INCH-POUND

MS17982D
11 October 2005
SUPERSEDING
MS17982C
19 June 1974

DETAIL SPECIFICATION SHEET

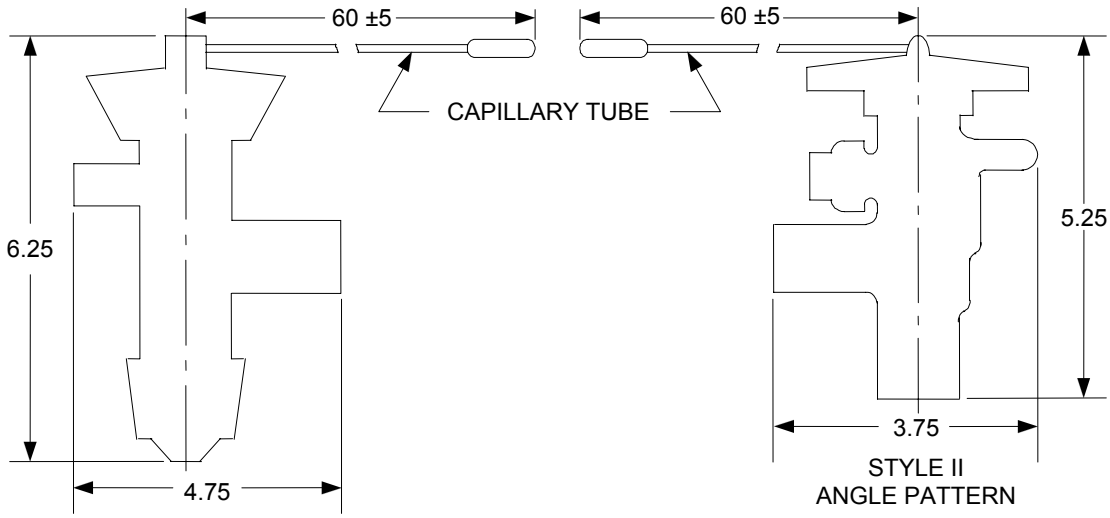
VALVES, EXPANSION, THERMOSTATIC, REFRIGERANT-12 (R-12) AND REFRIGERANT-22 (R-22)

Inactive for new design after 1 April 1996

This specification is approved for use by all Departments and Agencies of the Department of Defense.

MS17982D is inactive for new design and is no longer used, except for replacement purposes.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-23450.



Inches	mm
3.75	95.25
4.75	120.65
5	127.00
5.25	133.35
6.25	158.75
60	1524.00

NOTES:
1. Dimensions are in inches
2. Metric equivalents are given for information only.

FIGURE 1. Valve maximum overall dimensions.

TABLE I. Capacities for R-12 (British Thermal units per hour (Btuh)). 1/ 2/ 3/

MS PIN 4/	135°F condensing temp, 125°F vapor free liquid entering Thermostatic Expansion Valve (TEV)										105°F conditioning temperature 85°F vapor free liquid entering TEV	
	-10°F evaporator (EVAP) temperature 175 psi pressure drop (PD) across TEV		25°F EVAP. temperature 145 psi PD across TEV		-10°F EVAP temperature 145 psi PD across TEV		25°F EVAP temperature 125 psi PD across TEV		50°F EVAP temperature 100 psi PD across TEV		50°F EVAP temperature 35 psi PD across TEV	
MS17982	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-1	2,000	3,700	3,400	7,000								
-2	3,600	4,200	6,300	8,800								
-3					4,500	8,700	6,200	15,000				
-4					8,500	19,200	18,000	30,000				
-5					13,000	28,000	24,000	43,000				
-6									13,000	18,000	10,000	13,000
-7									28,000	34,000	19,000	22,000
-8									40,000	52,000	29,000	35,000
-9									57,000	75,000	36,000	54,000
-10									72,000	78,000	49,000	54,000
-11									109,000	130,000	71,000	83,000
-12									145,000	172,000	100,000	117,000

1/ Minimum capacity requirements must be met.
2/ Maximum capacities are merely for the application engineer.
3/ The suffix “A” in tables III and IV does not affect capacity.
4/ Part or Identifying Number (PIN).

TABLE I. Capacities for R-12 (Btuh) -Continued. 1/ 2/ 3/ 4/

MS PIN	57.2°C condensing temp, 51.7°C vapor free liquid entering Thermostatic Expansion Valve (TEV)										40.6°C conditioning temperature 29.4°C vapor free liquid entering TEV	
	-23.3°C evaporator (EVAP) temp 12.1 bar pressure drop (PD) across TEV		-3.9°C EVAP. temperature 10.0 bar PD across TEV		-23.3°C EVAP temperature 10.0 bar PD across TEV		-3.9°C EVAP temperature 8.6 bar PD across TEV		10.0°C EVAP temperature 6.9 bar PD across TEV		10.0°C EVAP temperature 2.4 bar PD across TEV	
MS17982	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-1	137.9	255.1	234.4	482.6								
-2	248.2	289.6	434.4	606.7								
-3					310.3	599.8	427.5	1034.2				
-4					586.1	1323.8	124.1	2068.4				
-5					896.3	1930.5	1654.7	2964.7				
-6									896.3	124.1	689.5	896.3
-7									1930.5	2344.2	1310.0	1516.8
-8									2757.9	3585.3	1999.5	2413.2
-9									3930.0	5171.1	2482.1	3723.2
-10									4964.2	5377.9	3378.4	3723.2
-11									7515.3	8963.2	4895.3	5722.7
-12									9997.4	11859.0	6894.8	8066.9

