

DC MOTOR FAN DRIVEN PRODUCTS

HEAT EXCHANGERS

S & SBV SERIES



2000K & KBV SERIES



HPV SERIES I

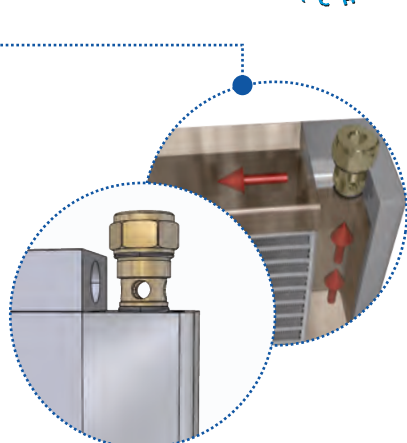


HPH SERIES I



HEAT-EXCHANGERS

EMMEGI Heat Exchanger Features



Built-in Bypass Valve



Heavy Duty Construction



Oil Connections

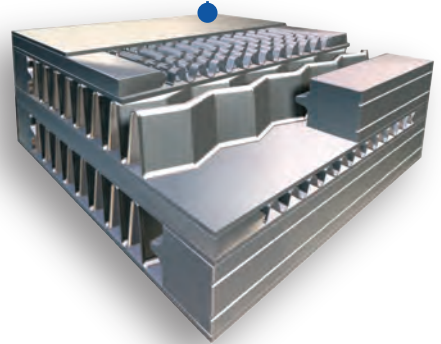
EMMEGI oil coolers are stocked with BSP Parallel thread oil connections. This allows us to draw inventory from our other Worldwide locations as needed. Product shipped from our US facility include SAE J514 37° flare adaptors. Both straight and 90° fittings are standard. A wide selection of optional types and sizes are available.

Bar & Plate Technology

Aluminum Bar & Plate construction is the most advanced heavy duty technology available today. This design has several significant features:

- > **Compact Performance:** Up to 50% smaller than traditional fin & tube construction.
- > **Rugged Construction:** 1/4" Thick bars protect the fluid channels from damage.
- > **Serviceable:** Bars extend to fin edges allowing high pressure washing.
- > **Non-Louvered Air Fins :** Low fouling (9 Fins / inch).

Ultra-low fouling air fins optional (5 Fins / inch).



S & SBV Series

S Series

No Bypass Valve

SBV Series

With 22 or 44 PSI Bypass Valve

Small to Medium Sizes

Single and Double Fan Configurations Available



2000K & KBV Series

2000K Series

No Bypass Valve

2000KBV Series

With 22 or 44 PSI Bypass Valve

Small to Medium Sizes

Single and Double Fan Configurations Available



HPH & HPV Series

HPV Series I

Vertical Mounting



Largest Sizes
Available from Stock
22 or 44 PSI Bypass
Valve Standard

HPH Series I

Horizontal Mounting



Standard Motor Features

> High quality, long life, sealed DC motors
> 12V and 24V motors available

> Metri-Pack wiring connections standard
> Mating Metri-Pack electrical connector provided

Optional Temperature Fan Controls



XT 51
(Adjustable)



TM4 P1
(Weatherpack
connector)



TMR4
(Integral relay)



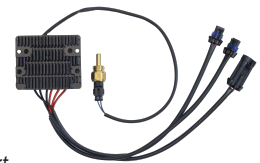
TM4 A1
(DIN connector)



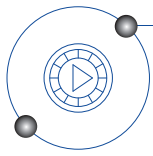
TMS4
(Soft start)



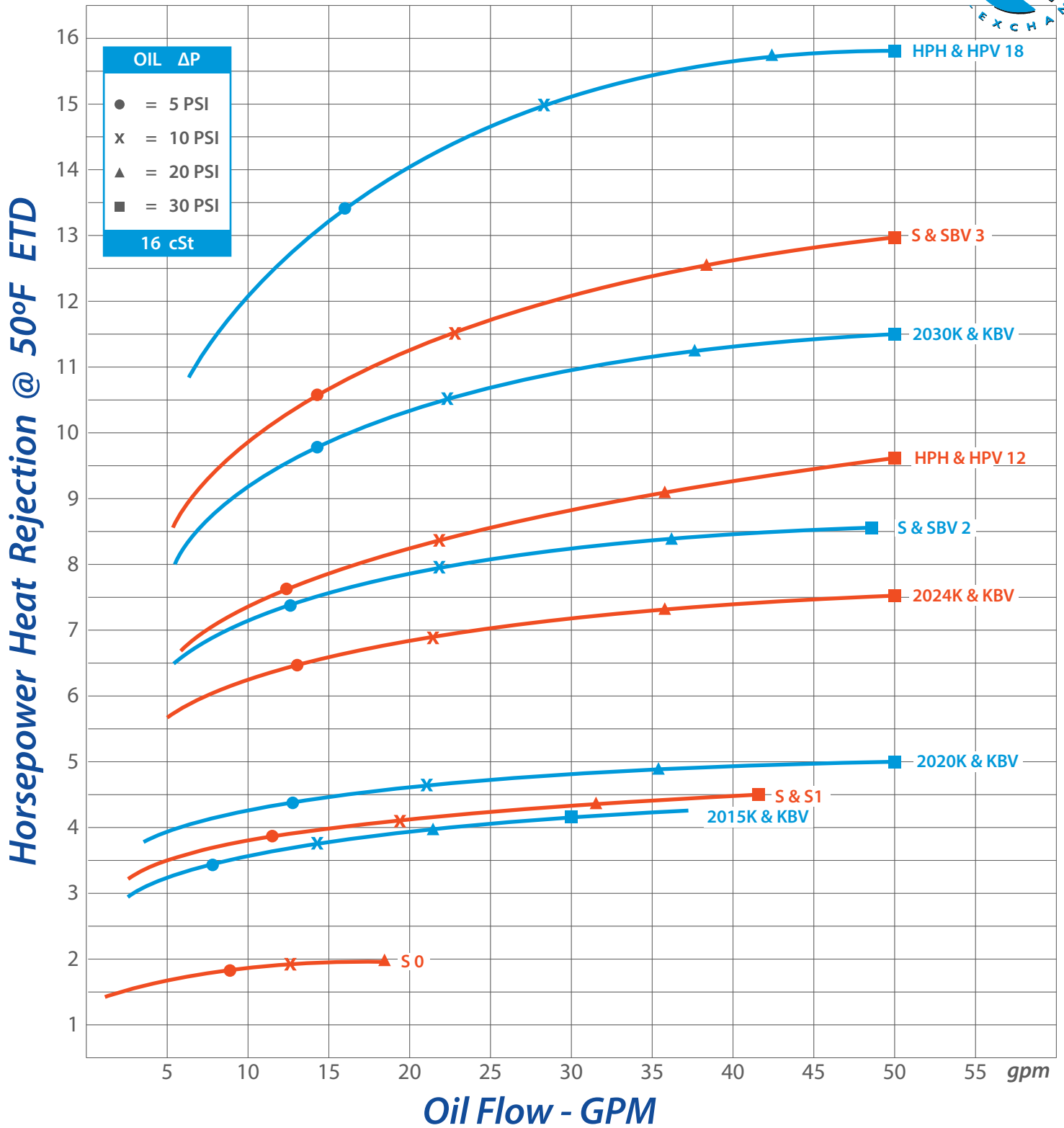
TCS
(Single-fan, soft start,
variable speed,
reversing air flow)



