EXPANSION VALVES

See Red Dot Catalog Also

PART NO.	DESCRIPTION	INLET	OUTLET	CAPILLARY TUBE LENGHT	EQUALIZER TUBE LENGHT	EQUALIZER TUBE FITTING
FLARE FITTING -- INTERNAL EQUALIZED						
20359	INTERNAL EQUALIZED	3/8' MALE FLARE	1/2" MALE FLARE	12'	-	-
38722	INTERNAL EQUALIZED	3/8" MALE FLARE	1/2" MALE FLARE	33"	-	-
FLARE FITTING -- EXTERNAL EQUALIZED						
71R8050	EXTERNAL EQUALIZED	3/8' MALE FLARE	1/2" MALE FLARE	18'	16.5"	1/4" FEMALE FLARE
20985 *	EXTERNAL EQUALIZED	3/8" MALE FLARE	1/2" MALE FLARE	19"	31"	1/4" FEMALE FLARE
O'RING FITTING -- INTERNAL EQUALIZED						
38720	INTERNAL EQUALIZED	3/8" MALE O'RING	1/2" MALE O'RING	10 1/2"	-	-
EX02280	INTERNAL EQUALIZED	16mm MALE O'RING	22mm MALE O'RING	10"	-	-
38683	INTERNAL EQUALIZED	3/8' MALE O'RING	1/2" MALE O'RING	12"	-	-
38684 (1)	INTERNAL EQUALIZED	3/8" MALE O"RING	1/2" MALE O"RING	12"	-	

* 2 ton valves - all other valves are 1 1/2 ton (1) Includes 3901172M1 Adapter

20359

38722

71R8050

20985

38720

EX02280

38683

38684

EXPANSION VALVES

See Red Dot Catalog Also

PART NO.	DESCRIPTION	INLET	OUTLET	CAPILLARY TUBE LENGHT	EQUALIZER TUBE LENGHT	EQUALIZER TUBE FITTING
O'RING FITTING -- EXTERNAL EQUALIZED						
38877 *	EXTERNAL EQUALIZED	3/8" MALE O'RING	1/2" MALE O'RING	8"	9 5/8"	1/4" FEMALE O'RING
38872 *	EXTERNAL EQUALIZED	3/8" MALE O'RING	1/2" MALE O'RING	9"	9"	1/4" FEMALE O'RING
71R8080	EXTERNAL EQUALIZED	3/8" MALE O'RING	1/2" MALE O"RING	10"	10"	1/4" MALE O"RING
31-10738	EXTERNAL EQUALIZED	16 MM O'RING	20 MM O'RING	11"	9"	12 MM FEMALE O'RING
38610	EXTERNAL EQUALIZED	3/8" MALE O'RING	1/2" MALE O'RING	19"	17"	1/4" FEMALE O'RING
38622 *	EXTERNAL EQUALIZED	3/8' MALE O'RING	1/2" MALE O'RING	33"	31"	1/4" MALE O'RING
38623	ORIFICE TUBE					
OT05925	ORIFICE TUBE					

