



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Diesel Fuel Heaters

Products & Problem/Solution



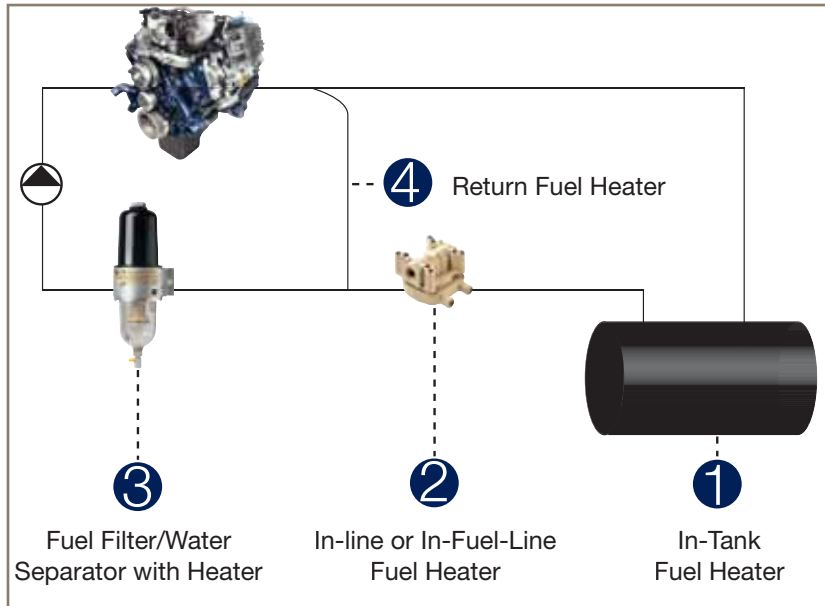
ENGINEERING YOUR SUCCESS.

Why You Need A Racor Fuel Heater

All diesel fuels (other than #1) contain dissolved waxes. At cold temperatures the wax crystallizes leading to filter plugging and fuel gelling. These changes greatly reduce fuel flow, adversely affecting the operability of vehicles.

With the increased popularity of biodiesel, and the use of ultra low sulfur diesel (ULSD), there are new cold weather challenges. While proper fuel winterization normally avoids trouble, both Biodiesels and ULSD may experience wax crystallization and gelling at higher than expected temperatures and contribute to cold fuel flow problems anyway.

Keeping this in mind, it is necessary, now more than ever, to utilize an efficient fuel heating system for all cold weather applications.



Consult application engineer or Racor Product Manager to develop a fuel heat circuit appropriate for your application.

In-Tank Fuel Heaters

Hot STK™ In-Tank Standpipe Fuel Heater 1



The Racor Hot STK with integrated fuel sender and optional thermostat delivers warm fuel directly from the fuel tank for fast start-ups in cold weather and Biodiesel applications. Innovative dual action heating radiates heat into the tank and heats the fuel again as it's drawn up through the standpipe producing a 32°F temperature rise using hot engine coolant for optimum efficiency in extreme conditions.

Part Number	Fits Tank Diameter	OHM Resistance	Thermostat Included
STK14/16ACV/FN	14"-16"	0-80 Ohms	Yes
STK14/16ACV/FS	14"-16"	240-33 Ohms	Yes
STK15/17ACV/FS	15"-17"	240-33 Ohms	Yes
STK17/19ACV/FS	17"-19"	240-33 Ohms	Yes
STK20/22ACV/FS	20"-22"	240-33 Ohms	Yes
STK22/24ACV/FS	22"-24"	240-33 Ohms	Yes
STK24/26ACV/FS	24"-26"	240-33 Ohms	Yes
STK26/28ACV/FS	26"-28"	240-33 Ohms	Yes
STK27/29ACV/FS	27"-29"	240-33 Ohms	Yes
STK14/16FS	14"-16"	240-33 Ohms	No
STK14/16FN	14"-16"	0-80 Ohms	No
STK17/19FS	17"-19"	240-33 Ohms	No
STK20/22FS	20"-22"	240-33 Ohms	No
STK24/26FS	24"-26"	240-33 Ohms	No
STK24/26FN	24"-26"	0-80 Ohms	No
STK26/28FS	26"-28"	240-33 Ohms	No
STK27/29FS	27"-29"	240-33 Ohms	No

Notes: Also available without fuel sender for custom applications. Also available in different lengths and ohm ranges upon request.

