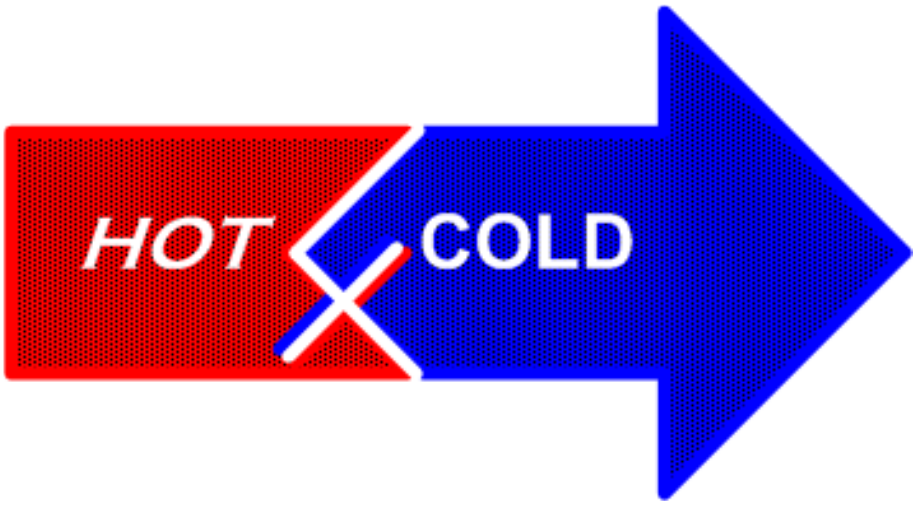
Universal Coolers cc



Product Catalog 2018

Setrab OilCoolers

DAVIES, CRAIG PTY. LTD.

TTP
AN API HEAT TRANSFER COMPANY

NRF

SPAL

SFS PERFORMANCE

K&N PERFORMANCE FILTERS

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Most information in this catalog is also on the website and is updated on a regular basis.

If you do not find what you are looking for in the catalog, please give us a call with your specific requirements.

Please note that not all of the products shown in the catalog are ex-stock, confirm availability before placing an order.

Please note that we reserve the right to make any changes at any time to the product range listed in this catalog.

Index

1. Introduction to Universal Coolers

Universal Coolers was founded in 1999 to supply quality small to medium sized heat exchangers to the market, supported by best-of-breed technical consultancy and support services.

Originally the business focused mainly on oil coolers, but as the business grew in size the range of products expanded. These now include: engine and transmission oil coolers, industrial oil coolers, intercoolers, charge air coolers, aluminium radiators, cooling packs, 12 and 24 V electric cooling fans and electric water pumps. We also sell accessories that complement our range of heat exchange products, for example: sandwich adapters, remote filter mounts, aluminium and stainless steel bends as well as silicone hose, bends and reducers.

We have a fully equipped workshop that enables us to do aluminium and sheet metal manufacturing, which includes but are not limited to complete aluminium oil coolers, intercoolers and radiators, as well as expansion tanks, fuel tanks, surge tanks and boost pipes. We are also able to re-core, repair and test intercoolers, oil coolers and aluminium radiators.

We currently supply the following markets and industries:

- Military vehicle manufacturers
- Earth moving equipment manufacturers
- Light aircraft industry
- Motorsport
- Mining industry
- Transport
- Manufacturing plants
- Processing plants

Product and application is perfectly matched by using our technical experience.
We also perform design integration services where bespoke solutions are required utilizing state of the art 3D parametric CAD software. This enables us to take a project from the initial concept phase to prototypes and finally production.

We have sole distribution agreements for Southern Africa with Setrab Oil Coolers from Sweden, Davies Craig from Australia, NRF from the Netherlands and Thermal Transfer Products from the US.

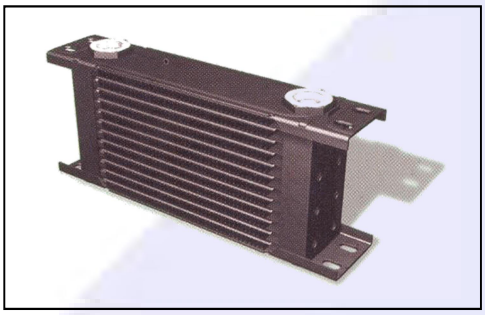
We supply Twin-Swirl oil coolers as an alternative to Hayden oil coolers, used on some earth moving equipment and industrial applications.

Although we concentrate on import and distribution, we have exported to the following countries: UAE, Kenya, Great Britain, United States, China and Switzerland, to name a few.

Some of our clients are: Paramount, Denel Vehicle Systems, DCD Dorbyl, Toyota Motorsport and AAD.

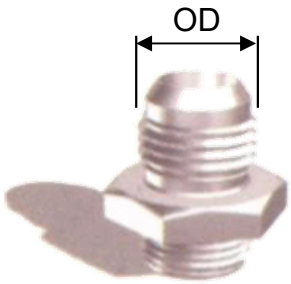
2. Oil coolers

2.1. Setrab ProLine STD Engine & Transmission Oil Coolers



This is the most popular engine oil cooler on the market. Its aluminium construction ensures optimal weight and performance. The ProLine STD range of oil coolers can withstand a dynamic pressure of up to 10 bar. Their four mounting brackets make it easy to mount the cooler in virtually any position. The cooler sizes have been standardized to ensure availability, but other sizes are also available. Custom coolers can be ordered in 9 different lengths ranging from 210 mm to 405 mm and with 7 up to 80 tubes.

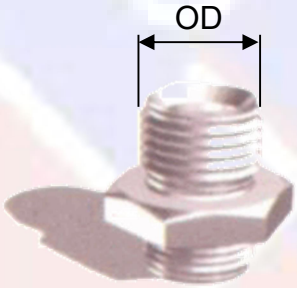
What makes the ProLine STD oil cooler unique is its adapter system: The connections on the cooler are internal M22x1.5 mm thread and adapters are utilized to adapt to the required connections. The following adapters are available:



JIC

-06, -08, -10, -12, -16

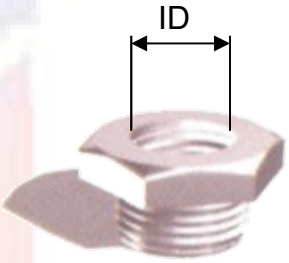
Size	Part no	OD
-06	06PL	14.3
-08	08PL	19.1
-10	10PL	21.9
-12	12PL	26.6
-16	16PL	32.7



BSP

3/8", 1/2", 5/8", 3/4"

Size	Part no	OD
3/8”	3/8PL	16.5
1/2”	1/2PL	20.7
5/8”	5/8PL	22.7
3/4”	3/4PL	26.2



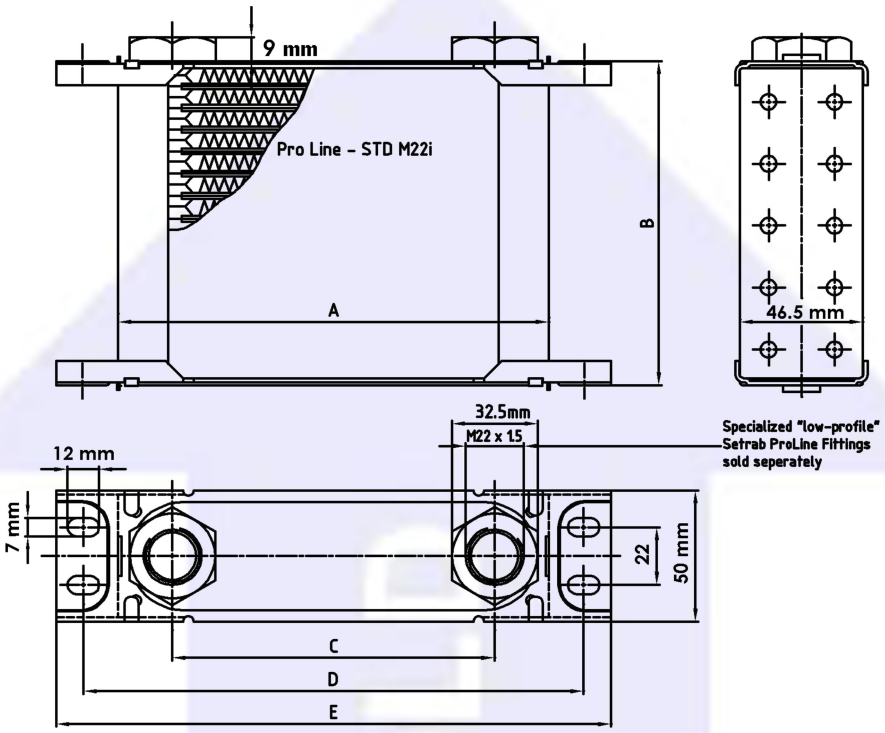
METRIC

M14, M16, M18

Non-stock item

Size	Part no	ID
M14	M14PL	12.6
M16	M16PL	14.6
M18	M18PL	16.5

List of standard sizes Setrab ProLine STD oil coolers:



Part no.	A mm	B mm	C mm	D mm	E mm	Weight kg	Volume liter
110M22I	163	75	122	190	210	0.43	0.10
113M22I	163	99	122	190	210	0.52	0.14
116M22I	163	123	122	190	210	0.61	0.19
119M22I	163	146	122	190	210	0.70	0.21
125M22I	163	193	122	190	210	0.91	0.26
150M22I	163	391	122	190	210	1.70	0.62
172M22I*	163	562	122	190	210	2.40	0.90
607M22I	283	52	242	310	330	0.54	0.14
610M22I	283	75	242	310	330	0.70	0.19
613M22I	283	99	242	310	330	0.86	0.24
616M22I	283	123	242	310	330	1.04	0.28
619M22I	283	146	242	310	330	1.20	0.38
625M22I	283	193	242	310	330	1.54	0.52
634M22I	283	264	242	310	330	2.04	0.71
640M22I	283	310	242	310	330	2.40	0.85
650M22I	283	388	242	310	330	2.95	1.04
910M22I	358	75	317	385	405	0.88	0.24
915M22I	358	115	317	385	405	1.25	0.38
919M22I	358	146	317	385	405	1.54	0.49
925M22I	358	193	317	385	405	1.97	0.71

*** - Used on a Porsche 911 with a RS scoop**

The Setrab ProLine STD oil coolers are also used for transmission oil cooling.
The series 1 and smaller sizes series 6 (7, 10, 13 row) coolers are suitable.

Applications for ProLine STD oil coolers:

Engine oil coolers:	Motor vehicles (standard or modified), racing cars, motorbikes, microlites, quads, etc.
Transmission oil coolers:	Motor vehicles (standard or modified), racing cars, quads, trucks, busses, etc
Diff oil coolers:	Racing cars, trucks and busses
Power steering oil coolers:	Racing cars and off-road vehicles
Fuel coolers:	Racing cars, turbocharged cars, trucks and busses

Engine oil cooler selection chart:

Applicable for water cooled engines.
For racing and turbocharged engines a cooler 1 or 2 sizes larger will be necessary.

Petrol		**610**	**613**	**616**	**619**	**625**	**634**	**640**
4 cyl	1300	X						
	1600	X						
	1800		X					
	2000		X					
	2200		X					
	2400			X				
	2600			X				
	2800			X				
6 cyl	2500			X				
	2800			X				
	3000				X			
	3500				X			
	4100				X			
8 cyl	3500				X			
	4000					X		
	5000					X		
	5700					X		
	6500					X		
Diesel								
4 cyl	2000		X					
	2200		X					
Turbo	2400			X				
Turbo	2500			X				
Turbo	2800				X			
Turbo	3000				X			
6 cyl	3000				X			
8 cyl	5700					X		
	6500						X	

2.2. Setrab ProLine SLM Oil Coolers

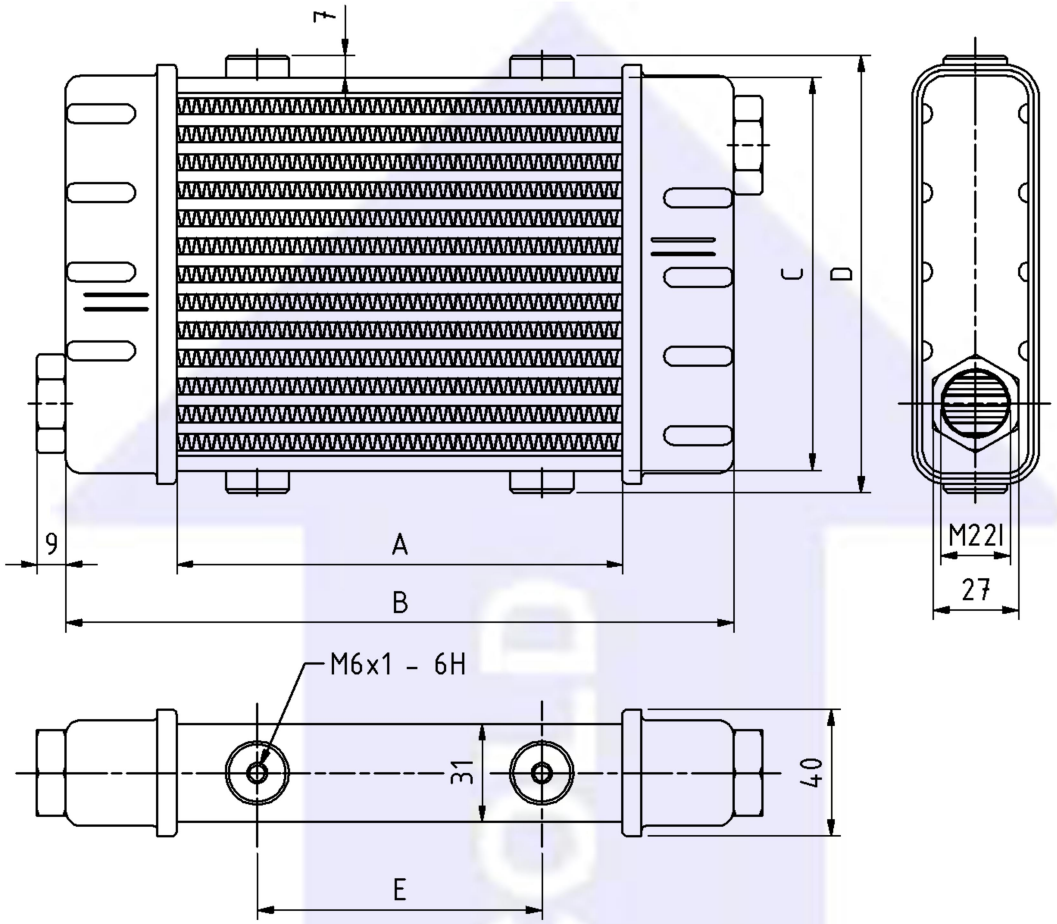
The Setrab SLM range of aluminium oil coolers is ideal for applications with limited space. It's high density tube&fin construction ensures optimal performance from the available space. The SLM range features a unique mounting design that allows for compact, vibration free installations. It can withstand dynamic working pressures of up to 8 bar. The SLM range also utilises the same adapter sytem as the Setrab Pro Line range – see page 2.

The Setrab SLM range is already in use by Quattro, AMG, VW and Norton MC.
The range consists of 4 different core lengths and 3 different heights.

All of the above qualities make the Setrab SLM range a very versatile heat exchanger with many applications.

Applications for Setrab Slimline oil coolers:

Engine oil coolers:	Motor vehicles (standard or modified), racing cars, motorbikes, microlites, quads, etc.
Transmission oil coolers:	Motor vehicles (standard or modified), racing cars, quads, trucks, busses, etc
Diff oil coolers:	Racing cars, trucks and busses
Power steering oil coolers:	Racing cars and off-road vehicles
Fuel coolers:	Racing cars, turbocharged cars, trucks and busses
Water coolers:	Microlites, quads

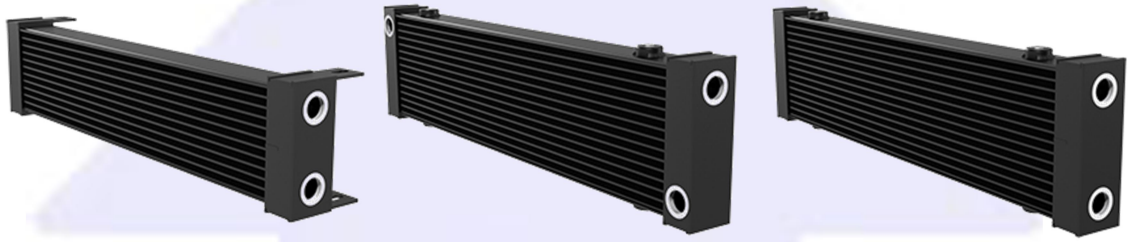


Part no.	A	B	C	D	E
SLM 141-06*	141	204	52	64	90
SLM 141-10*	141	211	88	100	90
SLM 141-14	141	211	124	138	90
SLM 250-06*	250	313	52	64	200
SLM 250-10	250	320	89	103	200
SLM 250-14	250	320	124	138	200
SLM 420-06	420	483	53	67	320
SLM 420-10	420	490	89	103	320
SLM 420-14	420	490	124	138	320
SLM 592-06	592	655	53	67	492
SLM 592-10	592	662	89	103	492
SLM 592-14	592	662	124	138	492

*Two mounting studs on top plate only

2.3. Setrab ProLine COM coolers

The Setrab ProLine COM coolers are hi-performance, heavy duty coolers for demanding conditions with high heat loads.
The COM coolers can withstand working pressures of up to 16 bar and are suitable for automotive and industrial applications.



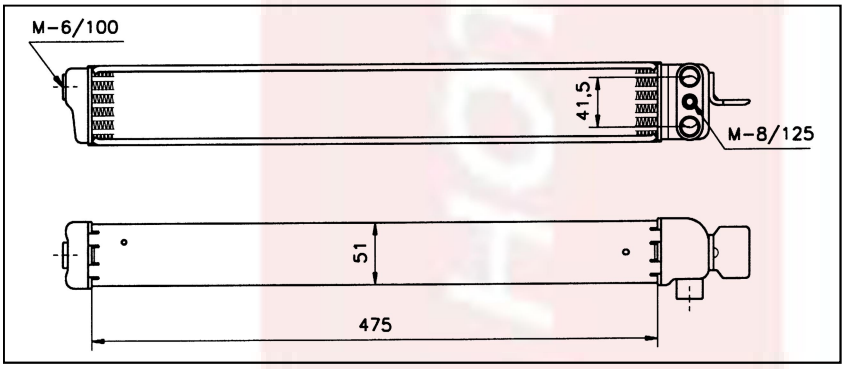
464COMF-15 2P	528COMF-15	528COMF-15 2P
2 pass (U-Flow)	1 pass (I-flow) Optional connection placement.	2 pass (U-flow)

Part no.	Type	Length	Height	Depth	C/C
		Core/Tot.	Core/Tot.	Core/Tot.	M8 studs
52-13141-01	464COMF-12 2P	464 / 532	107 / 121	46 / 50	
52-12864-01	528COMF-15	528 / 596	136 / 148	46 / 50	428
52-12965-01	528COMF-15 2P	528 / 596	136 / 148	46 / 50	428

2.4. OEM engine oil coolers

Part no.	Description	OE number	Core size
31019	BMW E36 M3	17.21.2.244.084	475x67x43
31050	Opel Astra	90194143	190x79x30

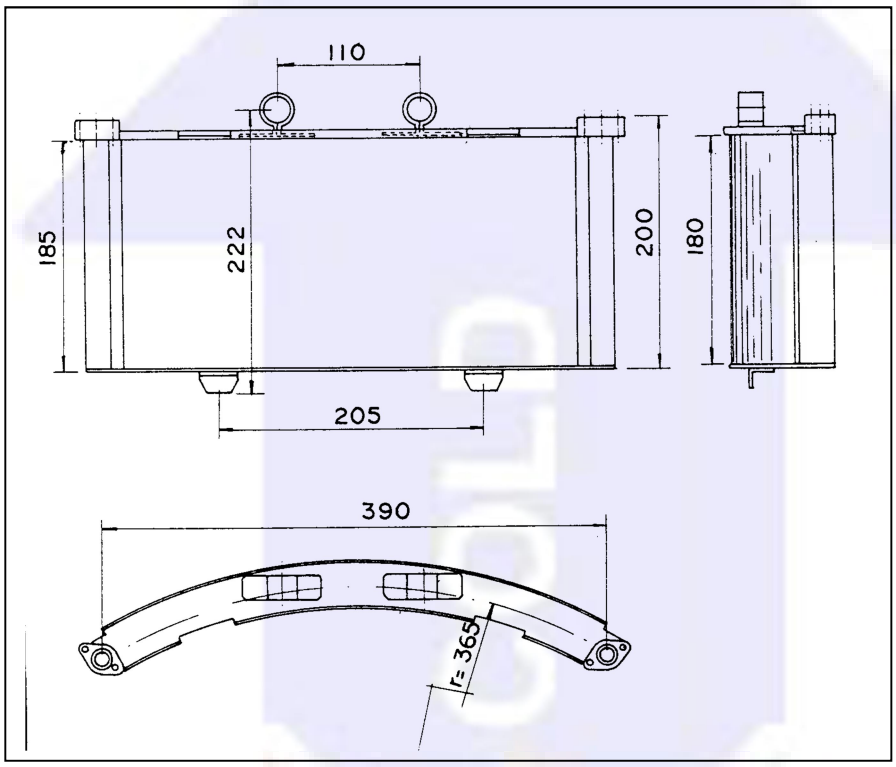
31019 – BMW E36 M3



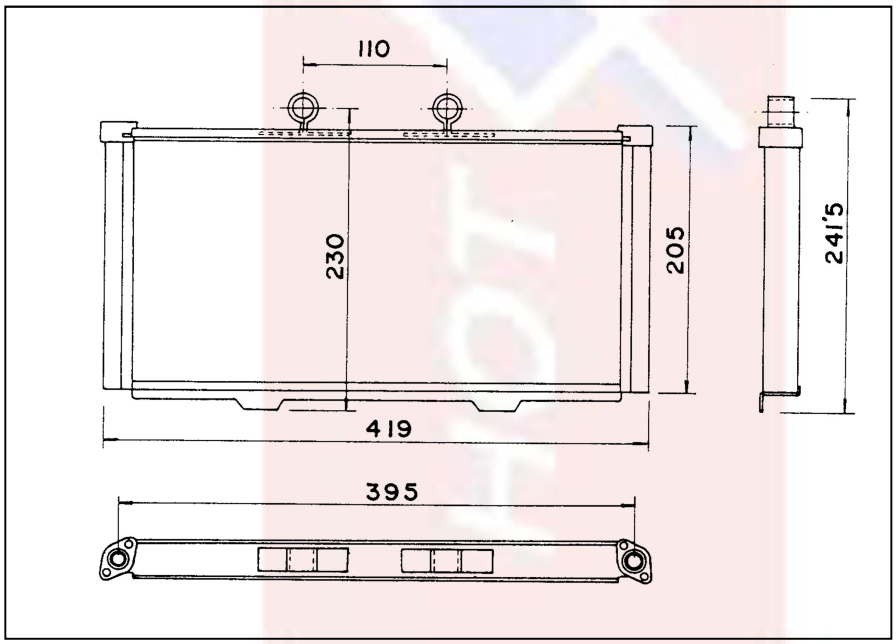
2.5. Motorbike replacement engine oil coolers

Part no.	Make & Model	Core Size
52010	Suzuki GSX 1100R	390x180x26
52011	Suzuki GSX 750R	375x190x26

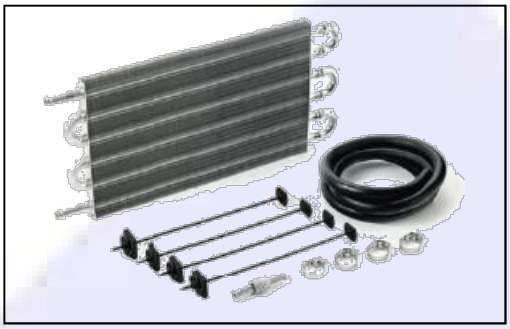
52010



52011



2.6. Ultra-Cool Transmission Oil Cooler



The Ultra-Cool transmission oil cooler was the industry's first transmission oil cooler. It is ultrasonically soldered for reliability and features high-efficiency turbulators in every tube for maximum heat dissipation. Ultra-Cool transmission oil coolers are only recommended for vehicles manufactured prior to 1990 and is not suitable for engine oil cooling. It is only sold in kit format including hose, quick fit kit and clamps.

