

Portable power

air portable • hand portable • cart-mounted

GPUs

military slave starters

power carts

DC power supplies

Portable fuelling/defuelling units

landing lights



Fcx
SYSTEMS

PowervampTM



Powervamp's range of Portable Battery Packs, GPUs and Power Supplies are recognized worldwide for the starting of all types of engines, from small gasoline piston units in UAVs, cars and light aircraft to the massive 1647-cubic-inch (27-litre) diesel engines or gas turbines of the most powerful main battle tanks.

Powervamp packs are in daily use in more than 50 countries. All are cleared for air transport, designed for tough everyday use and can operate in any position. Many are Nato codified and US National Stock numbered.

For the aviation industry, Powervamp's identical range of portable GPUs or ramp/workshop battery carts and 115v 400Hz TRUs will deliver the instant power to "spool up" the much larger shaft turboprops or turboprop engines of the regional airliners, corporate jets and medium lift tactical transports. At the smaller end, Powervamp's highly acclaimed carry-on-board GPUs will provide multistarts on most single or twin helicopters and private jets.

For ease of use, simplicity of service and versatility, the Powervamp battery pack and GPU range can be instantly uprated by connecting a second unit in parallel, doubling the amp/hour capacity and power delivery, while making individual pack weights manageable.

This proven concept provides multiple options and a high level of redundancy. The modular construction and the corrosion-proof stainless steel or alloy cases and fittings mean units can be serviced in the field or base workshops, eliminating return to factory servicing.

Special accessories, Nato plugs, tank plugs and purpose designed lead sets ensure Powervamp GPUs and battery packs can handle the most complex of start procedures typically required on some armored vehicles, larger helicopters and aircraft, or where a parallel/series start or a sequenced pressure-operated auto start system is used.

For more than 12 years Powervamp has been supplying its products to civil and military operators, Government agencies and many of the largest bus and truck operators worldwide. With unrivalled experience in the design and manufacture of portable power packs and DC power supplies and the starting of all types of engines, the company continues to be a major provider of DC and AC power at the Farnborough and Paris Air Shows and other major international aviation exhibitions.

ISO 9001-9002 CERTIFIED ORGANISATION



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The GPUs and engine slave starter packs shown next to the illustrations of aircraft, helicopters and vehicles are the packs considered by Powervamp Ltd—based on practical testing, existing civil and military users and 12 years of experience—to offer the best combination of performance and reliability for the tasks described. It must be remembered that variations in power demand may change according to starter/generator model, internal vehicle/aircraft wiring resistance, state of sulphation of flat batteries and ambient temperature. Powervamp products are in use worldwide in extremes of temperature.



12/24 GA pack

12v/24v general aviation pack



Small fixed wing GA piston aircraft



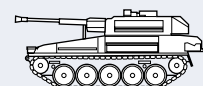
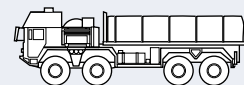
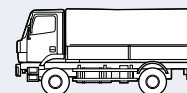
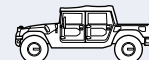
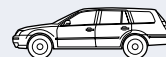
Small turbine and piston helicopters



Small turboprop and all piston aircraft



Free turbine helicopters: police, SAR, Hems, Executive



A budget-priced but extremely powerful dual voltage GPU designed for the civil operator and general aviation user where an alloy or stainless steel case is not necessary for aircraft transportation or corrosion resistance.

The 12 volt DC outlet provides a CCA of 470 amps and a peak amp figure of 925. The 25.4 volt DC outlet will deliver up to 850 amps with power control by removable key and 1000 amp switch. Will start 12v staff cars and military diesels, 10-tonne rigid, 32-tonne semis and medium-armored vehicles.

Specification

Peak amps (max short circuit current) 925

Cell capacity 12 volt 29 amp/hrs

Cell capacity 24 volt 29 amp/hrs

Recharge time from 50% 5 hours

Height	Length	Width	Weight
290mm/11.4in	380mm/15in	130mm/5in	27kg/60lbs

Case: powder-coated mild steel

Features

- Built-in 3-stage 2.3 amp charger and side-mounted IEC mains input socket.
- LED indicator lights, instead of digital voltmeters, indicate when pack is on charge and battery charge status.
- 2-metre lead and rubber 3-pin Nato plug
- Separate 2-metre colour-coded lead with 1000 amp cast brass and braided alligator clamps for connection to aircraft or vehicle batteries.
- Auto-selecting 110/220v AC internal charger system

Options

- Onboard charging kit



Suitable for aircraft and armored vehicles

1500S

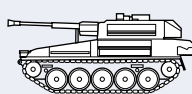
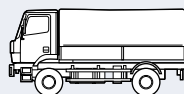
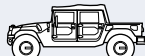
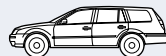
Single pack



Small turboprop and all piston aircraft



Free turbine helicopters: police, SAR, Hems, Executive



A very strong, lightweight, portable GPU in a stainless steel case. The GPU is ideal for carrying on board and for emergency power and turbine starting. Proven in service over 10 years – improved and updated. Now fitted with auto-selecting integral modular charging system for ease of use and maximum cell recharge, typically suitable for starting onboard APUs, 24v trucks 850 cu inch (14 litres) and all light tanks, APCs, weapons carriers, 4x4 and 6x6 vehicles and self-propelled guns.