In-Line Coolant Heat Exchangers

Nomad™ Coolant Heat Exchangers 2 4

Plumbed into the fuel upstream from filters, the coolant heater is another compact way to run through the cold. An optional internal thermostatically controlled valve allows fuel to bypass the heater once it has reached operating temperature. Depending on fuel flow rate, an 89°F heat rise is possible. Like its electric partner, there are no moving parts, nothing to rust or corrode.



Nomad coolant heaters are available with or without an internal thermostat.

Specification	320HTR4	320HTR4T
Engine HP	up to 300	up to 200
Internal Thermostat	No	Yes
Fuel Port Size	7/8"-14 UNF	3/8" NPT
Coolant Port Size	N/A	N/A
Height	3.8 in. (9.7 cm)	3.8 in. (9.7 cm)
Width	3.9 in. (9.9 cm)	3.9 in. (9.9 cm)
Depth	4.7 in. (11.9 cm)	4.7 in. (11.9 cm)
Weight (dry)	2.1 lbs (1.2 kg)	3.0 lbs (1.4 kg)

W8791 In-Line Coolant Heat Exchangers 2 4

The W8791 in-line diesel fuel heaters incorporate hot engine coolant to heat cold diesel fuel and keep equipment running in the most extreme weather conditions. Since the hot coolant surrounds the fuel, it is heated the entire time it passes through the fuel heater. The field proven system allows operators the cost-saving convenience of using #2 diesel fuel all year round. The W8791 is constructed of steel and requires no maintenance.



The dependable W8791 is available in a thermostatically controlled heavy-duty version.

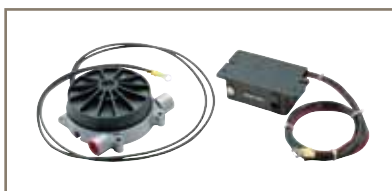
Consult factory for heat rise information.

Specification	W8791	W8791ACV
Fuel Port Size	1/2" NPT	1/2" NPT
Coolant Inlet Port Size	1/2" NPT	3/8" NPT
Coolant Outlet Port Size	3/8" MPT	3/8" NPT

In-Line Electric Fuel Heaters

Nomad™ Electric Heaters ②

The Racor Nomad Diesel Fuel Heater is available in 300 and 500 watts and is one of the most compact, most efficient ways to heat fuel on the road today. Installation usually takes about an hour. An optional frame rail mounting bracket eliminates drilling and welding.



The Nomad electric heater lets you install a high quality with a minimum amount of time, space, and money.

Specification	14278	14279	14257	14261
Engine HP	up to 200	up to 200	200-300	200-300
Power Output	300 watts	300 watts	500 watts	500 watts
Voltage	12 vdc	24 vdc	12 vdc	24 vdc
Amperes Draw	21.4	10.7	35.7	17.9
Alternator Rating ¹	65	40	75	45
Internal Thermostat	Yes		In-Cab Control	
Fuel Port Size	7/8"-14 SAE			
Height	2.6 in. (6.6 cm)			
Width	5.8 in. (14.7 cm)			
Depth	5.4 in. (13.7 cm)			
Weight (dry)	1.7 lbs (0.8 kg)			

¹ For on-highway trucks, assuming all tractor lights and blowers are on. Use of more accessories will require a higher rating.

