

Basic Information

EXPANSION VALVES (TXV)

The **expansion valve** (also referred to as TXV) is located at the evaporator inlet; controlling the flow of refrigerant entering the evaporator based on the cooling load or the evaporators temperature. A metering valve inside the expansion valve moves up and down in the refrigerants flow path, opening and closing the pathway inside. The pathway internally, is smaller than the refrigerant line, causing the pressure to drop, changing it from a high pressure liquid to low pressure liquid mist. Sensing temperature changes, the metering valve constantly opens or closes as it precisely meters the amount of of refrigerant needed. The expansion valve is considered one of the dividing lines bewteen the high and low pressure sections of the system. There are three different types of expansion valves; Block, Externally Equalized and Internally equalized.

ORIFICE TUBES/EXPANSION TUBES

Orifice Tubes / Expansion Tubes consist of a filter screen to remove contaminants, and a calibrated tube to meter refrigerant flow. Like an expansion valve they are mounted on the inlet side of the evaporator. They are found on vehicles using an accumulator instead of a receiver drier. CCOT (clutch cycling orifice tube) and FFOT (ford fixed orifice tube) systems. Both systems create the pressure drop by metering a steady flow of refrigerant while the compressor is operating. The cyling clutch switch, either a thermosatic switch or a pressure cycling switch turns the compressor on and off. The intermittent compressor operation controls the refrigerant flow and pressure.



EXPANSION VALVES

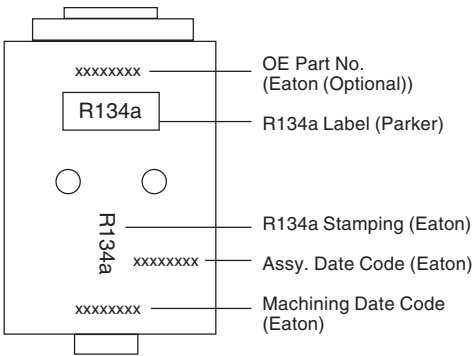
BLOCK TYPE 319

EXTERNALLY EQUALIZED 323

INTERNALLY EQUALIZED 323

ORIFICE/EXPANSION TUBES 324

SOLENOID VALVES 451



Related Items


Brackets, Expansion Valve 322

Orifice Extractor Kit 324

Orifice Repair Kits 324


Orifice Tube Assortment Kit 324

BLOCK TYPE EXPANSION VALVES (sorted in ascending by mounting type)

ILLUSTRATION	HOSE SIDE IN - OUT	EVAP. FITTING SIDE IN - OUT SUCTION	PART#	NOTE	RATING
	#6 - #10 Female O'Ring	#8 - #10 Female O'Ring	1613	Frtlnr; green stripes; Nick Type	1 1/2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1600		1 1/2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1601	40138-129	2 ton
	#6 - #10 Female O'Ring	#8 - #10 Female O'Ring	1603	4379-RD510546-0	2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1604	w/ Trinary Switch Port	2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1607	w/ Single Mounting Hole	1 1/2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1608	w/ Two Mounting Holes	2 1/2 ton
	#6 - #10 Female O'Ring	#8 - #8 Female O'Ring	1626	w/ port; EXP-002-ACT	2 ton
	#6 - #10 Female O'Ring	#8 - #10 Female O'Ring	1602		2 ton
	#6 - #10 Female O'Ring	#8 - #10 Female O'Ring	1606	w/ Single Mounting Hole	1 1/2 ton
	#6 - #10 Female O'Ring	#8 - #10 Female O'Ring	1627	w/ 1/4" Mounting Hole	2 ton
	#6 - #12 Female O'Ring	#8 - #10 Female O'Ring	1622	Volvo20443850	1 1/2 ton
	#6 - #12 Female O'Ring	#8 - #10 Female O'Ring	1623	5143304AA	1 1/2 ton
	#6 - #12 -	#8 - #12 Female O'Ring	1624	326310	1 1/2 ton
	#6 - #10 Flange Mount	#8 - #8 Flange Mount	1609	w/ 1 Front Switch Port; Nick Type	2 ton
	#6 - #12 Flange Mount	#8 - #10 Flange Mount	1614	Volvo; RE57575	2 ton
	#6 - #10 Flange Mount	#8 - #8 Flange Mount	1611	w/ 2 Service Ports	2 ton
	# 6 - #10 Flange Mount	#8 - #8 Flange Mount	1612	w/ 2 Ports; 2501794C1	2 ton
	#8 - #8 Flange Mount	# 6 - #10 Flange Mount	1648	KW, Pete, Berg (mini)	1 1/2 ton
	#6 - #10 Stat Seal	#8 - #10 Stat Seal	1618	Gold Color; Aux. Sleeper	1 1/2 ton
	#6 - #10 Stat Seal	#8 - #10 Stat Seal	1615	Gold Color; Main Unit	1 1/2 ton
	#6 - #12 Stat Seal	#8 - #10 Stat Seal	1619	Main Unit	1 1/2 ton
	#6 - #10 Stat Seal	#8 - #10 Stat Seal	1621	Burgundy Color; Aux. Sleeper	1 ton
	#8 - #12 Stat Seal	#8 - #10 Stat Seal	1632	327309	-
	#8 - #12 Stat Seal	#8 - #10 Stat Seal	1633	327308, Auxilliary	-
	#8 - #12 Stat Seal	#8 - #12 Stat Seal	1634	T1000898P, valve - T1000044L	-
	#8 - #12 Stat Seal	#8 - #12 Stat Seal	1642	VCCT1001838L	