* 2 ton valves - all other valves are 1 1/2 ton

38877

38872
31-10738

71R8100

38610

38622

38623

OT05925

71R8080

BLOCK TYPE

		LIQUID		SUCTION	
PART NO.	**DESCRIPTION**	**INLET From Compressor**	**OUTLET To Evaporator**	**INLET From Evaporator**	**OUTLET To Compressor**
21920* #	FLANGED	#6 O'RING	#8 O'RING	#8 O'RING	#10 O'RING
21921 #	FLANGED	#6 O'RING	#10 O'RING	#10 O'RING	#10 O'RING
21922* # 2	THREADED	#6 O'RING	#8 O'RING	#8 O'RING	#10 O'RING
21923 #	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#10 5/8" O'RING	#13 3/4" O'RING
21924 #	FLANGED/STUD	#6 O'RING	#8 O'RING	#10 O'RING	#13 O'RING
EX03700 * #	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#8 1/2" O'RING	#10 5/8" O'RING
EX03703 *	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#8 1/2" O'RING	#10 5/8" O'RING
38892 *	FLANGED	#6 O'RING	#8 O'RING	#10 O'RING	#12 O'RING
38893 *	FLANGED	#6 O'RING	#8 O'RING	#10 O'RING	#10 ORING
71R8301 #	THREADED	#6 3/8" O"RING	#8 1/2" O'RING	#8 1/2" O'RING	#10 5/8" O'RING
71R8330 # *	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#10 5/8" O'RING	#10 5/8" O'RING
EX03727 # *	FLANGED	#6 O'RING	#8 O'RING	#10 O'RING	#12 O'RING
EX03720 #	FLANGED	#6 O'RING	#10 O'RING	#10 O'RING	#10 O'RING
EX03722	FLANGED	#6 3/8" O'RING	#12 3/4" O'RING	#12 3/4" O'RING	#12 3/4" O'RING
EX03738 #	FLANGED	#6 O'RING	#8 O'RING	#10 O'RING	#12 O'RING
EX03739 *	FLANGED	#6 3/8" O'RING	#8 1/2" O'RING	#10 5/8" O'RING	#12 3/4" O'RING
EX03740 (1) #	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#8 1/2" O'RING	#10 5/8" O'RING
EX03746 #	FLANGED	#6 O'RING	#8 O'RING	#8 O'RING	#10 O'RING
EX03747	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#10 5/8" O'RING	#10 5/8" O'RING
EX03748 #	THREADED	#6 3/8" O'RING	#8 1/2" O'RING	#8 1/2" O'RING	#10 5/8" O'RING
EX03750	FLANGED	#6 O'RING	#8 O'RING	#10 O'RING	#10 O'RING

(1) Hi-Side 1/4" Male Switch Port (2) Lo-Side 1/4" Male Switch Port

***** 2 ton valves - all other valves are 1 1/2 ton

Has Mounting Holes

21920

21921

21922

21923
EX03739

21924

71R8301
EX03700

38892

38893

71R8330

EX03720

EX03722

EX03727

EX03738

EX03740

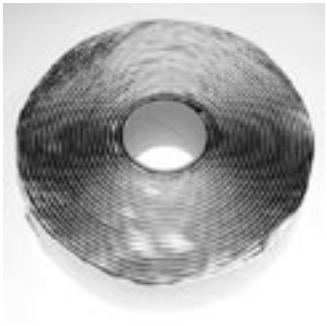
EX03746

EX03748
EX03703

EX03747

EX03750

EXPANSION VALVE ACCESSORIES

	PART NO.	DESCRIPTION
	40610	Clamp, Expansion Bulb (For 3/8’ Coil or 1/2” Tube Type)
	51683	External Equalizer Seal
	61003	Prestite Tape 30 Ft. Roll (Sold by the foot) wrapped around expansion bulb or coil.
	21996	Expansion Valve Screen

HECO EXPANSION VALVE PRICES

Prices are Subject to change without notice

Part No	Price	Comment
20359	$20.00	
20985	$20.00	
21920	$50.00	
21921	$30.00	
21922	$45.00	
21923	$85.00	
21924	$85.00	
21996	$2.50	
38606	$35.00	
38610	$45.00	
38620	$0.00	R/B EX03700
38622	$35.00	
38623	$5.00	
38683	$35.00	
38684	$75.00	
38720	$35.00	
38722	$45.00	
38872	$40.00	
38877	$27.50	
38892	$40.00	
38893	$45.00	
40610	$0.50	
51683	$0.25	
71R8050	$32.71	
71R8100	$37.10	
71R8301	$39.39	
71R8330	$40.00	
902-219	$0.00	N/A
EX02219	$0.00	N/A
EX02280	$60.00	
EX03700	$40.00	
EX03703	$40.00	
EX03720	$50.00	
EX03722	$40.00	
EX03727	$60.00	
EX03738	$60.00	
EX03740	$40.00	
EX03746	$45.00	
EX03747	$75.00	
EX03748	$75.00	
EX03750	$65.00	
OT05925	$7.00	

EXPANSION VALVE Section

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www.heco.net | E-mail: heco@bmi.net

The TXV ... learning to like them.

The TXV is used in so many refrigerant circuits that rarely is it even called by its true name... the THERMOSTATIC EXPANSION VALVE. There are other "expansion valves" that are not "thermostatic" but is the automotive world all TXV's are called "expansion valves".