TCS2X
(Two-fan, soft start,
variable speed,
reversing air flow)

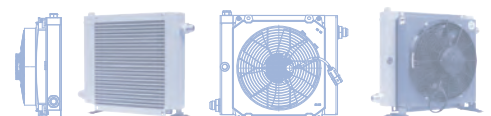


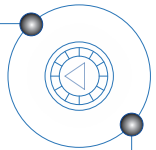
DC Performance Data - S & SBV, 2000K & KBV, HPH & HPV



Entering Temperature Difference

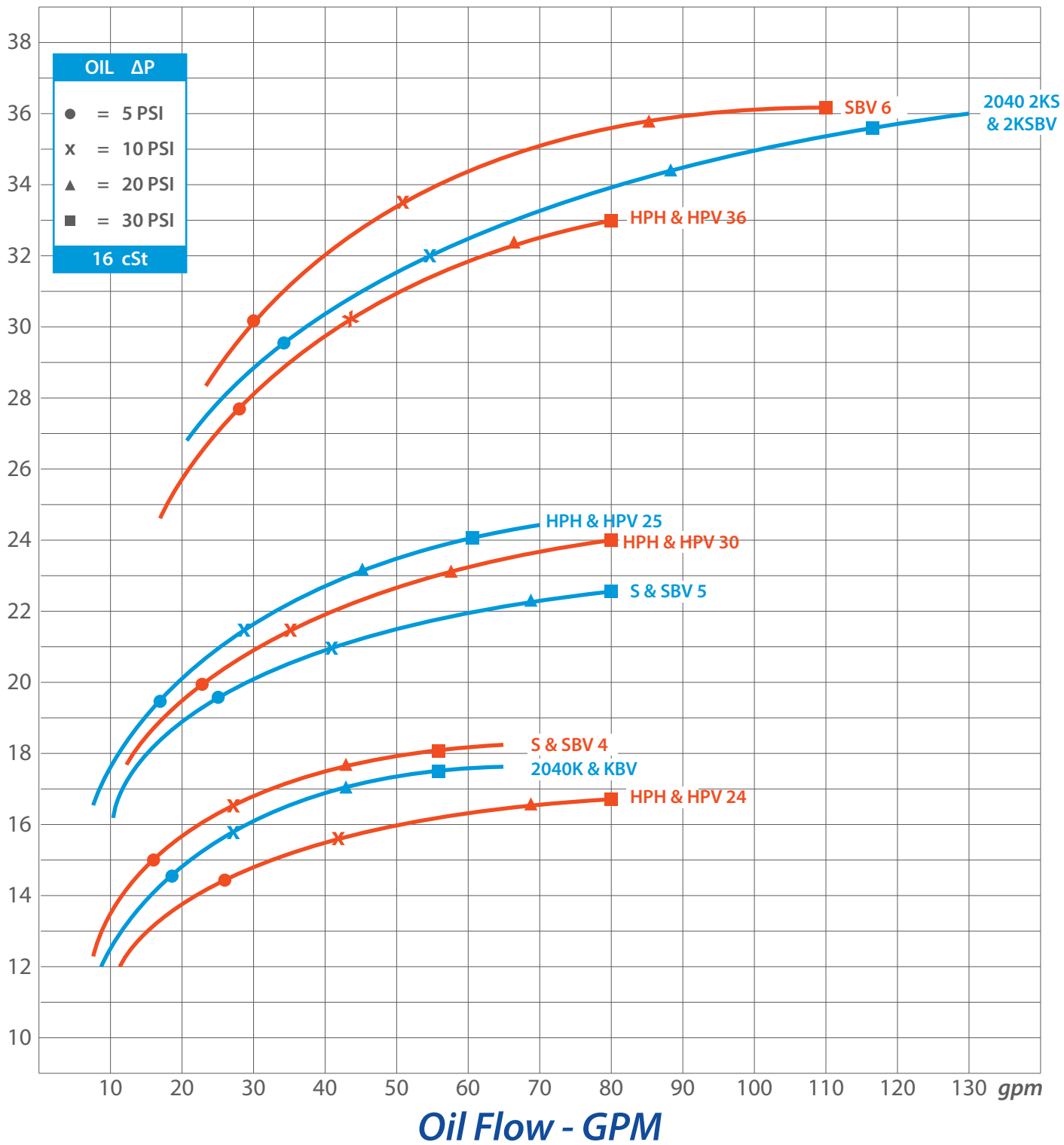
$$ETD \text{ } ^\circ\text{F} = \text{Oil Inlet Temperature } ^\circ\text{F} - \text{Air Entering Temperature } ^\circ\text{F}$$





Horsepower Heat Rejection @ 50°F ETD

HEAT-EXCHANGERS

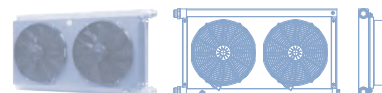


Correcting Heat Removal for Cooler Selection from Curve

$$\text{Horsepower Heat Load} \times \frac{50^\circ\text{F}}{\text{Desired ETD } ^\circ\text{F}} = \text{Corrected Horsepower Heat Removal for Curve Selection}$$

Correcting Curve to Actual Heat Removal

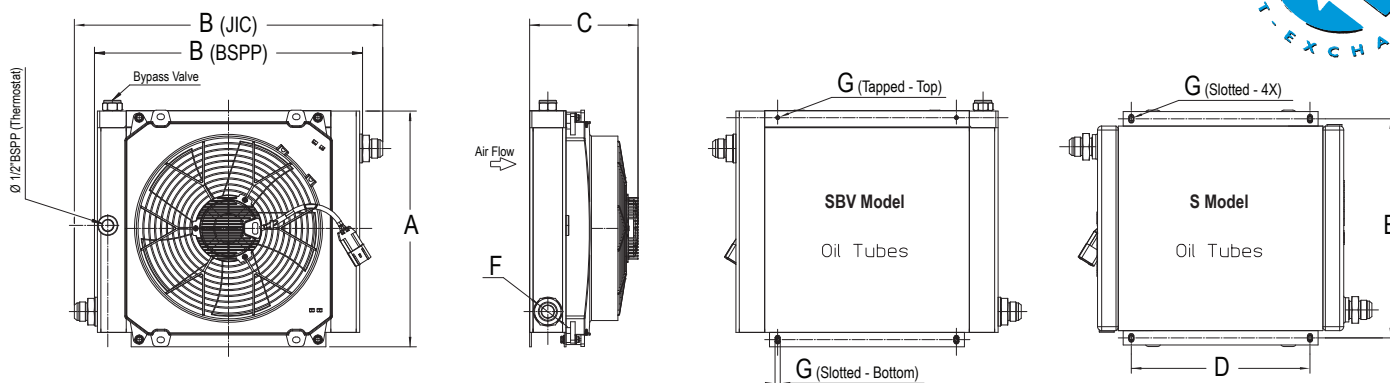
$$\text{Horsepower (FROM CURVE)} \times \frac{\text{Desired ETD } ^\circ\text{F}}{50^\circ\text{F}} = \text{Corrected Horsepower Heat Removal}$$



