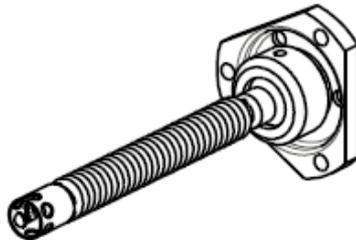


## SELF REGULATED JOULE THOMSON COOLER 5,18 L50D – BELLOW TYPE

Type: JTRB518L50D Code: K1000 003-001



Reliable  
Bellow type  
Acoustically Silent  
Vibration Free  
Reduced System Weight

The JTRB series automatically matches its cooling power to the varying applied demand.

It is optimized for stabile regulation with N<sub>2</sub>

The minicooler operates under military, aircraft and missile environments at ambient temperatures between **-40 °C and +70 °C**

The allowed ambient temperature for transport and/or storage is **-50/+80°C**.

Normal working pressure up to **420 bars (6000psi)**.

The minimum working pressure is between **60bar (@RT) and 140 bar (@High T)**.

Average cooling power during cool down between **5W and 10W, Mass: <10gr**

This type of JT cooler is designed for long runtime (duration – few hours).

### Cryogenic temperature

**77,5 K ±1K** can be achieved at ambient temperature from **-40°C to 80°C** at different attitudes

### Operating gas:

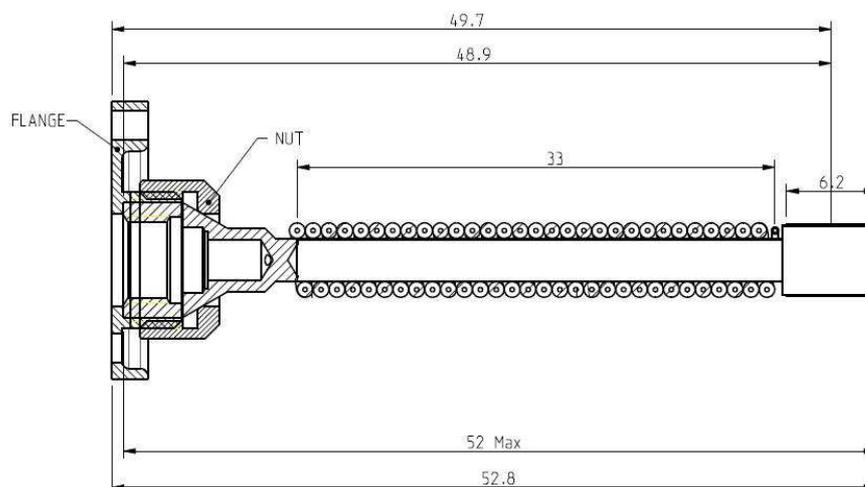
Nitrogen

### The gas supply

must be of high quality.  
(according to DEF STAN 58-96/3)