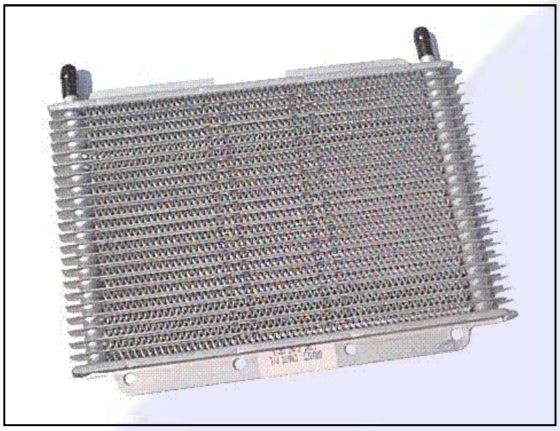
Part no.	Overall size & connections
404	403x191x20 mm, 3/8" push-on

2.7. Power steering Oil Cooler

The power steering oil cooler is made from an aluminium tube with internal turbulators and external waved air fins. This cooler can also be used for fuel and differential oil cooling. The cooler comes in a kit format including: hoses, clamps and a quick fit kit.

Part no.	Overall size & connections
1009	226x64x19 mm, 3/8" push-on

2.8. Hydra-Cool Transmission Oil Coolers



The Hydra-Cool transmission oil cooler is an effective way to keep the transmission at its optimum operating temperature. High efficiency turbulators in each tube direct the fluid for superior heat transfer. The Hydra-Cool's compact design is perfect for applications where the available mounting space is limited. The Hydra-Cool transmission oil cooler is not suitable for engine oil cooling. The Hydra-Cool are sold as a core only, kit with hose, clamps and quick fit kit as well as a fan combo kit.

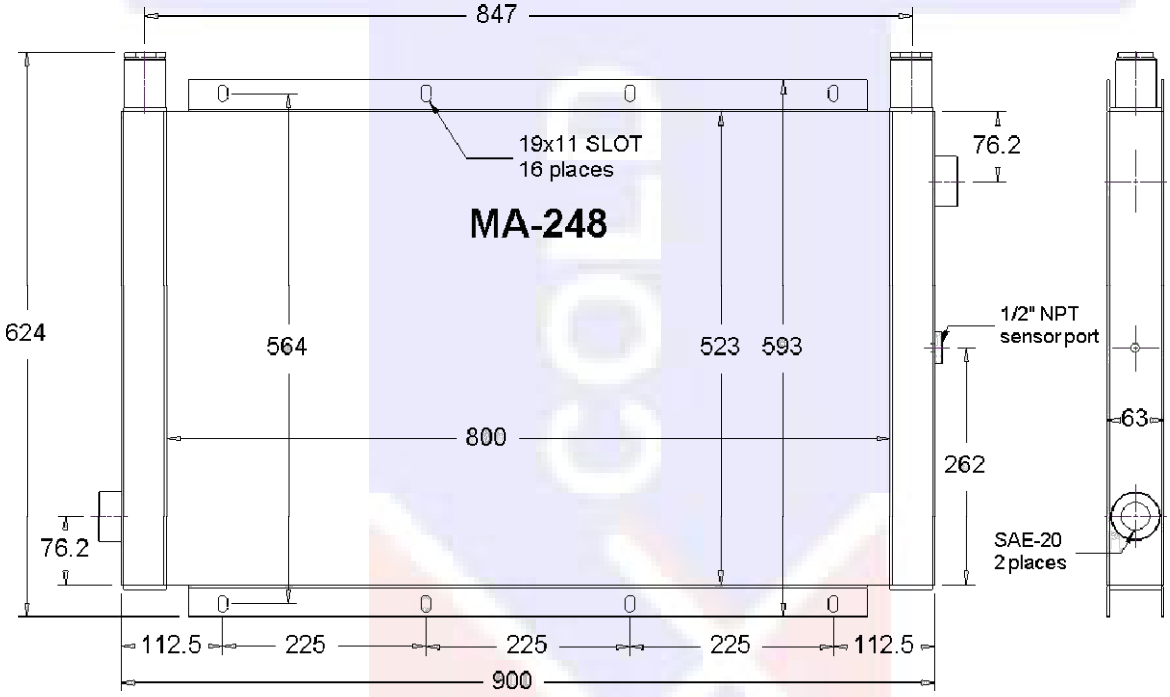
Part no.	Overall size & connections
0856	Cooler only, 280x141x19 mm, 3/8" push-on
0859	Cooler only, 280x180x19 mm, 3/8" push-on
0861	Cooler only, 280x200x19 mm, 3/8" push-on
0853	Cooler only, 280x213x19 mm, 3/8" push-on
0854	Cooler only, 280x300x19 mm, 3/8" push-on
678	Cooler 0853 with hose, clamps and quick fit kit
679	Cooler 0854 with hose, clamps and quick fit kit
691	Kit 679 with 10" 12 V fan, wiring and relay

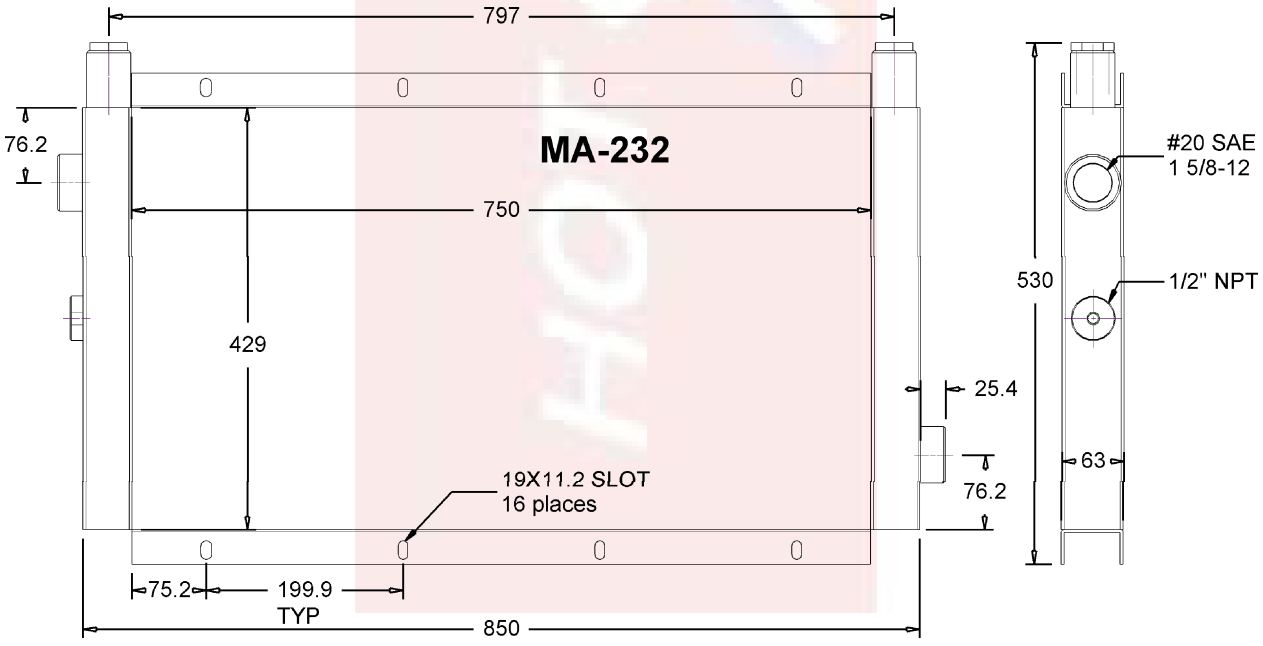
2.9. MA-series Oil Coolers

The MA-series, aluminium heat transfer units provide rugged high performance for demanding mobile equipment, oil cooling applications. All the coolers in the range feature proven brazed bar&plate core technology, engineered with an aggressive turbulator that produces ultra-high heat transfer. The MA-series of oil coolers can handle 570 l/min oil flow at up to 2070 kPa and 120ºC for extreme oil cooling performance.

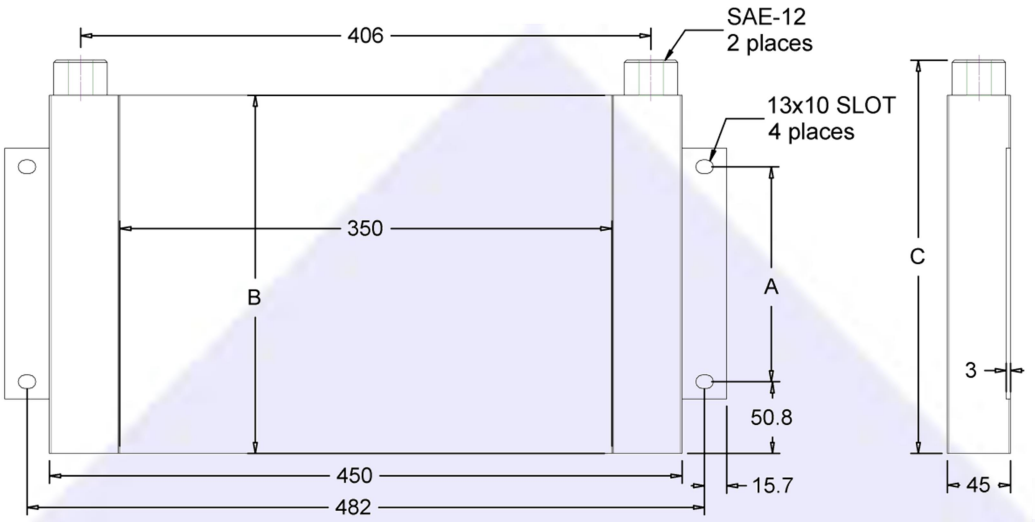
Fluid Compatibility

- Petroleum / mineral oils
- Oil / water emulsion
- Phosphate ester
- Water / ethylene glycol

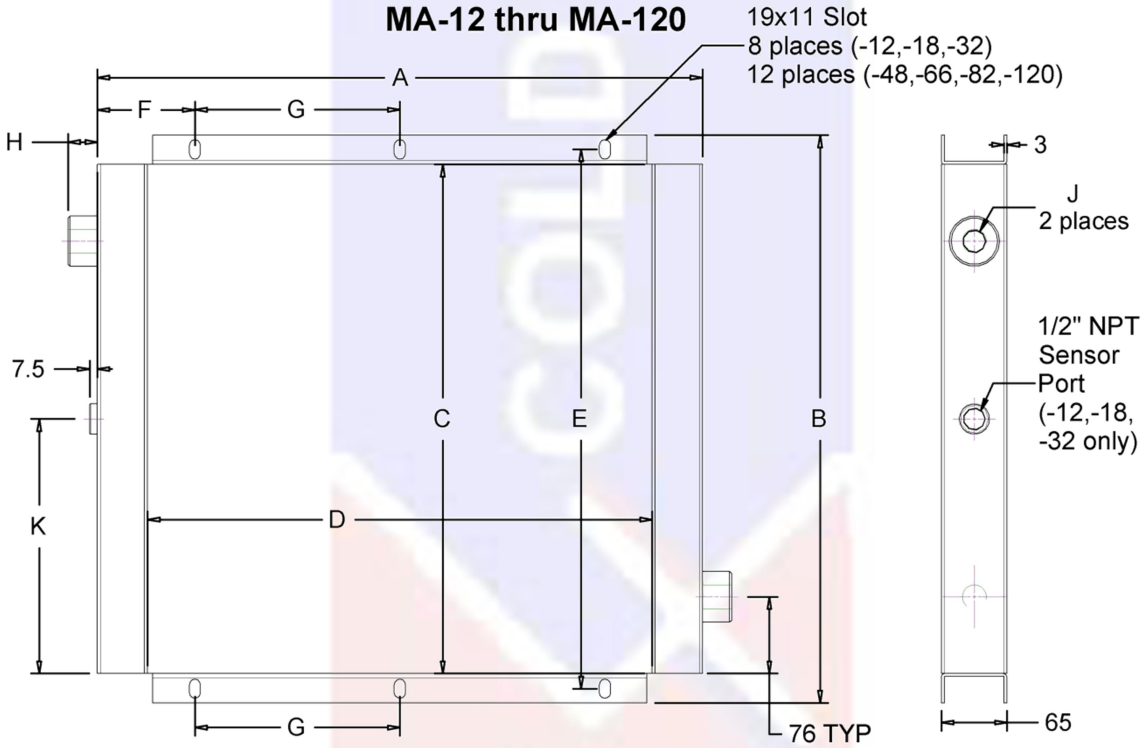




MA-8, MA-14, MA-20

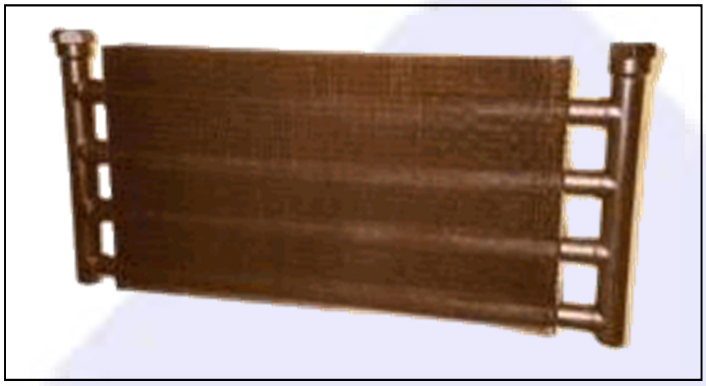


MA-12 thru MA-120



Model	A	B	C	D	E	F	G	H	J	K
MA-8	76	144	169							
MA-14	152	254	279							
MA-20	254	364	389							
MA-12	350	298	253	250	276	112	126	25	SAE12	127
MA-18	400	345	300	300	325	126	149	25	SAE12	150
MA-32	500	468	410	400	440	98	305	29	SAE16	205
MA-48	600	562	504	500	534	97	203	29	SAE16	
MA-66	700	656	598	600	628	96	254	40	SAE20	
MA-82	800	703	645	700	675	146	254	40	SAE24	
MA-120	800	1003	945	700	975	146	254	40	SAE24	

2.10. Twin-Swirl oil coolers

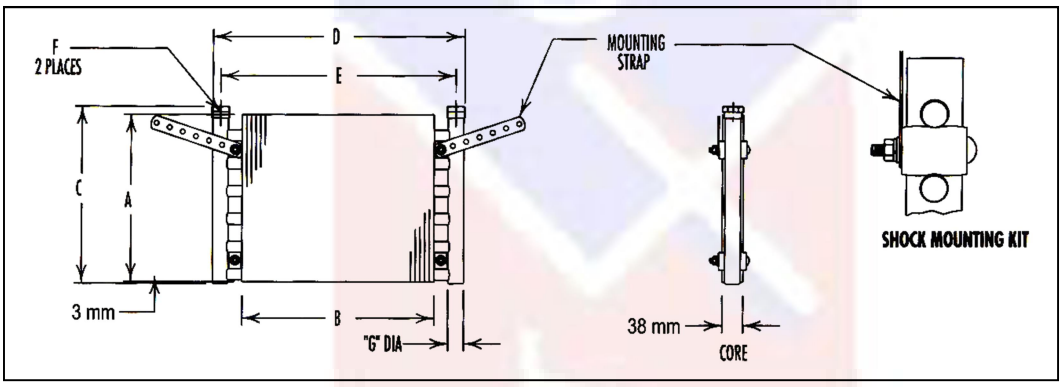


Due to this cooler's simple design, it is very sturdy and reliable.
The tubes are made from copper with internal aluminium extrusions acting as turbulators. The air fins are made from waved aluminium plate and the connections are brass. Because of their low air pressure drop across the core, these coolers are ideal for replacing water-cooled oil coolers. This also makes it possible to mount them in front of the radiator, with a limited effect on the cooling of the radiator.

Applications: Engine and transmission oil cooling for heavy duty vehicles, earth moving equipment and 4x4 vehicles.

The range of Twin Swirl coolers can withstand working pressures up to 20 bar.

Dimensions of Twin-Swirl oil coolers with Hayden cross reference:



List of sizes:

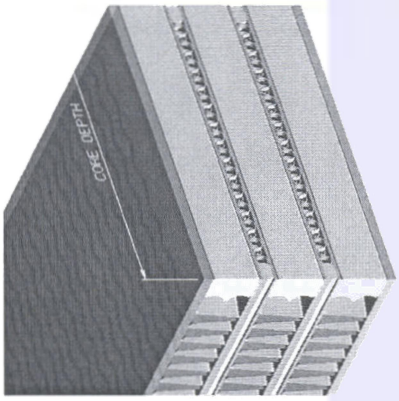
Part nr.	A	B	C	D	E	F	G	Hayden nr.
DH-051-1-1	102	286	114	381	359	½" NPT	22	10215S1
DH-062-1-1	152	286	165	381	359	½" NPT	22	10315S1
DH-073-1-1	152	362	165	457	435	½" NPT	22	10318S1
DH-084-1-1	152	514	165	610	587	½" NPT	22	10324S1
DH-095-2-1	203	362	216	457	435	JIC-10	22	10418V1
DH-216-1-1	305	502	322	610	581	¾" NPT	28	10624S1
DH-249-1-1	457	502	475	610	581	¾" NPT	28	10924S1
DH-326-1-1	610	489	635	610	575	1" NPT	28	11224S1
DH-337-1-1	610	641	635	762	727	1" NPT	28	11230S1

2.11. Bar & Plate oil coolers

2.11.1. NRF bar & plate oil coolers

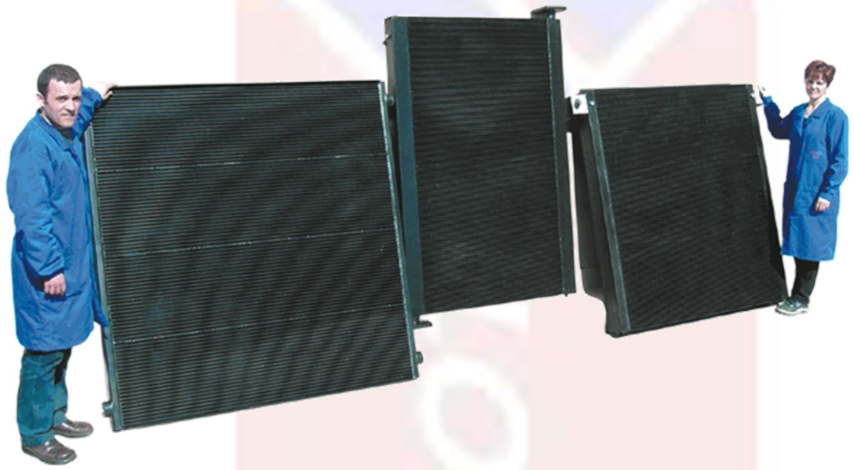
NRF bar & plate oil coolers are aluminium, vacuum brazed heat exchangers.
These coolers are suitable for the replacement of oil coolers on earthmoving equipment, mining equipment, agricultural machines, industrial machines, air compressors and many more applications. These core are available with hemmed fins for easier pressure washer cleaning.

These cores can be custom ordered in 1 off quantities with very short lead times – typically 2 weeks. We are able to supply these oil coolers complete with header tanks, connections and brackets.



BPS163, BPSH123	Square Waved and optional Hemmed fin
Core depths mm	40, 50, 62, 97, 114 140, 160, 180, 200
Tube pitch	12.3 and 16.3 mm
Airfin height	8 and 12 mm
Tube thickness	4.3 mm
Turbulator height	3 mm
Max. working pressure	25 bar
Max. working temperature	160°C

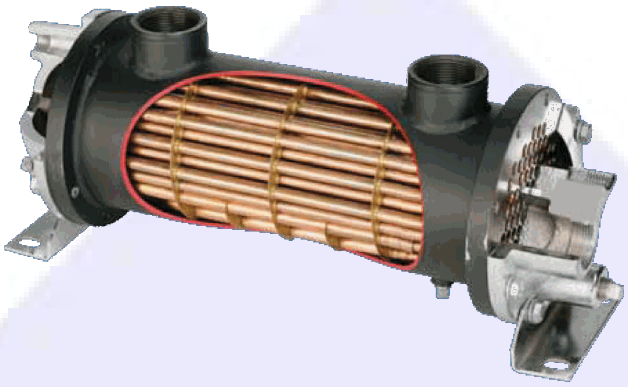
2.11.2. RAAL bar & plate oil coolers



RAAL bar & plate oil coolers are aluminium vacuum brazed units. RAAL has the capability to manufacture fairly large modular units accoring to the customer's specification. These coolers are suitable for the replacement of oil coolers on earthmoving equipment, mining equipment, agricultural machines, industrial machines, air compressors and many more applications.

We are able to supply complete units or cores only for remanufacturing.

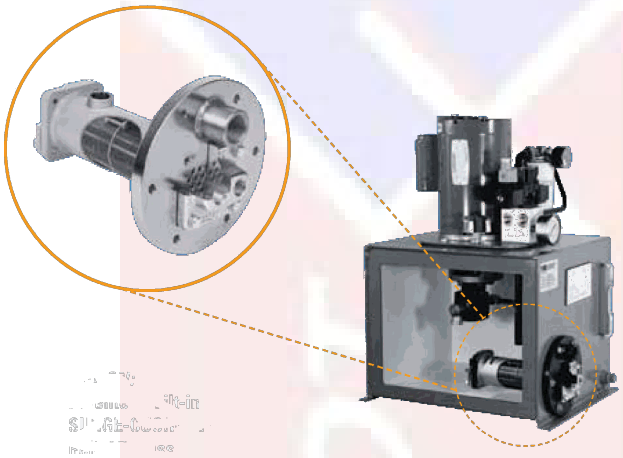
2.12. Shell & Tube Oil Coolers



Features

- Preferred for new oil-water applications
- Rugged steel construction
- Low cost
- Copper/steel or Stainless Steel construction
- Custom designs available
- End bonnets removable for servicing
- SAE Flange or BSPP shell side connections available

2.13. Shell & Tube in-tank oil cooler – EKTM Series

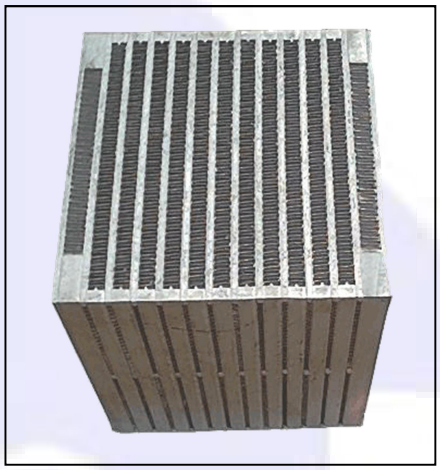


Features

- In-tank design minimizes space requirements and reduces plumbing
- Internal aluminium fins dramatically increase performance
- Removable end bonnets allow water passage servicing
- High strength steel shell

2.14. Magirus Deutz oil coolers

Recored unit



Core

We stock replacement cores for a range of Magirus Deutz oil coolers.
These cores are high performance, vacuum brazed, aluminium plate and bar heat exchangers. The air fins are waved and the oil channels have staggered turbulators.