EXTERNALLY EQUALIZED

Externally Equalized has a line with a fitting and nut, which are connected from the lower side of the expansion valves diaphragm to a point on the low side hose (between the evaporator and the compressor). This line allows refrigerant pressure to be applied in the same manner as an internally equalized type.

ILLUSTRATION	INLET	OUTLET	PART#	EQUALIZER / CAPILLARY TUBE LENGTH		RATING
	#6 (3/8") Male Flare	#8 (1/2") Male Flare	1610	1/4" Female Flare	12" 12"	1 1/2 ton
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1620	1/4" Male O'Ring	10" 10"	1 1/2 ton
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1625	1/4" Female O'Ring	13" 13"	1 1/2 ton
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1630	1/4" Male O'Ring	33" 33"	1 1/2 ton
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1631	Female ORing	13" 14"	2 ton

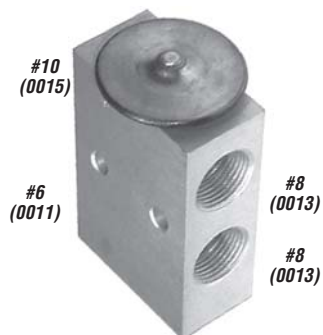
INTERNALLY EQUALIZED

Internally Equalized uses one capillary tube as a temperature sensing bulb to sense suction line temperatures.

ILLUSTRATION	INLET	OUTLET	PART#	CAPILLARY TUBE LENGTH	NOTE	RATING
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1640	12"	Volvo	1 1/2 ton
	#6 (3/8") Male O'Ring	#8 (1/2") Male O'Ring	1647	10"	F2UH19849AA	1 1/2 ton
	#6 (3/8") Male Flare	#8 (1/2") Male Flare	1635	12"	Aftermarket	1 1/2 ton
	M18 metric	M20 metric	1638	16 1/2"	GM	1 1/2 ton
	M16 metric	M20 metric	1639	16 1/2"	Peterbilt	1 1/2 ton

EXPANSION VALVES

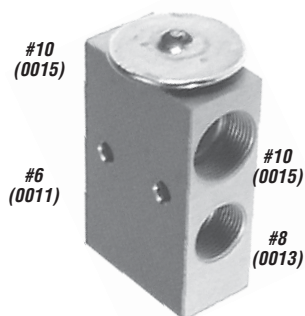
Block Type Expansion Valves



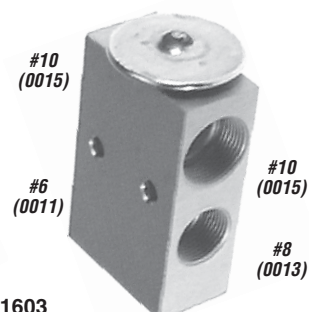
1600
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 1 1/2 ton