S & SBV Series Heat Exchangers

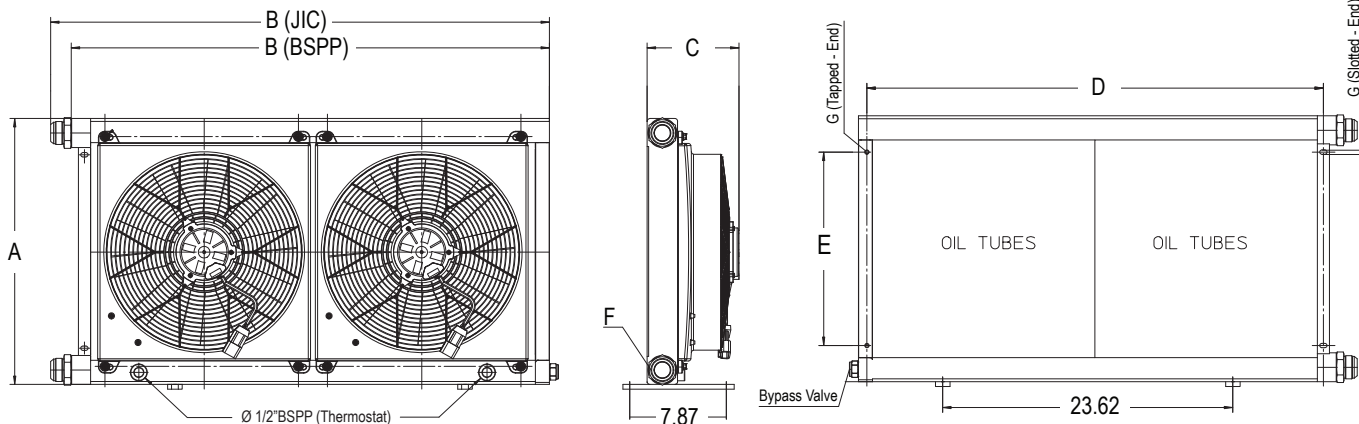
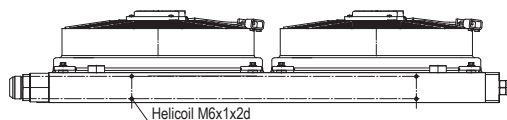


HEAT-EXCHANGERS



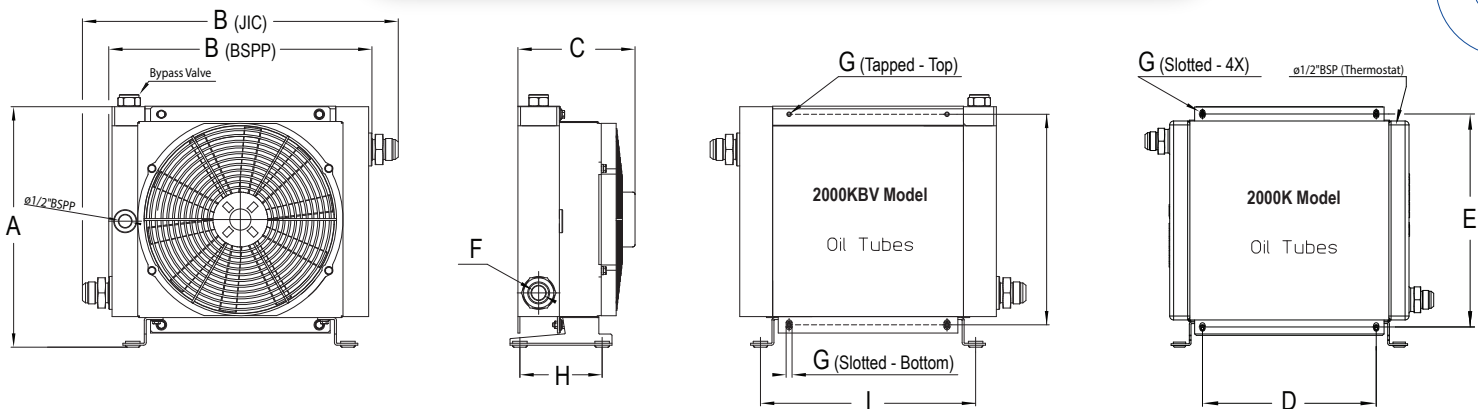
MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS				MOUNTING		CONNECTIONS		G		NET WEIGHT LBS
				A	B		C	D	E		F		S	
					BSPP	JIC			S	SBV	BSPP	JIC		
S 0	12 DC	4.5	(inch)	8.27	7.16	9.28	3.83	7.75	3.94		0.5" Internal	# 8 External	0.35 x .59 (4) Slotted holes	7
	24 DC	2.3	(mm)	210	182	236	97	197	100					13
S 1	12 DC	7.5	(inch)	9.56	12.16	15.31	5.79	5.91	8.78		1" Internal	# 16 External	0.35 x .70 (4) Slotted holes	20
	24 DC	3.3	(mm)	243	309	389	147	150	223					27
S & SBV 2	12 DC	7.7	(inch)	13.50	15.74	18.90	5.82	9.44	12.40	12.61	1.25" Internal	# 20 External	0.35 x .59 (2) Slotted holes	43
	24 DC	3.4	(mm)	343	400	480	148	240	315	320				54
S & SBV 3	12 DC	15.6	(inch)	16.20	18.30	21.46	7.40	12.20	14.96	15.15	1.5" Internal	# 24 External	0.35 x .59 (2) Slotted holes	82
	24 DC	7.6	(mm)	411	465	545	188	310	380	385				
S & SBV 4	12 DC	15.2	(inch)	20.29	21.65	25.30	7.40	15.74	19.13	18.97	1.5" Internal	# 24 External	0.35 x .59 (2) Slotted holes	82
	24 DC	8.1	(mm)	515	550	643	188	400	486	482				
S & SBV 5	12 DC	19.0	(inch)	20.27	22.44	26.24	8.62	15.74	19.01	20.27	1.5" Internal	# 24 External	0.35 x .59 (2) Slotted holes	82
	24 DC	9.9	(mm)	515	570	666	219	400	483	515				

* SBV dimensions shown unless otherwise noted. Some S models have slightly smaller overall dimensions.