Specification

Peak amps (max short circuit current) 1556

Cell capacity 26 amp/hrs

Cell configuration series

Standing volts (off charge) 25.6 volts nominal

Ambient temperature range -30°C to +40°C

Height	Length	Width	Weight
450mm/17.7in	340mm/13.4in	110mm/4.3in	23.5kg/51.7lbs

Case: All-welded antimagnetic stainless steel case with screw-retained rear inspection cover

Pack sits on 2 x transverse welded 'u' section feet with cut-outs to suit optional lightweight trolley

Nato stock number NCAGE: KD628 NSN: 2990-99-930-3147

Features

- Solid state digital voltmeter
- Heavy-duty push/pull on/off contactor with safety 'R' clip and replaceable 'on condition' contacts
- Flush-mounted polarized output port
- Fitted with unique input port designed for use with optional mains-powered 28v DC switch mode ramp/shop Powervamp power supply
- Accessory plug
- Controls located on pack top, protected by full-length stainless steel handle and reinforced angled side buttresses
- 2-metre heavy-duty double-insulated 50mm sq leads with heavy-duty rubber Nato plug
- Twin 110/220v 50/60Hz 3-stage integral charging modules with charge indicator LEDs
- All-welded case with removable screwed back panel

Options

- Heavy-duty trolley
- 24v worklamp
- Rapid recharge unit
- Lightweight fold-down trolley
- Padded jacket
- Onboard charging kit



Shown with optional padded cover with stowage pouch for mains input lead and DC output lead

2000S

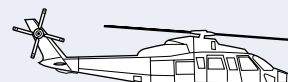
Single pack



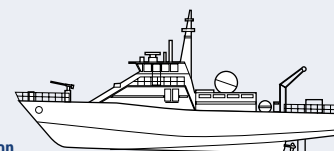
Corporate turbo prop



Corporate jets



10-16-seat helicopters with shaft turbines



Marine diesels to 600 cu in (10 litres)

Selected after trials by the British military for its 'Flyaway' pack, used on the Lynx Mk 3, Mk 7, Mk 8 and Mk 9 helicopters. Designed as a portable single unit for helicopters and small shaft turboprop engines starting where high peak amps and longer start cycles demand greater power cell capacity than the GPU 1500, the GPU 2000 can also be coupled in parallel to double its capacity. A simple parallel yoke will instantly connect two GPU 2000s to become the GPU 4000T (Twin).

Specification

Peak amps (max. short circuit current) 2000 amps

Cell capacity 38 amp/hr (2x13v 37.5 amp/hr cells in series)

Standing volts (off charge) 25.6 volts

Ambient temperature range -40°C to +40°C (optional +50°C)

Height	Length	Width	Weight
450mm/17.7in	440mm/17.3in	110mm/4.3in	32kg/70.4lbs

Case: Non-magnetic stainless steel with M3 screw retained rear panel for easy service

Accessory socket: Top-mounted ABS 4-pin plug with screw cap – fuse protected

Isolator: Push/pull contactor with security 'R' clip

Output socket: Flush polarized plug

Auxiliary end-mounted power port designed to accept optional 28v DC continuous power supply

Nato stock number NCAGE: KD628 NSN: 2995-99-230-9194

Supplied with

- 2-metre long double insulated leads – low temperature flexible and heavy-duty rubber Nato plug
- Twin 110/220v 50/60Hz 3-stage integral charging modules with charge indicator LEDs
- Mains input cable
- Fitted with neoprene anti-slip shock-absorbent feet
- Integral 220v charging system

Optional equipment

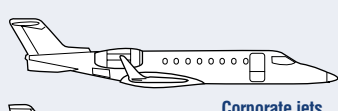
- Heavy-duty trolley
- 24v work lamp
- Rapid recharge unit
- Padded jacket with cable stowage
- Onboard charging kit



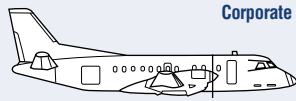
Suitable for aircraft and armored vehicles

3000S

Single pack shown with trolley



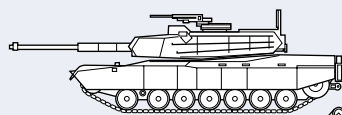
Corporate jets



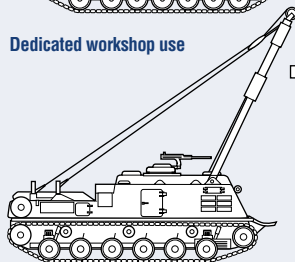
Regional airliners



30-seat helicopters with shaft turbines



Dedicated workshop use



This GPU is for ground operations at fixed bases. It can be connected to a second GPU to double the capacity to become the GPU 6000T (2 x 3000S). The 6000T is suitable for ramp use or where many smaller turbines need to be started in a short time, or for the occasional heavier start. Used worldwide by many military operators and frontline helicopter flights as a workshop pack for starting turbines and diesels up to 1647 cu inch (27 litres).

Specification

Peak amps (max short circuit current)	3000
Cell capacity	72 amp/hrs
Cell configuration	series
Standing volts (off charge)	25.6 nominal
Ambient temperature range	-30°C to +40°C (optional +50°C)

Height	Length	Width	Weight
480mm/19in	300mm/11.8in	150mm/6in	63kg/ 138.6lbs

Case: All-welded antimagnetic stainless steel case with screw-retained rear inspection covers.

Internal wiring: Flat rigid copper bus bars with bolted connections.

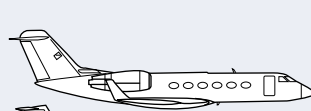
Features

- Backlit digital voltmeter 0-50v with on/off switch.
- Power on/off by switch controlled extra-heavy duty contactor with 'on condition' replaceable contacts.
- Flush-mounted polarized output port accepts quick-connect Nato lead.
- Fitted with unique input port designed for use with optional mains-powered 28v DC switch mode ramp/shop Powervamp power supply.
- Separate fuse protected charging/accessory plug.
- Controls housed on recessed angled faced front panel.
- Double handle design allows easy 2-man lift.
- GPU protection: electronic 'watchdog' timer shuts down pack and protects power cells from deep discharge.
- Supplied as standard with 2-metre heavy-duty double-insulated 50mm sq output lead with heavy-duty rubber Nato plug and 2-stage self-regulating charger.