Should you not find your specific Deutz oil cooler listed here, please contact us with your requirements.

List of sizes:

Part nr.	Model	OE nr.	Core size
RU8852-1.0	BF6L913 – Hydraulic	2237422KZ/90.881	268x220x197
RU8433-1.0	BF6L913 – Engine	04230100EA/91.540	212x155x180
RU8912-1.0	F6L912 – Hydraulic	2735338KZ/90.839	190x220x197
RU9046-1.0	F6L912 – Engine	2234409EA/90.74	365x61x125

3. Brazed Plate Heat Exchangers

A brazed plate heat exchanger is constructed as a series of corrugated channel plates stacked between front and rear cover plates. The cover plates can be configured with sealing plates or with blind rings. Connections are mounted on the cover plates and can be customized to meet specific market and application requirements.
During the vacuum brazing process, a brazed joint is formed at every contact point between the base and the filler material. This design creates a heat exchanger with two separate channels or circuits.

316 stainless steel construction and standard SAE connections are features of this highly efficient technology. The compact design and multiple mounting options lead to optimization of heat transfer when space is limited. High plate channel turbulence means effective performance even with close approach temperatures.

Features

- High performance, compact design
- Stainless steel, copper brazed
- Oil-to-water applications
- SAE oil connections, NPT water connections
- Short lead time

4. Oil Cooler Accessories

4.1. Sandwich Adapters and Remote Filter Mounts

We stock the following oil cooler accessories:

Part number	Description
210376	Sandwich adapter, ¾”-16 UNF, 1” thick, 2 ½” o-ring
185-000	Sandwich adapter, 13/16”-16 UNF, 1 7/8” thick, 3 1/8” o-ring, Chev
186-000	Sandwich adapter, M20x1.5 mm, 1” thick, 2 ½” and 3 1/8” o-rings
111-000	Blanking plate, ¾”-16 UNF, ½” ports up, 2 ½” o-ring
210514	Blanking plate, M24 x 1.5 mm ports up, 2 ½” o-ring
216-000	Blanking plate, M26 x 1.5 mm ports up, 2 ½” o-ring
210285	Blanking plate, ¾”-16 UNF, ½”NPT 4 ports, SWIVEL
1211-000	Remote filter mount, ¾”-16 UNF, ½” NPT ports up, 2 ½” o-ring
210343	Remote filter mount, ¾”-16 UNF, ½” NPT ports left, 2 ½” o-ring
210249	Remote filter mount, ¾”-16 UNF, ½” NPT 4 ports, 2 ½” o-ring
210333	Remote filter mount, ¾”-16 UNF, ½” NPT ports,2½” o-ring (Double)
210117	Remote oil thermostat – opens on 77 to 82°C – ½” NPT ports
161-000	Turbo Oiler Adapter, 3/4"-16 UNF, 1/8" NPT port, 2 1/2" o-ring
81043	Hi Flow oil filter, 3/4"-16 UNF, length: 108 mm
300452	Extension bolt for 181-000 – M18x1.5 mm
300456	Extension bolt for 181-000 – M20x1.5 mm
8BFB8	90º Elbow, ½” BSP to ½” tail for oil cooler
8FJB8	90º Elbow, JIC-08 to ½” tail for oil cooler
AF608	Straight fitting, 3/8” NPT to 1/2” tail for sandwich adapter
AF808	Straight fitting, ½” NPT to 1/2” tail for remote filter mounts
PARKERHITEMP38	3/8” Hydraulic hose for transmission oil coolers
PARKERHITEMP12	1/2” Hydraulic hose for engine oil coolers
B12-20/9W2	1/2” Hose clamps – 12 to 22 mm
B16-27/9W2	3/4” Hose clamps – 16 to 27 mm

These sandwich adapters, remote filter mounts, blanking plates and remote oil thermostats are made from A380/A384 aluminium for solid fill, porosity-free castings.

GUD Filter / Sandwich adapter reference guide

The following tables will help to locate the correct sandwich adapter or remote filter mount for your application. Should you not find your filter number, please call us for assistance.

The following filters use the 210376 sandwich adapter with a M20x1.5 centre bolt:

Z161	Mazda, Ford
Z164	Renault, Isuzu
Z193	Mazda, Ford
Z198	Mitsubishi, Ford, Isuzu
Z218	Honda
Z222	Mazda, Ford
Z226	Mitsubishi
Z228	Fiat

The following filters use the 210376 sandwich adapter:

Z48	Nissan 1400
Z88	Audi, Volkswagen
Z88G	Audi, Volkswagen
Z95	Toyota, Mazda, Ford, Landrover
Z96	Alfa Romeo, Fiat
Z123	Alfa Romeo, Ford, Toyota
Z135	Audi, Volkswagen
Z147	Alfa Romeo
Z152	BMW
Z153	Datsun, Nissan
Z157	BMW
Z159	Diahatsu, Suzuki
Z167	Volkswagen – Microbus
Z173	Toyota
Z185	Mercedes Benz 190E
Z197	Nissan
Z211	Toyota – 4AGE & 20V
Z214	Nissan
Z215	Nissan
Z217	Toyota, Fiat, Renault, MG

The following filter uses the 210376 sandwich adapter with a M18x1.5 centre bolt:

Z156	Opel

The following filters use the 186-000 sandwich adapter:

Z76	Mazda, Honda
Z91B	Mazda, Ford, Isuzu, Subaru, Hyundai
Z143	Isuzu, Mitsubishi, Nissan
Z162	Mazda, Ford
Z207	Isuzu

The following filters must be changed to a remote mount filter system:

		Blank Plate	Remote Filter Mount	New Filter
Z230	Toyota, Landcruiser4.2D	210514	1211-000	Z95
Z259	Mitsubishi	216-000	1211-000	Z95
Z248	Mazda, Ford 2.5TD	216-000	1211-000	Z95

4.2. Setrab oil cooler brackets

The Setrab oil cooler brackets are designed to ease the installation of the Setrab STD ProLine range of oil coolers. The brackets incorporate dampening pads to isolate the cooler from vibration. These brackets will lengthen the life expectancy of the oil cooler.

5. Aluminium radiators and accessories

5.1. High performance aluminium radiators

We supply custom made aluminium radiator cores and complete aluminium radiators with aluminium end tanks, CNC machined filler necks, drain plugs and fan switch mountings for motorsport, 4x4 vehicles, light aircraft, motorbikes, quads, etc.
The cores thicknesses vary from 20 mm to 114 mm.

The following cores are standard stock units:

Part number	Core size – mm	Header size – mm
CW0000014	650x460x43	460x60
CW0000015	570x450x43	450x60
CW0000016	500x460x43	460x60
CW0000241	405x710x43	710x60
RA33512-1.0	405x700x58	700x72
RA26955-1.0	650x464x58	464x72
RA38059-1.0	500x480x58	480x72
RA23147-1.0	340x266x30-curved	263x37

5.2. Aluminium, Stainless and Brass filler necks

Part number	Description
RN1	Large machined aluminium filler neck with overflow – OD 50 mm
RN2	Small machined aluminium filler neck with overflow – OD 38 mm
SSFN-41-O	Large machined stainless filler neck with overflow – OD 50 mm
5846.6	Large pressed brass neck with overflow – OD 50 mm
5823.1	Small pressed aluminium filler neck with overflow – OD 34 mm

5.3. Radiator caps

We stock radiator caps in the following pressures:

Part number	Pressure
50.63	Small, 90 kPa
50.62	Small, 110 kPa
50.62.2	Small, 150 kPa
TM3-13	Small, 90 kPa
TM3-16	Small, 110 kPa
TG3-13	Large, 90 kPa
TG3-16	Large, 110 kPa
TG3-18	Large, 120 kPa

5.4. Heavy duty aluminium radiators – truck & bus

We stock the following aluminium radiator cores or completes for trucks and busses:

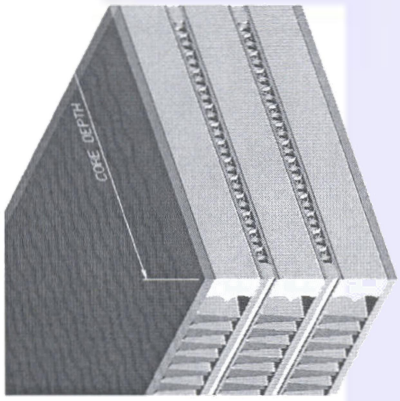
Part nr.	Make	Model	OE nr.	Core size
509616	DAF – with tanks	65CF	1434916	850x648x43
29586	DAF – core	85CF		905x648x43
509586	DAF – complete	85CF		905x648x43
29679	DAF – core	85CF series 2		950x648x43
509679	DAF – with tanks	85CF series 2		950x648x43
519541	DAF – with tanks	95XF	1326966	1068x791x43
29578	Mercedes – core	Actros	9425001203	1015x829x43
29604	Volvo – core	FH12	1676435	900x900x43
519702	Volvo – with tanks	FH12		900x900x43
509702	Volvo – complete	FH12		900x900x43
29610	Volvo – core	FM12	1665249	900x740x43
519701	Volvo – with tanks	FM12		900x740x43
509701	Volvo – complete	FM12		900x740x43
29709	Renault – core		5010315361	975x738x43
29587	Scania – core		1327249	860x964x43
509587	Scania – with tanks		1327249	860x964x43
519587	Scania – complete		1327249	860x964x43

5.5. Bar & Plate heavy duty radiators

5.5.1. NRF bar & plate radiators

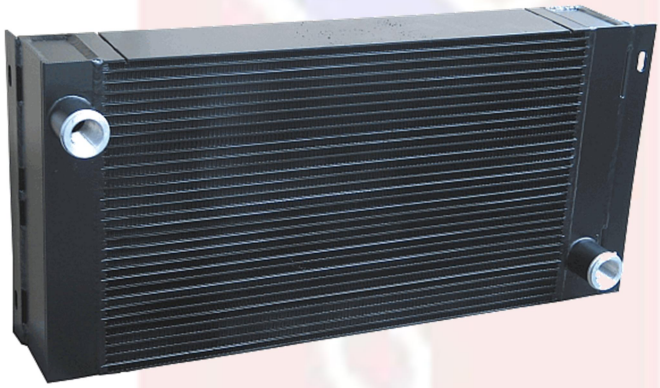
NRF bar & plate radiators are aluminium, vacuum brazed heat exchangers.
These coolers are suitable for the replacement of radiators on earthmoving equipment, mining equipment, agricultural machines, industrial machines and many more applications. These core are available with hemmed fins for easier pressure washer cleaning.

These cores can be custom ordered in 1 off quantities with very short lead times – typically 2 weeks. We are able to supply these radiators complete with header tanks, connections and brackets.



BPS163, BPSH123 (W)	Square Waved and optional Hemmed fin
Core depths mm	40, 50, 62, 97,114 140, 160, 180, 200
Tube pitch	12.3 and 16.3 mm
Airfin height	8 and 12 mm
Tube thickness	4.3 mm
Turbulator height	3 mm
Max. working pressure	25 bar
Max. working temperature	160°C

5.5.2. RAAL bar & plate radiators



RAAL bar & plate radiators are aluminium vacuum brazed units. RAAL has the capability to manufacture fairly large modular units accoring to the customer's specification. These coolers are suitable for the replacement of radiators on earthmoving equipment, mining equipment, agricultural machines, industrial machines and many more applications.

We are able to supply complete units or cores only for remanufacturing.

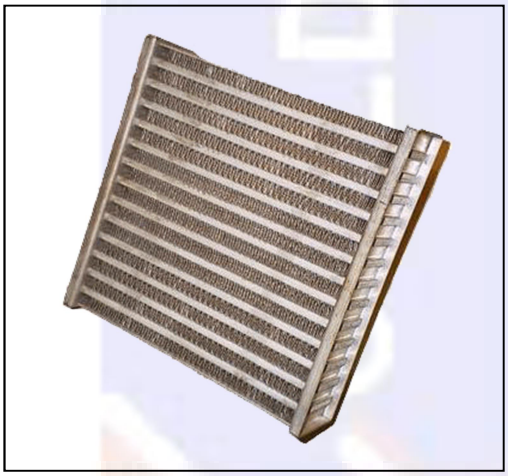
6. Intercoolers

6.1. High performance intercooler cores

These cores feature the latest in design technology. The tubes are 8 mm thick aluminium extrusions with internal fins. The air fins are 12 mm aluminium serpentine, louvered fins. The large air fins allows for higher air speeds, thus increased performance. These cores are available in 40, 50, 62 and 85 mm thicknesses. 70 mm (Setrab) and 100 mm (RAAL) cores are also available.

See the attached detailed drawings on the next page for more information on the construction of the intercoolers.

If you do not find a size close to your requirements we can import a custom size according to your requirements.

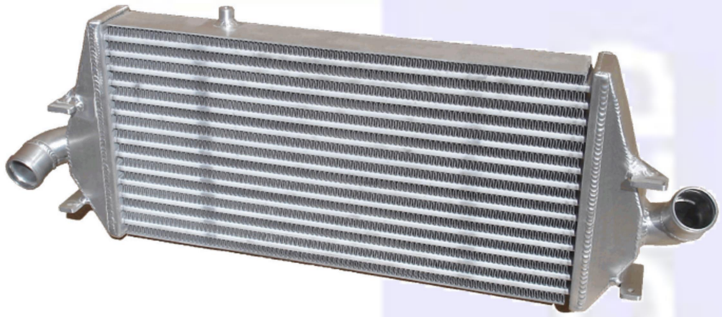


Part number	Size l*w*t mm
19054	440x697x62
19092	540x437x50
19140	600x297x62
82863	495x277x50
CI0000732	600x257x50
CI0001061	642x257x50
CI0000142	665x317x62
CI0000284	700x257x62
CI0000275	755x477x62
CI0001719	580x297x85

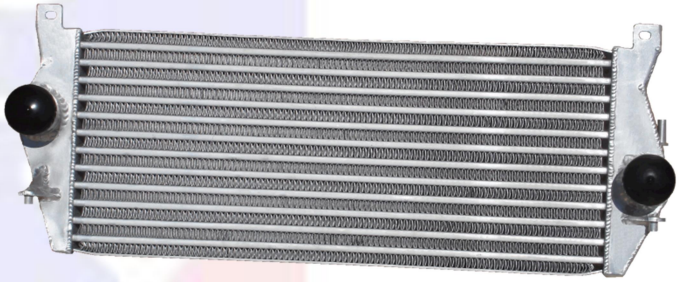
6.2. Intercooler kits

We manufacture intercooler kits using cores from our large range.
We currently have the following range:

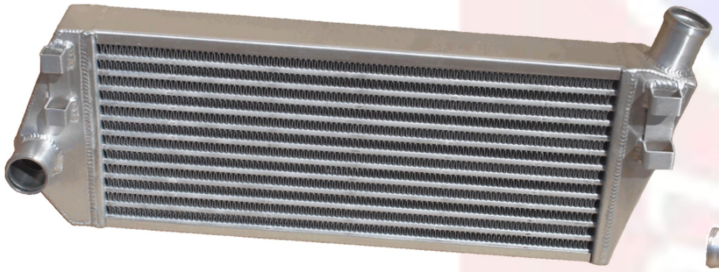
Make	Model	Core Size
Ford / Mazda	Ranger / 2500Td	495x277x50 mm
Ford	Focus ST	600x297x62 mm
Land Rover	Defender Td5	600x257x50 mm
	Discovery Td5	642x257x50 mm
Renault	Megane RS	600x290x62 mm



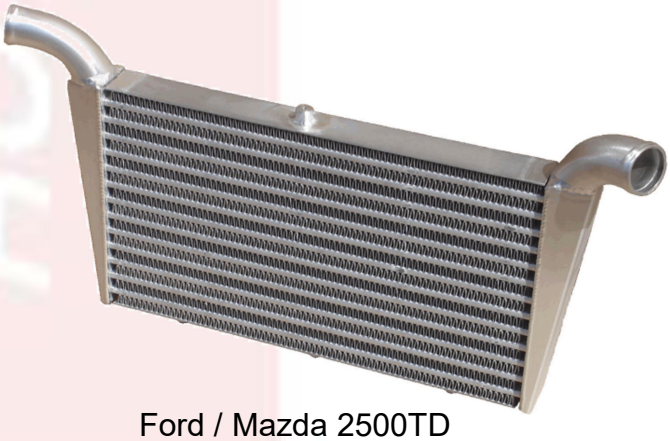
Ford ST



Land Rover Defender



Renault Megane RS



Ford / Mazda 2500TD

6.3. Heavy duty intercooler cores – truck & bus

We stock a wide range of vacuum brazed aluminium truck intercooler cores. They are the same construction as the light duty cores. We are able to supply complete custom build intercoolers according to the client's requirements

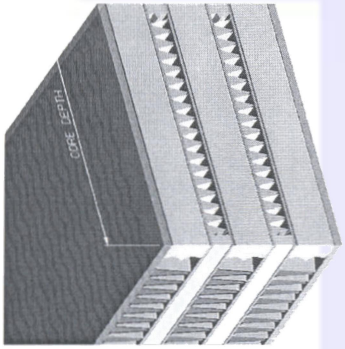
Part no.	Description	Size l*w*t mm	OEM part no.
83670	CAT 740	845x657x62	
19060	DAF 85CF	606x657x62	1235918
19055	DAF 95XF	553x857x50	
81427	DAF 85CF	520x737x62	
82914	ERF	590x677x62	
19172	Freightliner Argosy	610x857x50	
19162	Freightliner (short nose)	665x597x62	
82806	Freightliner (long nose)	770x537x62	
19353	International 9600	1040x637x50	
19163	International 9700	698x497x62	
19154	International 9800	705x637x50	
30117	Iveco Turbo Daily - complete	630x202x62	93822683
19028	Iveco Samag	490x717x50	19033
19058	Iveco Eurotech	658x697x50	93160530
88932	Kenworth	720x697x50	
30041	MAN F90 – complete	650x617x62	81.06130.0072
19015	MAN F90	653x617x50	81.06130.0023
19005	MAN F90	650x617x62	81.06130.0072
81935	MAN F2000	650x737x50	
19073	Mercedes NG90	650x757x50	6555010201
19076	Mercedes 1416	395x617x50	6775011001
19151	Mercedes Actros	750x857x62	9425010201
19008	Mercedes Actros	750x657x50	9425010301
19006	Mercedes SK 1733-1933	600x797x50	6565010001
85724	Nissan UD440	550x677x50	
19167	Peterbilt	635x677x62	
19063	Renault Major	650x797x50	5010213198
19082	Renault Magnum	755x797x62	5010066292
19013	Renault 340 / 385	630x917x62	5010230488
19001	Scania 112 / 142	675x637x62	352304 / 1100086
19018	Scania 124	825x797x62	1373517
87718	Toyota Hino	690x797x62	
19025	Volvo F10 / F12	740x777x62	1542735
19011	Volvo FH12	885x917x62	8112563
19187	Volvo FH12 – series 2	900x897x62	
19200	Volvo FM12	900x737x62	
19003	Volvo B12 Bus	885x757x62	1665242
84107	Volvo B7TL Bus	1000x477x62	
84349	Volvo B7R	875x637x62	

6.4. Bar & Plate intercoolers

6.4.1. NRF bar & plate intercoolers

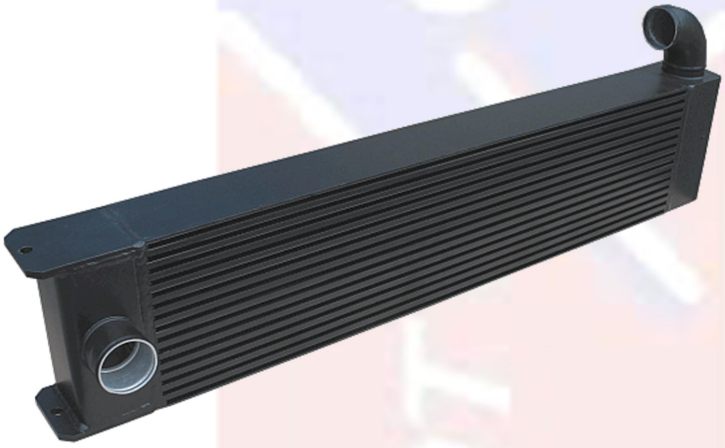
NRF bar & plate intercoolers are aluminium, vacuum brazed heat exchangers. These coolers are suitable for the replacement of intercoolers on earthmoving equipment, mining equipment, agricultural machines, industrial machines, air compressors and many more applications. These core are available with hemmed fins for easier pressure washer cleaning.

These cores can be custom ordered in 1 off quantities with very short lead times, typically 2 weeks. We are able to supply these intercoolers complete with header tanks, connections and brackets.



BPS193, BPSH153	Square Waved and optional Hemmed fin
Core depths mm	40, 50, 62, 97,114 140, 160, 180, 200
Tube pitch	15.3 and 19.3 mm
Airfin height	8 and 12 mm
Tube thickness	7.3 mm
Turbulator height	6 mm
Max. working pressure	16 bar
Max. working temperature	160°C

6.4.2. RAAL bar & plate intercoolers



RAAL bar & plate intercoolers are aluminium vacuum brazed units. RAAL has the capability to manufacture fairly large modular units accoring to the customer's specification. These coolers are suitable for the replacement of intercoolers on earthmoving equipment, mining equipment, agricultural machines, industrial machines, air compressors and many more applications.

We are able to supply complete units or cores only for remanufacturing.