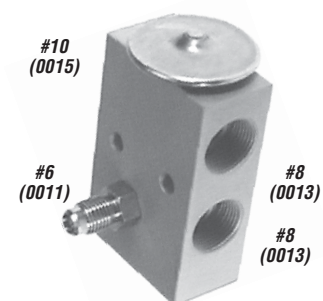
1601
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 2 ton
oe# 040138-129



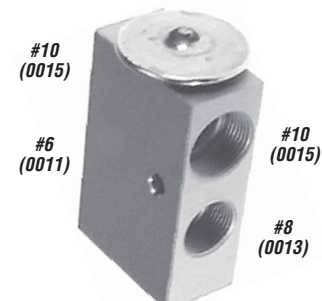
1602
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 2 ton



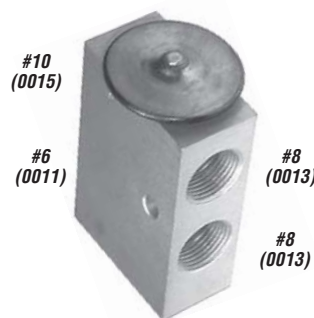
1603
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 2 ton
Mack Anti-Trumpet Type
oe# 4379-RD510546-0



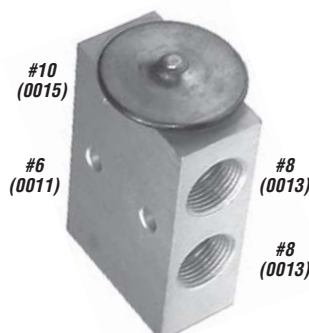
1604
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 2 ton
with Trinary Switch Port



1606
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 1 1/2 ton
with Single Mounting Hole



1607
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 1 1/2 ton
with Single Mounting Hole



1608
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 2 1/2 ton
with Two Mounting Holes



1609
Hose Side:
In #6 Flange Mount
Out #10 Flange Mount
Evaporator Suction Side:
In #8 Flange Mount
Out #8 Flange Mount
Rating: 2 ton
with 1 Switch Port;
Navistar #1696846C3



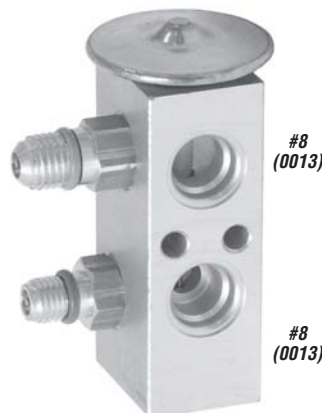
0134
Bracket for P/N #1609 (1 pc.)
oe# 2502132C1



0134B
Bracket Screws for P/N #0134
(10 pcs.) oe# 1696859C1

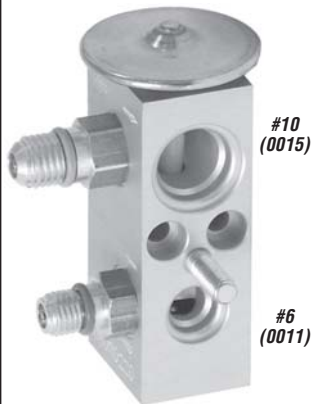


1611
Hose Side:
In #6 Flange Mount
Out #10 Flange Mount

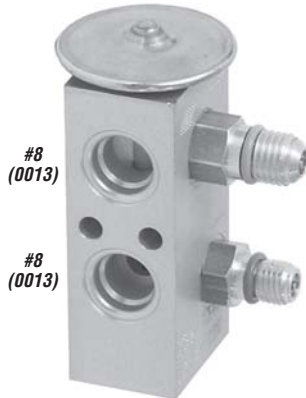


Evaporator Suction Side:
In #8 Flange Mount
Out #8 Flange Mount
Rating: 2 ton
w/2 Service Ports

Block Type Expansion Valves (continued)



1612
Hose Side:
In #6 Flange Mount
Out #10 Flange Mount



Evaporator Suction Side:
In #8 Flange Mount
Out #8 Flange Mount
Rating: 2 ton
w/ 2 Service Ports; 2501794C1



1613
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 1 1/2 ton
Freightliner .. Green Stripes
Nick Type



1614
Hose Side:
In #6 Flange Mount
Out #12 Flange Mount
Evaporator Suction Side:
In #8 Flange Mount
Out #10 Flange Mount
Rating: 2 ton
Volvo; RE57575