Thermoline™ In-Fuel-Line Heater ②

The heavy duty Thermoline diesel fuel heater comes installed inside a new fuel line and literally replaces the fuel line between the tank and the primary filter. It prevents power loss and stall, and assists starting down to -40°F. This heated path is recommended for extended use in cold weather environments and severe conditions.



Thermoline In-Fuel-Line Heater comes factory pre-wired with all hardware, ready for quick installation.

Specification	HEATER15024V	HEATER30012V	HEATER30024V	HEATER50012V	HEATER50024V
Wattage	150	300	300	500	500
Voltage	24	12	24	12	24
Length	4' (1.22M)	6' (1.82M)	6' (1.82M)	10' (3.05M)	10' (3.05M)
Fittings	7/8"-14 SAE	7/8"-14 SAE	7/8"-14 SAE	7/8"-14 SAE	7/8"-14 SAE

Fuel Filter/Water Separator With Heaters

777 Series ③ ④

777 Series features an internal thermostat to protect electric engine controls from overheating by the fuel heater and regulates fuel temperature automatically; warm fuel in the winter, cool fuel in the summer (thermostat setting: on at 40°F (4°C), off at 61°F (16°C)). This filter also offers temperature controlled fuel heating with return fuel or engine coolant. The thermostat valve closes at 95°F (35°C). Other features include a fuel primer port on top of the assembly, an internal check valve that guards against loss of prime, a heavy-duty integrated mounting bracket that is part of its one-piece billet machined body, a

clear bottom bowl that allows the operator to check for water and solid contamination at a glance, and a self-venting drain. Optional accessories include a vacuum gauge and a water detection system.



Specifications	777R
Maximum Flow Rate	150 GPH (568 LPH)
Port Size (fuel & Coolant)	1/2" NPT
Height	18.8 in. (47.8 cm)
Width	8.1 in. (20.6 cm)
Depth	6.8 in. (17.3 cm)
Weight (dry)	12.0 lb (5.4 kg)
Maximum Working Pressure	30 PSI (2.1 bar)
Ambient Temperature Range	-40° to +250°F (-40° to +121°C)
Maximum Fuel Temperature	190°F (32°C)

525 and 424 Series ③

The Racor 525 and 424 Series Fuel Heater/Water Separators are for today's high performance heavy-duty and smaller midrange engines. These lightweight aluminum units use engine coolant to produce a 47°F rise in fuel temperature, eliminating the need for fuel blending.

The 525 and 424 Series three-stage water separation process is more

than 99% effective in eliminating water from fuel under SAE J1839 test parameters.

The 525 and 424 Series units require no scheduled servicing, other than periodic water draining. The screen filtration system is also self-cleaning eliminating the need for additional maintenance.

The 525 and 424 Series units are available with either a 12 volt or 120 volt preheater and optional thermostat. The unit cover rotates 360° for ease of installation on any existing engine configuration.



Specification	WFH424	WFH525	WFH525/ACV
Flow Rate	60 gph (227 lph)	120 gph (454 lph)	120 gph (454 lph)
Port Size (Fuel)	1/2 NPT	1/2 NPT	1/2 NPT
Port Size (Coolant)	1/2 NPT	1/2 NPT	1/2 NPT
Height ¹	10.0 in (25.4 cm)	15.8 in (40.1 cm)	15.9 in (40.3 cm)
Width	5.3 in (13.5 cm)	5.3 in (13.5 cm)	5.3 in (13.5 cm)
Depth	5.3 in (13.5 cm)	5.3 in (13.5 cm)	5.3 in (13.5 cm)
H ₂ O Removal	99%	99%	99%
Automatic Shut-off Valve	No	No	Yes
Ambient Temperature Range	-40° to +250°F (-40° to +121°C)		
Maximum Fuel Temperature	190°F (32°C)		

¹ Allow 4" additional space for screen removal.

Fuel Filter/Water Separator With Heaters

6400 Series ③ ④

The 6400 Series fuel filter/water separator heaters feature not only a coolant fuel heater but it also offers coalescer and filtration options that provide superior engine protection in one complete system.