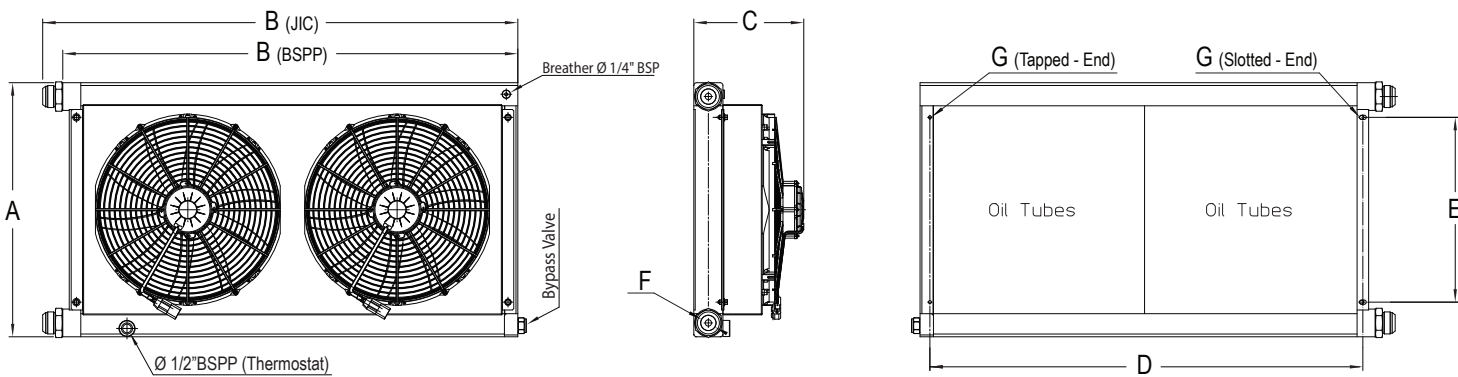
MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS				MOUNTING		CONNECTIONS		G		NET WEIGHT LBS
				A	B		C	D	E		F		S	
					BSPP	JIC			S	SBV	BSPP	JIC		
SBV 6	12 DC	20.8 (x2)	(inch)	21.65	38.93	40.60	7.48	37.17	15.75		1.5" Internal	# 24 External	0.35 x .59 (2) Slotted holes	82
	24 DC	10.4 (x2)	(mm)	550	989	1031	190	944	400					M8 Helicoil (2) Tapped holes

2000K & KBV Series Heat Exchangers



MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS				MOUNTING			CONNECTIONS		G		OPTIONAL MOUNTING FEET		NET WEIGHT LBS						
				A	B		C	D	E		F		K	KBV	H	I							
					BSPP	JIC			K	KBV	BSPP	JIC	K	KBV									
2015K & KBV	12 DC	7.5	(inch)	11.91	12.60	15.36	6.11	7.09	10.04	10.24	1" Internal	# 16 External	0.35 x .59 (4) Slotted Holes	M6 Helicoil (2) Tapped Holes	4.92	10.91	16						
	24 DC	3.8	(mm)	303	320	390	155	180	255	260					125	277							
2020K & KBV	12 DC	7.0	(inch)	11.91	12.60	15.36	6.82	7.09	10.04	10.24				1.25" Internal	# 20 External	0.35 x .59 (2) Slotted Holes	M6 Helicoil (2) Tapped Holes & 0.35 x .59 (2) Slotted Holes	4.92	10.04	18			
	24 DC	3.5	(mm)	303	320	390	173	180	255	260								125	255				
2024K & KBV	12 DC	7.8	(inch)	14.39	14.96	18.11	7.01	9.45	12.41	12.60							1.25" Internal	# 20 External	0.35 x .59 (2) Slotted Holes	M6 Helicoil (2) Tapped Holes & 0.35 x .59 (2) Slotted Holes	4.92	12.87	25
	24 DC	3.9	(mm)	366	380	460	178	240	315	320											125	327	
2030K & KBV	12 DC	12.0	(inch)	16.75	17.52	20.28	8.58	12.21	14.96	15.16	1.25" Internal	# 20 External	0.35 x .59 (2) Slotted Holes							M6 Helicoil (2) Tapped Holes & 0.35 x .59 (2) Slotted Holes	4.92	15.43	34
	24 DC	6.0	(mm)	425	445	515	218	310	380	385											125	392	
2040K & KBV	12 DC	19.5	(inch)	20.70	21.25	24.41	9.21	15.75	19.13	18.98				1.25" Internal	# 20 External	0.35 x .59 (2) Slotted Holes				M6 Helicoil (2) Tapped Holes & 0.35 x .59 (2) Slotted Holes	4.92	19.17	48
	24 DC	9.8	(mm)	526	540	620	234	400	486	482											125	487	

* 2000KBV dimensions shown unless otherwise noted. Some 2000K models have slightly smaller overall dimensions.

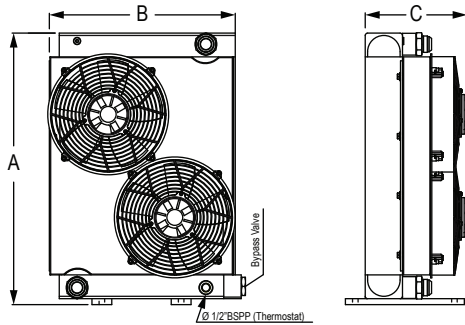


MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS				MOUNTING			CONNECTIONS		G		OPTIONAL MOUNTING FEET		NET WEIGHT LBS
				A	B		C	D	E		F		K	KBV	H	I	
					BSPP	JIC			K	KBV	BSPP	JIC	K	KBV			
2040 2KS & 2040 2KSBV	12 DC	19.5 (2x)	(inch)	21.65	38.66	40.55	9.37	36.90	15.75	15.75	1.5" Internal	# 24 External	0.35 x .59 (4) Slotted	0.35 x .59 (2) Slotted & M6 Helicoil (2) Tapped	4.92	19.17	93
	24 DC	9.8 (2x)	(mm)	550	982	1030	238	937	400	400					125	487	

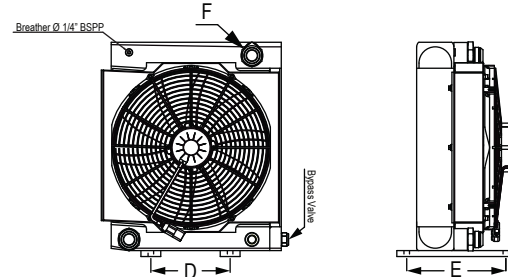
HPH & HPV Series Heat Exchangers



HPV 25 - 36 Models

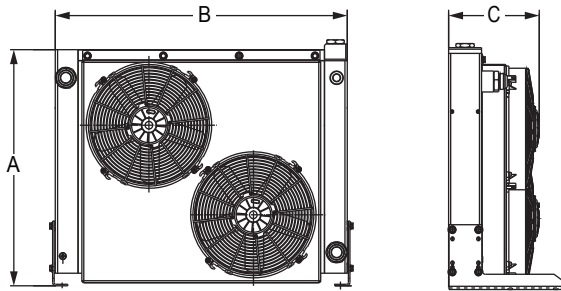


HPV 12 - 24 Model S

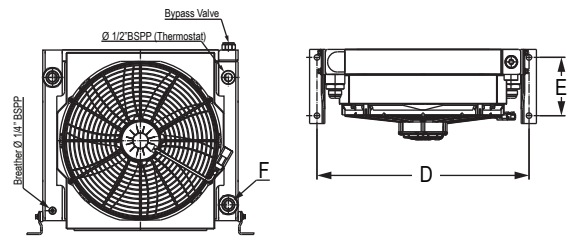


MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS			MOUNTING		CONNECTIONS		NET WEIGHT LBS
				A	B	C	D	E	F		
									BSPP	JIC	
HPV 12	12 DC	12.0	(inch)	15.75	14.21	8.89	5.91	7.87	1" Internal	# 16 External	35
	24 DC	6.0	(mm)	400	361	226	150	200			41
HPV 18	12 DC	19.6	(inch)	20.08	17.88	8.98	7.87	7.87	1.25" Internal	# 20 External	50
	24 DC	9.8	(mm)	510	454	228	200	200			60
HPV 24	12 DC	19.8	(inch)	21.06	17.82	10.20	7.87	9.84	1.25" Internal	# 20 External	72
	24 DC	9.9	(mm)	535	453	259	200	250			112
HPV 25	12 DC	19.2	(inch)	25.98	23.81	9.25	15.74	7.87	1.25" Internal	# 20 External	50
	24 DC	11.2	(mm)	660	605	235	400	200			60
HPV 30	12 DC	19.8	(inch)	26.92	18.48	10.11	7.87	9.84	1.25" Internal	# 20 External	72
	24 DC	9.9	(mm)	684	469	257	200	250			112
HPV 36	12 DC	27.2	(inch)	30.91	24.08	10.20	12.21	9.84	1.25" Internal	# 20 External	50
	24 DC	13.6	(mm)	785	612	259	310	250			60