1615
Hose Side:
In #6 Stat Seal
Out #10 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
Rating: 1 1/2 ton
Main Unit Gold Color
APBN83308231



1618
Hose Side:
In #6 Stat Seal
Out #10 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
Rating: 1 1/2 ton
96-01 Freightliner Century Class
Aux Sleeper Gold Color
BOA80-321-00-269



1619
Hose Side:
In #6 Stat Seal
Out #12 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
Rating: 1 1/2 ton
Main Unit Freightliner
Egelhof#327302 BEHR#A4965



1621
Hose Side:
In #6 Stat Seal
Out #10 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
Rating: 1 ton
03-Up Frghtlnr Century Class
Aux Sleeper ... Burgundy Color
BOA93674



1622
Hose Side:
In #6 Female O'ring
Out #12 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 1 1/2 ton
VOLVO O.E. 20443850;
BOAA4931, BOA73079



1623
Hose Side:
In #6 Female O'ring
Out #12 Female O'ring



Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 1 1/2 ton
oe# 05143304AA



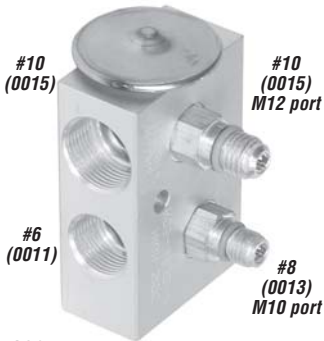
1624
Hose Side:
In #6
Out #12
Evaporator Suction Side:
In #8 Female O'ring
Out #12 Female O'ring
Rating: 1 1/2 ton
oe# 326310 Sprinter

EXPANSION VALVES

Block Type Expansion Valves (continued)



1626
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #8 Female O'ring
Rating: 2 ton w/port
oe# EXP-002-ACT



1627
Hose Side:
In #6 Female O'ring
Out #10 Female O'ring
Evaporator Suction Side:
In #8 Female O'ring
Out #10 Female O'ring
Rating: 2 ton, 1/4" mnt holes
oe# RD5-9935



1632
Hose Side:
In #8 Stat Seal
Out #12 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
oe# 327309



1633
Hose Side:
In #8 Stat Seal
Out #12 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #10 Stat Seal
oe# 327308



1634
Hose Side:
In #8 Stat Seal
Out #12 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #12 Stat Seal
T1000898P
valve - T1000044L



1642
Hose Side:
In #8 Stat Seal
Out #12 Stat Seal
Evaporator Suction Side:
In #8 Stat Seal
Out #12 Stat Seal
oe# VCCT1001428N



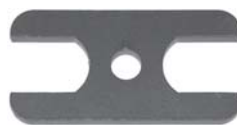
1648
Hose Side:
In #8 Flange Mount
Out #8 Flange Mount
Evaporator Suction Side:
In #6 Flange Mount
Out #10 Flange Mount
Rating: 1 1/2 ton mini
Kenworth/Peterbilt
Bergstrom 540056



TECH TIP: A nicked or bleed valve type expansion valve is typically used in auxiliary systems to keep the refrigerant oil from trapping in the line behind the valve when it is off and the main system is on. The use of a nicked expansion valve depends on the design of the system. The life of the compressor will greatly be reduced if a "no nick" or "non bleed" valve is put in place of the "nicked" or "bleed valve" type that the system was designed for.

A "nicked seat" expansion valve allows a small amount of refrigerant and oil to leak through the valve seat when it is in a shut position. The bypass is made by using a precise nick or impression to allow the refrigerant to leak by the seat and ball with the amount of by pass required.