Meets Environmental Conditions per MIL-STD-810D

### Dimensions:

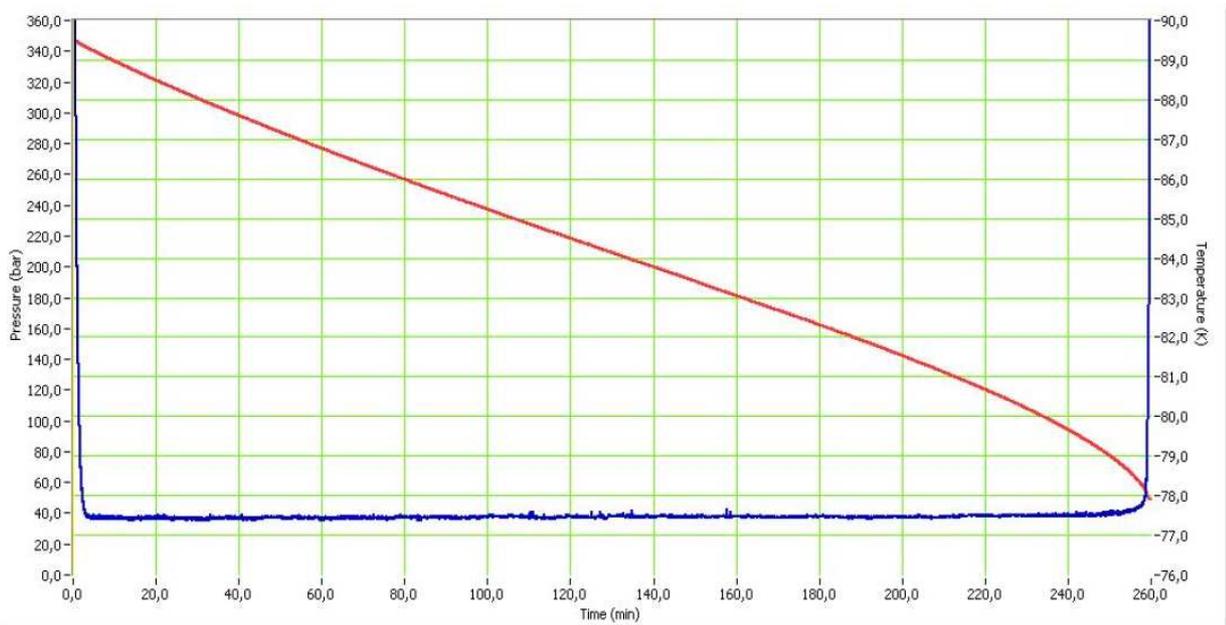


## PERFORMANCE SPECIFICATIONS (for an ambient temperature of 23 °C)

Typical performance measurement of Self Regulated Joule Thomson cooler 5,18 L50 Type: JTRB518L50D in dewar cell, type DSO-Mock with the bottle size 0.6 L, filled with N2 to pressure of 385 bar @ 23°C, detector in horizontal orientation.

### Temperature and pressure versus time for regulated JT minicooler

Meritev: 8	tchl(140K)=16,3 s	Komentar:
Oznaka hladilnika: 02	tchl(80K)=93,8 s	
Dewarjeva posoda: DSO Mock	Th= 77,47 °C	
Orientacija: HORIZONTALNO	STD= 0,047 K	V= 0,6l
Senzor tlaka-pv.M-172Senzor tlaka-p0.M-177	tdef= 258,2 min	SCXI, Cryost DSO v15a
p0=385,8bar	Th max = 78,1 K	
Tok= 25,1°C	Th min = 77,4 K	



Runtime, cool down time and temperature stability versus time  
(Blue line- bottle pressure (pb[bar]), black line- Th[K])

Tests	MU	Amb. Temp. (°C)	Pressure (bar)	Nominal Value
Ambient flow	(NI/min)	+21° ±3	207 ±5	8-12
Make time	(sec)	+21 ±3	full bootle	<100
Runtime (0,6L)	(min)	+21 ±3	385 ±5	>260
Cooldown time (140K)	(sec)	+21 ±3	full bootle	<20
Regulated output after 5 minutes operation	(NI/min)	+21 ±3	207 ±5	<0,4

Values above are valid for Dewar DSO-mock. For another dewar the values are different.

## SELF REGULATED JOULE THOMSON COOLER 5,18 L67

Type: JTRB518L67 Code: K1000 005-001



Self Regulated, bellow type JT cooler was developed to suit US common module.

- Reliable
- Bellow type
- Acoustically Silent
- Vibration Free
- Reduced System Weight