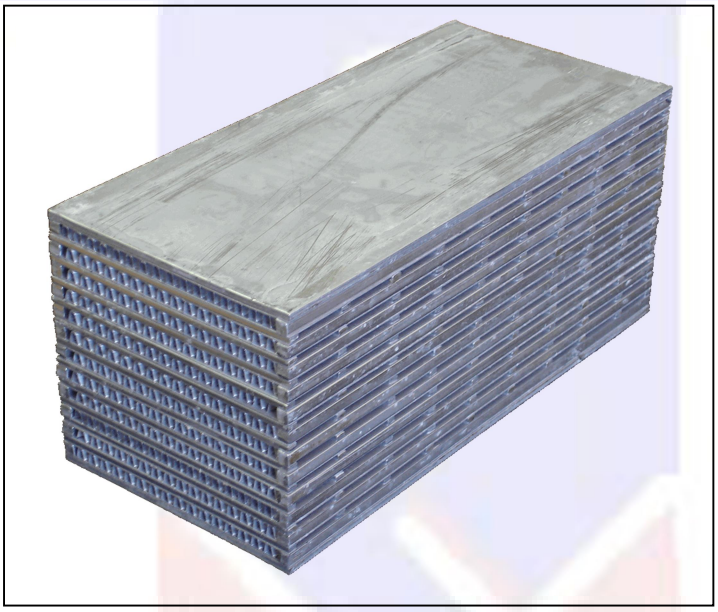
6.5. Charge Cooler Core – water-cooled intercooler

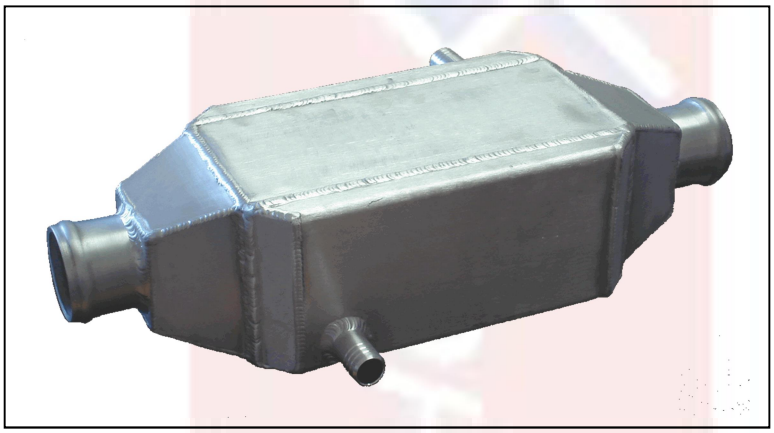
A charge cooler has the same function as an air-to-air intercooler, but the air is cooled with water instead of air. Although the system is more expensive and complex due to the fact that you require a radiator, water pump and header tank, it is much more compact and will ensure a better throttle response.

We can supply and install complete charge air cooler systems.

We stock the following core:

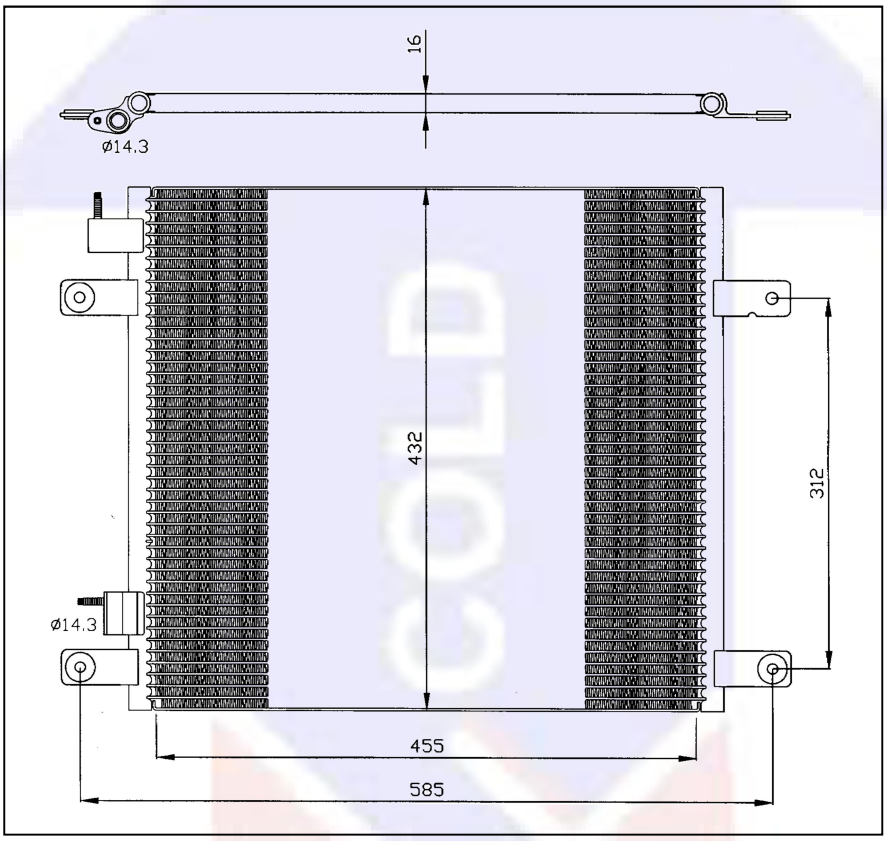
Part nr.	Core size	Waved fin height	Water channel gap
RAS3489-1.0	230x105x100 mm	5 mm	2.5 mm



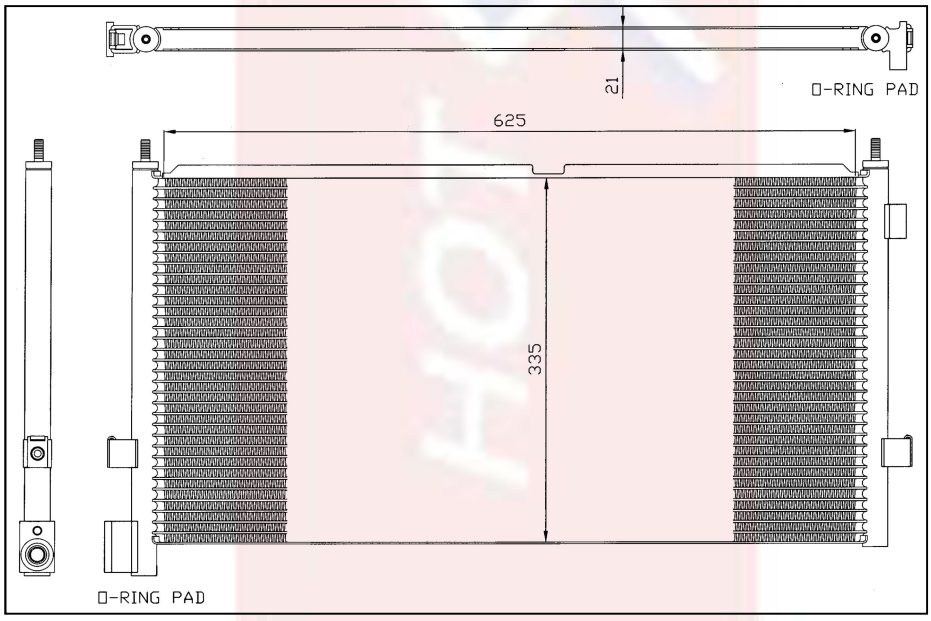


7. Condensers – truck

Part number	Description	Size - mm
35364	DAF – CF85	455x432x16
35313	Volvo – FM12	625x335x21
35314	Volvo – FH12	790x330x21
35522	Volvo – FH12	790x330x21
35061	Scania	820x460x24



35364



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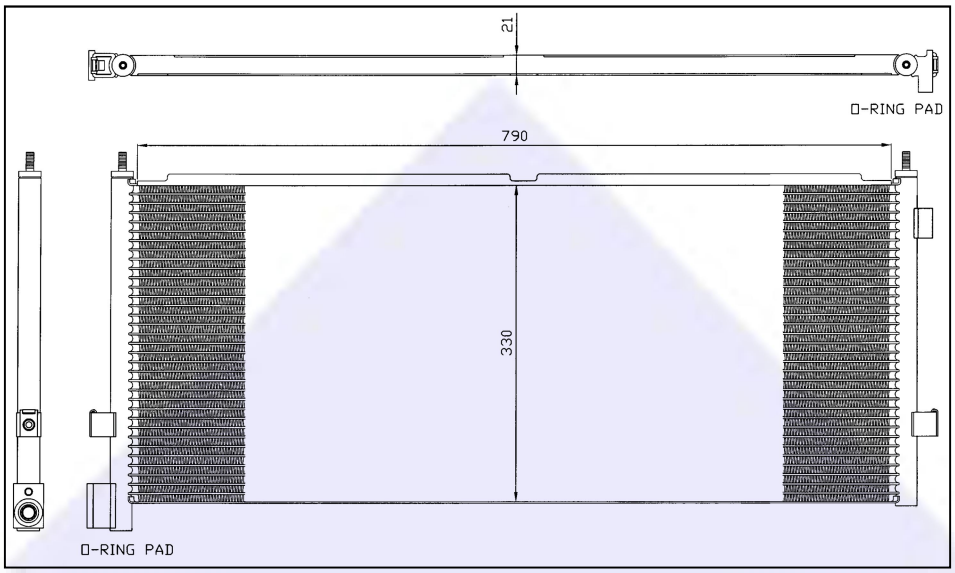

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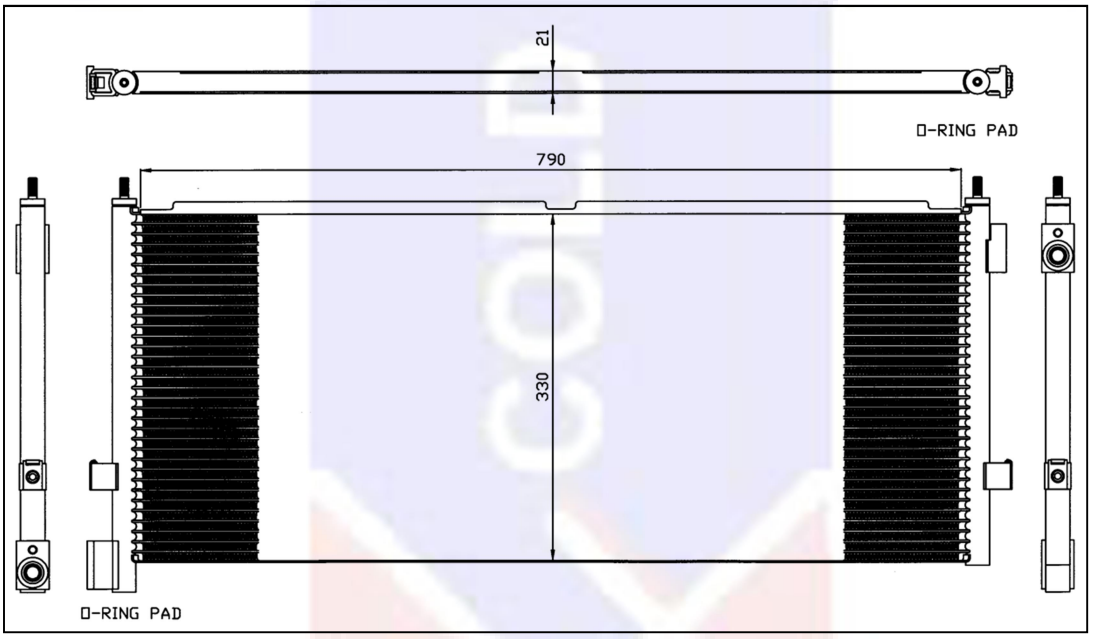

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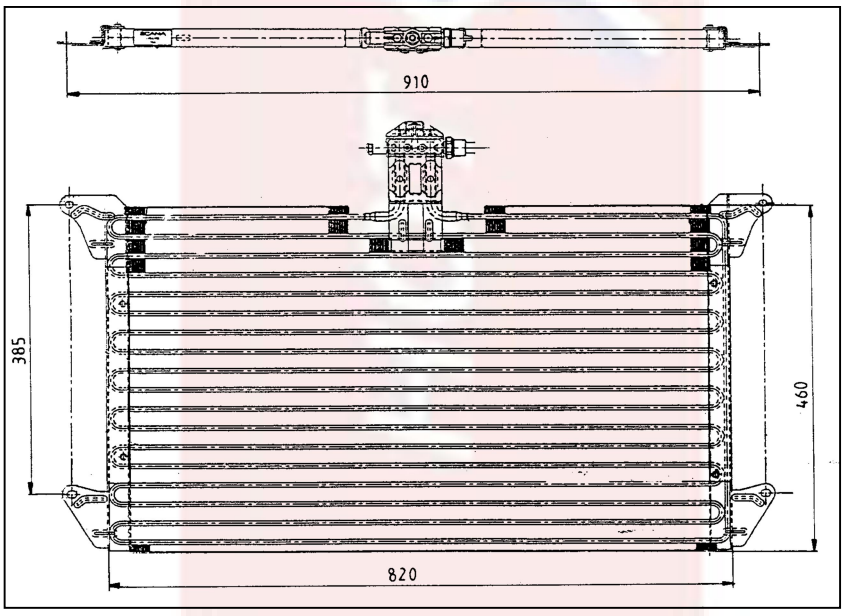


35061

8. SFS High Performance Silicone Kits

SFS Performance manufactures and distributes the world's finest high performance silicone hoses. Whether you're running a race team or want to get the best performance from your road car, SFS Performance can provide the hose you need, when you need it. Designed to thrive on the high pressures and extreme temperatures found in the high performance engine, SFS Performance hoses won't deteriorate, no matter how much you put them through. Every hose is made by hand by one of our experts. If we don't think a hose is good enough, it won't leave our workshop.
SFS Performance can meet the high specification and time sensitive demands of race teams and our hoses have proven themselves at the highest levels of racing. Many of the world's most prestigious teams and manufacturers use SFS Performance including: Peugeot WRC, Prodrive, Ford Motorsport, Roush, Aston Martin, Bentley, Noble, Radical, Ascari.

Car make	Model	Application	QTY	Part number
Ford	Focus ST	Turbo	5	THS161
		Turbo – Y-pipe	1	THS161-3
		Coolant	5	CHS160
Land Rover	Defender 300Tdi	Turbo	3	THS194
	Defender Td5	Turbo	3	THS192
	Discovery 300Tdi	Turbo	3	THS172
	Discovery Td5	Turbo	3	THS193
Renault	Megane RS	Induction	1	AH31
Subaru	GT	Coolant	8	CHS52
		Heater	2	HH06
		Turbo	3	THS153
		Induction	1	THS107
		Airbox	1	THS108/B
Subaru	Sti	Coolant	2	CHS97
		Airbox	1	THS108/C
		Turbo	3	THS106
		Turbo	4	THS147
		Coolant	21	CHS146
		Breather	17	BH07
Volkswagen	Golf V Gti	Turbo	2	THS170
	Polo Gti	Induction	1	AH35

9. SFS High Performance Silicone Hose - BLACK

SFS silicone products are handmade and of the highest quality. It can be used on a multitude of applications, from motorsport to industrial and food processing applications.

9.1. SFS straight silicone hose

SFS straight hose can be ordered as fuel/oil hose (fluoro-lined), high temperature hose (nomex reinforced, -60 to 220°C) or wire reinforced.
6.5-13 mm: 3.5 mm (3 ply)
16-70 mm: 4.5 mm (3 ply)
76-127 mm: 5 mm (4ply)
Standard colour is **BLACK**
Other colours available to order (blue, red, yellow, purple, green, orange, white)

Part No.	Description
SHL-6.5	6.5 mm ID, 1 m long
SHL-8.0	8 mm ID, 1 m long
SHL-9.5	9.5 mm ID, 1 m long
SHL-11	11 mm ID, 1 m long
SHL-13	13 mm ID, 1 m long
SHL-16	16 mm ID, 1 m long
SHL-19	19 mm ID, 1 m long
SHL-22	22 mm ID, 1 m long
SHL-25	25 mm ID, 1m long
SHL-28	28 mm ID, 1 m long
SHL-30	30 mm ID, 1 m long
SHL-32	32 mm ID, 1m long
SHL-35	35 mm ID, 1 m long
SHL-38	38 mm ID, 1m long
SHL-41	41 mm ID, 1 m long
SHL-45	45 mm ID, 1 m long
SHL-48	48 mm ID, 1 m long
SHL-51	51 mm ID, 1 m long
SHL-54	54 mm ID, 1 m long
SHL-57	57 mm ID, 1 m long
SHL-60	60 mm ID, 1 m long
SHL-63	63 mm ID, 1 m long
SHL-65	65 mm ID, 1 m long
SHL-68	68 mm ID, 1 m long
SHL-70	70 mm ID, 1 m long
SHL-76	76 mm ID, 1 m long
SHL-80	80 mm ID, 1 m long
SHL-83	83 mm ID, 1 m long
SHL-89	89 mm ID, 1 m long
SHL-102	102 mm ID, 1 m long
SHL-114	114 mm ID, 1 m long
SHL-127	127 mm ID, 1 m long

9.2. SFS 45 and 90° Bends - BLACK

SFS bends can be ordered as fuel/oil hose (fluoro-lined) and high temperature hose (nomex reinforced, -60 to 220°C).
6.5-13 mm: 3.5 mm (3 ply)
16-70 mm: 4.5 mm (3 ply)
76-102 mm: 5 mm (4ply)
Standard colour is blue
Other colours available to order (black, red, yellow, purple, green, orange)

Part No.	Description
E45-6.5	6.5 mm ID, 45° bend
E45-8.0	8 mm ID, 45° bend
E45-9.5	9.5 mm ID, 45° bend
E45-11	11 mm ID, 45° bend
E45-13	13 mm ID, 45° bend
E45-16	16 mm ID, 45° bend
E45-19	19 mm ID, 45° bend
E45-22	22 mm ID, 45° bend
E45-25	25 mm ID, 45° bend
E45-28	28 mm ID, 45° bend
E45-30	30 mm ID, 45° bend
E45-32	32 mm ID, 45° bend
E45-35	35 mm ID, 45° bend
E45-38	38 mm ID, 45° bend
E45-41	41 mm ID, 45° bend
E45-45	45 mm ID, 45° bend
E45-48	48 mm ID, 45° bend
E45-51	51 mm ID, 45° bend
E45-54	54 mm ID, 45° bend
E45-57	57 mm ID, 45° bend
E45-60	60 mm ID, 45° bend
E45-63	63 mm ID, 45° bend
E45-70	70 mm ID, 45° bend
E45-76	76 mm ID, 45° bend
E45-80	80 mm ID, 45° bend
E45-83	83 mm ID, 45° bend
E45-89	89 mm ID, 45° bend
E45-102	102 mm ID, 45° bend

Part No.	Description
E90-6.5	6.5 mm ID, 90° bend
E90-8.0	8 mm ID, 90° bend
E90-9.5	9.5 mm ID, 90° bend
E90-11	11 mm ID, 90° bend
E90-13	13 mm ID, 90° bend
E90-16	16 mm ID, 90° bend
E90-19	19 mm ID, 90° bend
E90-22	22 mm ID, 90° bend
E90-25	25 mm ID, 90° bend
E90-28	28 mm ID, 90° bend
E90-30	30 mm ID, 90° bend
E90-32	32 mm ID, 90° bend
E90-35	35 mm ID, 90° bend
E90-38	38 mm ID, 90° bend
E90-41	41 mm ID, 90° bend
E90-45	45 mm ID, 90° bend
E90-48	48 mm ID, 90° bend
E90-51	51 mm ID, 90° bend
E90-54	54 mm ID, 90° bend
E90-57	57 mm ID, 90° bend
E90-60	60 mm ID, 90° bend
E90-63	63 mm ID, 90° bend
E90-70	70 mm ID, 90° bend
E90-76	76 mm ID, 90° bend
E90-80	80 mm ID, 90° bend
E90-83	83 mm ID, 90° bend
E90-89	89 mm ID, 90° bend
E90-102	102 mm ID, 90° bend

9.3. SFS Vacuum Tubing - BLACK

Part No.	Description
VT3-30	3 mm ID, 2 mm wall thickness
VT4-30	4 mm ID, 2 mm wall thickness
VT5-30	5 mm ID, 2.5 mm wall thickness
VT6-30	6 mm ID, 2.5 mm wall thickness
VT8-30	8 mm ID, 3 mm wall thickness
VT10-30	10 mm ID, 3 mm wall thickness

10. Industrial Quality Silicone Products

Our imported silicone products are of the highest quality. They meet and exceed all performance and physical characteristics of SAE J20 R1, SAE J20 R1 H.T., TMC RP303B Grade I and Grade II, Mil Spec, A-A52426 and are resistant to electrochemical degradation. The temperature range of all the silicone products is -53 to 177ºC. All silicone hose, bends and reducers are 4 ply. The silicone hose may be purchased in 0.1 meter increments. The vacuum hose may be purchased in 1 meter increments. Most products are available in blue and red.

We are also able to supply silicone hose with stainless steel reinforced wire in customs lengths for high pressure industrial applications.

10.1. Straight silicone hose

Part No.	Description
C40-031	8 mm ID, 1 m long
C40-038	10 mm ID, 1 m long
C40-050	13 mm ID, 1 m long
C40-062	16 mm ID, 1 m long
C40-075	19 mm ID, 1 m long
C40-087	22 mm ID, 1 m long
C40-100	25 mm ID, 1m long
C40-112	28 mm ID, 1 m long
C40-125	32 mm ID, 1m long
C40-138	35 mm ID, 1 m long
C40-150	38 mm ID, 1m long
C40-162	42 mm ID, 1 m long
C40-175	45 mm ID, 1 m long
C40-187	48 mm ID, 1 m long
C40-200	51 mm ID, 1 m long
C40-212	54 mm ID, 1 m long
C40-225	57 mm ID, 1 m long
C40-238	60 mm ID, 1 m long
C40-250	63 mm ID, 1 m long
C40-275	70 mm ID, 1 m long
C40-300	76 mm ID, 1 m long
C40-312	80 mm ID, 1 m long
C40-325	83 mm ID, 1 m long
C40-338	86 mm ID, 1 m long
C40-350	89 mm ID, 1 m long
C40-400	102 mm ID, 1 m long
C40-450	114 mm ID, 0.914 m log
C40-500	127 mm ID, 0.914 m log
C40-550	140 mm ID, 0.914 m log
C40-600	152 mm ID, 0.914 m log

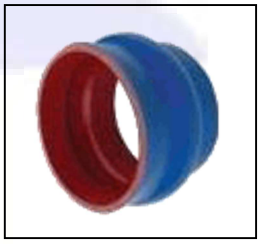
10.2 Reducing elbows

Part No.	Description
90-200/225	51 to 57 mm ID
90-200/250	51 to 63 mm ID
90-250/275	63 to 70 mm ID
90-250/300	63 to 76 mm ID

10.3. Silicone hump hose

The hump hose is used for applications where radial and axial movement is required.

Part no.	Description
H40-200	51 mm ID, 76 mm long
H40-225	57 mm ID, 76 mm long
H40-250	63 mm ID, 76 mm long
H40-275	70 mm ID, 76 mm long
H40-300	76 mm ID, 76 mm long
H40-350	89 mm ID, 76 mm long
H40-400	102 mm ID, 76 mm long



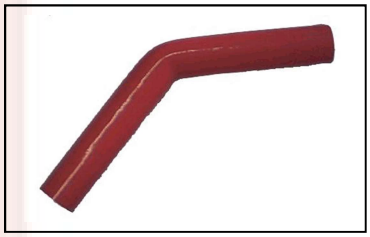
10.4. Silicone charge air cooler hose

The charge air cooler hose is specifically designed for trucks and earthmoving equipment. The charge air cooler hose have 2 humps for large axial and radial movements and are reinforced with 3 steel rings for high boost applications.