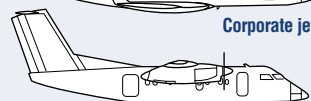


3000T

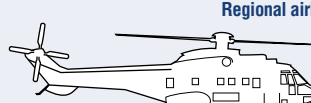
2x1500S packs with trolley



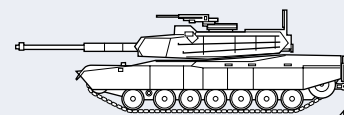
Corporate jet



Regional airliners



20-seat helicopters with shaft turbines



For workshop use and portability in the field



Designed for turbine starting on large and medium helicopters and corporate jets, the GPU 3000T (twin) is easy to use and comprises 2 x 1500S units connected in parallel. This design ensures individual GPU weight is low and they can be carried on board easily. The GPUs are cleared for air transportation and are in worldwide use with civil and military operators since first introduced in 1994. One of the most popular combinations with the best power-to-weight ratio, designed for medium workshop/field deployment use by helicopter squadrons and armored brigades when the need for extreme durability is critical and continuous DC power is not required. Starts all armored vehicles illustrated on page 7.

Specification

Individual GPU data as for 1500S pack

Peak amps (max short circuit current)	3000
Combined cell capacity	52 amp/hrs (packs connected in parallel)
Overall dimensions: packs including trolley:	

Height	Length	Width	Weight
1000mm/39in	450mm/18in	440mm/17.5in	61kg/137lbs

Nato stock number NSN 2990-99-789-1831

Features

- All stainless steel case with removable screwed one-piece rear panel for easy/rapid access
- Push/pull on/off isolator with safety 'R' clip
- Solid state digital voltmeter
- Full length tubular stainless handle allows two-man lifting
- Twin 110/220v auto selecting 3-stage integral charging modules with charging status LEDs
- Quick connect paralleling yoke allows individual GPU packs to be separated for single use
- 2-metre double insulated 50mm square output leads with polarized plug and heavy duty rubber Nato plug
- Tubular steel trolley with 200mm diameter wheels
- Integral 110/220 charging
- Fused accessory socket

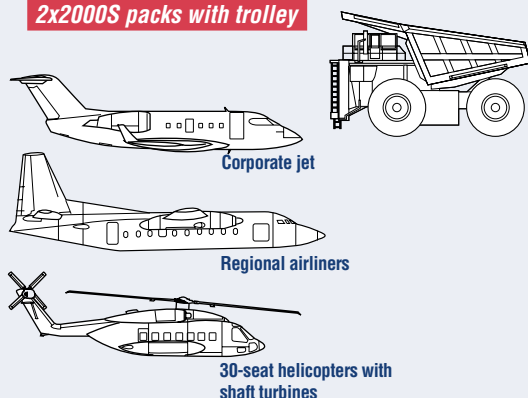
Options

- Padded jackets
- 24 volt inspection lamp
- Onboard charging kit
- Rapid separate charger unit
- External fast charger



4000T

2x2000S packs with trolley



These recently upgraded packs joined in parallel provide the combination of hand-portable modules with the extra amp/hour capacity to start heavier turbines. Now with push/pull isolator, integral 110/220 volt charging and shock-absorbing feet. Ideal for base workshops, engine bays, heavy plant. The smaller size of these packs allow practical carrying and stowage in aircraft or vehicle. With additional capacity, will start all the armored vehicles illustrated on page 7.

Specification

Individual GPU data as for 2000S pack

Peak amps	4000
Combined cell capacity connected in parallel)	74 amp/hrs (packs)

Overall dimensions: packs including trolley:

Height	Length	Width	Weight
1000mm/39in	450mm/15in	460mm/18in	85kg/191 lbs

Features

- Supplied as standard with GPU parallel connecting yoke and trolley with 200mm (8in) diameter rubber wheels and frame of 30mm diameter yellow powder-coated tubular steel. Pack locates forward of wheels
- Fitted with neoprene anti-slip shock-absorbent feet
- Solid state digital voltmeter

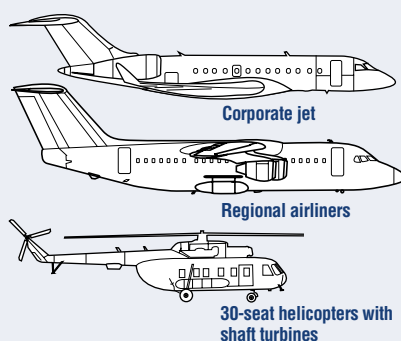
Options

- 28v DC 40 or 80 amp switch-mode power supply
- Single trolley
- Cold/hot-weather padded handle grips
- Woven nylon padded jacket for transportation/pack protection
- Bolt-on trolley shelf to accept 40 or 80 amp power supply unit
- Onboard charging kit



6000T

2 x 3000S packs, supplied with trolley



Used at fixed bases or with ramp vehicles, the new 6000T units have been increased in amp/hour capacity to provide more amp/hours for pre-flight use. Although fully air portable, their individual weight means their preferred use is with ground maintenance or for ramp power. Twin packs are designed for ramp/workshop or large armored vehicle compounds.

