10.2	6.6	7.4	6.6	6.5	9.0	7.2	8.9	10.2	6.3	6.6	6.7	6.7	3.1
3.5	12.2	13.4	8.7	9.8	8.8	8.6	11.9	9.5	11.7	13.5	8.3	8.7	8.8	8.8	4.0
4.5	17.0	18.6	11.8	13.7	12.3	12.0	16.5	13.3	16.4	18.7	11.3	12.1	12.2	12.2	5.6

t <sub>0</sub>	+4 °C	-70 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	+4 °C	-70 °C	-70 °C	-40 °C
t <sub>c</sub>	+38 °C	-30 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	+38 °C	-30 °C	-30 °C	+25 °C
Δt <sub>ev</sub>	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K	1 K



### Adsorber Charge

a	b	d	PS [bar(a)]	PF [bar(a)]
R134a	+15 °C ... -30 °C	A	34	37.4
R401A	+15 °C ... -30 °C	A	34	37.4
R22	+15 °C ... -45 °C	A	36	39.6
R407C	+15 °C ... -45 °C	A	36	39.6
R407A	+15 °C ... -45 °C	A	36	39.6
R422D	+15 °C ... -45 °C	A	36	39.6
R404A	±0 °C ... -50 °C	A	36	39.6
R507A	±0 °C ... -50 °C	A	36	39.6
R402A	±0 °C ... -50 °C	A	36	39.6
R407B	±0 °C ... -50 °C	A	36	39.6
R410A	+15 °C ... -20 °C	A	40	44.0
<b>Gas Charge</b>				
R134a	+5 °C ... -30 °C	MOP A +15 °C	34	37.4
	-10 °C ... -30 °C	MOP A ±0 °C	29	31.9
R401A	+5 °C ... -30 °C	MOP A +15 °C	34	37.4
	-10 °C ... -30 °C	MOP A ±0 °C	29	31.9
R22	+5 °C ... -45 °C	MOP A +15 °C	36	39.6
	-10 °C ... -45 °C	MOP A ±0 °C	29	31.9
	-27 °C ... -45 °C	MOP A -18 °C	29	31.9
R407C	+5 °C ... -45 °C	MOP A +15 °C	36	39.6
	-10 °C ... -45 °C	MOP A ±0 °C	29	31.9
	-27 °C ... -45 °C	MOP A -18 °C	29	31.9
R407A	+5 °C ... -45 °C	MOP A +15 °C	36	39.6
	-10 °C ... -45 °C	MOP A ±0 °C	29	31.9
	-27 °C ... -45 °C	MOP A -18 °C	29	31.9
R422D	+5 °C ... -45 °C	MOP A +15 °C	36	39.6
	-10 °C ... -45 °C	MOP A ±0 °C	29	31.9
	-27 °C ... -45 °C	MOP A -18 °C	29	31.9
R404A	-10 ... -50 °C	MOP A ±0 °C	36	39.6
	-20 °C ... -50 °C	MOP A -10 °C	34	37.4
	-27 °C ... -50 °C	MOP A -18 °C	34	37.4
R507A	-10 ... -50 °C	MOP A ±0 °C	36	39.6
	-20 °C ... -50 °C	MOP A -10 °C	34	37.4
	-27 °C ... -50 °C	MOP A -18 °C	34	37.4

### Adsorber Charge

a	b	d	PS [bar(a)]	PF [bar(a)]
R402A	-10 ... -50 °C	MOP A ±0 °C	36	39.6
	-20 °C ... -50 °C	MOP A -10 °C	34	37.4
	-27 °C ... -50 °C	MOP A -18 °C	34	37.4
R407B	-10 ... -50 °C	MOP A ±0 °C	36	39.6
	-20 °C ... -50 °C	MOP A -10 °C	34	37.4
	-27 °C ... -50 °C	MOP A -18 °C	34	37.4
<b>Gas Charge</b>				
ISC 89	-40 °C ... -70 °C	MOP -40 °C	29	31.9
	-55 °C ... -70 °C	MOP -55 °C	29	31.9
R134a	+15 °C ... -40 °C	MOP +15 °C	34	37.4
	+10 °C ... -40 °C	MOP +10 °C	34	37.4
	±0 °C ... -40 °C	MOP ±0 °C	29	31.9
R22	+15 °C ... -45 °C	MOP +15 °C	36	39.6
	+10 °C ... -45 °C	MOP +10 °C	36	39.6
	±0 °C ... -45 °C	MOP ±0 °C	29	31.9
	-18 °C ... -45 °C	MOP -18 °C	29	31.9
R23	-40 °C ... -80 °C	MOP -40 °C	29	31.9
	-55 °C ... -80 °C	MOP -55 °C	29	31.9
R404A	+10 °C ... -50 °C	MOP +10 °C	36	39.6
	±0 °C ... -50 °C	MOP ±0 °C	36	39.6
	-18 °C ... -50 °C	MOP -18 °C	34	37.4
R407C	+15 °C ... -30 °C	MOP +15 °C	36	39.6
	+10 °C ... -30 °C	MOP +10 °C	36	39.6
R410A	+15 °C ... -50 °C	MOP -15 °C	40	44.0
	-40 °C ... -70 °C	MOP -40 °C	29	31.9
	-55 °C ... -70 °C	MOP -55 °C	29	31.9
R507A	+10 °C ... -50 °C	MOP +10 °C	36	39.6
R508A	-40 °C ... -90 °C	MOP -40 °C	29	31.9
	-55 °C ... -90 °C	MOP -55 °C	29	31.9
R508B	-40 °C ... -100 °C	MOP -40 °C	29	31.9
	-55 °C ... -100 °C	MOP -55 °C	29	31.9



ZE-00076 (x10)



ZE-00015 (x10)

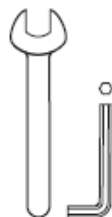


ZE-00078 (x10)

ZE-00017 (x20)



EN 378  
A2, A3



ATEX



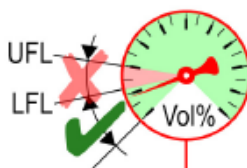
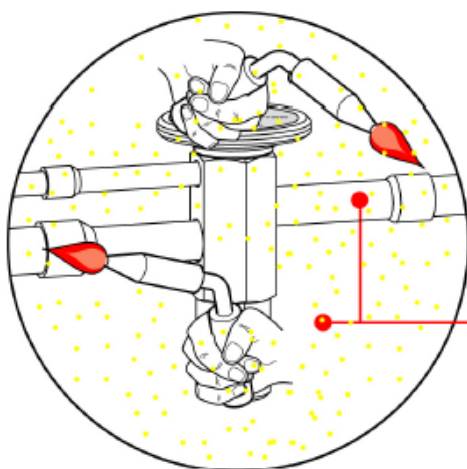
a) R290  
R600a  
R1270  
HFO-1234yf



EN 378  
EN 13313  
ATEX



1



UFL: upper flammability limit Vol %  
LFL: lower flammability limit Vol %

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