The 6400 Series coolant heater delivers outstanding heat rise up

to 30°F from 0°F at 1 gpm. The 6400 Series offers automatic, thermostatically controlled coolant heating. The internal coolant shut-off valve eliminates problems with over-heated fuel during hot weather operation and expensive external connections and hardware (also available without automatic shut-off valve).



Specification	6400	6401
Maximum Flow Rate	120 gph / 454 lph	75 gph / 284 lph
Automatic Shut-off Valve	No	Yes
Port size (Fuel)	7/8"-14	
Port size (Coolant)	#10 Barbed Fittings for 5/8" I.D. Coolant Hoses	#10 Barbed Fittings for 5/8" I.D. Coolant Hoses
Replacement Element	S6464 Coalescer or S3226P (30 Micron)	S6464 Coalescer or S3226P (30 Micron)
Height	16.5 in (419 mm)	16.5 in (419 mm)
Width	6 in (152 mm)	6 in (152 mm)
Depth	6 in (152 mm)	6 in (152 mm)
Clean Pressure Drop	0.49 psi (3.4 kPa)	0.49 psi (3.4 kPa)
Maximum Allowable Pressure	15 psi (103 kPa)	15 psi (103 kPa)
Ambient Temperature Range	-40° to +250°F (-40° to +121°C)	
Maximum Fuel Temperature	190°F (32°C)	

300RC Series ③ ④

The 300RC Series Diesel Fuel Filter/Heater/Water Separators are specifically designed to handle today's tough cold weather and Biodiesel fuel system problems. These units feature a standard high efficiency coolant heat exchanger to heat incoming fuel.

The 300RC Series features high capacity Aquabloc®II media allowing for excellent contaminant removal and water separation. Available in 2, 10, and 30 micron ratings.



Basic Models	345	360	390
Fuel Ports	3/8" NPTF	3/8" NPTF	3/8" NPTF
Replacement Element	R45	R60	R90
Flow Rate	45 gph (170 lph)	60 gph (227 lph)	90 gph (341 lph)
Height	8.7 in (221 mm)	10.4 in (264 mm)	11.25 in (286 mm)
Width	4 in (102 mm)	4 in (102 mm)	4 in (102 mm)
Depth	4.8 in (122 mm)	4.8 in (122 mm)	4.8 in (122 mm)
Heat Rise	59°F @ 45 gph	52°F @ 60 gph	45°F @ 90 gph
Ambient Temperature Range	-40° to +250°F (-40° to +121°C)		
Maximum Fuel Temperature	190°F (32°C)		

Spin-On Series In-Bowl Heaters ③

Racor equips Spin-On Series fuel filter/water separators with optional 200W resistance heaters integrated into the bowl. Placing the heat source just below the element allows for maximum transfer.

Racor Spin-On Series In-Bowl heaters are available installed in assembly upon order (consult catalog for part numbers) or as retrofit kits which are listed below.



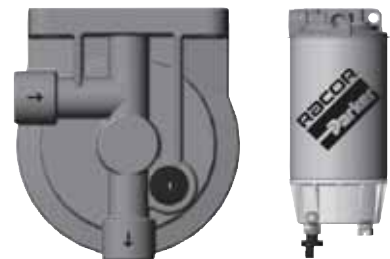
Specification	RK 22354-01	RK 22354-02	RK 30900	RK 30925
Heater Retrofit Kit For	200 Series	200 Series	3150, 3250, 4120, 6120	3150, 3250, 4120, 6120
Wattage	200	200	200	200
Voltage	12V	24V	12V	24V
Bowl Type	Clear	Clear	Clear	Clear