HPH 25 - 36 Models



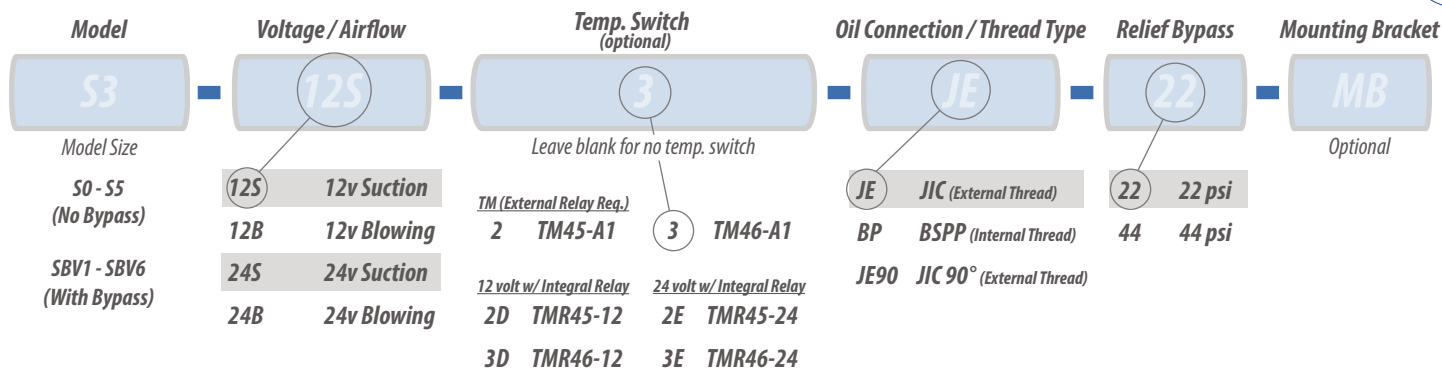
HPH 12 - 24 Model S



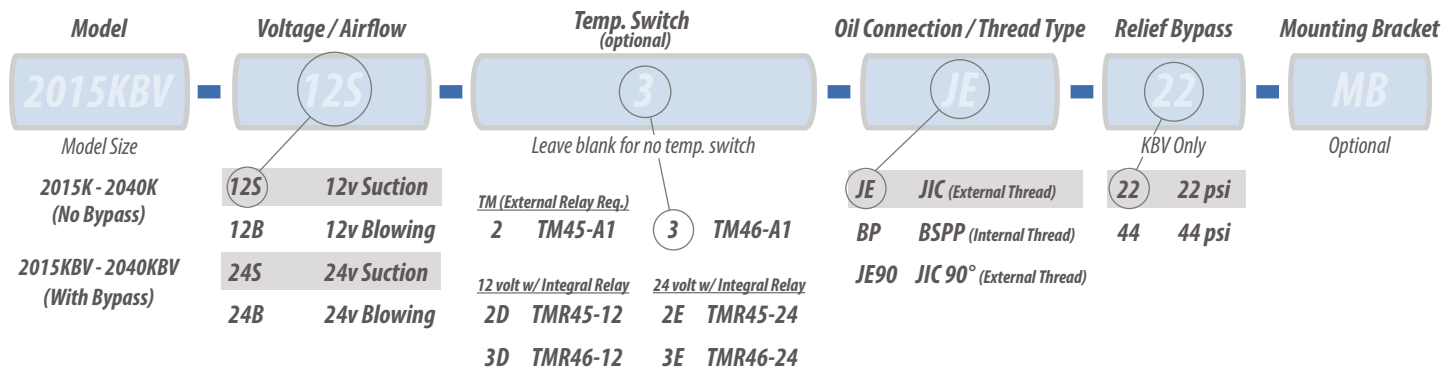
MODEL	VOLTAGE	AMP DRAW	UNIT OF MEASURE	OVERALL DIMENSIONS			MOUNTING		CONNECTIONS		NET WEIGHT LBS
				A	B	C	D	E	F		
									BSPP	JIC	
HPH 12	12 DC	12.0	(inch)	14.58	15.35	8.89	17.03	5.78	1" Internal	# 16 External	35
	24 DC	6.0	(mm)	370	390	226	433	147			41
HPH 18	12 DC	19.6	(inch)	18.30	19.68	9.01	21.36	5.78	1.25" Internal	# 20 External	50
	24 DC	9.8	(mm)	465	500	229	543	147			60
HPH 24	12 DC	19.8	(inch)	19.21	20.47	10.11	19.05	5.11	1.25" Internal	# 20 External	72
	24 DC	9.9	(mm)	488	520	257	484	130			112
HPH 25	12 DC	19.2	(inch)	24.09	25.59	9.25	27.27	5.78	1.25" Internal	# 20 External	50
	24 DC	11.2	(mm)	612	650	235	693	147			60
HPH 30	12 DC	19.8	(inch)	19.42	26.37	10.11	24.96	5.11	1.25" Internal	# 20 External	72
	24 DC	9.9	(mm)	493	670	257	634	130			112
HPH 36	12 DC	27.2	(inch)	24.40	30.31	10.20	28.89	5.11	1.25" Internal	# 20 External	50
	24 DC	13.6	(mm)	620	770	259	734	130			60