Specification

Individual GPU data as for 3000 S pack

Peak amps	6000
Combined cell capacity connected in parallel)	144 amp/hrs (packs)

Overall dimensions: packs including trolley

Height	Length	Width	Weight
580mm/29in	300mm/11.8in	350mm/13.8	126kg/277lbs

Features

Supplied as standard with:

- Trolley with 200mm (8in) diameter rubber wheels and frame of 30mm diameter yellow powder-coated tubular steel. Packs locate forward of wheels to maintain centre of gravity over axle when being moved
- Twin 2-stage mains-powered automatic charger. 2metre lead with heavy-duty Nato plug GPU parallel connecting yoke
- Solid state digital voltmeter

Options

- 28v DC 40 or 80 amp switch-mode combined shop/ramp power supply/charger
- Single trolley
- Cold/hot-weather padded handle grips
- Woven nylon padded jacket for pack protection

PV range

PV 1500/40
PV 3000/40
PV 3000/80

for UAVs,
aircraft, trucks
and heavy armor

The PV range of portable GPUs was designed to provide operators with the ability to run avionics systems, fault find or carry out maintenance work and start diesel or turbines all within a self-contained compact and hand-portable GPU.

Considered by professional operators – including many of the world's airforces, navy units, air corps and paramilitary forces – as the finest, most advanced unit of its type, the key to this range's success is in its very powerful miniaturized 28v DC integral power supply and its field-replaceable plug-in modules and servicing.

Where additional turbine or diesel starting power is required, or there is a need for a higher level of continuous DC power for systems operation or the running of role equipment, then the single unit can be connected in parallel.

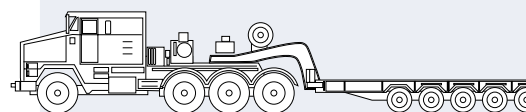
A single phase mains 110v or 220v AC connection will automatically activate the 40 amp internal power supply units which comprise 2 x 20 amp independent systems giving full redundancy at loads below 20 amps.

All models feature:

- "Push to view" button which activates solid-state voltmeter to show GPU volts without mains power
- Over voltage and overload protection
- Revolutionary design enables full tear-down and service in the field or forward workshop
- Modular construction ensures easy replacement of all parts
- Stainless steel sliding safety cover shields high current outlet during air/road transportation

All models supplied as standard with:

- 6.6 ft (2 meter) heavy-duty DC output cable and rubber NATO plug or tank plug
- AC input cord
- workshop manual
- full set of socket (Allen) wrenches to allow disassembly



Powervamp-designed
and manufactured
Leclerc connector

3-pin aviation
Nato plug

Nato armored
vehicle connector

Designed for tri-service use

- UAVs
- Helicopters
- Aircraft
- Vehicles
- Main Battle Tanks
- Marine diesels

All packs illustrated without
padded camouflage jacket

Designed for turbine
and diesel starting
and continuous
operation of
avionics, fire
control systems and
AFV electrical
systems

PV 1500/40

Single pack with integral charger

A portable GPU or vehicle starter with built-in 40 amp 28v DC power supply. This GPU is designed to start small to medium turbine aircraft and helicopters and medium diesels providing up to 40 amps of continuous power from any domestic 110v 60Hz or 220v 50/60 Hz supply.

- 40 amp 28.5v DC continuous output (with mains input)
- Power supply output monitor – for load monitoring and diagnostic aid
- Solid state DC voltage display – mains activated
- 40 amp 'twin circuit' 28 volt DC micro power supply (with 20 amp independent outputs for redundancy backup)
- 10 amp accessory socket. GPU can be re-charged via accessory port and any 24/28v DC vehicle/aircraft power source
- Can be recharged via an aircraft 115v 400Hz bus
- 1500/40 can be instantly coupled to a second 1500/40 GPU to double peak amps and continuous power to convert to a 3000/80 or can instantly convert to a 3000/40 by using the power cell module.

PV 3000/40

Twin pack, 40 amp 28v DC

The **PV 3000/40** comprises a PV 1500/40 connected in parallel with a similar pack with the same capacity, but without the second power supply. Continuous 28v DC output is 40 amps, but turbine starting performance is doubled to start large engines and armored vehicles such as BMP3 using Powervamp's specially developed retrofit slaving kit,

- 40 amp 28.5v DC integral power supply
- Twin 'side by side' power packs with 'quick de-couple' connector
- Twin solid state voltage displays
- Twin 28 volt DC accessory ports
- Tough, balanced ramp cart with storage for cable and NATO plug
- PV 3000/40 de-couples to provide 1 PV 1500/40 and 1 stand alone 1500 peak amp 29 amp/hr portable GPU
- Can be recharged via an aircraft 115v 400Hz bus

NOTE: The Twin Pack configuration allows series/parallel starting of aircraft and specific armored vehicles – retrofit kit required for BMP and similar

PV 3000/80

Twin pack, up to 80 amp 28v DC

The **PV 3000/80** comprises 2 x PV 1500/40 GPUs, connected in parallel. It will deliver the same peak turbine starting power as the 3000/40 required for large helicopters or medium turbine aircraft, heavy armored vehicles such as the Abrams, Leclerc and the Leopard 2 MBT, and if both GPUs are connected to either 110/220v AC, it will deliver up to 80 amps continuous 28 volt power.

