AEROTECH HERMAN NELSON INTERNATIONAL INC.

AEROTECH HERMAN NELSON EXTREME PORTABLE HEAT

BT400 SERIES

EXECUTIVE SUMMARY

The Evolution of a Legendary Heater

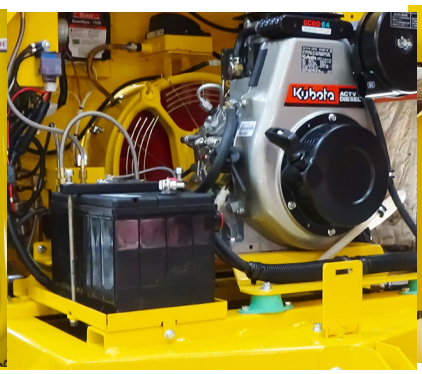
A Lead Forward

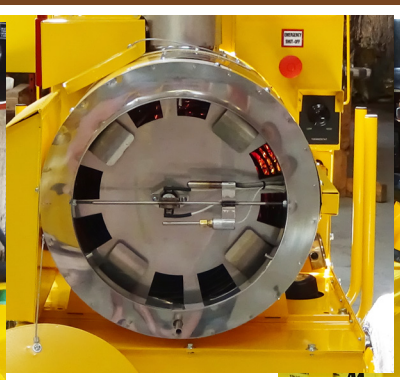
DIFFERENT
On The Inside

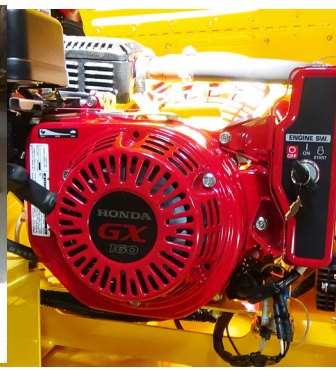
AEROTECH HERMAN NELSON EXTREME PORTABLE HEAT

BT400 SERIES

On the surface the BT400 NEX looks very similar to earlier Aerotech Herman Nelson heater models (BT400-10 through 46). The older generation of heaters used proven decades-old technologies originally developed for the US Military. In its day the original Herman Nelson heater was the best system available. Today, advances in micro-processor technologies (CPUs) now allow a level of automatic monitoring and control which were never possible in previous generations. What was once a military only product has now become a widely accepted commercial industrial product. Government safety certification was the greatest challenge facing Aerotech in moving the Herman Nelson heater from the military appliance it once was to a widely accepted and available commercial heat product used in commercial aviation, construction and exploration. In these industries safety is not just a concern but is a requirement for any manufacturer producing a modern heater. Today if you look inside and under the hood of the BT400 NEX what you will see is a modern, efficient piece of machinery which meets the heating needs of many industries (aviation, construction, exploration and the military)







TEMPERATURE CONTROL

THE HISTORY

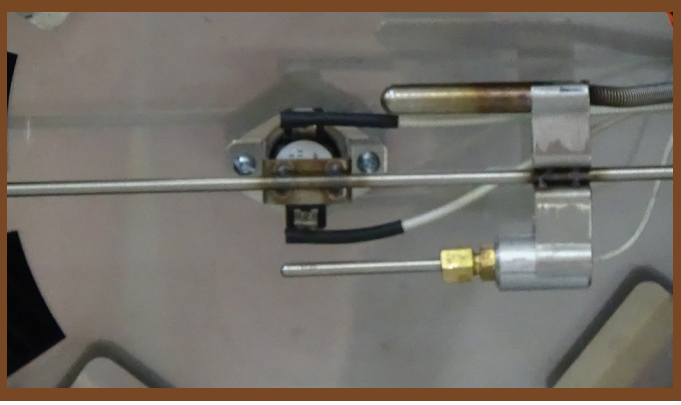
BT400-46 MECHANICAL VALVES

BT400 NEX-G CONTROL PANEL

BT400 NEX-D CONTROL PANEL

The older model (BT400-46 and earlier) had mechanical valves which were manually controlled. This meant that the operator of the heater had to closely observe the machine while it worked. The temperature had to be manually set by opening and closing the valve. The situation had the potential for the introduction of “Human Error”.