Part No.	Description
CAC30-300x6	76 mm ID, 152 mm long
CAC30-350x6	89 mm ID, 152 mm long
CAC30-400x6	102 mm ID, 152 mm long
CAC30-400x8	102 mm ID, 200 mm long
CAC30-450x6	114 mm ID, 152 mm long

10.5. 45º Silicone bends

Part no.	Description
45-075x10	19 mm ID, 45°, 200 mm legs
45-100x10	25 mm ID, 45°, 200 mm legs
45-125x10	32 mm ID, 45°, 200 mm legs
45-150x10	38 mm ID, 45°, 200 mm legs
45-175x10	45 mm ID, 45°, 200 mm legs
45-200x10	51 mm ID, 45°, 200 mm legs
45-225x10	57 mm ID, 45°, 200 mm legs
45-250x10	63 mm ID, 45°, 200 mm legs
45-275x10	70 mm ID, 45°, 200 mm legs
45-300x10	76 mm ID, 45°, 200 mm legs
45-350x10	89 mm ID, 45°, 200 mm legs
45-400x10	102 mm ID, 45°, 200 mm legs



10.6. 90º Silicone bends

Part no.	Description
90-075x10	19 mm ID, 90°, 200 mm legs
90-100x10	25 mm ID, 90°, 200 mm legs
90-125x10	32 mm ID, 90°, 200 mm legs
90-150x10	38 mm ID, 90°, 200 mm legs
90-175x10	45 mm ID, 90°, 200 mm legs
90-200x10	51 mm ID, 90°, 200 mm legs
90-225x10	57 mm ID, 90°, 200 mm legs
90-250x10	63 mm ID, 90°, 200 mm legs
90-275x10	70 mm ID, 90°, 200 mm legs
90-300x10	76 mm ID, 90°, 200 mm legs
90-350x10	89 mm ID, 90°, 200 mm legs
90-400x10	102 mm ID, 90°, 200 mm legs

10.7. Silicone reducers

Part no.	Description
R40-125/175	45 to 32 mm ID, 76 mm long
R40-150/175	45 to 38 mm ID, 76 mm long
R40-150/200	51 to 38 mm ID, 76 mm long
R40-175/200	51 to 45 mm ID, 76 mm long
R40-175/225	57 to 45 mm ID, 76 mm long
R40-175/300	76 to 45 mm ID, 76 mm long
R40-200/225	57 to 51 mm ID, 76 mm long
R40-200/250	63 to 51 mm ID, 76 mm long
R40-200/275	70 to 51 mm ID, 76 mm long
R40-200/300	76 to 51 mm ID, 76 mm long
R40-200/325	83 to 51 mm ID, 76 mm long
R40-225/250	63 to 57 mm ID, 76 mm long
R40-225/275	70 to 57 mm ID, 76 mm long
R40-225/300	76 to 57 mm ID, 76 mm long
R40-250/275	70 to 63 mm ID, 76 mm long
R40-250/300	76 to 63 mm ID, 76 mm long
R40-250/325	83 to 63 mm ID, 76 mm long
R40-275/300	76 to 70 mm ID, 76 mm long
R40-275/350	89 to 70 mm ID, 76 mm long
R40-300/350	89 to 76 mm ID, 76 mm long
R40-300/400	102 to 76 mm ID, 76 mm long
R40-325/400	102 to 83 mm ID, 76 mm long
R40-350/400	102 to 89 mm ID, 76 mm long

11. Aluminium mandrel and pressed bends, stubs and tubing

Our aluminium bends and elbows, except for the mandrel type, are pressed from plate and fused together. All mandrel bends have 140 mm legs.

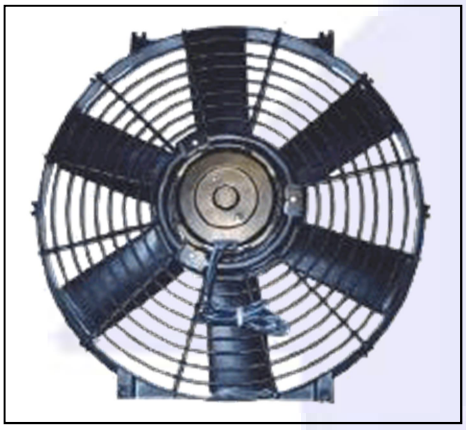
We bead roll our stubs from 32 mm up to 102 mm tubing with a 3 mm wall thickness.

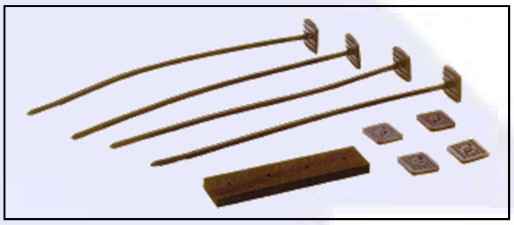
We also sell aluminium tubing per meter from OD 8 mm to 101.6 mm

Part no.	Description - Outside Diameter	Thickness	Radius
AE25	Pressed Elbow OD 25 mm	3	47
AMB-32x1.5	Mandrel Bend OD 32 mm	1.5	48
AMB-38x1.5	Mandrel Bend OD 38 mm	1.5	57
AE38	Pressed Elbow OD 38 mm	3	45
AB38	Pressed Bend OD 38 mm	3	70
AE45	Pressed Elbow OD 45 mm	3	50
AMB-51x1.8	Mandrell Bend, OD 51 mm	1.8	76
AE51	Pressed Elbow OD 51 mm	3	47
AE57	Pressed Elbow OD 57 mm	3	50
AB57	Pressed Bend OD 57 mm	3	85
AMB-63x1.8	Mandrel Bend OD 63 mm	1.8	95
AE63	Pressed Elbow OD 63 mm	3	55
AMB-70x1.8	Mandrel Bend OD 70 mm	1.8	105
AMB-76x1.8	Mandrel Bend OD 76 mm	1.8	114
AE76	Pressed Elbow OD 76 mm	3	90
AMB-89x2	Mandrel Bend OD 89 mm	2	134
AE89	Pressed Elbow OD 89 mm	3	90
AMB-102x2	Mandrel Bend OD 102 mm	2	153
AE101	Pressed Elbow OD 102 mm	3	120
AE127	Pressed Elbow OD 127 mm	3	120

12. Electric fans – 12 and 24 V

12.1. Davies, Craig 12 & 24 V automotive





Quick fit kit

These electrical fans provide a new standard in efficient, low profile, low noise, air movement devices. They are suitable as replacement units or as additional cooling fans. All the fans listed here are fully reversible. Each fan has its own shroud. A quick fit kit is sold as an optional extra, for easy installation. As a primary cooling source they provide:

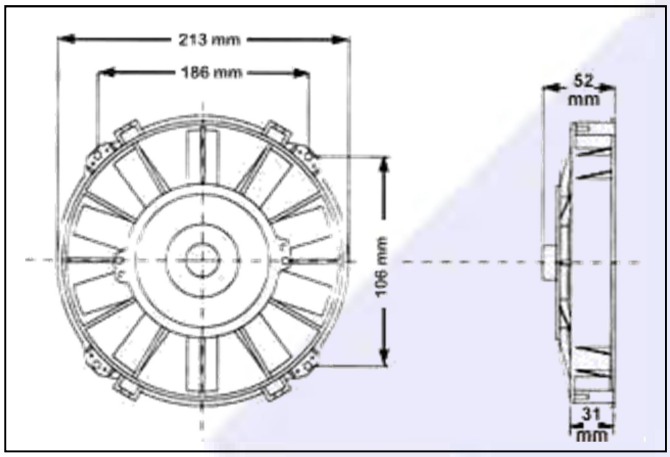
- Economical replacement for O.E. parts
- About 5% increase in engine power and fuel saving when replacing fan clutch assemblies
- Compatibility with all electric fan controls

Applications:

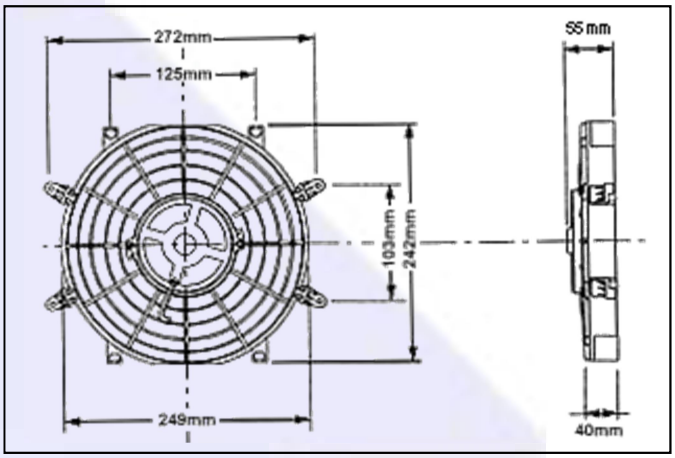
- Engine cooling fans
- Automotive air conditioner fans
- Oil cooler fans
- Intercooler fans

Part nr.	Size	Rated power	Max CFM (m³/h)
0135	8” (213x213x52)	90 W, 12 V	390 (663)
0136	8” (213x213x52)	90 W, 24 V	390 (663)
0160	9” (249x242x60)	90 W, 12 V	587 (997)
0161	9” (249x242x60)	90 W, 24 V	587 (997)
0145	10” (290x270x64)	90 W, 12 V	692 (1176)
0147	10” (278x275x55) SLIM	90 W, 12 V	(1152)
0146	10” (290x270x64)	90 W, 24 V	692 (1176)
0162	12” (293x293x55)	90 W, 12 V	812 (1380)
0163	12” (293x293x55)	90 W, 24 V	812 (1380)
0164	14” (350x348x76)	130 W, 12 V	1018 (1730)
0107	14” (350x348x94) HP	160 W, 12 V	1500 (2548)
0165	14” (350x348x76)	130 W, 24 V	1018 (1730)
0166	16” (425x400x101)	225 W, 12 V	2120 (3602)
0172	16” (425x400x101)	225 W, 24 V	2120 (3602)

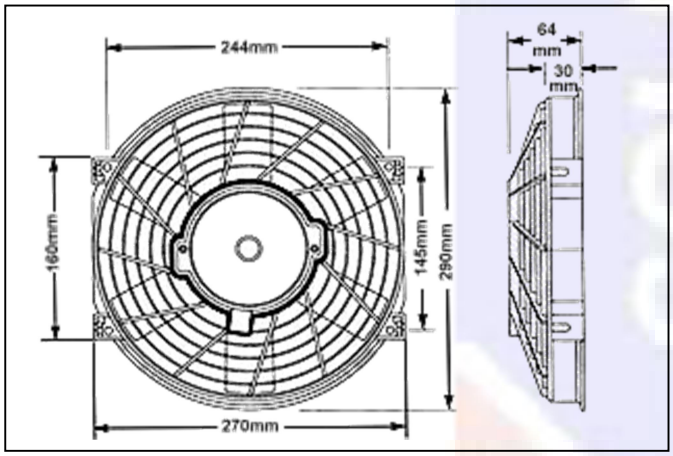
Electric fan dimensions:



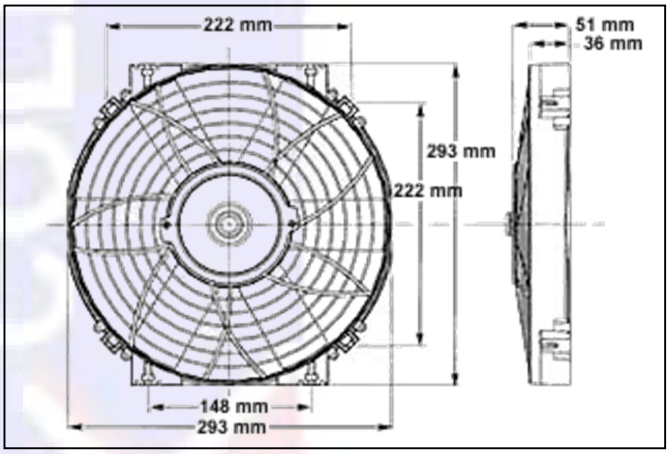
8”



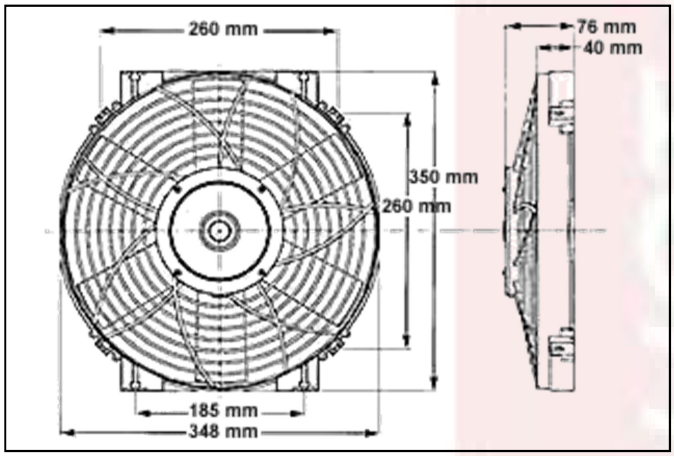
9”



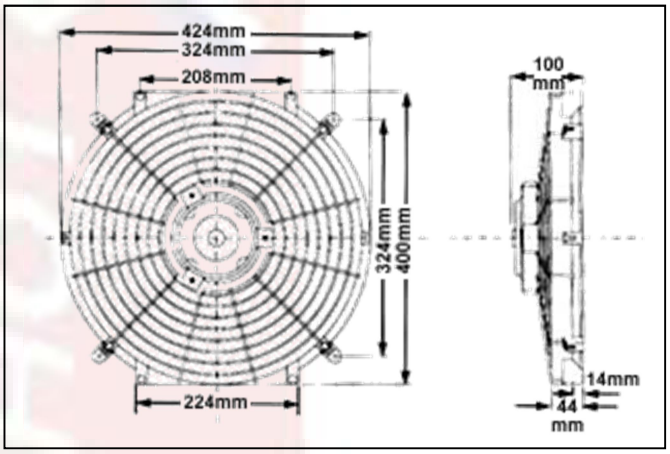
10”



12”



14”

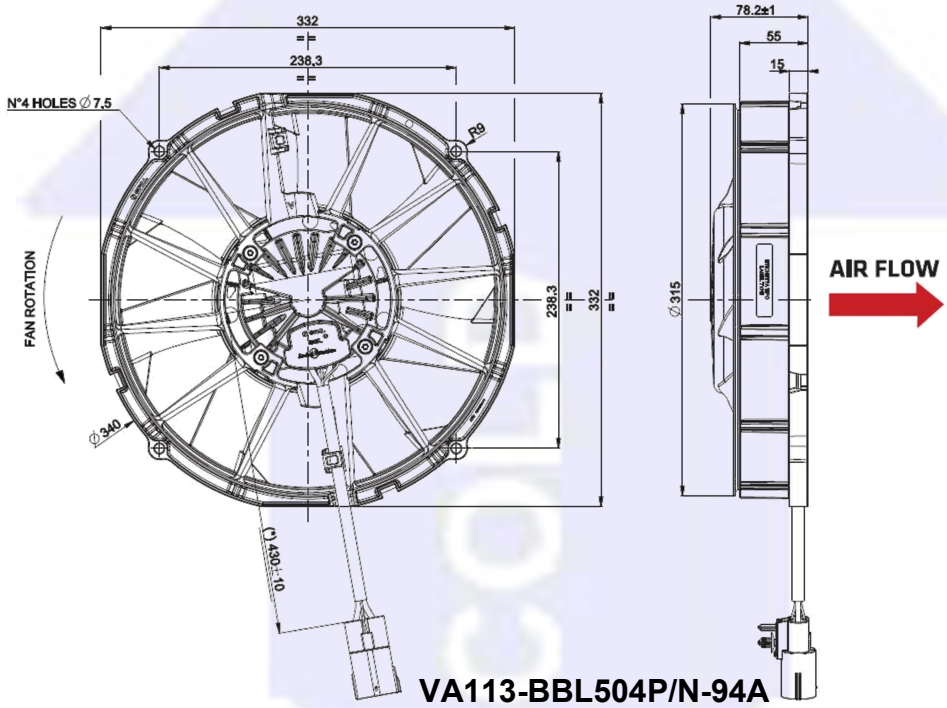


16”

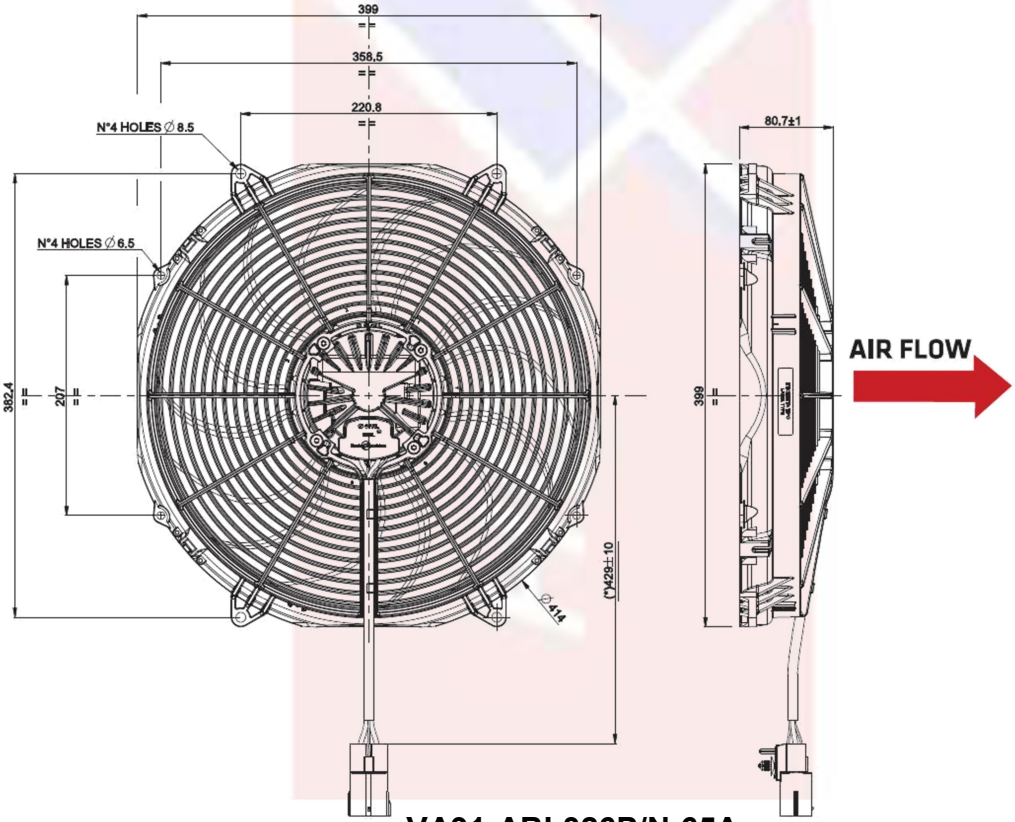
12.2. Spal 12 & 24 V Brushless fans

Spal brushless fans offer the following advantages over similar brushed fans:

- Speed controllable via PWM controller
- Soft start – no current spike during startup
- Much increase lifespan of up to 40 000 hrs
- Reduced profile / thickness
- Reduced weight



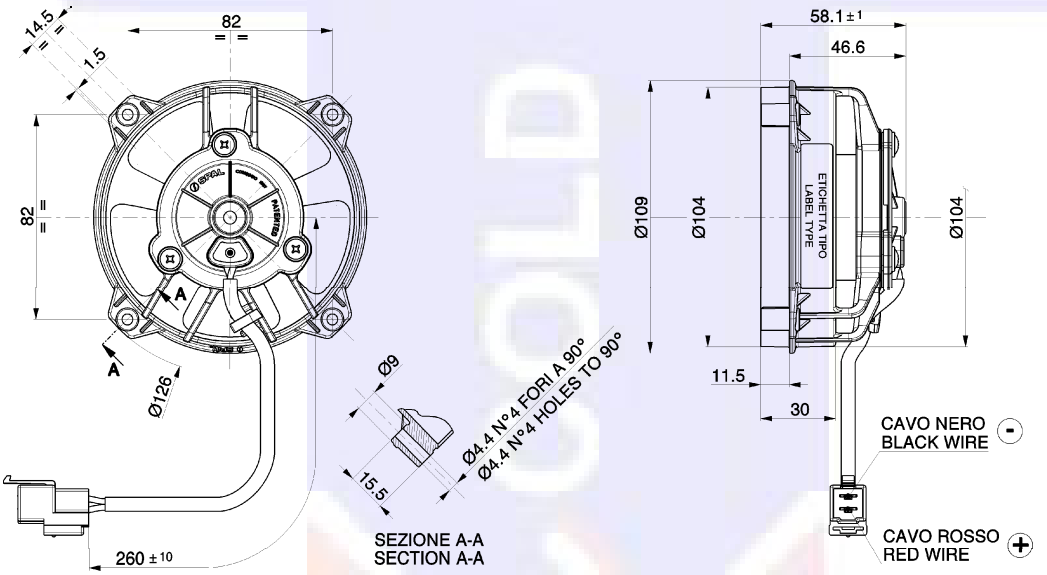
VA113-BBL504P/N-94A
24V - 850 W - 4300 m³/hr



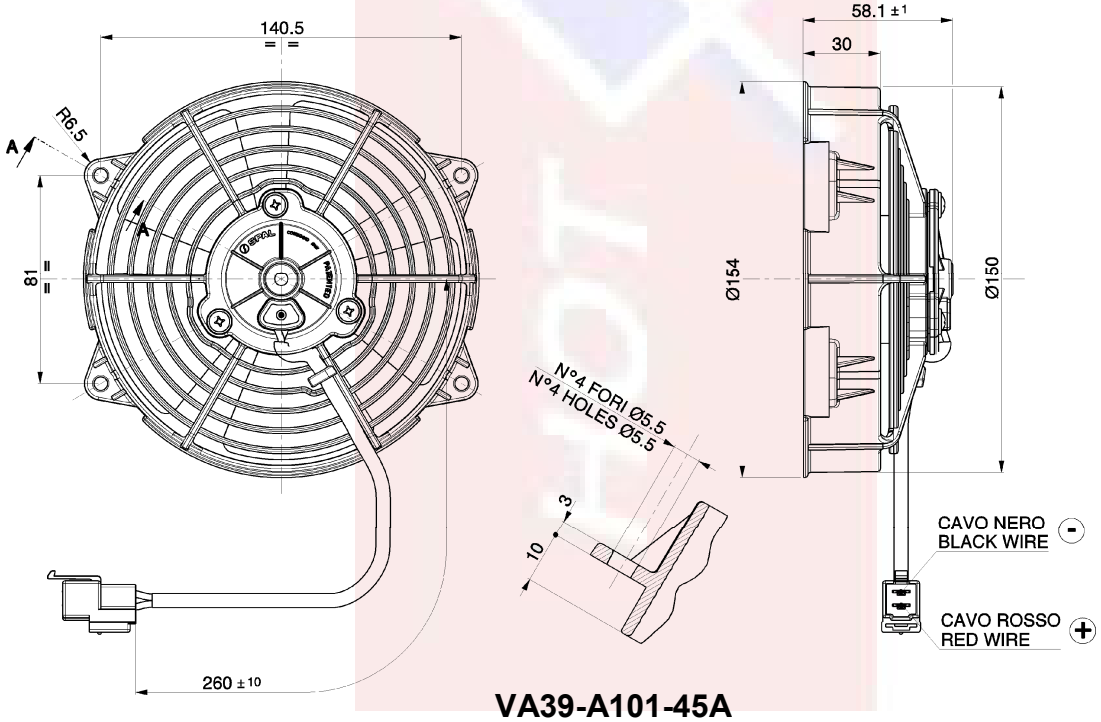
VA91-ABL326P/N-65A
12 V - 300W - 3150 m³/hr