1/ Minimum capacity requirements must be met.
2/ Maximum capacities are merely for the application engineer.
3/ The suffix “A” in tables III and IV does not affect capacity.
4/ Metric equivalents are given for information only.

TABLE II. Capacities for R-22 (Btuh). 1/ 2/ 3/

MS PIN	135°F condensing temp, 125 °F vapor free liquid entering thermostatic expansion valve (TEV)										105°F conditioning temperature 85°F vapor free liquid entering TEV	
	-10°F evaporator (EVAP) temperature 250 psi pressure drop (PD)		25°F EVAP temperature 220 psi PD		-10°F EVAP temperature 220 psi PD		25°F EVAP temperature 200 psi PD		50°F EVAP temperature 175 psi PD		50°F EVAP temperature 75 psi PD	
MS17982	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-13	3,250	5,020	5,330	16,380								
-14	5,850	8,830	10,250	14,300								
-15					7,550	14,600	14,350	25,000				
-16					14,250	32,200	30,000	49,800				
-17					21,800	47,000	40,000	71,500				
-18									22,200	30,700	18,800	24,500
-19									47,700	58,000	38,800	41,500
-20									68,000	88,500	54,700	66,000
-21									97,000	128,000	68,000	102,000
-22									122,500	133,000	92,500	102,000
-23									185,700	222,000	134,000	150,000
-24									242,000	293,000	188,800	221,000

1/ Minimum capacity requirements must be met.
2/ Maximum capacities are merely for the application engineer.
3/ The suffix “A” in tables III and IV does not affect capacity.

TABLE II. Capacities for R-22 (Btuh) -Continued 1/ 2/ 3/ 4/

MS PIN	57.2°C condensing temp, 51.7°C vapor free liquid entering thermostatic expansion valve (TEV)										40.6°C conditioning temperature 29.4°C vapor free liquid entering TEV	
	-23.3°C evaporator (EVAP) temperature 17.2 bar pressure drop (PD)		-3.9°F EVAP temperature 15.2 bar PD		-23.3°C EVAP temperature 15.2 bar PD		-3.9°C EVAP temperature 13.8 bar PD		10.0°C EVAP temperature 12.1 bar PD		10.0°C EVAP temperature 5.2 bar PD	
MS17982	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-13	224.1	346.1	367.5	1129.4								
-14	403.3	608.8	706.7	986.0								
-15					520.6	1006.6	989.4	1723.7				
-16					982.5	2220.1	2068.4	3433.6				
-17					1503.1	3240.5	2757.9	4929.8				
-18									1530.6	2116.7	12962.1	1689.2
-19									3288.8	3999.0	2675.2	2861.3
-20									4688.4	6101.9	3771.4	4550.5
-21									6687.9	8825.3	4688.4	7032.7
-22									8446.1	9170.0	6377.7	7032.7
-23									12803.6	15306.4	9239.0	10342.1
-24									16685.3	20201.6	13017.3	15237.4

1/ Minimum capacity requirements must be met.
2/ Maximum capacities are merely for the application engineer.
3/ The suffix “A” in tables III and IV does not affect capacity.
4/ Metric equivalents are given for information only.

TABLE III. R-12 valve configuration. 1/

<table>
<tr><th colspan="2">MS17982 dash number</th><th colspan="2">Equalizer</th><th rowspan="3">Pressure limit means</th><th colspan="3">Connections</th></tr>
<tr><th rowspan="2">Style I</th><th rowspan="2">Style II</th><th rowspan="2">Type</th><th rowspan="2">Connection</th><th colspan="2">Size (inches)</th><th rowspan="2">Type</th></tr>
<tr><th>Inlet</th><th>Outlet</th></tr>
<tr><td>-1</td><td>-1A</td><td rowspan="2">I (internal)</td><td rowspan="2">---</td><td rowspan="2">Yes</td><td rowspan="2">3/8 (.375)</td><td rowspan="2">1/2 (.500)</td><td rowspan="4">Flare</td></tr>
<tr><td>-2</td><td>-2A</td></tr>
<tr><td>-3</td><td>-3A</td><td rowspan="8">II (external)</td><td rowspan="8">Flare 1/4 (.250)</td><td rowspan="8">No</td><td rowspan="4">1/2 (.500)</td><td rowspan="4">5/8 (.625)</td></tr>
<tr><td>-4</td><td>-4A</td></tr>
<tr><td>-5</td><td>-5A</td></tr>
<tr><td>-6</td><td>-6A</td></tr>
<tr><td>-7</td><td>-7A</td><td rowspan="4">5/8 (.625)</td><td>7/8 (.875)</td><td rowspan="4">Solder</td></tr>
<tr><td>-8</td><td>-8A</td></tr>
<tr><td>-9</td><td>-9A</td><td rowspan="3">1-1/8 (1.125)</td></tr>
<tr><td>-10</td><td>-10A</td></tr>
<tr><td>-11</td><td>-11A</td><td>7/8 (.875)</td></tr>
<tr><td>-12</td><td>-12A</td></tr>
</table>

1/ Metric equivalents are given for information only.