- 80 amp 28.5v DC integral power supply
- Twin 'side by side' power packs with 'quick de-couple' connector
- Twin solid state voltage displays – mains activated. Cross checks power cell voltage
- Twin 28 volt DC accessory ports
- Tough, balanced ramp cart with storage for cable and NATO plug
- The 3000/80 model can be de-coupled to allow each 1500/40 unit to operate independently
- Can be recharged via an aircraft 115v 400Hz bus

Specifications

	PV 1500/40	PV 3000/40	PV 3000/80
Peak amps (max. short circuit current)	1540	3120	3120
Cell capacity (amp/hr)	29 amp/hour	58 amp/hour	58 amp/hour
Temperature vs performance	+40°C 110% +5%	+25°C 100% +5% 0°C 80% +5% -20°C 65% 10%	-40°C 50% 10%
Re-charge time from fully discharged	38 minutes	75 mins @ 40 amps	32 mins @ 80 amps
Power supply	Advanced switch mode		
Continuous power (max)	40 amp 2x28v integral 20 amp modules	40 amp 2x28v integral 20 amp modules	2 x 28v integral 40 amp modules x 2 (80 amps)
AC input (selectable)	100-132 volts RMS 45-400 Hz 200-264 volts RMS 45-400 Hz		
DC output	28 volts DC on load, 28.4 volts on standby or power cell float		
Accessory output (separately fused)	28 volts at 10 amps		
Output current (recommended cont.)	35 amps	35 amps	70 amps
Efficiency	Typically 82%		
Ambient operating temperature	-20 to +50°C		
Optional rating	-40 to +60°C		
Cooling	Natural convection, fan assisted		
Displays	1) Digital voltmeter. Displays output voltage to 0.1 volt accuracy 2) 2 x red, 2 x green LEDs for power supply output status and diagnostic use	As PV 1500/40 except with second voltmeter at rear of 1500 module 2) 2 x red, 2 x green LEDs for power supply output status and diagnostic use	Each unit as PV 1500/40 2) 2 x red, 2 x green LEDs for power supply output status and diagnostic use
Protections	DC Protection: Electronic current limiting with over current fuse protection; over voltage battery protection; DC output over voltage protection. AC protection: Input AC circuit breakers. Thermal power supply overtemp auto shut down.		
Isolation	Input to output 2500 volts RMS. Minimum. Complies with all safety requirements creepage, clearances, isolation. Conforms to UL. VDE. BS standard		
GPU construction	3mm folded aluminium alloy with stainless steel back panel, fittings – all stainless steel		
Dimensions	Fully assembled on shop/ramp cart:		
	Length 400mm 15.75in	Height 300mm 11.81in	Width 135mm 5.31in
	Weight 26ka 58.5lbs	Length 430mm 15.93in	Height 1006mm 40in
		Width 500mm 20.47in	Weight without trolley 50ka 112.5lbs
			Weight with trolley 61ka 137.25lbs
US National Stock Numbers	VEHICLE: 2990-99-799-5679 AVIATION: 2995-99-811-5528		
Nato stock number	N CAGE: KD628 NSN: 2990-99-611-7404		
	N CAGE: KD628 NSN: 2990-99-319-0613		
	VEHICLE: 2990-99-410-4027 AVIATION: 2995-99-395-8601		
	N CAGE: KD628 NSN: 2990-99-234-3529		

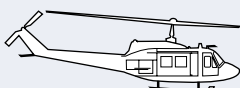
NEW DEVELOPMENT
**** Multi-function battery system ****



... introducing the

Integrated Battery System

Combined onboard battery/GPU system – military/STC



Not certified for civil use

Model IBS18

The Powervamp Integrated Battery System (IBS) is a new concept combining, in one compact battery system, a conventional high discharge sealed lead-acid battery with a miniaturized 28 volt DC power supply module and battery charger.

The IBS, when connected to 110 or 220 volts 50/60Hz AC input power, can deliver up to 40 amps of continuous 28 volts DC power for ramp or in-hangar avionics servicing, lighting and aircraft maintenance purposes.

Previously, a separate GPU or DC supply was required for ramp or hangar servicing. Now, it is only necessary to access the battery and insert a standard IEC female mains connector into the special mains input socket mounted on the front of the battery, adjacent to the battery disconnect.

With mains power connected, a solid state digital voltmeter automatically activates to confirm the output voltage. LEDs indicate the operating status of the miniaturized power supply module.

For reliability and redundancy, the DC power supply operates as two fully independent 20 amp (max) circuits, each with its own IEC socket.

A 'push to view' button allows the aircraft operator or technician to accurately check the voltage of the battery when not connected to the external mains. This useful feature allows operators to monitor the battery voltage while the aircraft is on the ground without having to access cockpit. When not connected to a mains supply, a 'watchdog' timer shuts off the voltmeter after approx 5 minutes to conserve power.

Provisional specifications

Nominal voltage	24v
Nominal capacity	18 amp/hrs (1 hr to 20v @ +20°C (+65°F))
Integral 28 volt DC power supply via	110/220v AC mains input
Digital voltmeter	
2 x 20 amp miniaturized power supplies provide full redundancy at loads below	20 amps
Cooling:	4 mini fan Forced air (ground operation only)

Features

- No separate GPU required for avionics maintenance
- 40 amp @ 28v DC integral power supply
- Sealed battery – no maintenance
- High power engine starts
- Long life – pure lead grids
- Unrestricted transportation
- Vents and thermal sensors not required

CoolSpool™

28–30 volt Portable GPUs and Start Carts

This unique range of 28 volt portable GPUs has been developed to provide more spool-up watts on starter engagement for larger turbine aircraft or helicopters fitted with voltage sensitive Fadec systems, or heavier-current-drawing shaft turbines and turbo-prop aircraft, thus shortening start times and lowering start temperatures. Additionally, this latest system in the new CoolSpool range of portable GPUs has an integral charging and continuous ground power system, able to deliver up to 40 amps of continuous DC power at 28.5–29 volts, for avionics work, shop maintenance, diagnostics, training or demonstrations.

All the CoolSpool models use matched cells to raise the voltage. Using their unique 'power maximizer circuit', the GPU 26 and 52 can be voltage boosted via a 110v AC or 220v AC mains input to their maximum starting voltage, simply by selecting the power boost switch. Voltage will be raised to just below the upper Fadec limit as indicated on the solid state voltmeter. At peak starter engagement on a medium turbine, this can result in almost 9% more power, or with a 1300 amp starter engagement, more than 3200 watts of extra power compared with some other 28 volt packs.