Brackets - Expansion Valves



0133
Evap./ Exp. Valve Retainer
OE# 22-45028-000 (1 pc.)

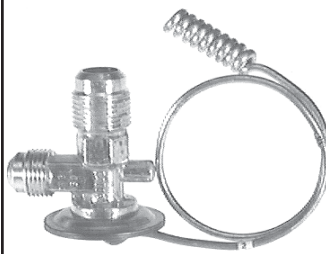


0134
Bracket for #1609 (1 pc.)
2502132C1



0134B
Bracket Screws
for #0134 (10 pcs.)
1696859C1

Internally Equalized Expansion Valves



1635

Inlet #6 (3/8") Male Flare
Outlet #8 (1/2") Male Flare
Rating: 1 1/2 ton
Capillary Tube Length 12"
Aftermarket



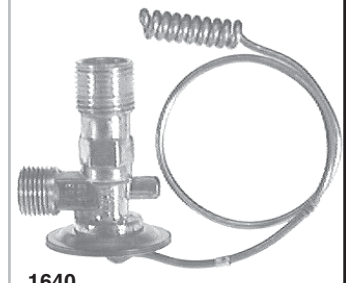
1638

Inlet M18 metric
Outlet M20 metric
Rating: 1 1/2 ton
Capillary Tube Length 16 1/2"
GM



1639

Inlet M16 metric
Outlet M20 metric
Rating: 1 1/2 ton
Capillary Tube Length 16 1/2"
Peterbilt w/Inlet Screen



1640

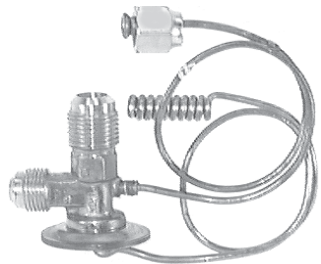
Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating: 1 1/2 ton
Capillary Tube Length 12"
Volvo

1647

Farm and Off-Road Units
O-Ring Fitting (R12/R134a)
Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating 1 1/2 ton
Capillary Tube Length 10"
FORD O.E. F2UH19849AA



Externally Equalized Expansion Valves



1610

Inlet #6 (3/8") Male Flare
Outlet #8 (1/2") Male Flare
Rating 1 1/2 ton
Nut 1/4" Female Flare
Equalizer Tube Length 12"
Capillary Tube Length 12"



1620

Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating 1 1/2 ton
Nut 1/4" Male O'ring
Equalizer Tube Length 10"
Capillary Tube Length 10"



1625

Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating 1 1/2 ton
Nut 1/4" Female O'ring
Equalizer Tube Length 13"
Capillary Tube Length 13"



1630

Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating 1 1/2 ton
Nut 1/4" Male O'ring
Equalizer Tube Length 33"
Capillary Tube Length 33"












1631

Farm and Off-Road Units
O-Ring Fitting (R12/R134a)
Inlet #6 (3/8") Male O'ring
Outlet #8 (1/2") Male O'ring
Rating 2 ton
Nut Female O'ring
Equalizer Tube Length 13"
Capillary Tube Length 14"



EXPANSION VALVES

Orifice / Expansion Tubes

					
WHITE 1650 GM .072"	BLUE 1651 Ford .067"	ORANGE 1652 Ford .057"	WHITE / BLACK 1653 GM Condenser .072"	RED 1654 Ford/Peterbilt .062"	BROWN 1656 Ford .047"
					
YELLOW 1657 GM/Volvo .062"	Smart VOV Valve Condenser 1658 Condenser-Retro Fit, Variable Flow Design	Smart VOV Valve Evaporator 1659 Evaporator-Retro Fit, Variable Flow Design	PURPLE 1662 Navistar 3548044C1	BLACK WHITE 1663 Ford E-Series .072" XC4Z-19D990AA	

Orifice Tube Assortment

1675 Orifice Tube Assortment

Kit Contains:
Part# Qty.

1650 (10)
1651 (10)
1652 (5)
1653 (10)
1654 (5)
1656 (5)

Chrysler, purple (2)
Volvo, #1657 (2)



Orifice Extractor Kit

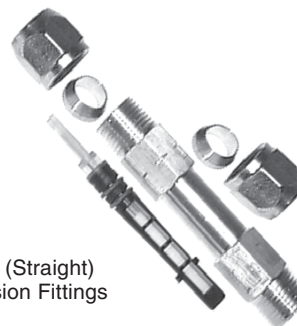


8930
Orifice Tube Extractor
Easily removes damaged orifice tubes in Ford & GM vehicles.

Orifice Repair Kits



1660
GM Evaporator Kit
Male Insert O-Ring
No. 8 x 8 Compression Fittings
(3/8" O.D. Tubing)



1661
Ford Evaporator Kit (Straight)
No. 8 x 8 Compression Fittings
(1/2" O.D. Tubing)