Specification	RK 22616-01	RK 22616-02	RK 30895	RK 30924
Heater Retrofit Kit For	300RC, 400, 600 Series	300RC, 400, 600 Series	320 Series	320 Series
Wattage	200	200	200	200
Voltage	12V	24V	12V	24V
Bowl Type	Clear	Clear	Clear	Clear

300 Series In-Head Heater ③

The in-head 150W heater is a cold weather aid and is thermostatically controlled when power is provided. The heater will automatically turn on if the fuel temperature drops below 45°F (7°C) and will automatically turn off at 75°F (24°C). Heat is supplied directly below the inlet port to melt the wax crystals

and allow fuel to efficiently pass through the element. The heater is operated by turning the ignition switch on for a minimum of five minutes prior to starting the engine.

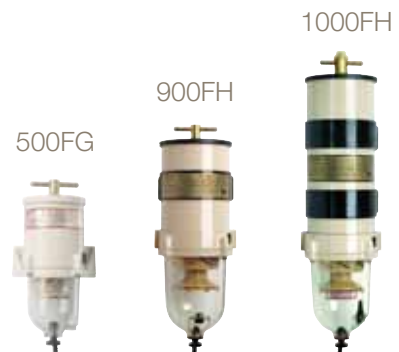


325R and 300R

Turbine Series ③

The Racor Turbine Series comes available with a powerful heater which is situated directly below the filter element to assist with cold starting. Thermostats are standard to meet the requirements of today's advanced electronic engines. These heaters begin to work in just a few moments and place minimal demand on the battery.

Racor Turbine Series heaters are available installed in assembly upon order (consult catalog for part numbers) or as retrofit kits which are listed below.



Specification	RK 15383-01	RK 15383-02	RK 11-1800-01	RK 11-1800-02
Heater Retrofit Kit For	500FG	500FH	900FH and 1000FH	900 and 1000FH
Wattage	150	150	300	300
Voltage	12V	24V	12V	24V

Heaters For Engine Coolant Applications

ECH™ Tank-Type Coolant Heaters

The Racor ECH™ tank-type coolant heaters operate using the thermo-siphon circulation principle. Heated coolant is returned to the engine as colder coolant is drawn into the heater.

By utilizing standard alternating current (AC) from the customer supplied source, they heat and maintain the engine coolant at a pre-determined temperature range. This warm coolant helps keep the engine ready for instant operation. Racor ECH tank-type coolant heaters are mounted off the engine for long life and increased wattage output. Design is perfect for use with generator set applications



Heater Range

Range of Wattage*	Range of Voltage*	Thermostat Range
400-5000	120-575	80-100 100-120 120-140

*Contact Racor For Availability

Note: Not for use as fuel heaters

Compact Tank-Type Coolant Heaters



TPS Series
Single Phase
200-500 Watts
120V and 240V

Racor Part Number	Ambient Above -20°F	Ambient Below -20°F	Volts	Watts	Phase	Amps	Thermostat Range	
							On	Off
TPS051GT8-000	150 Cubic Inch or Less	150 Cubic Inch or Less	120	500	1	4.2	80°F	100°F
TPS051GT10-000			120	500	1	4.2	100°F	120°F
TPS051GT12-000			120	500	1	4.2	120°F	140°F
TPS052GT8-000			240	500	1	2.1	80°F	100°F
TPS052GT10-000			240	500	1	2.1	100°F	120°F
TPS052GT12-000			240	500	1	2.1	120°F	140°F
TPS101GT8-000	350 Cubic Inch or Less	200 Cubic Inch or Less	120	1000	1	8.4	80°F	100°F
TPS101GT10-000			120	1000	1	8.4	100°F	120°F
TPS101GT12-000			120	1000	1	8.4	120°F	140°F
TPS102GT8-000			240	1000	1	4.2	80°F	100°F
TPS102GT10-000			240	1000	1	4.2	100°F	120°F
TPS102GT12-000			240	1000	1	4.2	120°F	140°F
TPS151GT8-000	350-500 Cubic Inch or Less	200-300 Cubic Inch or Less	120	1500	1	12.5	80°F	100°F
TPS151GT10-000			120	1500	1	12.5	100°F	120°F
TPS151GT12-000			120	1500	1	12.5	120°F	140°F
TPS152GT8-000			240	1500	1	6.3	80°F	100°F
TPS152GT10-000			240	1500	1	6.3	100°F	120°F
TPS152GT12-000			240	1500	1	6.3	120°F	140°F
TPS181GT8-000	500-700 Cubic Inch or Less	300-400 Cubic Inch or Less	120	1800	1	15	80°F	100°F
TPS181GT10-000			120	1800	1	15	100°F	120°F
TPS181GT12-000			120	1800	1	15	120°F	140°F
TPS202GT8-000			240	1800	1	8.3	80°F	100°F
TPS202GT10-000			240	1800	1	8.3	100°F	120°F
TPS202GT12-000			240	1800	1	8.3	120°F	140°F