### Cryogenic temperature

**77,5 K ±1K** can be achieved at ambient temperature from -40°C to 70°C at different attitudes

### Operating gas:

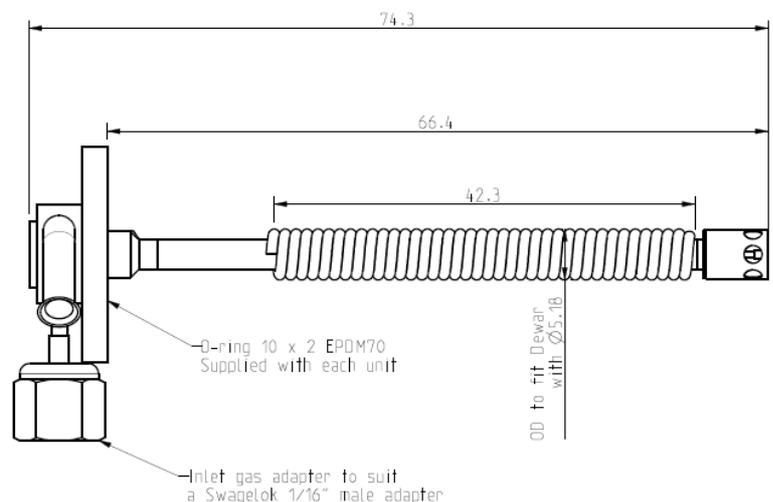
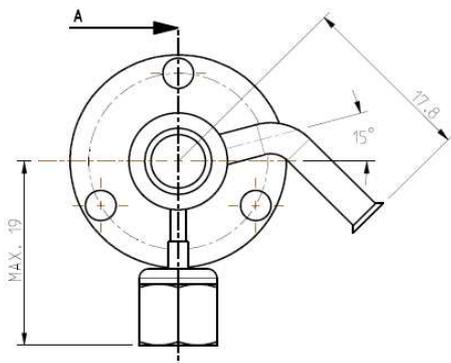
Nitrogen

### The gas supply

must be of high quality.  
(according to DEF STAN 58-96/3)

Meets Environmental Conditions per MIL-STD-810D

### Dimensions:



The JTRB series automatically matches its cooling power to the varying applied demand.

It is optimized for stable regulation with N2

The minicooler operates under military, aircraft and missile environments at ambient temperatures between **-40 °C and +70 °C**

The allowed ambient temperature for transport and/or storage is **-50/+80°C**.

Normal working pressure up to **420 bars (6000psi)**.

The minimum working pressure is between **60bar (@RT) and 140 bar (@High T)**.

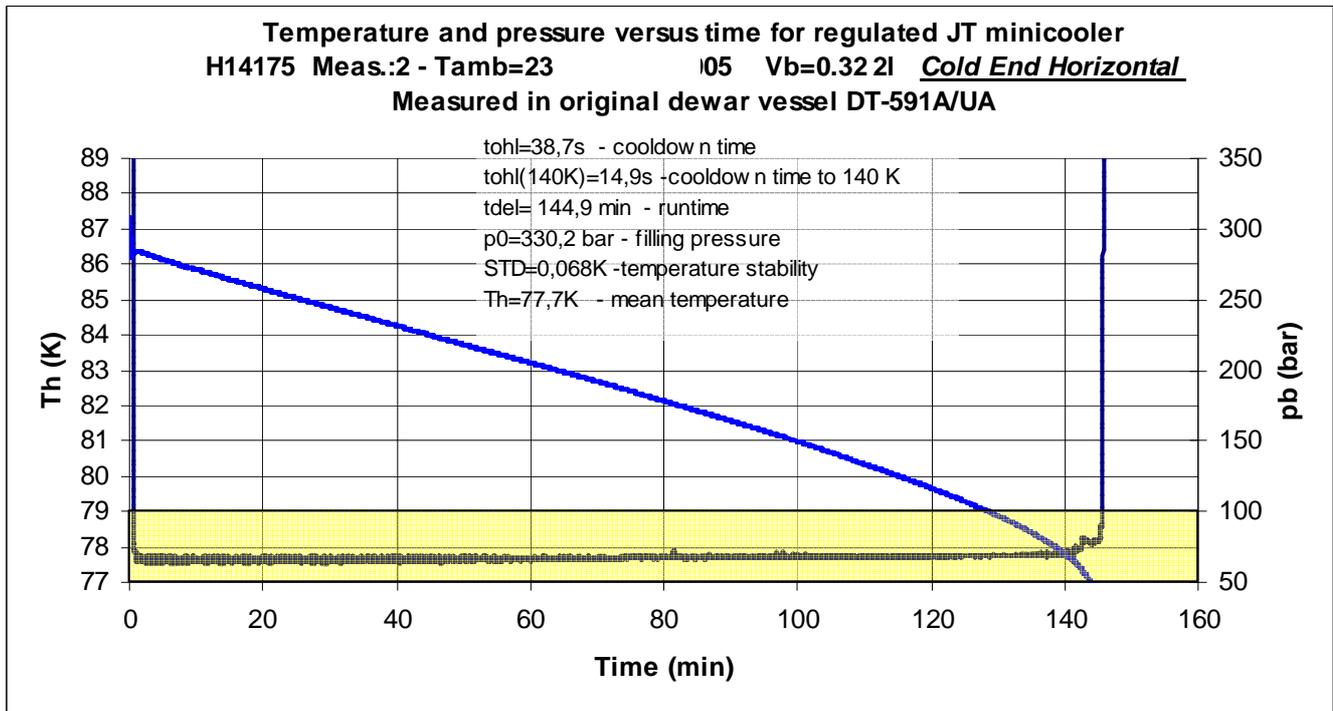
Average cooling power during cool down between **5W and 10W, Mass: 17gr**