HEAT-EXCHANGERS

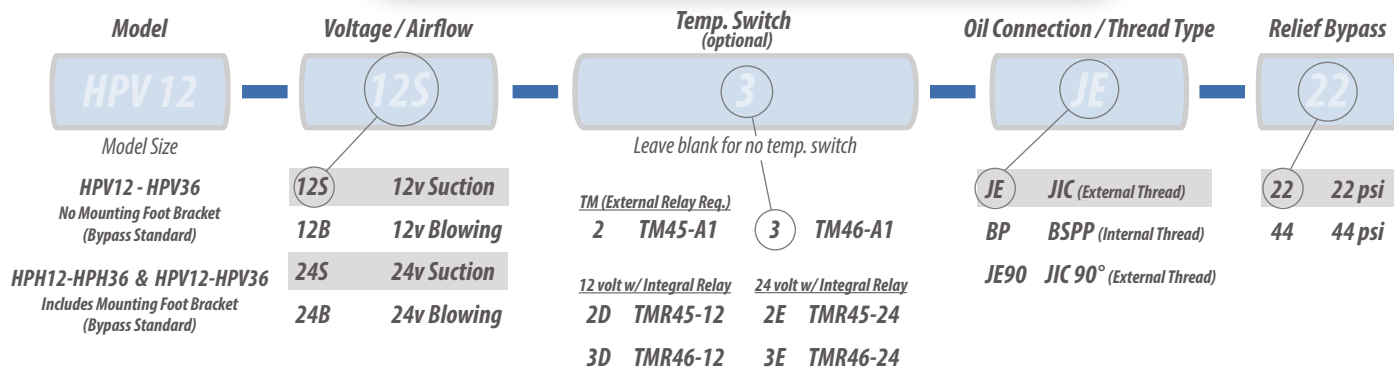
S & SBV Series Ordering Codes



2000K & KBV Series Ordering Code



HPV Series I Ordering Code



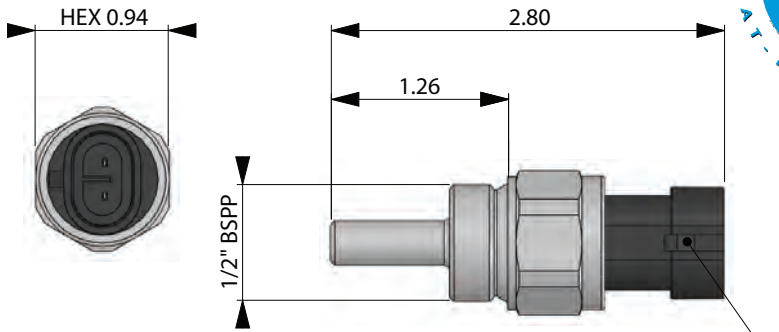
Indicates Standard Selection

TS12-24 Temperature Sensor NTC



Technical Data

Termistor : NTC
Termistor Coverage : Polyamide
Body : Threaded Brass
R (77° F) : 10 kΩ
Protection Level : IP69K
Working Temperature : -40°F to 268°F
β (25/85) : Any Position

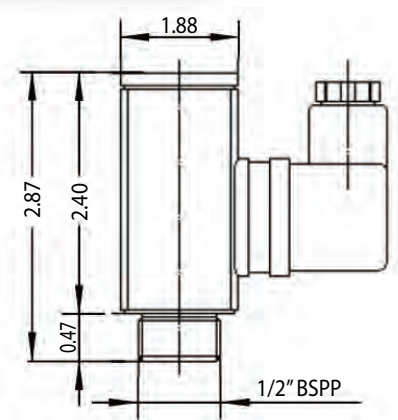
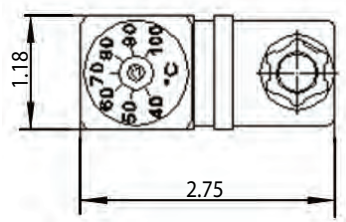


Waterproof connector type AMP SS1.5 (cod.282104-1)

XT51 Adjustable Temperature Switch

Technical Data

Power Supply : 12v - 24v
Temperature Range : 104°F to 194°F
Working temperature : -4°F to 248°F
Maximum Pressure : 1450 PSI
Switching Accuracy : ± 3°F
Body Material : Brass
Mounting : Any Position
Weight : 0.4 lbs



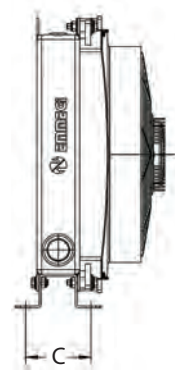
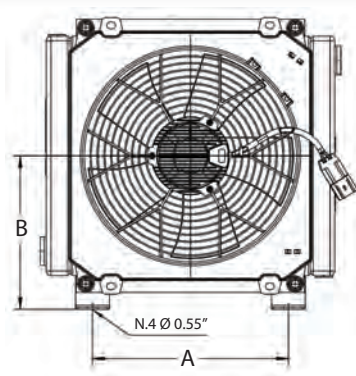
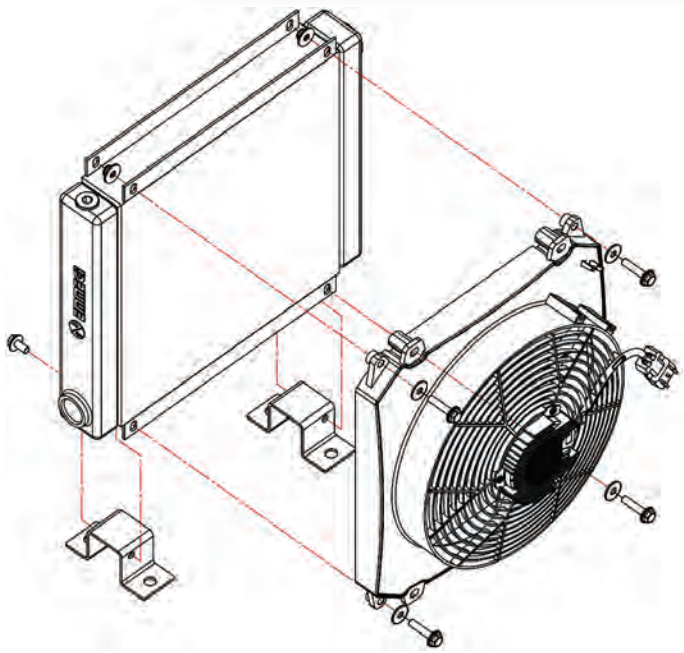
Electrical Data

Electrical Connections : DIN 43650
Electrical Protection : DIN 40050 IP65
Electrical Contact : Normally Open
Maximum Contact Load : 1.4 Amp

Part Number	Temperature Range	Ordering Code (for cooler code)
XT51 - 12	104° - 194°F	9D
XT51 - 24	104° - 194°F	9E

Normally closed switches are available: Consult factory.

S & SBV Mounting Brackets (Optional)



MODEL	Dimensions			Mounting Brackets
	A	B	C	P/N
S & SBV 2	8.66	7.68	3.78	056293A
S & SBV 3	7.48	9.00	3.78	056293A
S & SBV 4	14.96	11.04	3.78	056293A
S & SBV 5	14.96	11.02	5.00	056292A

TM4 - A1 Temperature Control

Bimetallic Monocontact Thermo-Switch Series TM4 - A1

TM4 - A1 Series close on rise when the fluid temperature exceeds the higher set point (turning the fan on) and they re-open at the lower set point (Turning the fan off).

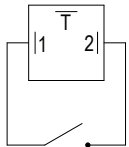
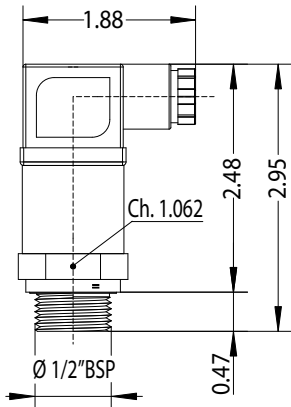
The 22° F hysteresis prevents the fan from over-cycling. The top of the switch may be rotated in 90° increments for ease of wiring.