More From Racor



Fuel Filter/Water Separators

The worlds #1 brand of Fuel Filter/Water Separators— turbine and spin-on designs for diesel and gasoline with clear and metal collection bowls.



Alternative Energy

Racor offers the industry's first and most complete line of alternative fuel filter/coalescers and prefilter/strainers. From pipeline to engine, they deliver the ultra-fine filtration required by alternative fuels.



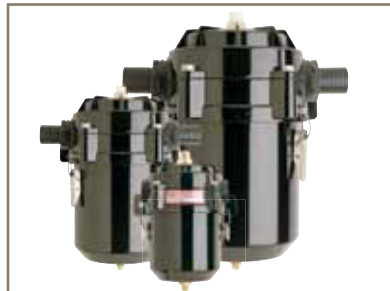
Fuel Dispensing Systems

Racor offers high capacity solutions to remove water and contamination from diesel fuel, kerosene, and light hydrocarbons at fuel pumps, in day tanks, and fuel tanks.



Heavy Duty Air Cleaners and Replacement Elements

Racor has expanded its air filtration family of products to include Heavy Duty Air Cleaners and replacement air filter elements. These high-capacity, efficient and flexible products expand the breadth of line that Racor customers have grown to expect.



Crankcase Ventilation Filtration Systems

Racor Crankcase Ventilation Systems help to keep emissions low and engine rooms clean. The patented CCV™ contains Racor's high-performance Vaporbloc™ filter made with depth loading, engineered fiber coalescing media.



Bypass Oil Filtration

Removes dirt, varnish, ash, tar, soot and other contaminants along with condensed water which forms damaging acids if left in oil.

- Micron Filtration
- Extends the miles between oil changes
- Saves maintenance costs and downtime
- Keeps oil cleaner longer

Full Line of Racor Additives



We've Bottled Racor Protection

Racor additives are performance-enhancing products for all climates and seasons. There are several convenient sizes, including a 16 oz. bottle; 1 and 5 gallon containers; and a 55 gallon drum. The high concentration of active ingredients in Racor additives allows for higher treatment rates. All Racor fuel additives are alcohol-free.



Powershot+™ Diesel Conditioner

Racor Powershot+™ Diesel Fuel Conditioner is recommended for use in all engine applications using #1 and #2 diesel fuels.

With regular use fuel economy is improved, corrosion protection is provided, and fuel stability is enhanced during storage.

Compatible with Biodiesel blends up to B20.



Diesel Conditioner Plus+

Racor Diesel Conditioner Plus+ is a multi-functional fuel additive for all season use. Its formulation contains a cetane improver. Its lubricity additives reduce friction and pass the scuffing BOCLE test for lubricity. Corrosion and rust formation are also reduced.

Compatible with Biodiesel blends up to B20.