For operators demanding more power, typically through an aircraft upgrade, the CoolSpool 26 can be uprated simply by adding the upgrade module which is inserted between the upper and lower CoolSpool 26 modules to double its turbine starting capacity to 52 amp/hrs.

Features

All models in the new CoolSpool range offer operators a number of significant features over all other types of GPUs on the market:

- Modular design allows rapid upgrade
- Integral 40 amp 28–30 volt DC continuous power supply system as standard
- Certified batteries – fully approved for air transportation
- Genuine 28–30 volt cell capacity, fully balanced
- The best power-to-weight ratio on the market
- Miniaturized integral power supply

‘We are extremely satisfied with the CoolSpool 130. It is rugged, portable and user-friendly. We use it on all our fleet, which includes the ATR 42 and Let 410 ... it offers true value for money. I would not hesitate to recommend it ...’

John Gwaseko, Technical Manager, Precision Air Services Ltd, Dar es Salaam, Tanzania



CoolSpool 260
rear panel



Designed for aviation use only

CoolSpool



Designed for aviation and ramp support, the CoolSpool 130 will start all armored vehicles and free turbine/turboprops illustrated. It is ideal for large engine overhaul shops.

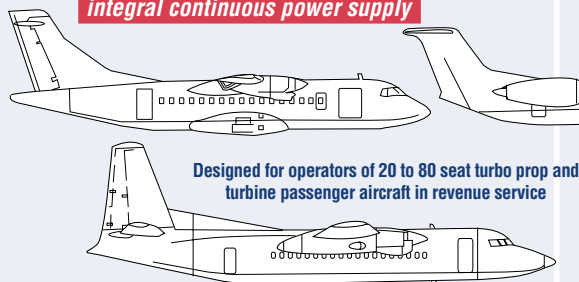
CoolSpool 26 CoolSpool 52

**With modular 40amp 28vDC
integral continuous power supply**

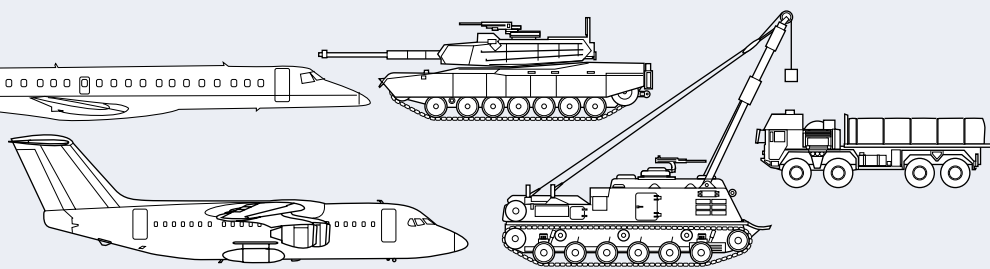
CoolSpool 130 CoolSpool 260

28v DC Start Cart

CoolSpool 260 will start all aircraft and vehicles illustrated in this brochure. Typically used in engine rebuild shops, for regular turbine starting and compressor washing, at vehicle storage compounds and on very large military bases.



Designed for operators of 20 to 80 seat turbo prop and turbine passenger aircraft in revenue service



Specification

	CoolSpool 26	CoolSpool 52
Peak amps (max)	1200 amps	1800 amps
Amp hours	26 a/hr	52 a/hr
Voltage: standing – off charge, 28.5–29 volts		
With maximizer circuit switch on and mains connected for 15 minutes before start: 29–31 volts		
Continuous DC power (mains connected) 40 amps @ 28.5 volts (without maximizer circuit)		
Power supply: 2 x 20–25 amp paralleled Powervamp advanced micro switchmode power supplies		
Input voltage: 110/220 volts, 50/60 Hz, single phase (selectable)		
Max. mains current at full load: 220 volts: 8 amps 110 volts: 16 amps		
All models are cleared for air transportation and are maintenance-free and can operate in any attitude. Supplied with 2-metre lead and rubber Nato plug, mains input charge lead, instructions and full 12-month warranty.		

	Height	Length	Width	Weight
CoolSpool 26	260mm 10.2in	390mm 15.4in	290mm 11.4in	32kg 70.4lbs
CoolSpool 52	500mm 19.7in	390mm 15.4in	290mm 11.4in	62kg 136.4lbs



CoolSpool 52

Specification

28v DC Battery Cart	CoolSpool 130	CoolSpool 260
Peak amps (max starting current)	1600 amps	2000 amps
Amp hours	130 a/hr	260 a/hr
Max. power supply output	40	80
Continuous rating (recommended)	30	60
AC input voltage @ 220v	8 amps	16 amps
AC input voltage @ 110v	16 amps	32 amps
Control panel: Digital voltmeter with 'push to view' and watchdog timer		
Mains input plug: standard IEC socket – up to 80 amps via heavy-duty combination on/off switch and integrated circuit breaker – above 80 amps special single- or three-phase supply		
ON/OFF emergency isolator: Heavy-duty double pole push/pull switch with red mushroom knob		
28v DC accessory socket, fused @ 10 amps, suitable for worklight, DC		
Power cells: 5 x 130 amp/hr series connected starved electrolyte gas recombining cells. Cells cleared for air transportation. Correctly protected in accordance with ICAO regulations		

Height	Length	Width	Weight
720mm/28in	1060mm/42in	710mm/28in	157kg/345.4lbs (CoolSpool 130) 270kg/594lbs (CoolSpool 260)
Tyres: 4 x 260mm x 85mm pneumatic			