This type of JT cooler is designed for long runtime (duration – few hours).

## PERFORMANCE SPECIFICATIONS

(for an ambient temperature of 23 °C)

Typical performance measurement of Self Regulated Joule Thomson minicooler Type JTRB518L67 in dewar cell, type DT-591A/UA. (US common module) with the bottle size 0.32 L, filled with N2 to pressure of 335 bar @ 23°C, detector in horizontal orientation.



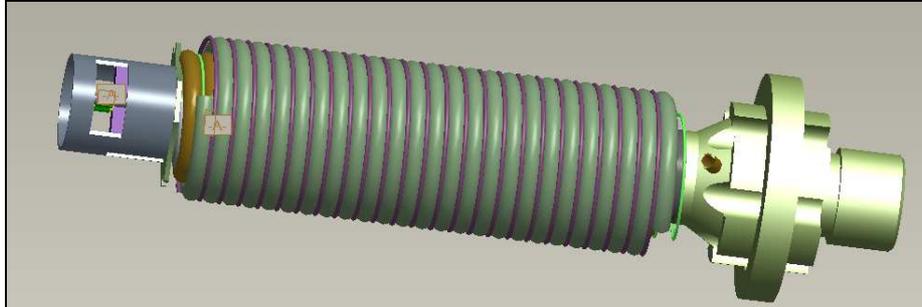
Runtime, cool down time and temperature stability versus time  
 (Blue line- bottle pressure (pb[bar]), black line- Th[K])

Tests	MU	Amb. Temp. (°C)	Pressure (bar)	Nominal Value
Ambient flow	(NI/min)	+21° ±3	207 ±5	8-12
Make time	(sec)	+21 ±3	full bootle	<60
Runtime	(min)	+21 ±3	335 ±5	>140
Cooldown time (140K)	(sec)	+21 ±3	full bootle	<20
Regulated output after 5 minutes operation	(NI/min)	+21 ±3	207 ±5	<0,4

Thermal loss of Dewar @ 80 K less than 120 mW

## SELF REGULATED JOULE THOMSON COOLER 10,3 L43 – BELLOW TYPE

Type: JTRB103L43 Code: K1000 010-001



Reliable  
Bellow type  
Acoustically Silent  
Vibration Free  
Reduced System Weight

The JTRB series automatically matches its cooling power to the varying applied demand.

It is optimized for stable regulation with N<sub>2</sub>

### Cryogenic temperature

**77,5 K ±1K** can be achieved at ambient temperature from -40°C to 71°C at different attitudes

The minicooler operates under military, aircraft and missile environments at ambient temperatures between **-40 °C and +71 °C**

### Operating gas:

Nitrogen

The allowed ambient temperature for transport and/or storage is **-50/+80°C**.

### The gas supply

must be of high quality.  
(according to DEF STAN 58-96/3)  
Meets Environmental Conditions per MIL-STD-810D

Normal working pressure up to **690 bars (10000psi)**.