The introduction of an electronic thermostat control and sensor in place of the mechanical temperature valve is a low cost alternative to the mechanical temperature valve. The temperature range is the same 150°F to 250°F. With its wired sensor this eliminates the problems associated with the capillary tubes kinking, breaking and leakage of the fluid in the capillary tube. With better temperature control throughout the entire range you now have a more accurate and dependable control over the temperature output. The quick disconnect terminals allow for fast easy installation and service. The result is better temperature control and less maintenance.



COMPUTER CONTROLLED

The new BT400 NEX uses a microprocessor (Burner Control Module or CPU) to control fuel delivery to combustion chamber. Rather than using manual valves the “Burner Control Module” uses a solenoid to regulate fuel flow. The Control Module also monitors the inside of the combustion chamber for flame. If there is no spark or flame the heater goes into “lock out’ mode until the problem is resolved. In the event that the heater has a physical problem the heater will automatically stop supplying fuel to the combustion chamber.

The heater uses a cds “photo” sensor to check for the presence of flame in the combustion chamber and will not allow the unit to supply fuel if a flame is not present.

CPU MONITORING - CONSISTENT HEAT CONTROL

The addition of the CPU means the heater can cycle the heat on and off to hold a constant temperature automatically without having to manually adjust a valve. Heaters are calibrated at the factory to output a constant 250°F, a temperature which allows the longest service life of the heat exchanger.

The CPU also continuously monitors temperatures and other vital signs like fuel pressure and nozzle health.

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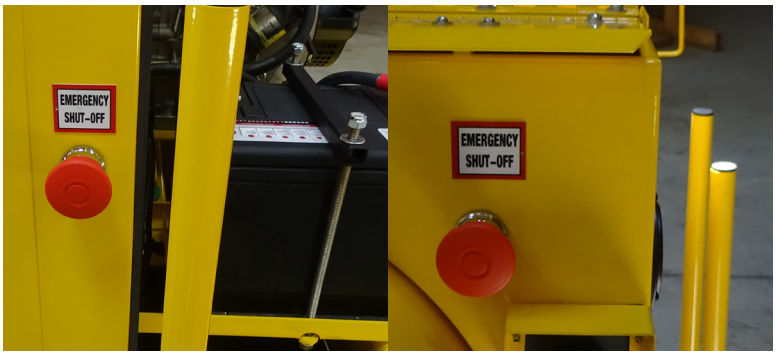
SAFETY



On the older model of heater it was possible for fuel delivery to continue to the combustion chamber in the absence of flame - now the cds “photo” sensor monitors and controls fuel delivery to ensure safe operation at all times. The heater is now CSA, UL, and O-TL certified. On newer models an emergency shut-off switch has been added. This switch removes power from the burner control shutting off the burner and removes power from the time delay relay shutting off the engine. In addition newer models include a 12V Power Socket supplies 12 volts for the strobe light.

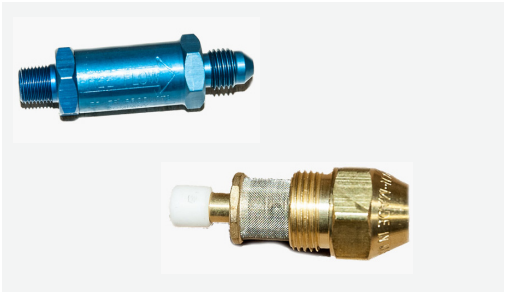
ELECTRIC START/STOP THROTTLE

Because the BT400 NEX uses a 12 volt electrical system it allows us to use electric key ignition start and stop on the control panel. On previous models 12 volt start was also available but the throttle control was manually set using a looking plunger. The elimination of the manual lock out plunger removes the potential of human error or abuse and results in a more fail safe and dependable heater. The BT400 NEX has the operating RPM set to maintain a constant 3600 RPM which allows for a longer service life of the heat exchanger when proper cool down periods are followed.