12.3. Spal 12 & 24 V Hi-performance fans

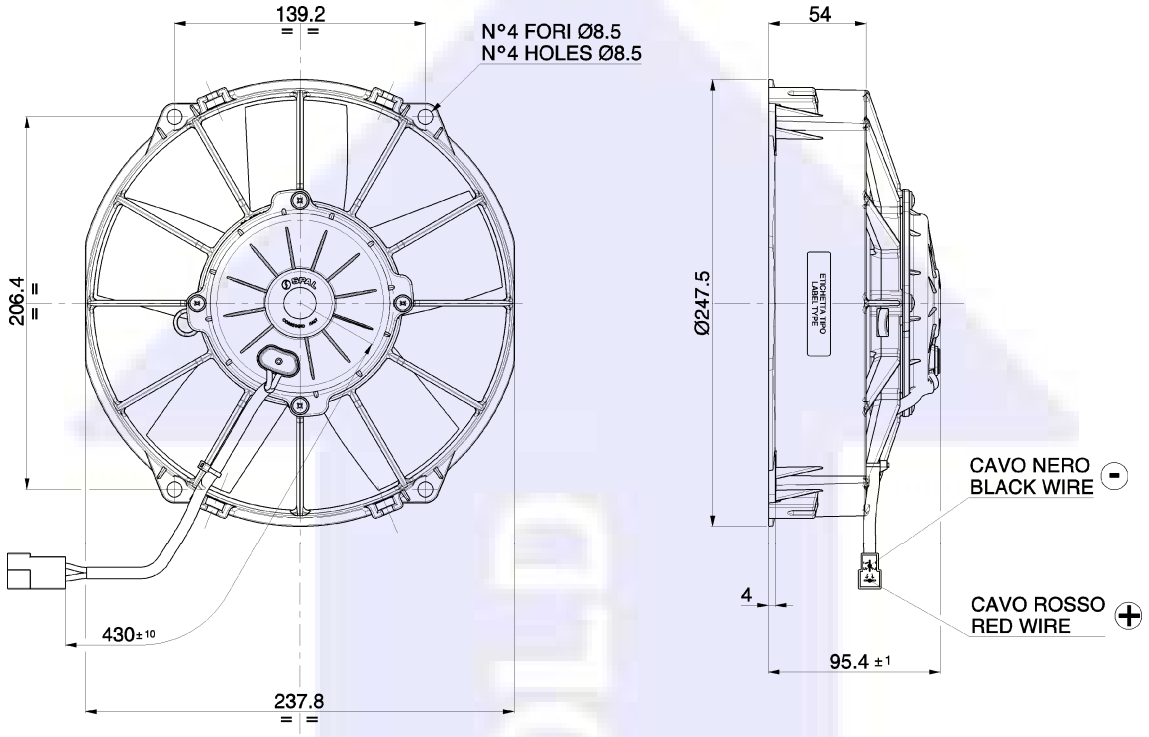
Part number	Blade dia.	Max flow - m³/hr	Flow direction	Voltage
VA32-A101-62A	96 mm	250	Suction	12 V
VA39-A101-45A	140 mm	610	Suction	24 V
VA02BP70LL40S	225 mm	1260	Blowing	12 V
VA26-AP50C44A	280 mm	2090	Suction	12 V
VA59BP70LL37A	280 mm	2270	Suction	24 V
VA01AP70LL36A	305 mm	2780	Suction	12 V
VA01BP70LL36A	305 mm	2900	Suction	24 V
VA01BP70LL36S	305 mm	2760	Blowing	24 V
VA01BP90LL79S	305 mm	3260	Blowing	24 V
VA33AP91LL65A	385 mm	3310	Suction	12 V



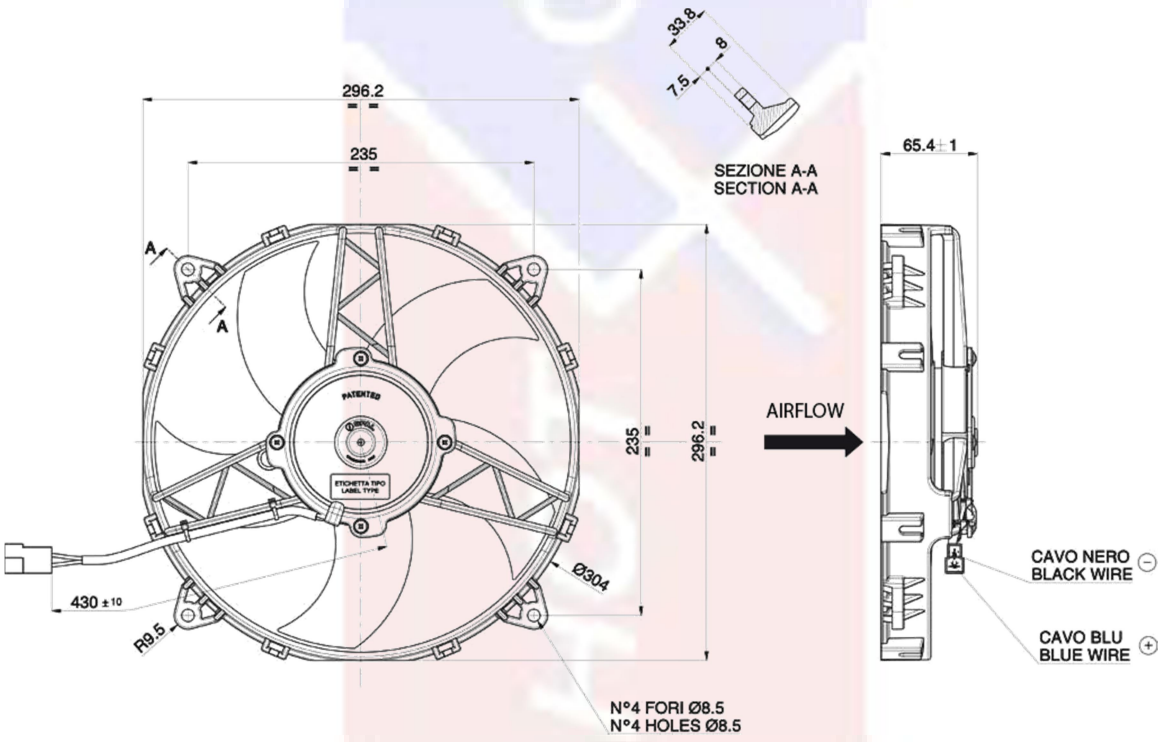
VA32-A101-62A



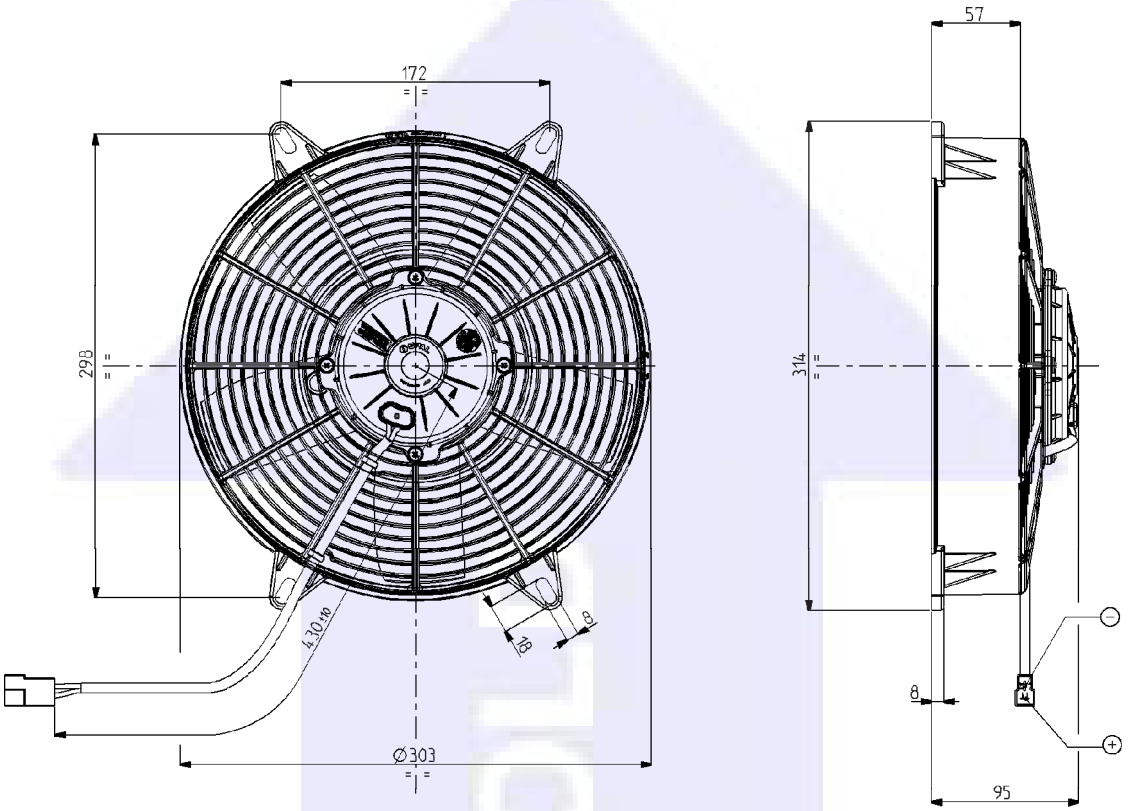
VA39-A101-45A



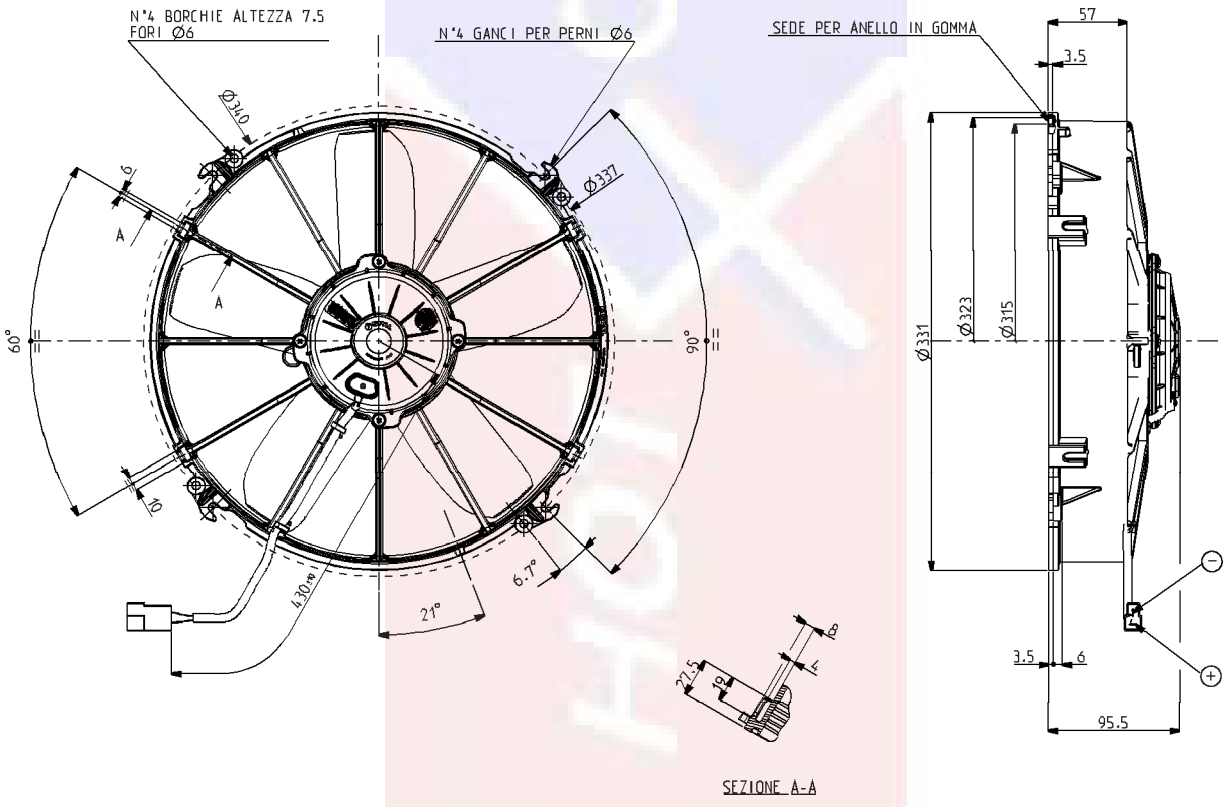
VA02-BP70LL-40S



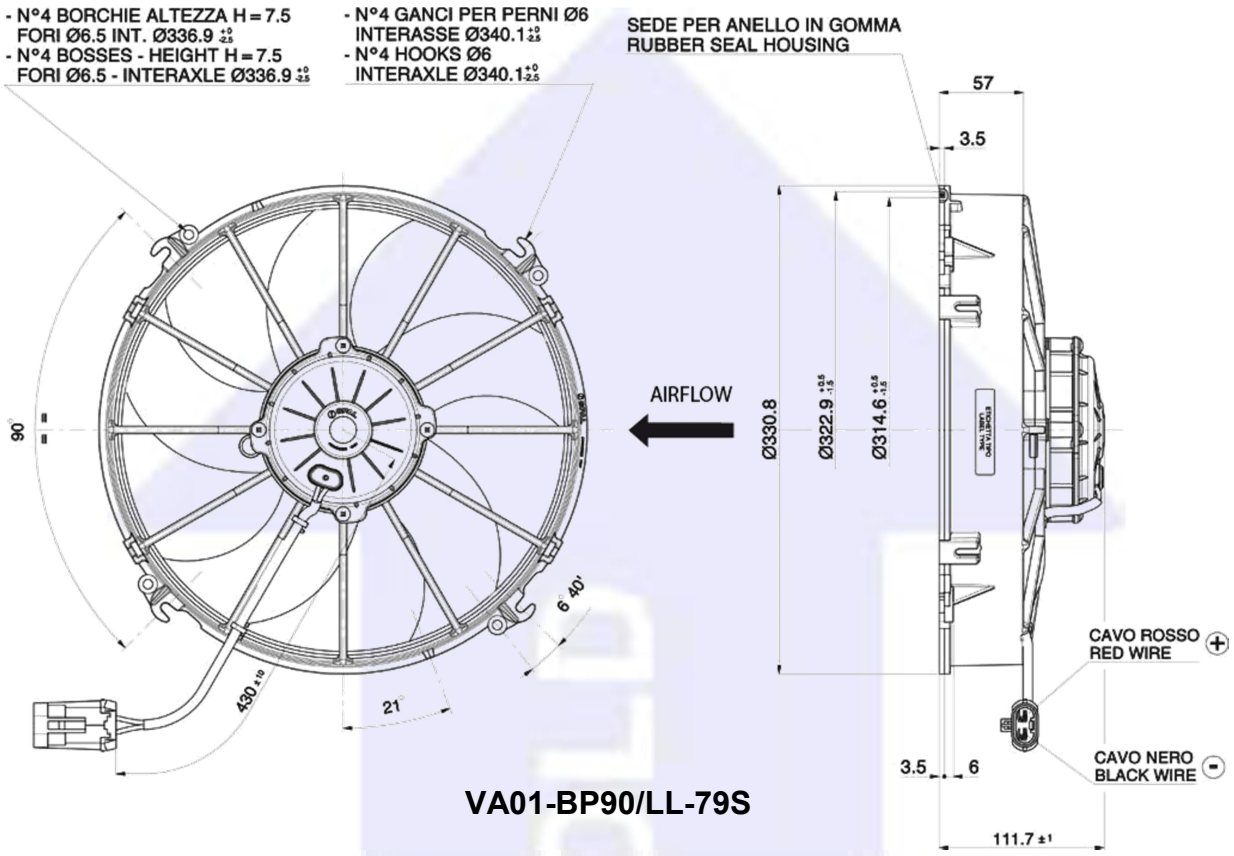
VA26-AP50/C-44A



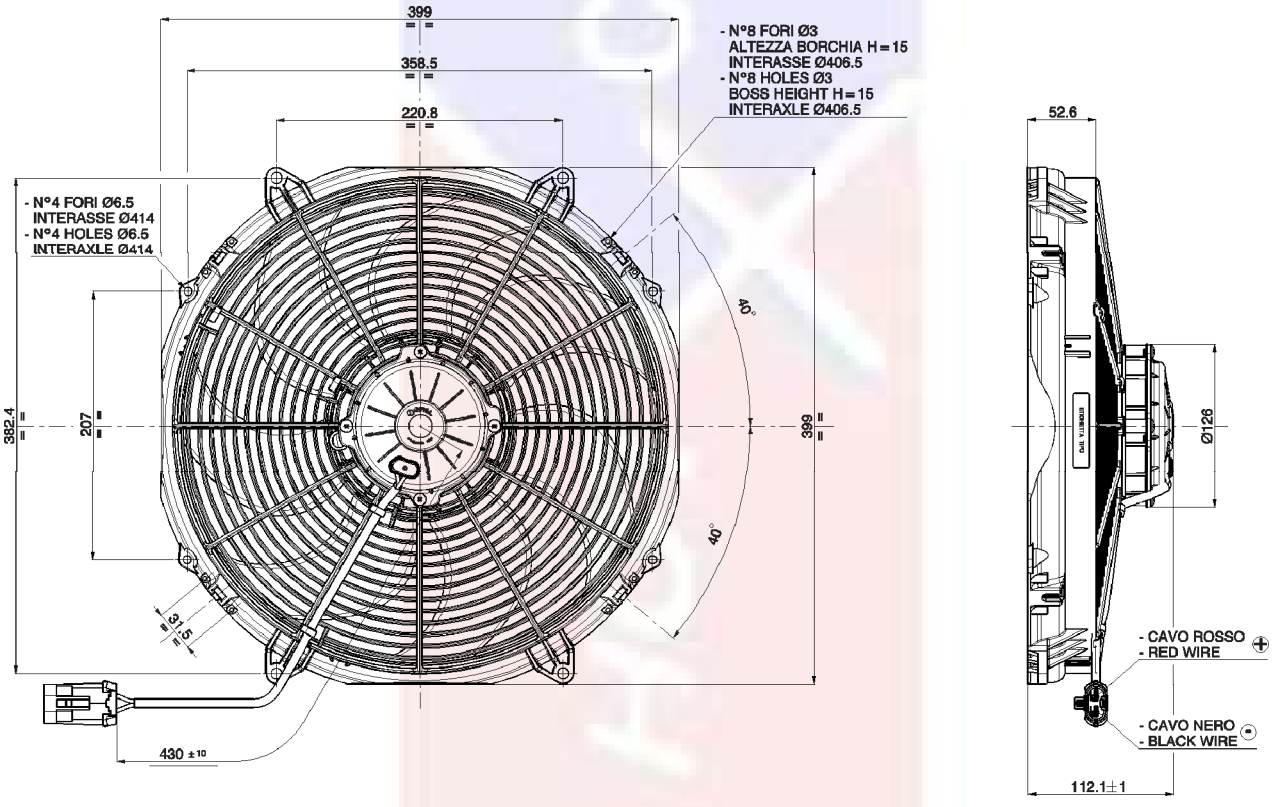
VA59-BP70LL-37A



VA01AP70LL36A & VA01BP70LL36A & VA01BP70LLS



VA01-BP90/LL-79S



VA33-AP91/LL-65A

13. Heavy duty fans blades

Our range of on- and off-road fan blades consist of modular, composite, moulded and metal fan blades.

Modular Fans offer greater flexibility in design and manufacturing for optimal performance plus faster, easier testing and prototyping. The fans are constructed with innovative clamshell knuckles that clamp each blade to the steel-center disk. This allows blades to be set to a specific pitch angle. These fans feature a selection of computer-optimized blade designs for maximum efficiency and advanced engine cooling. These blades are available in up to 1 829 mm diameter.

Composite Standard Fans feature plastic fan blades attached to metal spiders. This gives you the best of both worlds. You get a metal fan's capability to twist the fan blade angle. Plus you receive the lighter weight and added efficiency of plastic fans. They are available in up to 2 438 mm diameter.

Moulded axial fan blades are precisely that, a moulded nylon blade with a metal center disc. They are lightweight and efficient. These blades are available in up to 864 mm diameter.

Part of the moulded fan blades are the HEHF, which is a combination of the best features of axial-, mixed- and radial-flow technology-minus all the disadvantages. This innovative high-efficiency, hybrid-flow technology means the ultimate airflow solution to meet the demands of EPA10, Euro VI and Tier 4 engines. Patented design optimized to move air more efficiently around the engine and through the under-hood compartment with the highest available efficiency and lowest noise. These blades are available in a 550 and 750 mm diameter.

Metal Standard Fans are custom designed to meet your precise application requirements for airflow, size, blade width, shroud type, tip clearance, fan pulley ratio, fan speed range and other factors. Our experienced and technical experts work with you to determine the right fan for your light-, medium- or heavy-duty cooling needs for both on- and off highway applications. The metal blades are available in up to 2 438 mm diameters.

14. Heavy duty fan drives

Our range of fan drives are heavy duty units that are suitable for most on- and off-road applications, for example:

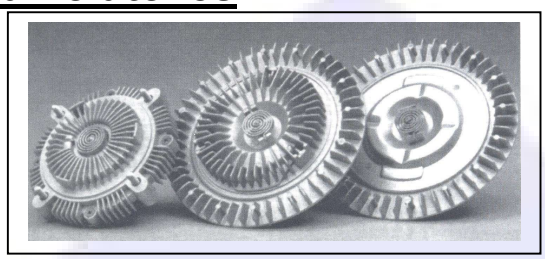
- Military vehicles
- Earthmoving machinery
- Mining machinery
- Compressors
- Generators
- Forklifts

The range consists of variable speed, two-speed and on/off fan drives. Variable speed drives include fully variable drives with a programmable controller, PWM controllable drives and viscous fan drives. The top of the range drive can handle up to 2 500 Nm, a blade size up to 2 438 mm and engine power of up to 2 983 kW. Fully variable design offers significant fuel savings, reduced fan noise, more available horsepower, high torque and improved cooling with increased airflow.

Two-Speed Fan Drives alternate between eddy current and spring-actuated cooling. While using eddy current, the fan drive turns the fan at a lower speed, which reduces operating noise, increases available horsepower for auxiliary systems and minimizes radiator abrasion from dust and debris. It spring-actuates when more cooling is needed, running the fan at full input speed. It also provides faster engine warm-ups in cold weather. Two-Speed Fan Drives are suitable for up to 447 kW engines.