The minimum working pressure is **between 60bar (@RT) and 140 bar (@High T)**.

Average cooling power during cool down between **10W and 25W**,

**Mass: <15gr**

## Dimensions:

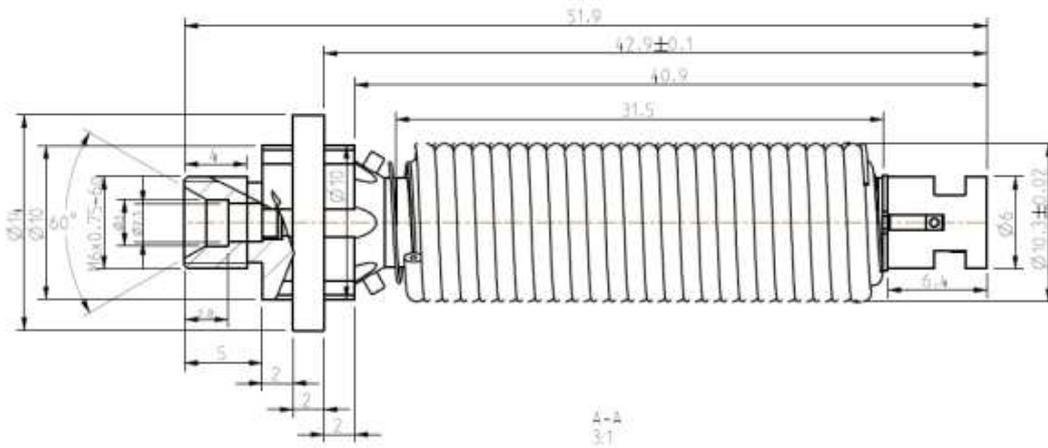


Figure 1. JTRB10L40 M6 , basic dimensions in mm

## PERFORMANCE SPECIFICATIONS

(for an ambient temperature of 23 °C )

Typical performance measurement of Self Regulated Joule Thomson cooler 10,3 L43

Type: JTRB103L43 in suitable dewar cell with the bottle size 0.7 L, filled with N<sub>2</sub> to pressure of 486 bar @ 21°C, detector in horizontal orientation.

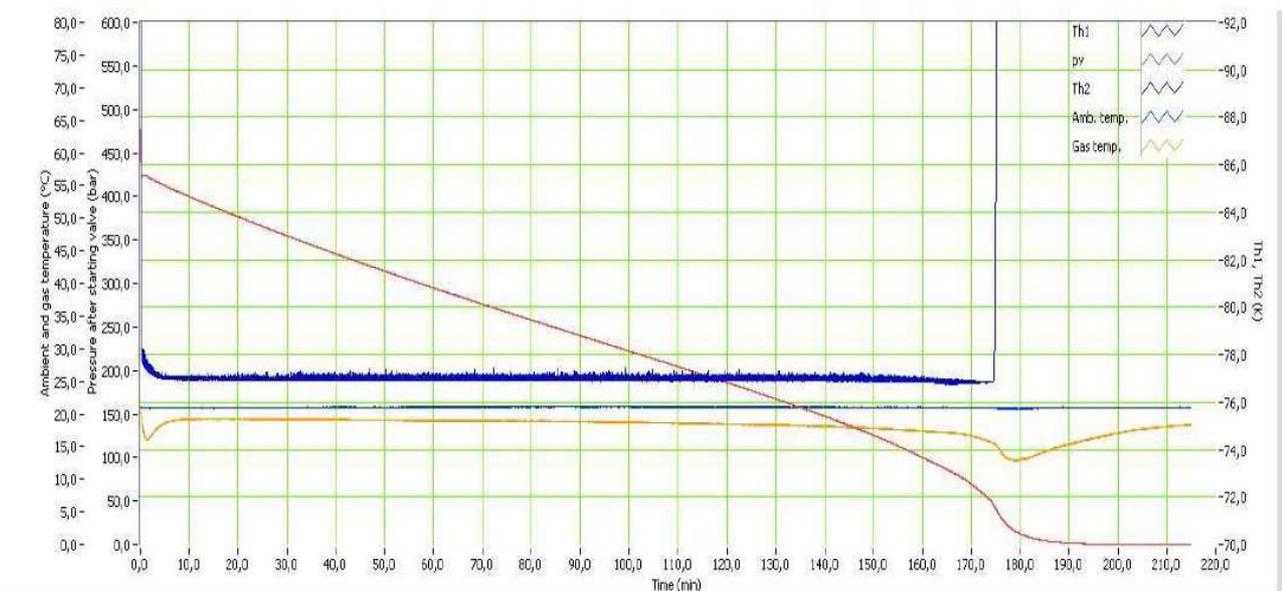
## Temperature and pressure versus time for regulated JT minicooler