Integral power supply charging system

110/220v AC selectable single-phase switch mode powersupply/charger. Regulated to 31.2 volts DC. Units comprise 2 x 20 amp TEFC independent switch-mode modules paralleled for reliability. Short circuit protected, current overload protection

NCAGE: KD628

Unit supplied as standard with

- Spare wheel
- Foam fire extinguisher
- 4-metre double insulated DC output cable
- Nato plug
- Frame and casing manufactured from steel sheet and hollow section, finished in powder-coated yellow

Options

- Up-rated 'continuous' DC power
CoolSpool 130 70, 140, 220 amps @ 28v DC
CoolSpool 260 120, 200, 280, 360 amps @ 28v DC
- Trailer board with 12v or 24v lighting
- 3-phase input with 400-450 amp DC continuous power



Suitable for aviation and very large vehicle compounds, ab initio flight training, ramp operations, storage, and where operation must be totally self-contained.



Scamm'r with PV 3000/80 GPUs and CoolSpool 26

Scamm'r

Self-contained air-mobile, modular, multi-role GPU system

Specification

A 110v/220v generator fitted to a wheeled frame and designed to accept 2 x PS80 Power Supplies, 1 x PV 1500/40, 1 x PV 3000/40, 1 x PV 3000/80, 1 x Coolspool 26, 1 x Coolspool 52. This product provides continuous AC mains output to power the 28 volt DC power supply units in the PS80 and PV 1500/40 units.

Gasoline Version: Honda Generator EC 6000
Diesel Version: Yanmar L100

Approx Dimensions – Scamm'r frame

	Height	Length	Width	Wheel size
Honda EC 6000				
Without wheels	665mm/26.2in	800mm/31.4in	625mm/24.6in	
With wheels	665mm/26.2in	1300mm/51.2in	750mm/29.5in	4 x 250mm/10in pneumatic
Yanmar L100	Similar to the above - may vary slightly			

Basic weight without GPUs or Power Supply

Approx weight of generator unit and frame

Honda Generator EC 6000	95kg/209.5lbs
Yanmar L100	156kg/344lbs

Features

- Comprises a gasoline or diesel-driven generator supplying 110v/220v single phase AC power driving a variety of optional GPUs and/or power supplies which delivers 28v DC for continuous avionics use. When fitted with optional PV 1500/40 Powervamp GPU packs, the unit will provide regular turbine starting power or very high amp for short durations, with GPUs being continuously recharged via its power supply.
- Unit disassembles in seconds.
- Individual modules allow stand-alone versatility.
- With generator shutdown, system can run from AC mains supply for hangar use.
- Many in daily use at RAF bases, Police air operations, foreign air forces, maintenance bases etc.

This highly versatile mobile generator module enables a range of standard Powervamp products to be instantly installed into the wheeled frame thus turning the complete unit into a mini, lightweight, self-contained, air mobile, modular multirole GPU (Scamm'r). The various options within the GPUs and Power Supplies allow operators to match the maximum output power or continuous amps to their requirements. The Scamm'r is ideal for flight line ops, ab initio training, hangar maintenance or remote airfield operations.

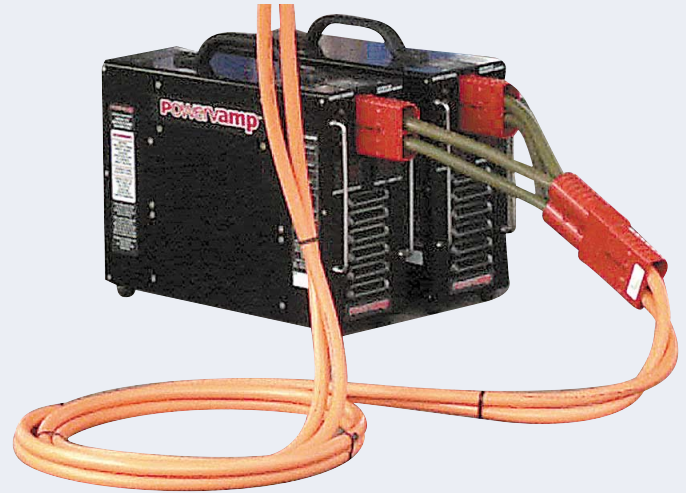
A key feature of the unit is that for use in confined areas or workshops, the gasoline or diesel engine can be shut down and a 110 or 220 volt domestic AC line can be plugged into the unit to allow the GPUs or power supplies to continue to operate as if the engine was running.

The standard options of engine are the Honda EC6000 gasoline unit with 6 KVA generator or the Yanmar L100 Diesel with 7.5 kw generator.



Scamm'r with CoolSpool 26 28v GPU/power supply

Used on its own or in parallel with any Powervamp battery pack to power avionics or run AFV fire control and girosystems, fault finding or 'engine off' training



PS80

PS80/2240 28V DC 80 amp power supply

Specification

Maximum output current	80 amp
Maximum watts	2240
Continuous rating (amps)	80% of maximum output
Switching frequency	67Hz
AC mains input (selectable)	98-110v AC 50-60Hz or 210-240v
Cooling	Triple fan and heatsink
Temperature range	-25°C to +50°C

Height	Length	Width	Weight
305mm/12in	405mm/16in	135mm/5.3in	Approx 12.5kg/27.5lbs

Case: all-alloy non-ferrous case

Features

- Four independent paralleled 20 amp advanced switch mode PCBs connected in parallel provide 80 amps output for ease of service and maximum redundancy.
- Digital voltmeter indicates output voltage.
- Load monitoring via digital ammeter.
- Automatic current limiting.
- On/off power control via switchable circuit breaker.
- 4 x output "On" warning lights and status LEDs to indicate individual PCB output.
- 10 amp 28 volt DC accessory port for inspection lamp/soldering irons etc.
- Hand/air portable.
- 80 amp unit can be ganged to increase output (parallel connecting harnesses required) to achieve up to 400 or more amps.
- Unit can act as aircraft battery charger ONLY on lead acid batteries.
- Operates directly into the aircraft from any domestic 110 or 220 volt AC mains supply or runs in parallel with Powervamp GPUs, acting as a power supply and charger.
- Protected against overload, short circuit and reverse polarity.