Diesel Winter Plus+

Racor Diesel Winter Plus+ is added to middle petroleum distillates such as No. 2 heating oil or diesel fuel to improve their low temperature operability as measured by pour point and cold filter plugging point. Racor Diesel Winter Plus+ prevents the plugging of lines, filter screens, and valves and allows the fuel to flow freely down to 32°F (0°C). Diesel Winter Plus+ contains a deicer, which can help reduce line freezing.

Compatible with Biodiesel blends up to B20.



Diesel Biocide

Racor Diesel Biocide is a multifunctional petroleum distillate fuel additive. It is used to help maintain color stability and clarity, control bacteria, fungi, organic reaction and sludge formation, inhibit corrosion, and disperse existent sludge.

EPA Est. No. 072342-CA-001
EPA Reg. No. 1448-17-47099.

Compatible with Biodiesel blends up to B20.



Diesel Performance Plus+

Racor Diesel Performance Plus+ has the same engine protection qualities as the Racor Diesel Conditioner Plus+ and it has five times the cetane improver to deliver optimal engine performance. The added performance comes with improved lubricity and is alcohol free for better fuel system component protections.

Compatible with Biodiesel blends up to B20.



Powershot+™ Gasoline Conditioner

Racor Powershot+™ Gasoline Conditioner is a convenient gasoline additive that cleans while it protects. It can be used in all types of internal combustion systems and gasoline blends.

By cleaning the engine's fuel injectors or carburetor, Racor Powershot+™ Gasoline Conditioner provides better combustion, better fuel economy and lower exhaust emissions.



Gasoline Conditioner Plus+

Racor Gasoline Conditioner Plus+ is a diluted multi-functional gasoline additive that cleans as it protects. It is designed for secondary treatment applications and can be used with all types of internal combustion systems and gasoline blends. It provides better combustion, better fuel economy and lower exhaust emissions.



Synthetic Heavy Duty Engine Oil

Racor also offers premium fully-synthetic engine oil crafted with the highest quality synthetic base stock and additive systems which provide superior film strength and oxidation resistance as well as exceptional soot and deposit control. Racor's 100% Synthetic Engine Oil is formulated to meet CJ-4 API oil specification in model year 2007 engines and is backwards compatible to assure excellent engine protection no matter what engine you are running.

Advances in lubrication technology allow Racor Synthetic Engine Oil to be used in both diesel and gasoline engines in year round operating environments.

Additive Part Numbers and Treat Ratios

Part Number	Description	Size	Treats
ADT 1111	Powershot+ Diesel Fuel Conditioner	11 ounces	30 gallons
ADT 1116	Diesel Conditioner Plus+	16 ounces	320 gallons
ADT 1201	Diesel Conditioner Plus+	1 gallon	2,560 gallons
ADT 1555	Diesel Conditioner Plus+	55 gallon drum	140,800 gallons
ADT 2116	Diesel Biocide	16 ounces	1,280 gallons
ADT 2201	Diesel Biocide	1 gallon	10,240 gallons
ADT 2405	Diesel Biocide	5 gallons	51,200 gallons
ADT 2555	Diesel Biocide	55 gallon drum	563,200 gallons
ADT 3116	Diesel Performance Plus+	16 ounces	80 gallons
ADT 4116	Diesel Winter Plus+	16 ounces	128 gallons
ADT 4201	Diesel Winter Plus+	1 gallon	1,024 gallons
ADT 4555	Diesel Winter Plus+	55 gallon drum	563,200 gallons
ADT 5111	Powershot+ Gasoline Conditioner	11 ounces	15 gallons
ADT 5116	Gasoline Conditioner Plus+	16 ounces	320 gallons

DISTRIBUTED BY:



***BOLLAND
MACHINE***

A DIVISION OF DIESEL ENGINE PARTS WAREHOUSE INC.

**Contact Us for Product Information
or to Place an Order**

Phone 724-846-1290

Fax 724-846-5253

Email *kevin@bollandmachine.com*

Address 2718 Darlington Road
Beaver Falls, PA 15010

www.bollandmachine.com