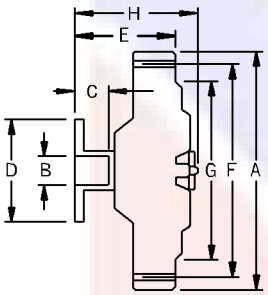
On/Off fan drives are either pneumatically or electromagnetically controlled. The On/Off Pneumatic Fan Drive engages only when cooling is needed, resulting in reduced horsepower and fuel consumption. In the off mode, the drive completely disengages. The drive is engine controlled, providing the best possible response time. When engaged, the drive can deliver the maximum torque required by high-airflow capacity fans, without slipping. Electromagnetic On/Off Fan Drives delivers efficient cooling while improving engine performance in today's demanding diesel engines. And the no-slip operation responds quickly to cooling requirements in off-highway equipment, medium-duty trucks and buses.

15. Viscous fan clutches

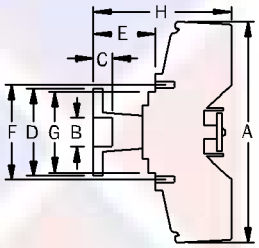


Part nr.	Make	Engine Model	Displacement	Type
2565	Mazda, Mitsubishi	4G54	2.6 Petrol	1
2650	Nissan Hardbody	VG30E	3.0 Petrol	1
2654	Mitsubishi Pajero	6G72	3.0, 3.5 Petrol	1
2657	Toyota Landcruiser	2F, 3F	4.0, 4.2 Petrol	1
2661	Toyota Landcruiser	1FZFE EFI	4.5 Petrol	1
2664	Nissan	VG33E	3.3 Petrol	1
2796	Jeep Cherokee	L6	4.0 Petrol	4
2809	Land Rover Disco 2,3		4.0 Petrol	4
5001	Nissan Patrol	L28, TD42, Z24	2.8, 4.2, 2.4	1
5103	Toyota Hilux	12R, 18R, 2Y, 3Y, 4Y	1.6 – 2.2 Petrol	1
5124	Toyota Hilux	2L, 3L, 5L	2.4, 2.8, 3.0 Diesel	1
5231	Nissan	VG30E	3.0 Petrol	1
5410	Toyota Hilux		2700i Petrol	1
5412	Toyota Hilux	KZTE	3.0 Diesel	1
5499	Toyota Landcruiser	2H, 1HZ	4.0, 4.2 Diesel	1

TYPE 1



TYPE 4



Dimensions:

Part nr.	A	B	C	D	E	F	G	H
2565	149	16	12.7	57.9	45.7	122	104	58
2650	157.5	16/32	19.8	76.2	59.9	143.5	128.8	74.9
2654	169	16/24	21.6	68.1	59.4/40.4	153	137	74
2657	169	16	22.9	78	62	136	104	77
2661	168.9	16	21.1	78	72.4	135.9	103.9	87.4
2664	157.5	16/32	12.7	76.2	59.9	143.5	128.8	74.4
2796	163.8	16	16	62.5	41.4	82.6	66.3	94.2
2809	163.1			37	27.5	82.6	66.6	80.5
5001	147	17.2/31.4	23.9	76.8	45.3	134	420	59
5103	136	16	22.5	58	53	122	104	73
5124	160	16 T	11/21.5	77.5	69.3	136	104	84
5231	147	13.7/24.8	7.4/16.6	66	50	134	120	63
5410	164	16	23.5	78	68.7	136	104	84
5412	164	22	23.5	78	76	136	104	82.3
5499	159	16 T	10.7/23.4	78	76.3	136	104	95

16. Electric Water Pumps & Accessories

16.1. Electric Water Pump (EWP)

The revolutionary range of Davies, Craig's patented Electric Water Pumps are unique performance enhancement accessories suitable for most makes of 12V and 24V engines.

There are four models available:

- EWP®80 – 80 litres [21.13 US gal] per minute: suitable for engines up to 2.0L (2000cc)
- EWP®115 – 115 litres [30.38 US gal] per minute: for engines and 4WDs 2.0L to 3.5L (2000cc to 3500cc)
- EWP®130 – 130 litres [34.4 US gal] per minute: Recommended as a replacement for the EWP®80 and for engines 3.5L to 5.0L (3500cc to 5000cc)
- EWP®150 – 150 litres [39.63 US gal] per minute: to satisfy those larger and higher horsepower, turbocharged, supercharged and 'worked' engines which develop excessive heat that must be tamed!

EWP®150, EWP®130, EWP®115 (Alloy and Nylon) and EWP®80

The EWP® is designed to replace a vehicle's existing Mechanical belt-driven water pump. All models are simple, fit-it-yourself electric water pumps – lightweight, compact, more powerful design suitable for small, medium, large, plus high-performance cars and 4WD vehicles.
The EWPs are vital performance enhancement products that improve engine cooling management while giving more power and torque and evenly dissipating heat soak.
All deliver 3% to 5% improved fuel economy while lowering environmental impact by reducing emissions.
The EWPs are ideal as a 'booster' for your current mechanical pump within your existing cooling system.

Combined with the Electronic Digital Controller, the EWP continues to run after you've switched off, eliminating "heat soak" and extending engine life. Davies, Craig's revolutionary, Australian-designed EWP are made from anti-corrosive, lightweight, glass-filled nylon. The aluminium alloy version is also available in 24 V.

All kits come with everything you need for easy installation including, all the necessary wiring, different couplings to fit various hose sizes and easy to understand, Do-It-Yourself instructions.

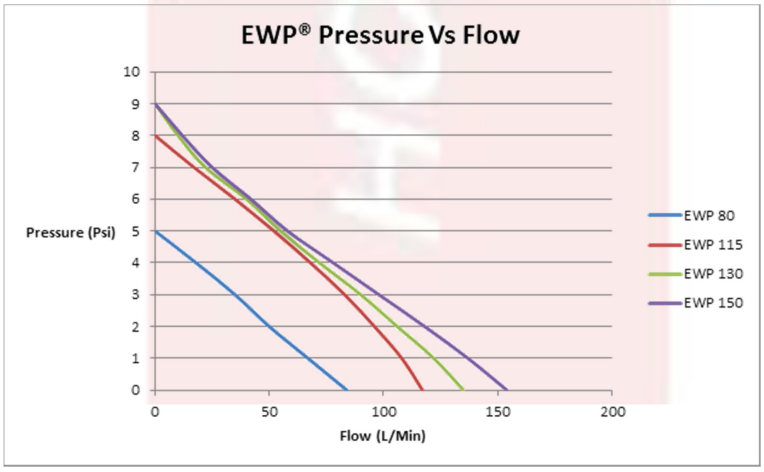
The EWP is the most economical way to increase horsepower and save on fuel consumption while caring for your engine.

Options for pump control

1. Use in conjunction with LCD EWP®/Fan Digital Controller
   The Digital Controller has a micro-processer which will run the EWP® at exactly the right flow rate maintaining your set, targeted engine temperature.
2. Use in conjunction with a Thermatic® Switch Combine the EWP® with an adjustable Thermatic® Switch to add a cooling boost to an overheating mechanical pump cooling system.
3. Continuous Running
   Wire the pump to the ignition for maximum cooling – suitable for race vehicles, very hot climates and chronically overheating engines.
   Electric Water Pump Kits are supplied with everything you need for DIY installation, including easy-to-understand instructions

Pump Summary

Pump Model			At a glance				Page
			Operating Volage	Max. Current	Max Flow Rate	Opertating Temperature	
EWP®150		12 Volt (#8060)	3 V - 15 V DC	10 Amps	150 L/min 39.63 US gal/min	-40° - 130° C -40° - 266° F	
		24 Volt (#8061)	10 V - 27 V DC	5.5 Amps	150 L/min 39.63 US gal/min	-40° - 130° C -40° - 266° F	
EWP®130		12 Volt (#8080)	3 V - 15 V DC	10 Amps	130 L/min 33.34 US gal/min	-40° - 130° C -40° - 266° F	
		24 Volt (#8081)	10 V - 27 V DC	5,5 Amps	130 L/min 33.34 US gal/min	-40° - 130° C -40° - 266° F	
EWP®115 Alloy or Nylon	 ALLOY	12 Volt (#8040)	3 V - 15 V DC	10 Amps	115 L/min 30.38 US gal/min	-40° - 130° C -40° - 266° F	
		24 Volt (#8041)	10 V - 27 V DC	5.5 Amps	115 L/min 30.38 US gal/min	-40° - 130° C -40° - 266° F	
	 NYLON	12 Volt (#8025)	3 V - 15 V DC	10 Amps	115 L/min 30.38 US gal/min	-40° - 130° C -40° - 266° F	
		24 Volt (#8026)	10 V - 27 V DC	5.5 Amps	115 L/min 30.38 US gal/min	-40° - 130° C -40° - 266° F	
EWP®80		12 Volt (#8005)	3 V - 15 V DC	7.5 Amps	80 L/min 21.13 US gal/min	-20° - 130° C -4° - 266° F	



16.2. EWP Controller

For optimum control of Davies, Craig 12 Volt and 24 Volt Electric Water Pumps. Suits EWP®80, EWP®115, EWP®130, EWP®150 and Thermatic® Fans.

The LCD EWP® / Fan Digital Controller has two specific functions. This unique Digital Controller will manage the operation of the EWP® by varying the speed of the pump in response to the coolant temperature and manage control of your electric engine fan.

The Controller has a push-button to lock in any targeted/set temperatures between 40°C (104°F) to 110°C (230°F) . It's highly recommended you set/target the Controller to closely match your engine's existing thermostat temperature.

Generally, higher engine temperature will offer improved fuel efficiency and lower engine temperature more power. The Digital Controller will operate the engine's electric fan automatically once the engine has reached 3°C (5.4°F) above the targeted (set) temperature. Another significant benefit is that the Controller allows the EWP® to run on after ignition shutdown to eliminate heat soak.

Features:

- Black & White Numerical LCD Screen
- Suitable for 12v & 24v electrical systems, with relevant displays
- Celsius or Fahrenheit display option
- Warning Alarms:
- Plus 10°C (14°F) set/target temperature
- Under temp 40°C after 5 mins
- Temp sensor error
- Over or under voltage
- EWP error
- Select any set temp range from 40°C (104°F) to 110°C (230°F)
- Set / targeted temperature memory
- Override feature to assist bleeding EWP & fail safe
- Input voltage display
- Compatible with billeted style Electric Water Pumps
- Genuine Thermometer, with coolant and targeted/set temp. displays
- Diagnostic check & warm-up signals

- Flashing “EWP®” logo signifying water pump in operation
- Davies Craig Thermatic® Fan logo, circulating signifying fan in operation
- Flashing High & Low Voltage indicators
- Low & High Temp indicators
- Above Set/Target Temperature indicator accompanies audible alarm
- Temperature Sensor short & open circuit indicators
- Automatic time-out, EWP® runs for 3 minutes or until engine temp has reduced to -10◦C (-14F) below set/targeted temp whichever occurs first.

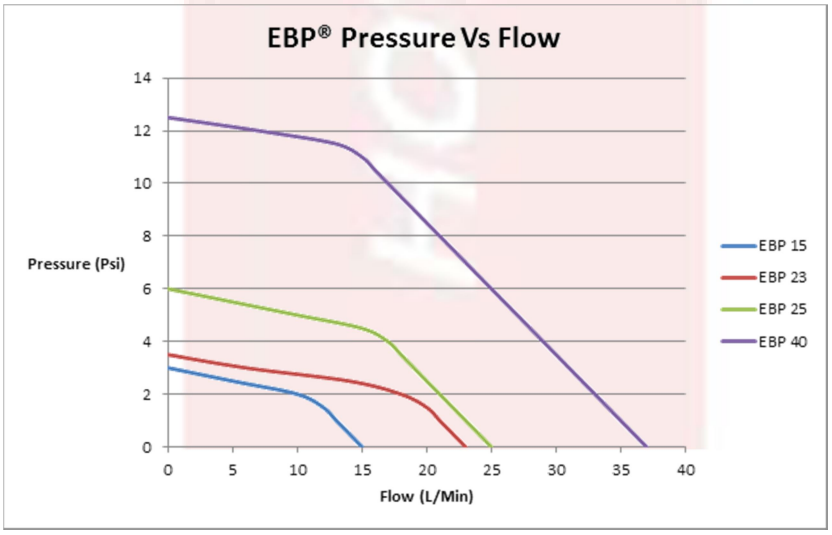
The Davies, Craig LCD EWP®/Fan Digital Controller (#8001) as an engine management component has undergone extensive research, development, vehicle and test centre scrutiny.

Technical Specification - LCD Controller	
Voltage range	12V DC to 29V DC
Display LCD size	70mm (2.76”) x 60mm (2.36”)
Maximum current	12Amps
Warning alarm	High & low Temp., Above set temp., Sensor short circuit, Pump error, High & low voltage and Sensor open circuit
Targeted (set) temperatures	Singular degrees from: 40°C (104°F) to 110°C (230°F)
Memory	Set & targeted temperature
Fan cut-in temp.	3°C (5.4°F) above the targeted (set) temperature
Controller type	PCB with micro-processor
Sensor type	Thermister in housing
Overrun/ shutdown	-10°C (14°F) below set/target temperature or 3 minutes
Indicators	Temperature, power, EWP, test, fan, high & low temp, voltage, above set temperature (with alarm)
Weight	100 grams (3.5 oz)
Dimensions	Length = 95mm (3.7") Width = 130mm (5.1") Depth = 25mm (1”)

16.3. Electric Booster Pumps - 12 & 24 V

The EBP is a 'brushless' 12 & 24 V, high flow, magnetically driven water pump. The EBP motor has no brushes to ever wear out and the pump is magnetically driven by the motor, which means that no shaft sealing is required. There is only one moving part, the impeller, and it is floating in the coolant. The pump chamber is hermetically sealed for trouble free operation. The EBP's ease of installation, low current draw, high flow capacity and long life makes it ideal for a range of applications.

SPECIFICATION		ELECTRIC BOOSTER PUMPS			
		EBP15	EBP23	EBP25	EBP40
Flow Rate (Max)	L/Min	15	23	25	37
	Gal/Min	4	6.1	6.6	9.8
Pump Material	Nylon 66	Yes	Yes	Yes	Yes
	Alloy	No	No	No	No
Voltage	12 Volt	Yes	Yes	Yes	Yes
	24 Volt	No	No	No	Yes
Operating Temp	C	-40 to 120	-40 to 120	-40 to 120	-40 to 120
	F	-4 to 248	-4 to 248	-4 to 248	-4 to 248
Weight	Grams	245	364	995	570
	Pounds	0.54	0.8	2.19	1.25
Fits Hose Size		12.5 to 19mm	12.5 to 19mm	19mm	19mm
Engine Size (Liters)		Motorbikes, Heater Systems & Solar			



16.4. Electric water pumps - 12 & 24V

Our range of reversible, self-priming electric water pumps has either rubber impellers or PTFE helical gears. Rubber impellers guarantee high flow rates and the passage of small impurities in waste water. PTFE gears guarantee constant pressure, heavy duty cycles, lower noise levels and excellent resistance to chemicals. The range also includes a stainless steel bodied pump with either a Viton or EPDM seal for aggressive fluids. The electric water pump range has a maximum flow rate of 46 l/min and a maximum pressure of 7 bar.

Stainless steel pump

Rubber impeller pump

Shower kit

Pressure washer kit

16.5. Electric oil pumps – 12 & 24V

Our range of reversible oil transfer pumps is self-priming and has bronze gear for transfer of lubricating oils and viscous fluids. Helical bronze gears guarantee constant pressure, heavy duty cycles, less noise and can operate in the absence of liquid. A gear pump uses the meshing of gears to pump fluid by displacement. They are one of the most common types of pumps for hydraulic fluid applications. These pumps are available in versions with an integrated on-off switch or flow reverser switch, a kit with an on-off switch and battery clips and a kit with electronic control. Typical applications of this pump are the circulation of gearbox or differential oil for remote oil cooling. The maximum working pressure possible is 3 bar and the maximum flow is 18 l/min with SAE30 oil at 25°C

16.6. Electric diesel pumps – 12 & 24V

Our range electric diesel pumps consist of a sliding vane pump and bronze gear pumps.

The sliding vane pump is self-priming and has an integrated bypass-valve. The sliding vanes guarantee high flow rates (45 l/min) and heavy-duty cycles. The rotor and vanes are made of resin and the body is made of aluminium with two connection options.

The self-priming bronze gear pumps are reversible. Helical bronze gears guarantee constant pressure, heavy duty cycles, less noise and can operate in the absence of liquid.
A gear pump uses the meshing of gears to pump fluid by displacement. They are one of the most common types of pumps for fluid applications.
These pumps are available in versions with a portable case with on-off switch and battery clips, an integrated on-off switch or flow reverser switch and a kit with electronic control.
The maximum working pressure possible is 7 bar and the maximum flow is 46 l/min.

17. Thermal switches

17.1. Adjustable thermal switches

The Adjustable Thermal Switch (ATS) is a temperature control device which senses the temperature of the engine's cooling water and turns on the electric fan at the set temperature.
Davies, Craig offers three types of Thermatic® Fan Switches:

- Part #0455 Premium Thermatic Switch senses both air or coolant temperatures (with #0409), single or twin fan operation, attractive dashboard mounted monitor.
- Part #0444 senses air temperature near the top radiator hose as it passes through the radiator or senses coolant temperature (with #0409) for single or twin fan operation
- Part #0401 senses the coolant temperature after it passes through the engine block prior to entering the radiator.
- Part #0400 is a combination of the unit #0401(opposite) and the #0409 Hose Adaptor (opposite), offering probe placement in the top radiator hose.

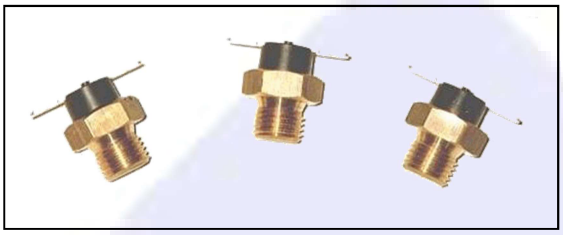
All Thermatic® Fan Switches feature:

- automatically activate the Thermatic® Fans at the set/targeted temperature when cooling is required
- can be adjusted over a wide temperature range by simply turning a knob located on the control switch (#0401). Push-button scrolling through the 40°C to 110°C temperature range (#0444 & #0455)
- can be employed to operate the Electric Water Pump when operated as an auxiliary pump to the mechanical water pump
- are ideal for dual-fan operation (#0444 & #0455).

Specs	Part #0401	Part #0444	Part #0455	Part #8001
Operating Voltage	12 & 24 Volt	12 & 24 Volt	12 & 24 Volt	12 & 24 Volt
Maximum Current	20 Amps	40 Amps	40 Amps	12 Amps EWP Only
Single Fan Control	✓	✓	✓	✓
Duel Fan Control	Wiring Dependant	✓	✓	Wiring Dependant
EWP control	ON / OFF ONLY (USE 8001)	ON / OFF ONLY (USE 8001)	ON / OFF ONLY (USE 8001)	✓
EBP control	✓	✓	✓	✗
EWP/EBP and Fan control	Wiring Dependant	✓	✓	EWP and Fans only
Single Fan/EWP/EBP Application	All DCPL Fans, EWPs & EBPs	All DCPL Fans, EWPs & EBPs	All DCPL Fans, EWPs & EBPs	All DCPL Fans & EWPs
Duel Fan Application	Relay Switching Current MAX 15A	All Fans (MAX 30A Each)	All Fans (MAX 30A Each)	All Fans (Wiring Dependant)
Speed	Single Speed	Single Speed	Single Speed	Single speed Fan & Variable EWP
AC Override	Wiring Dependant (use 0404)	✓	✓ With indicator	✗
Duel Fan Start-Up Delay	✗	10 Seconds	10 Seconds	✗
Temperature Display	✗	✓	✓	✓
Set Temperature Display	✗	✓	✓	✓
Fan Operation Indicator	✗	✗	✓	EWP and Fan
Temperature Set Indicator	✗	✗	✓	✓
Fault Display	✗	✗	✓	✓
°C Setting	✗	✓	✓	✓
°F Setting	✗	✓	✓	✓
°C D °F Change	✗	✓	✓	✓
Air Temperature Detection	✗	✓	✓	✗
Coolant Temperature Detection	✓	✓ (Requires 0409)	✓ (Requires 0409)	✓
Temperature Setting Range	40°C To 100°C (104°F To 212°F)	40°C To 110°C (104°F To 230°F)	40°C To 110°C (104°F To 230°F)	40°C To 110°C (104°F To 230°F)
Temperature Setting Method	Turn Knob	Push Button	Push Button	Push Button
Mounting position	Engine bay	Engine bay	Vehicle Cabin	Vehicle Cabin

Dimensions	35mm x 58mm x 45mm	95mm x 65mm x 56mm	80mm x 70mm x 30mm	95mm x 130mm x 25mm
Accessories	Part #1000 or #1001	Part #1000 or #1001	Part #1000 or #1001	Part #1000 or #1001
	Part #0400 (#0401 + #0409)	Part #0409	Part #0409	Thermatic Fan
	Part #0422 (Duel Fan Only)	Part #0422 (Duel Fan Only)	Part #0422 (Duel Fan Only)	EWP Header Adaptor Kit
				EWP Digital Controller Combo

17.2. Industrial Thermal switches

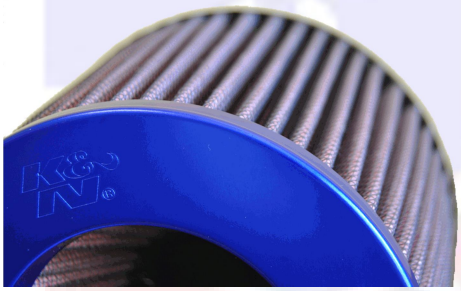


Our range of industrial thermal switches is available in various temperature settings. They are mainly used for temperature control on cooling packs with electric fans. All the switches have an M14x1.5 mm connection, which fits onto Setrab cooling packs. The thermal switches can handle temperatures ranging from -30 to 177°C and up to 10 A (AC/DC).

Part No.	Close ±3ºC	Open ±6ºC
70-06519	50	35
70-06458	60	45
70-06520	90	75

The 50 and 60ºC thermal switches are used for hydraulic applications.
The 90ºC thermal switch are used for lubricating applications as in engine & transmission cooling.

18. K&N Perfomance Air Filters



K&N Engineering, of Riverside, California, is the inventor and leading innovator of reusable cotton gauze filter technology for automotive applications. From humble beginnings as a family run business over 40 years ago, K&N Engineering, now a truly global company with offices in the U.K. and the Netherlands, continues to exist as a family owned business with an enthusiast mindset and a direct connection with motor sports that carries over throughout all levels of management and manufacturing.
Today, K&N exists as both the sales and brand leader for performance filters, and maintains a stocking catalogue of over 3,500 part numbers, including an extensive line of both factory replacement drop-in filters, FIPK (Fuel Injection Performance Kit) applications, and its line of innovative Performance Gold oil filters.

We are a distributor of K&N performance air filters. We stock a wide range of the performance air filters as well as induction and cleaning kits.