Technical Data

Power Supply : 12v - 24v - 230v
Working temperature : -4°F to 248°F
Maximum Pressure : 2900 PSI
Switching Accuracy : ± 7°F
Body Material : Brass
Mounting : Any Position
Weight : 02.5 oz

Electrical Data

Electrical Connections : Metripack 280
Electrical Protection : DIN 40050 IP65
Electrical Contact : Normally Open
Maximum Contact Load : 12v 10 Amp
 24v 5 Amp
 115v 10 Amp
 230v 15 Amp



Part Number	Temperature Range	Ordering Code (for cooler code)
TM 44 - A1	104 - 82°F	1
TM 45 - A1	122 - 100°F	2
TM 46 - A1	140 - 118°F	3
TM 47 - A1	158 - 136°F	4
TM 48 - A1	176 - 154°F	5
TM 49 - A1	194 - 172°F	6

Normally closed switches are available: Consult factory.

TM4 - P1 Pre-Wired Temperature Switch

Bimetallic Monocontact Thermo-Switch Series TM4 - P1

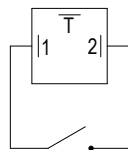
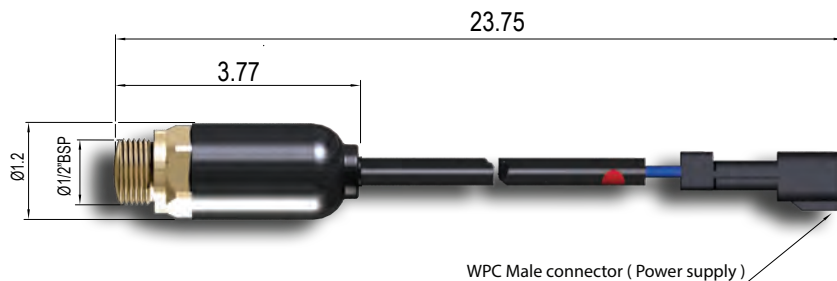
The TM4 - P1 series allows the closing of an electrical contact when the fluid temperature exceeds the set-point value of the thermostatic switch.

Technical Data

Power Supply : 12v - 24v
Working temperature : -4°F to 248°F
Maximum Pressure : 2900 PSI
Fixed Hysteresis Value : About 22°F
Switching Accuracy : ± 7°F
Power Supply Cord Length : 23.75"
Body Material : Brass
Mounting : Any Position
Weight : 2.8 oz

Electrical Data

Electrical Connections : Metripack 280
Positive : (A) Brown Wire
Negative : (B) Blue Wire
Electrical Protection : IP 67
Electrical Contact : Normally Open
Maximum Contact Load : 12v - 24v 8 Amp



Part Number	Temperature Range	Ordering Code (for cooler code)
TM45 - P1	122°F - 100°F	2B
TM46 - P1	140°F - 118°F	3B

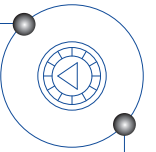
Other Temperature settings Available. Consult Factory

TCS Single-Fan Temperature Controller

▶ **Soft Start**

▶ **Variable Speed**

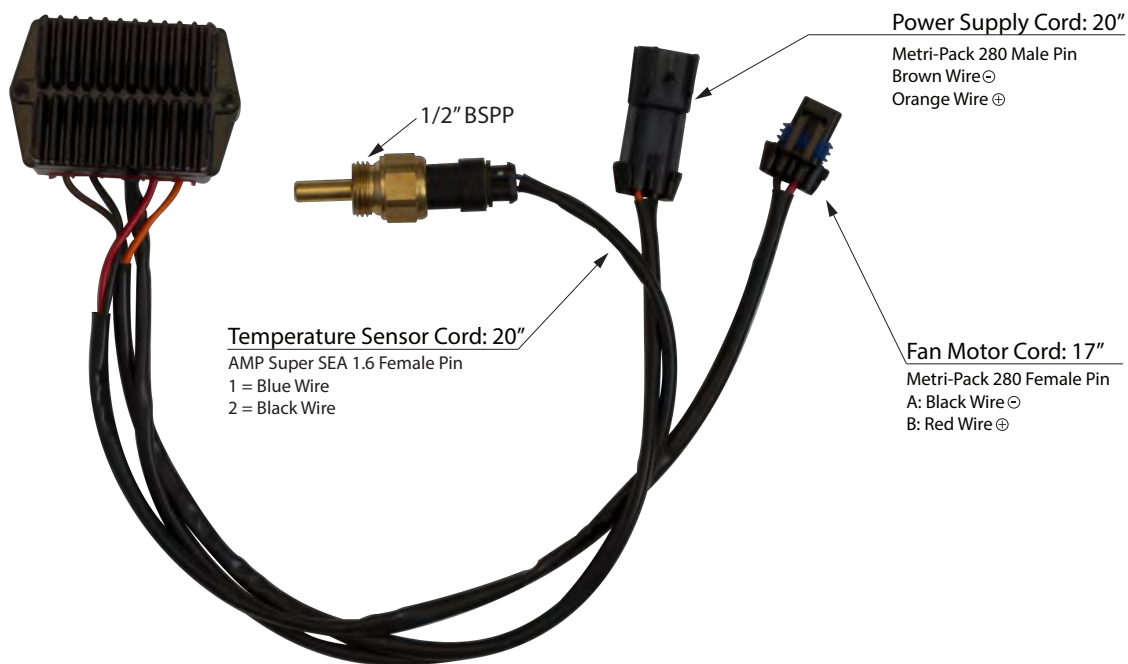
▶ **Reversing Air Flow**



The TCS Temperature Controller incorporates soft start, variable speed, and automatic fan reversing features into a plug-and-play package pre-wired for connection to fan motors.

Operation Features:

- > Controls fans to operate at variable speed between 104°F and 140°F
- > Soft-start reduces in-rush amp draw to max. 10% over operating current
- > SVR feature reverses fan air flow 3x per hour to blow out debris
- > 10,000 hour life at 185°F operating temp. to over 40,000 hours depending on conditions
- > Protected against reversed polarity to the power supply line
- > Mating Metri-Pack connector included



Electrical Data

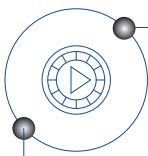
Electrical Protection : IP67
Electrical Contact : Normally Open
Approvals : CE
Maximum Contact Load : 25 Amp

Technical Data

Power Supply : 12v - 24v
Working temperature : -4°F to 185°F
Maximum Pressure : 2900 PSI
Switching Accuracy : ± 3.6°F
Body Material : Anodized Aluminium
Mounting Holes: 2x 0.21"
Mounting : Any Position
Weight : 0.55 lbs
Box Size: 3.39 x 2.20 x 1.38

Assembly Part Number	Description
TCS-104-140-SV	12V & 24V soft start with variable speed from 104°F to 140°F
TCS-104-140-SVR	12V & 24V soft start with variable speed from 104°F to 140°F with fan reversing
Component Part Number	Description
TC-104-140-SV	Controller Only
TC-104-140-SVR	Controller Only
TCS12-24	1/2" BSPP temperature sensor used with all controllers
TCS Connector	Incoming power and ground electrical connector for TCS controllers