Why do we use expansion valves? The answer is almost totally in their name. "Valve" because we must have some device for the controlling refrigerant feed to the evaporator. "Expansion" because there must be a device for lowering the high pressure of the refrigerant leaving the liquid line. The expansion valve" does both of these things. The **thermostatic** expansion valve serves these two purposes by using a **temperature** of the refrigerant leaving the evaporator. The TXV measures that temperature with a bulb clamped to the outside of the suction line, The bulb is filled with a refrigerant "charge" that increases in pressure as the bulb gets warmer. This pressure change then moves a diaphragm on the valve which opens or closes the refrigerant path within the valve. The warmer the bulb gets, the wider the opening gets and the more refrigerant that is allowed to enter the evaporator. As more refrigerant enters the evaporator coil, the temperature of the gas leaving the evaporator will lower, cooling the bulb and reducing the flow through the valve. The valve flow will settle at a position to hold the original setting of the valve.

Setting? Most valves are not adjustable, so how are you going to set them? True, they can't be set in the field but they are set at the factory. The setting they have is called their "**superheat**" setting and it is one of the most important settings in an air conditioning system.

The only control the TXV can accomplish is to maintain a constant **superheat** at the exit of the evaporator. It does not maintain a constant refrigerant feed or coil temperature. Only a constant superheat.

Designers select **superheat** settings based on many factors: evaporator design, flow rate, system capacity, etc. For this reason TXV's should not be substituted unless the technician is certain their operating characteristics are identical to the original.

The most important characteristic is the **superheat** setting. It would be nice if we could close on that simple fact. We can't. We might have led you to believe that superheat is a single temperature. It is not. **Superheat** is the **difference** between **two** temperatures.

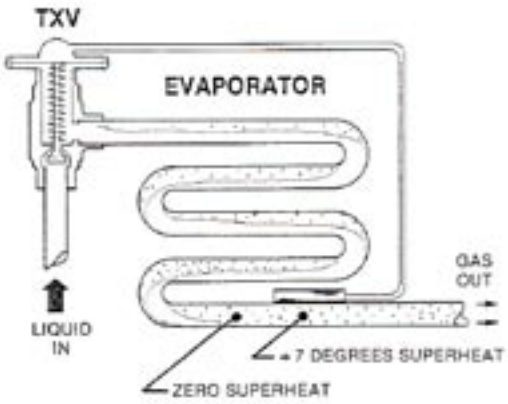
SUPERHEAT = EVAP. OUTLET TEMP. (Measured by bulb) - (MINUS)
SATURATION TEMP. (Found by Measuring Suction Pressure)

The TXV and SUPERHEAT

Evaporators are hard working components in an automotive air conditioner. The sad part is that, by themselves, they are refrigerant guzzlers that if not controlled would send deadly slugs of liquid to the compressor.

An evaporator, working as designed, takes in just enough liquid to do its cooling job-and no more. An evaporator that is receiving less than the proper amount is said to be “starved”. An evaporator receiving too much refrigerant is said to be “flooded” or “slugging”. Both conditions must be avoided in most applications.

One device that does the metering job is the TXV - the Thermostatic Expansion Valve. A moving pin within the TXV meters refrigerant at a precise rate to match the needs of the evaporator. But how does the TXV know how much refrigerant the evaporator needs? If you were to make that decision how would you do it?



You would find a way to see the condition of the refrigerant leaving the evaporator. If you see liquid you would close down the valve a little until you saw nothing but gas, Once you saw nothing but gas , you would open the valve ever so little until you saw the last drop of liquid evaporate at the evaporator exit. The arrangement gives you maximum cooling with no chance of liquid entering the suction line.

The TXV does this same job by measuring the superheat of the gas at the evaporator exit. Simply stated, superheat is the additional heat that goes into a gas after it has been evaporated. Until all liquid has evaporated the superheat will stay at zero. At the point the last drop of liquid evaporates, the superheat will start to rise and will keep rising as the gas absorbs the heat.

The TXV measures the two things that must be known to determine superheat: Suction pressure (measured at the underside of the diaphragm) which tells us the temperature of the gas at zero superheat; and the actual gas temperature (measured by the bulb). The difference between these two temperatures is the superheat.

As suction pressure goes up the valve tends to close. As bulb temperature goes up the valve will open. It is the spring which is set at the factory that will determine the superheat level the valve will maintain.

Most automotive expansion valves are set to control a superheat level between 7 and 12 degrees.