SOLENOID VS MECHANICAL VALVES

A solenoid valve is an electro-mechanically operated valve. The valve is controlled by an electric current through a solenoid. Solenoids offer fast and safe switching, high reliability, long service life, good medium compatibility of the materials used, low control power and compact design. The Control Module also monitors the inside of the combustion chamber for flame. If there is no spark or flame the heater goes into “lock out” mode until the problem is resolved. In the event that the heater has a physica problem the heater will automatically stop supplying fuel to the combustion chamber. The heater uses a cds “photo” sensor to check for the presence of flame in the combustion chamber and will not allow the unit to supply fuel if a flame is not present. Replacement values for older units are still available.

REDUCED MAINTENANCE COSTS



Solenoid valves are less expensive than manual valves. Aerotech continues to manufacture manual control valves at its factory to support existing customers. Replacement costs in the solenoid system are approximately 40% of the previous replacement valves, and dependability and service life are extreme

FUEL TANK: POLYETHYLENE RESIN VS STEEL

Steel has a shorter service life than modern polyethylene. Steel tanks will eventually rust and fail but prior to failing they will leave deposits in the tank potentially shortening the service times by clogging the fuel filters and possibly the nozzle in the heater. The newly redesigned BT400 NEX uses a high density polyethylene resin tank and in the event that servicing is needed the tank can be easily accessed by removing the front of the trailer chassis. The BT400 NEX has the option to include a spill recovery tray under the fuel tank panel for environmentally sensitive situations.

THE KUBOTA OIL COOLED ENGINE OC60

Oil-cooled engines are superior to air cooled and are preferred because they maintain a more constant temperature around the cylinder and head. This helps with everything from tuning to reliability. There's all sorts of physical reasons that apply to how good a fuel to air mixture burns. How metals expand, contract, how many heat cycles a piece of steel can go through before it's structurally weakened. Heat around the engine causes air to thin out, causing the mix to richen. It's easier to predict what an engine will do if it's running at a stable relatively low, temperature. Oil-cooled engines are simpler than liquid cooled. No radiator, pump and accessories to run, which, at the end of the day means fewer things to go wrong.

TOW BAR AND TIRES

The BT400 NEX features the standard "long bar" and now we offer an optional swivel wheel kit for ease of maneuverability (below right). Tires have been standardized on all models to use tubeless tires and solid rims which are easier to maintain.

COMPARISON OF THE BT400 VS THE TD500 IDF

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VS

	BT400 SERIES		TD500 IDF	
Heat Exchanger		Efficient 16 fins		Inefficient 1 fin
Max. output temperature	250°F: at any time! (Even the outside temp. is -65°F)		290°F: in the brochure 220°F: High limit switch for Frost Fighter heaters Around 120°F: actual output temp.	
Heating capacity	400,000 BTU/H About: 366,000 BTU/H		500,000 BTU/H About 443,000 BTU/H	
Nozzle	2.00 GPH 45 Degree		2.50 GPH 60 Degree	
Operating pressure	150 psi		140 psi	
Fuel capacity	35 US Gallons		38 US Gallons	
Fuel consumption	2.5 GPH		4.5 GPH	
Run time	14 Hrs		8 Hrs	
Weight (Dry)	745 Lbs/338 Kg Portable		1300 Lbs/590 Kg	
Dimensions (L x W x H)	71” x 50” x 48” 180cm x 127cm x 122cm		82” x 60” x 52” 208cm x 152cm x 132cm	
Brake	Tongue Activated		Adjustable Brake	
History	Over 60 years		Few years	
Customers	Air Canada, WestJet, American Airlines, Delta Airlines, United Airlines, Alaska Airlines, Air France, Finn Air, Korean Air, UPS, FedEx, Hainan Airlines, China Southern Airlines		Few Customers	

NOTES:

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