Measurement No.:3  
Cooler's SN.:014  
Test dewar: MFR S-7069  
Orientation:DOWN  
Pressure transd.:M-171

p0=486,2bar  
Tamb= 21,0°C

cooling time(79,6 K)=9,8 s  
cooling time(90,0 K)=8,0 s  
Th after 1 min= 78,0 K  
Tss= 77,01 K  
STD= 0,094 K  
runtime= 174,7 min  
Th max = 77,8 K  
Th min = 76,8 K

Comments:  
Final ATP test  
V=0,7l; Ph=50mW;  
Test dewar: 3  
Data logging:Cryostat SCD v1\_ang\_PXI v1.02.vi  
Measured by: Toporiš  
Th used for calculations: 1



Runtime, cool down time and temperature stability versus time  
(Viol. line- bottle pressure (pb[bar]), blue line– Th[K])

## Self Regulated Joule Thomson Cooler 10,3 L43K – bellow type

Type: JTRB103L43K

Code: K1000 010-001



- Reliable
- Bellow type
- Acoustically Silent
- Vibration Free
- Reduced System Weight

### Cryogenic temperature

**77,5 K**  $\pm 1K$  can be achieved at ambient temperature from  $-40^{\circ}C$  to  $71^{\circ}C$  at different attitudes

### Operating gas:

Nitrogen

### The gas supply

must be of high quality.  
(according to DEF STAN 58-96/3)  
Meets Environmental Conditions per MIL-STD-810D

### Main technical characteristics:

- The JTRB series automatically matches its cooling power to the varying applied demand.
- It is optimized for stabile regulation with N2
- The minicooler operates under military, aircraft and missile environments at ambient temperatures between  $-40^{\circ}C$  and  $+71^{\circ}C$
- The allowed ambient temperature for transport and/or storage is  $-50/+80^{\circ}C$ .
- Normal working pressure up to 690 bar (10000psi).
- The minimum working pressure is between 60bar (@RT) and 140 bar (@High T).
- Average cooling power during cool down between 10W and 25W
- Mass: <15gr

### Dimensions:

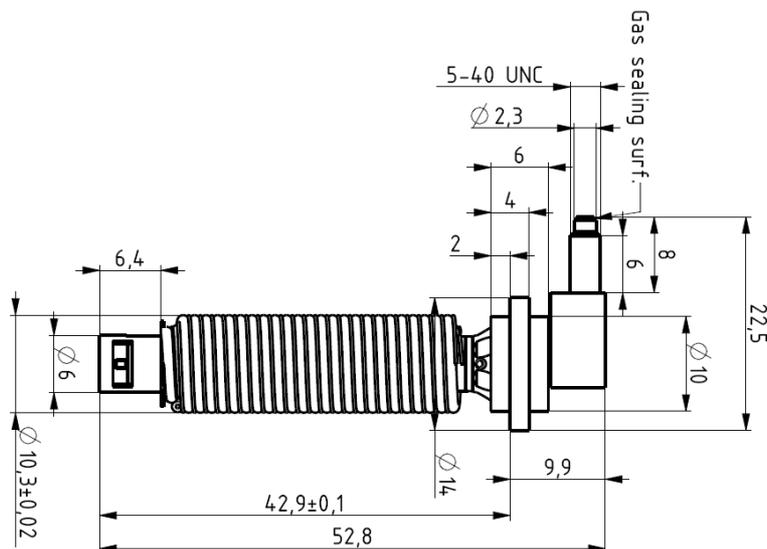


Figure 1. JTRB10L40 M6 , basic dimensions in mm

## PERFORMANCE SPECIFICATIONS

(for an ambient temperature of 23 °C)