HEAT-EXCHANGERS



TCS2X Two-Fan Temperature Controller



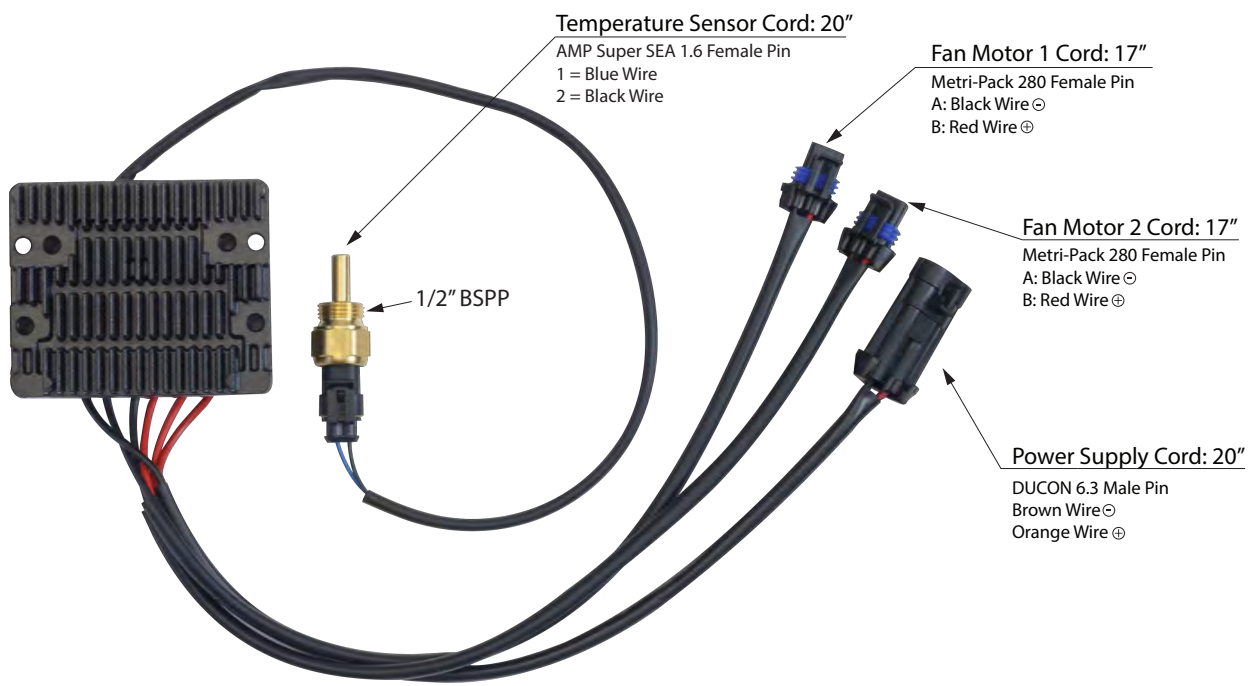
▶ **Soft Start**

▶ **Variable Speed**

The TCS Temperature Controller incorporates soft start, variable speed features into a plug-and-play package pre-wired for connection to fan motors.

Operation Features:

- > Controls fans to operate at variable speed between 104°F and 140°F
- > Soft-start reduces in-rush amp draw to max. 10% over operating current
- > 10,000 hour life at 185°F operating temp. to over 40,000 hours depending on conditions
- > Protected against reversed polarity to the power supply line
- > Mating DUCON connector included



HEAT-EXCHANGERS

Electrical Data

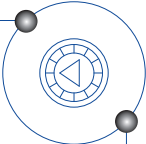
Electrical Protection : IP67
 Electrical Contact : Normally Open
 Approvals : CE
 Maximum Contact Load : 50 Amp (25A / Channel)

Technical Data

Power Supply : 12v - 24v
 Working temperature : -4°F to 185°F
 Maximum Pressure : 2900 PSI
 Switching Accuracy : ± 3.6°F
 Body Material : Anodized Aluminium
 Mounting Holes: 4x 0.26"
 Mounting : Any Position
 Weight : 0.55 lbs
 Box Size: 4.45 x 3.68 x 1.75

Assembly Part Number	Description
TCS2X12-104-140-SV	12V Two-Fan controller soft start with variable speed from 104°F to 140°F
TCS2X24-104-140-SV	24V Two-Fan controller soft start with variable speed from 104°F to 140°F
Component Part Number	Description
TC2X12-104-140-SV	Controller Only
TC2X24-104-140-SV	Controller Only
TCS12-24	1/2" BSPP temperature sensor used with all controllers
TCS Connector	Incoming power and ground electrical connector for TCS2X controllers

Product Lines



AC Fan Driven



2000K & KBV AC Motors
Heat Removals to 16 HP.
Optional Internal Bypass Valve.
Totally Enclosed Motors.
Oil Flows to 50 GPM.



HPV Series I AC Motors
Heat Removals to 70 HP.
Internal Bypass Valve Standard.
Totally Enclosed Motors.
Oil Flows to 100 GPM.



HPV Series II AC Motors
Heat Removals to 265 HP.
Internal Bypass Valve Standard.
Totally Enclosed Motors.
Oil Flows to 350 GPM.

DC Fan Driven



2000K & KBV DC Motors
Heat Removals to 35 HP.
Optional Internal Bypass Valve.
Oil Flows to 125 GPM.



HPV Series DC Motors
Heat Removals to 36 HP.
Internal Bypass Valve Standard.
Oil Flows to 80 GPM.



S & SBV Series DC Motors
Heat Removals to 38 HP.
Optional Internal Bypass Valve.
Oil Flows to 100 GPM.

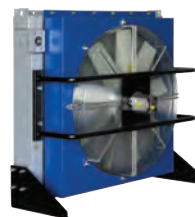
Hydraulic Fan Driven



2000K & KBV Hydraulic Motors
Heat Removals to 30 HP.
Optional Internal Bypass Valve.
Wide range of Hydraulic Motor Displacements available.
Oil Flows to 50 GPM.



HPV Series I Hydraulic Motors
Heat Removals to 130 HP.
Internal Bypass Valve Standard.
Oil Flows to 100 GPM.



HPV Series II Hydraulic Motors
Heat Removals to 300 HP.
Optional Internal Bypass Valve.
Oil Flows to 350 GPM.

Cooling Systems



Silent Evo II
Off-line cooling systems with oil cooler & recirculation.
Pump heat removals to 60 HP.



RID Series
Gearbox cooling systems with oil cooler, recirculation pump & filter
heat removals to 25 HP.



HPA TK
Combination reservoir, oil cooler, & suction filter.
Ideal for closed loop hydrostatic cooling.

Water / Oil



WB Series Water/Oil
Stainless steel Water/Oil Coolers.
Compact water saving design.
Heat Removals to 360 HP.
Oil Flows to 200 GPM.



MG Series Water/Oil
Sea Water duty shell & tube heat exchangers.
Corrosion resistant copper-nickel cooling tubes & bronze end bonnets.



Water Modulating Valves
Control water flow through Water/Oil heat exchangers to maintain desired oil temperatures.
No external input required.

Accessories



AC Temperature Switches
Cycle cooling fan to maintain desired temperatures.
Fixed & adjustable designs available.



DC Temperature Switches
12v & 24v Models.
TMR Switches are prewired & include relay for plug & play operation.



Thermostatic Valves
Modulating valves bypass oil during cold startup.
#8 through #24 sizes available.