19. Tyre Pressure Monitoring System

Suitable for cars, 4WDs, single- or multi-axle trailers, motor homes, caravans, trucks, buses, 5th wheelers, motorbikes

TYREGUARD 400 TPMS

The Davies, Craig TYREGUARD 400 TPMS (Tyre Pressure Monitoring System) is a unique electronic safety system for monitoring air pressure and temperature in tyres.

It consists of simple easy-to-install, screw-on wireless sensors and a hand-held monitor. Fixed to the tyre valve, each sensor monitors the air pressure and temperature inside the tyre, and then transmits the air pressure and temperature information to the monitor.

This information is then graphically illustrated on the monitor screen and the operator can scroll through the data for each individual tyre.

The driver or passenger can read the specific data of each tyre's air pressure and temperature parameters displayed on the screen. An audible alarm will sound and the red LED light will flash should the tyre pressure and/or temperature vary markedly from each tyre's targeted air and temperature settings.

The TPMS will monitor the air pressure and temperature of up to 22 tyres with a pressure range of 0 to 1,000 kPa (145psi) and sensors within 7.6 meters (25 feet) of the device.

Part #	Description
1015	Tyreguard 400 TPMS Kit (inc. monitor, 4 sensors, batteries & anti-theft locking devices, mounting bracket, cradle and 12/24V DC charger)
1012	Monitor – Tyreguard 400
1013	Charger – Tyreguard 400

Tyre Pressure Monitor Sensors (wireless)

Extra wireless sensors are available in a twin pack for use with the TPMS Kit, #1015. The extra sensors can be fitted retrospectively to tyre valves to allow the monitoring of tyre pressures and temperatures on multi-wheeled tandem and bogey axle trailers, caravans, 5th wheelers, motor homes etc.

The TPMS #1015 will monitor up to 22 tyres with a pressure range of 0 to 1,000 kPa (145psi) and sensors within 7.6 metre (25 feet) range of the hand-held monitor. Simply fit each sensor to a tyre valve, then re-program the monitor. Each sensor is supplied with a 3-volt CR1632 lithium battery and anti-theft sensor locking device.

Part #	Description
1016	Tyre Pressure Monitor wireless sensors (2-pack)

Sensor Booster

A Sensor Booster unit may be required if your vehicle has a wheelbase in excess of eight metres (26.25 feet). The Sensor Booster is mounted at the rear of the tow vehicle to relay the sensor signals from rear/trailer wheels.

There's no need to fit a second Booster should the vehicle's rear wheels exceed 16 metres (52.5 feet) as the Booster's transmitting radius is around 18 metres (59 feet).

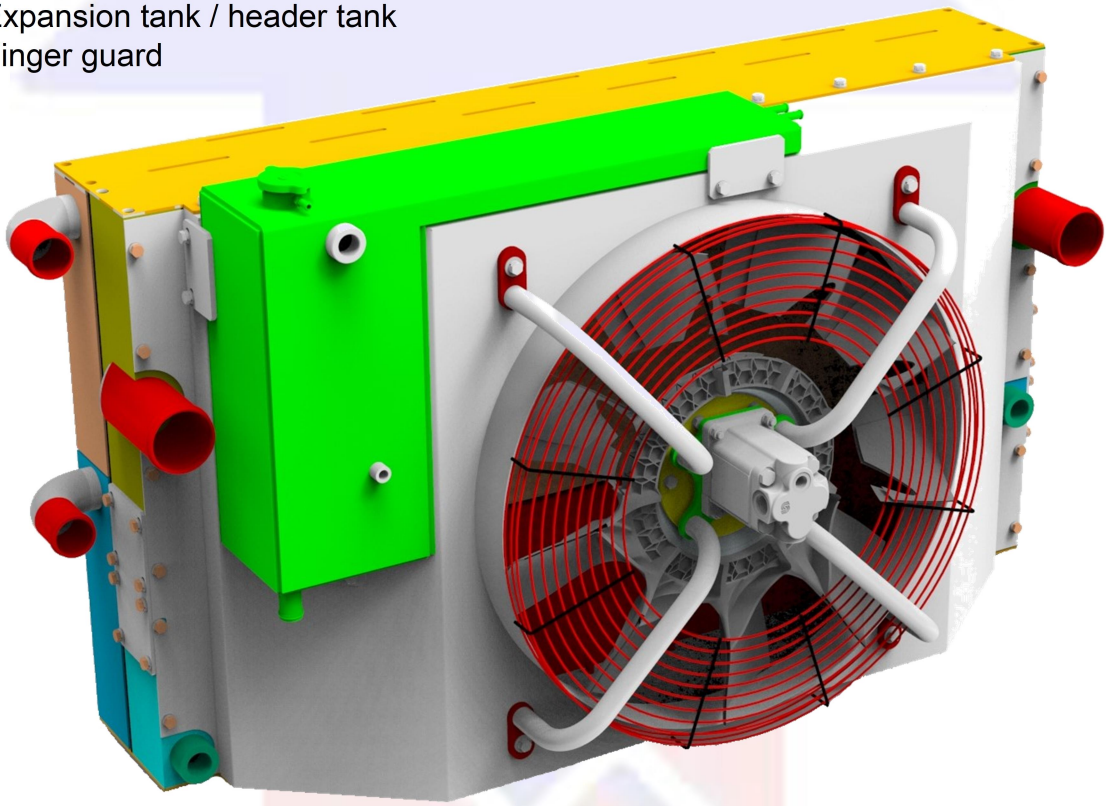
Part #	Description
1020	Tyre Pressure Monitor Sensor Booster

20. Complete cooling systems

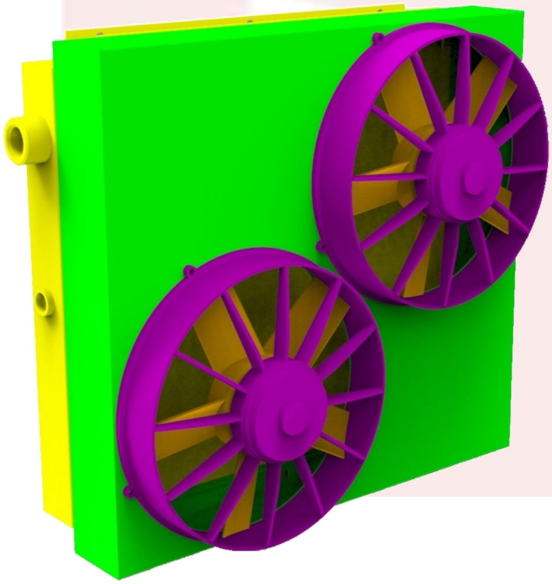
We are able to develop, design and manufacture complete cooling systems for mobile or stationary applications.

These systems can include, but are not limited to the following components:

- Heat exchangers – radiator, oil coolers, intercooler, fuel cooler, condenser
- Fan drive – hydrostatic, variable speed (programmable, PWM, viscous), two speed and on/off (electromechanical, pneumatic)
- Fan blade
- Cowling
- Expansion tank / header tank
- Finger guard



This include airblast cooling packs based on the Setrab ProLine, MA-series, Bar & Plate and Twin-Swirl oil coolers incorporating a 12 / 24 VDC or 230 / 400 VAC electric fan.



21. Accessories

21.1. Heavy duty hose clamps – T-bolt

Theses heavy duty stainless steel T-bolt clamps are ideal for all applications with a high boost pressure or where you want a clamp that will look good and last as long as our silicone hoses.

Part number	Size
TB-138	35-40
TB-163	41-46
TB-175	44-51
TB-188	48-56
TB-200	51-59
TB-225	57-65
TB-238	60-68
TB-275	70-78
TB-300	76-84
TB-325	83-91
TB-375	95-103
TB-425	108-116
TB-525	133-141
TB-625	159-167

21.2. Round vinyl caps

Round vinyl caps are also referred to as dust caps and are manufactured from PVC. They are used to cover the in and outlets of intercoolers and radiators in order to keep dust out.

I.D. - mm	Length – mm
8	12.7
31.8	25.4
34.9	38.1
38.1	38.1
50.8	38.1
63.5	38.1
76.2	38.1
101.6	38.1

21.3. Hot Melt Sticks

Hot Melt Sticks are used for the repair of radiator and intercooler cores.

21.3.1. Specifications

- The sticks are made of a Thermoplastic Polyamide Resin.
- The material is non hazardous, but sufficient ventilation is required.
- Polyamide Resin has a good chemical resistance for water, weak acids, diluted alkaline, hydrocarbons, oil and grease.
- It is not resistant to Alcohol, Ketonen and Esters.
- Polyamide Resins are hygroscopic, meaning that they absorb humidity from the air. Keep the material stored in a closed plastic bag to prevent contamination with water.

21.3.2. How to repair a heat exchanger with Polyamide Resin sticks

With a hot melt gun

- Fill the hot melt gun with resin sticks.
- Adjust the temperature on the hot melt gun heater between 190 to 220°C.
- Make sure the leaking spot is dry, clean and not greasy.
- Pre-heat the cooler on the leaking spot.
- Apply the resin on the leaking spot so that the area is covered completely. Watch that the melted resin is flowing easily over the cooler surface and has a good wetting. If this is not the case the temperature of either the heat exchanger or the hot melt gun is too low.

With a gas-burner

- Make sure the leaking spot is dry, clean and not greasy.
- Pre-heat the cooler on the leaking spot.
- Apply a small amount of resin by touching the preheated spot with the stick and gently heat it with the burner until the resin starts to become liquid. Keep the flame in the area, but do not overheat the resin. If it starts to discolor dark, it is a sign of overheating. Watch that the melted resin is flowing easily over the cooler surface and has good wetting. If this is not the case the temperature is too low.

22. Installation instructions

22.1. Installation instructions for oil coolers

22.1.1. Orientation

The cooler can be mounted on its bottom plate with the connections facing up or on its side, but not upside down. When mounted on its side, ensure that the inlet/pressure hose are connected to the bottom connection, this will ensure that no air can be trapped inside the oil cooler. The advantage of having the connections on the side is, being able to drain the oil without removing the oil cooler.

22.1.2. Connections

Apply some oil or grease to the adapters before fitting them. Always use a spanner to counteract the force on the connections when tightening or loosening an adapter or a fitting. Support the hydraulic hoses connected to the oil cooler in order to remove any tension put on the connections on the oil cooler.

22.1.3. Types of connections

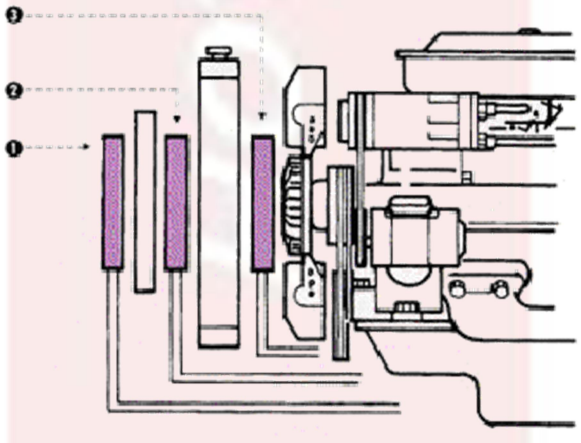
JIC – mostly used for hydraulic and motorsport applications:
- -06 – transmission, diff, powersteering
- -08 – engine, transmission
- -10, -12, -16 – engine

BSP – mostly used for road cars:
- 3/8” – transmission, diff, powersteering
- 1/2” – engine, transmission
- 5/8”, 3/4” – engine

22.1.4. Positioning

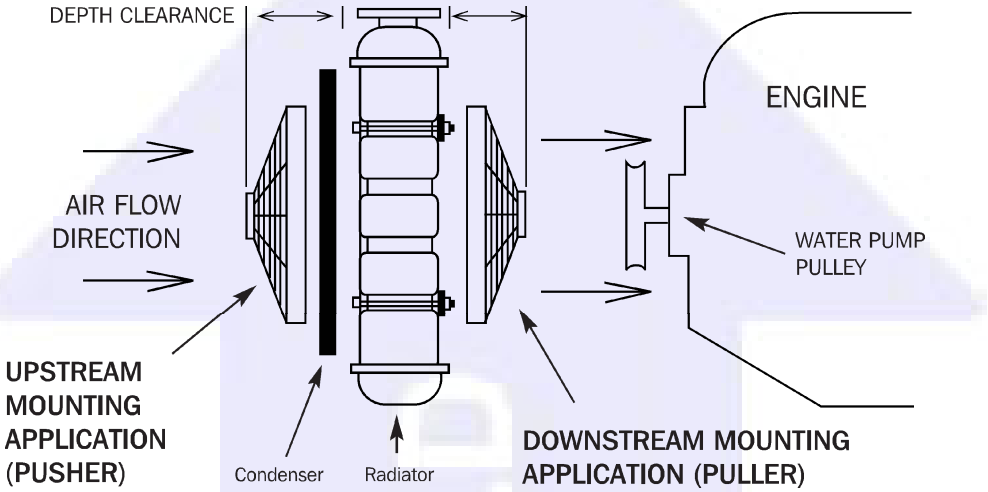
The installation must be free of pulsations and vibrations. Where possible, mount the oil cooler in the direct airflow stream in front of the radiator and condenser.

Rever to the drawing:
In front of the radiator and A/C condenser, the oil cooler is 100% efficient.
Between the A/C condenser and the radiator, the oil cooler is 75% efficient.
Behind the radiator, the oil cooler is only 60% efficient.
Support the oil cooler on all four mounting brackets, especially for off-road and racing installations. We recommend using the Setrab Bracket kit.



22.2. Installation instructions for electric fans

All the fans are assembled in a “pusher” configuration. This means that the fan must be mounted up-stream (in front of the radiator). To change to “puller” configuration the blade must be turned around and the polarities reversed.



22.2.1. Direction / Polarities

Please note that the recommendation below is not always valid as the blue and black wires might sometimes be reversed in the factory. So please check whether the flow direction is correct before installing the fan.

For “**pusher**” configuration the **black** wire is positive.
When looking at the blade with the motor behind the fan, the blade must be turning **anti-clockwise**.
For “**puller**” configuration the **blue** wire is positive.
When looking at the blade with the motor behind the fan, the blade must be turning **clockwise**.

22.2.2. Controlling the fan

If the electric fan replaces a viscous or fixed fan, a thermal switch will be required to control the fan. This is not supplied with the fan. An adjustable (40 – 100°C) thermal switch kit is available. It includes a relay, wiring, fuse and installation instructions.
When fitting a thermal switch ensure that the temperature is higher than the thermostat’s temperature – about 5 to 10ºC. Also ensure that the thermal switch is fitted on the “hot” side of the radiator.

22.2.3. Installation

The fan is mounted onto the radiator or condenser using the quick fit kit supplied with the fan. Remove the cowling of the viscous fan. The electric fan must fit directly onto the core and must not be larger than the core of the radiator.
For the 8”, 9”, 10” and 12” fans fit a 15 amp fuse.
For the 14” fan a 20 amp fuse will be required.
For the 16” fan a 30 amp fuse will be required.

23. Services

We offer the following services in conjunction with our product range.

23.1. Design

We have the resources to design a complete cooling solution according to the client's specifications. We are able to take accurate measurements at the client's premises in order to design the best possible solution. Given all the necessary input data, we can calculate performance data for most of our product range. Using CAD software we are able to set up drawings to check compatibility and integration with the client's cooling system, before manufacturing. Our fully equipped workshop enables us to manufacture most components for the cooling system in house.

23.2. Manufacturing

Our fully equipped workshop enables us to manufacture complete cooling systems in-house. We can also do the following:

- Re-coring of intercoolers and oil coolers
- Manufacturing of aluminium intercooler and radiator header tanks
- Manufacturing of boost pipes
- General aluminium and stainless steel welding

We have the following manufacturing equipment:
1 x HAAS SR-100 Gantry profile cutter for aluminium, soft metals and plastic
1 x 40 ton press brake
2 x 300 amp AC/DC water-cooled welding machines
1 x 1 meter lathe
1 x 1.3 meter guillotine
1 x cold saw
1 x heavy duty polisher
1 x plate roller
1 x box and pan folder
1 x "Jenny" lip roller
2 x bandsaw
1 x pedestal drill
1 x disc sander
1 x 12 ton hydraulic press

23.3. Pressure testing

We have a large (1.5 x 1.5 m) pressure test tank for pressure testing intercoolers, oil coolers and radiators with air up to 6 bar. We also have a custom build pressure test unit that can test up to 30 bar pressure with water.

23.4. Repairs

Repairing of intercoolers, oil coolers and aluminium radiators with either welding or glue.

24. Frequently Asked Questions

24.1. Why do I need an engine oil cooler for my car?

Due to the high ambient temperatures, high underhood temperatures are produced. In addition new aerodynamic body styles reduce air flow to the engine compartment. Engine oil not only lubricates but also absorbs a lot of heat from the engine and due to this, oil crankcase temperatures can reach 120°C or higher during normal operation. Maximum load conditions can cause oil to exceed 135°C. By installing an oil cooler you can expect to mantain oil temperatures in the 80 to 100°C range, thereby reducing wear and extending the life of all internal engine components.

Excessive engine heat is caused by the following:

- Towing
- Climbing steep grades
- Carrying loads
- Hot driving conditions
- Harsh driving - racing
- Engine conversions (turbocharging, gasflowing, etc.)

24.2. How do I install an engine oil cooler?

The oil cooler can be mounted flat on it's bottom plate or on it's side, but not up-side-down. A sandwich adapter, which fits inbetween the spin-on oil filter and the block, is utilised to circulate the engine oil to the oil cooler. On air-cooled VW engines a special adapter is used to circulate the engine oil to the oil cooler, because it does not have a spin-on oil filter.

24.3. Where do I mount the engine oil cooler?

For the maximum efficiency, the engine oil cooler should be mounted where it will receive the coolest air and maximum air flow. Between the A/C condensor and the radiator the oil cooler's efficiency will be reduced to 75% and between the radiator and the fan it will decrease to 60%.

24.4. Why do I need a transmission oil cooler for my car?

Due to high ambient temperatures and the tremendous heat generated in an automatic transmission, an auxiliary transmission oil cooler is an economical way to help protect against costly repairs. Automatic transmission fluid (ATF) cools, lubricates and cleans internal transmission components. When transmission temperatures exceed about 93°C, the ability of the ATF to perform is greatly diminished. Subsequently, the life span of the fluid, seals and moving parts are significantly reduced. Higher internal temperatures also increase the wear rate of the friction and clutch plates.
Excessive transmission heat is caused by the following driving conditions:

- Towing
- Climbing steep grades
- Stop and go traffic
- Carrying loads (carpooling)
- Hot driving conditions
- Driving in snow, ice or sand

24.5. How do I install a transmission oil cooler?

An auxillary transmission oil cooler must be installed in the return line to the gearbox, in series with the existing oil cooler. It can also be installed as a replacement for the existing oil cooler.

24.6. Where do I mount the transmission oil cooler?

For the maximum efficiency, the transmission oil cooler should be mounted where it will receive the coolest air and maximum air flow. Between the A/C condensor and the radiator the oil cooler's efficiency will be reduced to 75% and between the radiator and the fan it will decrease to 60%.

24.7. Why do I need an electrical fan?

As a primary cooling source, electrical fans provide the following:

- Economical replacement for OE parts
- Increase in engine power when replacing fan clutch and fan assemblies, which means fuel saving
- Compatability with all electrical fan controls
- Reversable blades for pusher or puller applications
- As a add-on cooling source, electric fans provide the following:
- Constant airflow regardless of vehicle speed
- Increased air conditioning performance due to constant airflow across the condensor

24.8. What size electrical fan do I need?

A general rule of thumb is that you have to cover about 70% of the radiator core area with the fan blade diameter.

24.9. How much airflow (cfm) do I need to cool my engine?

A 4 cylinder engine requires about 1000 cfm (1700 m^3/h), a 6 cylinder engine requires 1700 cfm (2890 m^3/h) and a small V8 about 2100 cfm (3570 m^3/h). To reach the minimum cfm required you may need to install two or possibly more fans.

24.10. How do I mount the electrical fan?

The electrical fan has it own shroud on which the mounting feet are attached. A quick fit kit (page 30) is used to mount the fan directly onto the radiator core.

24.11. How do I activate the electrical fan?

The electrical fan can be activated in a number of ways:

- Direct wired: the fan is wired to the ignition wiring on the switched side.
- Non-adjustable thermal switch: the fan turns on when the engine temperature reaches a pre-set temperature.
- Adjustable thermal switch: the fan turns on when the engine temperature reaches the pre-determined and set temperature.
- When running the EWP system with the Digital Controller, it can also activate the fan at 3˚C above the EWP set temperature.
- Toggle switch: the fan is activated by a standard switch.

24.12. How does an intercooler work?

An intercooler only works in conjunction with a turbocharger. The outlet air from the turbocharger heats up because of the work that has been done to compress it. The increase in temperature results in a decrease in density, which means that less air enters the combustion chamber. An intercooler is used to cool down the compressed air, which increases the density. Two types of intercoolers are available on the market: air-to-air and water-to-air.

24.13. Why do I need an intercooler?

An intercooler has the following advantages:

- Lower intake temperatures which results in lower combustion temperatures and longer engine life
- Inhibits pre-ignition in spark-ignition engines
- Higher turbo boost is possible
- More power (kW) from the engine
- Better fuel efficiency

24.14. Where do I mount the intercooler?

Mount the intercooler as close as possible to the turbo and intake manifold. The shorter the path from the turbo outlet to the inlet manifold, the less the pressure drop and throttle-lag will be. Ensure that the intercooler gets direct airflow across the core for optimal cooling.

24.15. Why do I need an Electric Water Pump?

An electric water pump has the following advantages above a mechanical water pump:

- Has the ability to run after the engine has stopped, eliminating heat soak
- Gives you optimum cooling under all circumstances
- Replaces the kWs required to drive the mechanical pump at higher rpm when high flow rates are not required, which means more grunt at the wheels or better fuel consumption

24.16. How do I install the EWP?

The EWP is designed to be installed in the bottom radiator hose. The kit comes with everything you need for easy installation including, easy to understand, Do-It-Yourself instructions.

24.17. How do I control the EWP?

For the best performance the EWP Digital Controller are used. It can control all the EWPs in the range, including 24V EWPs. The Controller allows you to electronically set the target temperature and it adjusts the rate of flow, hunting for and then locking onto the temperature you set. You have a choice of 60, 65, 70, 75, 80, 85, 90 or 95˚C engine temperature, selected at the touch of a button. The Controller will also run the EWP after engine shutdown till 5°C below the set temperature is reached or for 2 minutes.
The Digital Controller can also control the electric cooling fan. When connected it will switch on the electric fan at 3˚C above the set temperature.
This option requires the removal of the thermostat and either the mechanical pump impeller from the pump shaft or the bypass of the water pump pulley from the belt set-up, using a shorter belt.

The EWP can be combined with an adjustable on/off switch to add a cooling boost to an overheating cooling system when required. With the switch connected directly to the battery, the EWP will run-on after hot engine shut-down, eliminating heat soak.

The pump can be wired directly to the ignition for maximum cooling - suitable for very hot climates and chronically over-heating engines. This option requires the removal of the thermostat and either the mechanical pump impeller from the pump shaft or the bypass of the water pump pulley from the belt set-up, using a shorter belt.