Typical performance measurement of Self Regulated Joule Thomson cooler 10,3 L43

Type: JTRB103L43K in suitable dewar cell with the bottle size 0.7 L, filled with N2 to pressure of 486 bar @ 21°C, detector in horizontal orientation.

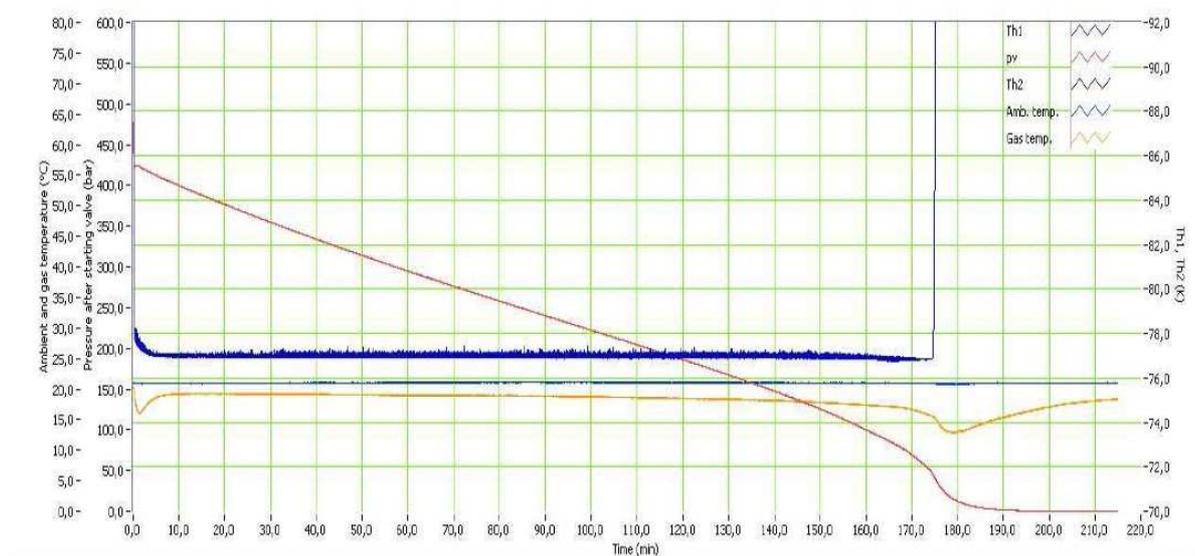
### Temperature and pressure versus time for regulated JT minicooler

Measurement No.:3  
Cooler's SN :014  
Test dewar: MFR S-7069  
Orientation:DOWN  
Pressure transd.:M-171

p0=486,2bar  
Tamb= 21,0°C

cooling time(79,6 K)=9,8 s  
cooling time(90,0 K)=8,0 s  
Th after 1 min= 78,0 K  
Tss= 77,01 K  
STD= 0,094 K  
runtime= 174,7 min  
Th max = 77,8 K  
Th min = 76,8 K

Comments:  
Final ATP test  
V=0,7l; Ph=50mW;  
Test dewar: 3  
Data logging:Cryostat SCD v1\_ang\_PXI v1.02.vi  
Measured by: Toporiš  
Th used for calculations: 1



Runtime, cool down time and temperature stability versus time  
(Viol. line- bottle pressure (pb[bar]), blue line- Th[K])