Inches	mm
.250	6.35
.375	9.53
.500	12.70
.625	15.88
.875	22.23
1.125	28.58

TABLE IV. R-22 valve configuration. 1/

<table>
<tr><th colspan="2">MS17982 dash number</th><th colspan="2">Equalizer</th><th rowspan="3">Pressure limit means</th><th colspan="2">Connections</th></tr>
<tr><th rowspan="2">Style I</th><th rowspan="2">Style II</th><th rowspan="2">Type</th><th rowspan="2">Connection</th><th colspan="2">Size (inches)</th><th rowspan="2">Type</th></tr>
<tr><th></th><th></th></tr>
<tr><td>-13</td><td>-13A</td><td rowspan="2">I (internal)</td><td rowspan="2">---</td><td rowspan="12">No</td><td rowspan="2">3/8 (.375)</td><td rowspan="2">1/2 (.500)</td><td rowspan="4">Flare</td></tr>
<tr><td>-14</td><td>-14A</td></tr>
<tr><td>-15</td><td>-15A</td><td rowspan="10">II (external)</td><td rowspan="10">Flare 1/4 (.250)</td><td rowspan="4">1/2 (.500)</td><td rowspan="4">5/8 (.625)</td></tr>
<tr><td>-16</td><td>-16A</td></tr>
<tr><td>-17</td><td>-17A</td></tr>
<tr><td>-18</td><td>-18A</td></tr>
<tr><td>-19</td><td>-19A</td><td rowspan="4">5/8 (.625)</td><td>7/8 (.875)</td><td rowspan="4">Solder</td></tr>
<tr><td>-20</td><td>-20A</td></tr>
<tr><td>-21</td><td>-21A</td><td rowspan="3">7/8 (.875)</td><td rowspan="3">1-1/8 (1.125)</td></tr>
<tr><td>-22</td><td>-22A</td></tr>
<tr><td>-23</td><td>-23A</td></tr>
<tr><td>-24</td><td>-24A</td></tr>
</table>

1/ Metric equivalents are given for information only.

Inches	mm
.250	6.35
.375	9.53
.500	12.70
.625	15.88
.875	22.23
1.125	28.58

REQUIREMENTS

Dimensions and configuration. See figure 1 and tables I through IV.

Intended use. The thermostatic expansion valves covered by this specification are intended for use with military standard and high-temperature refrigerating and air-conditioning equipment.

Identification of product. The PIN for the valve consists of the MS number plus the dash number from table III or IV as applicable. Example: MS17982-1.

Definitions.

Factory superheat setting: The factory superheat setting of a thermostatic expansion valve is the final adjustment made by the manufacturer during production tests.

Superheat change: The superheat change (superheat gradient) of a thermostatic expansion valve is the difference between no-flow superheat and the superheat required to produce rated capacity or required flow.

Operating characteristics.

Superheat:

Type: Adjustable

Setting:

R-12 parts:

-1 through -5: Factory set at 7 ±2 °F (-14 ±1°C) at bulb reference temperature of 0°F (-18°C).
-6 through -12: Factory set at 10 ±2 °F (-12 ±1°C) at bulb reference temperature of 32°F (0°C).

R-22 parts:

-13 through -17: Factory set at 6 ±2°F (-14 ±1°C) at bulb reference temperature of 32°F (0°C).
-18 through -24: Factory set at 6 ±1°F (-14 ±0.6°C) at bulb reference temperature of 32°F (0°C).

Superheat change of a thermostatic expansion valve shall no be more than 7°F (4°C) throughout the range of temperature in which the evaporator is specified to operate to produce the required capacity at these conditions.

Pressure limit means (R-12 only).

Setting: Parts -1 and -2; factory set at maximum operating pressure of 30 psig (2.07 bar), +7 psi. (0.48 bar), - 0 psi.

Connection ends:

Flare: External, in accordance with SAE-J513.
Female: In accordance with ASME-B16.22.

Order of precedence. For design feature purposes, this standard takes precedence over procurement documents referenced herein.

Referenced documents. In addition to MIL-DTL-23450, this document references the following:

ASME-B16.22
SAE J513

Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

CONCLUDING MATERIAL

Custodians:
Army - GL
Navy - SH
Air Force - 99
DLA - CC

Preparing activity:
DLA - CC

(Project 4820-0864-000)

Review activities:
Army - AT, CR4
Navy - MC, SA
Air Force - 71
DLA - GS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organization and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.