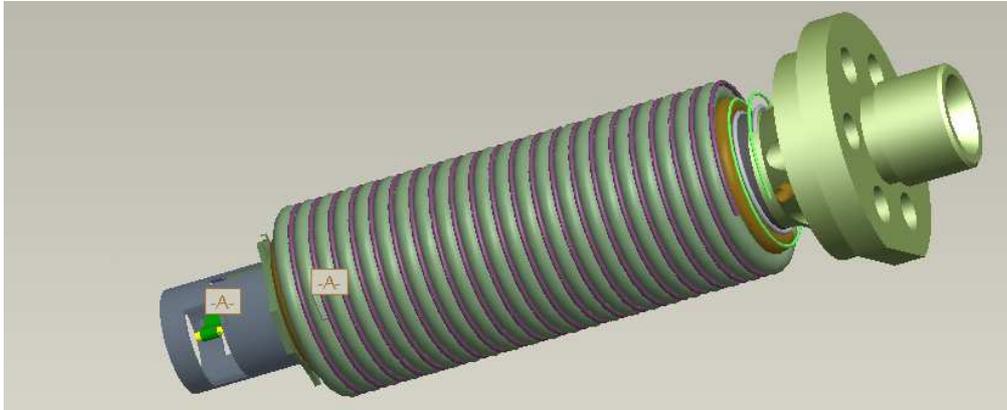
Further Technical Information is available on request.

Specifications are subject to change without notice

## Self Regulated Joule Thomson Cooler 11,2 L40 – bellow type

Type: JTRB112L40

Code: K1000 022-001



- Reliable
- Bellow type
- Acoustically Silent
- Vibration Free
- Reduced System Weight

### Cryogenic temperature

**78,3 K**  $\pm 1K$  can be achieved at ambient temperature from  $-40^{\circ}C$  to  $71^{\circ}C$  at different attitudes

### Operating gas:

Nitrogen

### The gas supply

must be of high quality.  
(according to DEF STAN 58-96/3)  
Meets Environmental Conditions per MIL-STD-810D

### Main technical characteristics:

- The JTRB series automatically matches its cooling power to the varying applied demand.
- It is optimized for stable regulation with **Nitrogen**
- The minicooler operates under military, aircraft and missile environments at ambient temperatures between  $-40^{\circ}C$  and  $+71^{\circ}C$
- The allowed ambient temperature for transport and/or storage is  $-50/+80^{\circ}C$ .
- Normal working pressure up to 690 bar (10000psi).
- The minimum working pressure is between 60bar (@RT) and 140 bar (@High T).
- Average cooling power during cool down between 80W and 100W depend on configuration
- Mass: <15gr

### Dimensions:

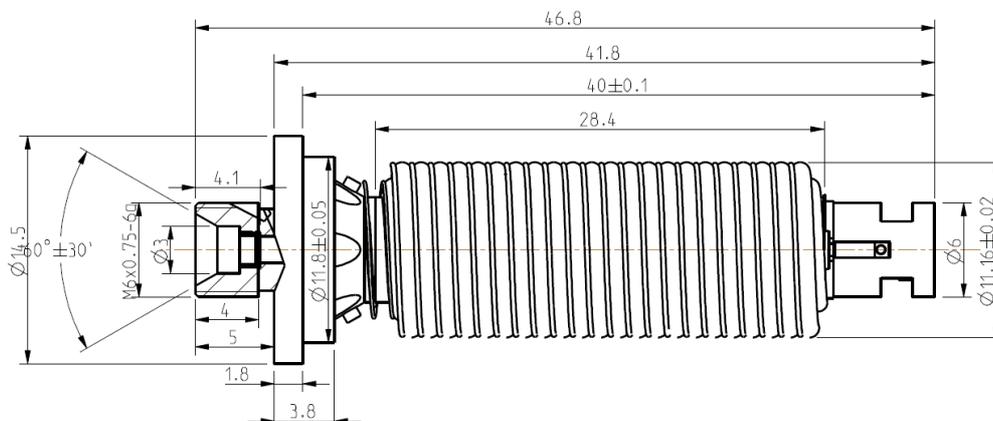


Figure 1. JTRB112L40 M6, basic dimensions in mm

Further Technical Information is available on request.  
Specifications are subject to change without notice