Options

- Can be run in parallel with all Powervamp GPUs
- Protective cover for outdoor use
- Trolley to hold two units



Embraer ERJ-135 – Paris Airshow 2003, 3 x 80 PS80s ganged in parallel



Portable Landing Light System (PLLS)

Compact, lightweight, self-contained air/ground activated lights

The portable landing light is a multi-function rapid deploy pilot or ground activated lighting system for use at temporary landing zones or air strips.

Using the latest in power-saving LED technology, the Powervamp landing lights allow fixed or rotary wing aircraft to identify the runway or heliport at night and with confidence at a visual range of up to approx 7 km (5 miles) in clear conditions.

The portable landing light system (PLLS) comprises 6 high lux, low power LED modules, each having four selectable colours, white, red, green and blue, and a night vision IR setting. The individual modules are slaved to a master control unit which acts as both the manual controller and radio receiver unit decoding the aircraft radio transmission 'clicks' to allow pilot activation of the landing lights.

For compactness and reliability, the LEDs are arranged in a closely spaced matrix of five groups. For vibration resistance, each assembly is 'potted' and mounted in its corrosion-free case as an individual module. For helicopter operators familiar with the tactical 'T' light configuration, the standard Euro 'T' Kit includes six LED light modules, one hand-controller/receiver unit and six ground stake poles with three-axis adjustment. The complete system is housed in a compact nylon carry case. For operators using the tactical 'Y' configuration, kits are available with five LED modules.

Although the tactical 'T' layout requires only five lights and the 'Y' layout only four, an additional LED unit is provided. This unit could be set manually to another colour – red, for example – to act as an obstruction warning light, hand-held marshalling light or simply as a spare module.

Where multiple landing zones are in use – typically to identify a refuelling point from the main landing area – all LEDs or a single LED can be pre-selected manually to display a different coloured light in order to identify the correct zone.

The PLLS can be activated by incoming aircraft using the onboard RF transmitter on the equipment's frequency of 122.9 MHz. The master control unit which receives the pilot controlled command relays the signal at 433 MHz (or 3.5 MHz in the USA) to the individual LED units. After a short 'auto test' pause, light activation occurs, with all LEDs fully synchronized.

Setting up the system is quick, and spacings can be accurately set using a simple measuring tape.

Each module is powered by four AA batteries. A 10-minute 'watchdog' timer will shut off the lights to conserve battery power.

Specification

Max height	Adjustable, to 24 inches
Size	125mm/5in x 85mm/3.7in x 55mm/2.2in
Enclosure	Water/dust/shockproof
Ground fitting	6 x stainless steel adjustable spiral point rods, with 'T' bar to screw into the ground
Visibility	Directional heads
Adjustability	Articulated head adjustment
Power required	2.5 to 6 volts
Type	4 x AAs per unit
Activation frequency:	Master unit: 122.9 MHz Local remote manual mode: 433 MHz (315 MHz USA)
Weight per unit	360g/0.8lb with batteries
No. of lights	6
Pattern	Either 'T' or 'Y' form plus a spare or drop zone light
Light colours fitted	Red, blue, green, white, infra red
Strobe	Fitted as standard on Master

Modes of operation

- 1 Constant light if required
- 2 Automatic 2 – 4 – 6 – 8 hour timeout
- 3 Automatic daylight saving mode
- 4 Aircraft activation on 7 – 5 – 3 code
- 5 Manual activation at ground level
- 6 Local remote handheld radio activated
- 7 10-minute timeout of light after pilot activation

We reserve the right to amend or change the technical specification in line with our policy of continuous product development and improvements.



Heliport Xenon 'H' strobe

LED portable
flashing/steady light

Runway and heliport landing lights

ICAO-compliant landing aids

For more than six years, the Powervamp product range has included portable heliport lighting. Demand internationally has increased for this type of Powervamp equipment, and so have requests for fixed airport and heliport lighting systems.

As a result, for more than four years, Powervamp has been offering a complete range of fully ICAO-compliant landing aids, including illuminated wind cones, strobe beacons, glide path indicators (VASI), marker lights, surface floodlights and low intensity obstacle lights. All equipment can be installed for manual operation or, where regulations permit, by pilot activation via aircraft radio.



Surface floodlight



Illuminated windsock



Glide path indicator



Low intensity obstacle light



Marker light



Radio control



Portapump

Portable refuelling pumps: the safe solution to fast, filtered fuelling – in daily use with civil and military operators worldwide

A small lightweight and compact portable fuelling/defuelling unit with full size aviation filter and high delivery pump designed to be carried in light turbine helicopters.

Can be operated from any 24v–28v DC power source, e.g. portable GPU, aircraft or 24v vehicle. Ideal for field operations.

Proven in tough field conditions, the Powervamp Portapump is a compact self contained module developed for aviation operators, the military, and organizations with a requirement to rapidly fuel/defuel aircraft, vehicles or marine vessels using either the aircraft, vehicle or vessel's own 24-28 volt DC power, 24 volt Powervamp GPU or 110/220Ac supply.

Suitable for pumping Jet A1, diesel or other fluids with a flash point above 37°C (a special model suitable for pumping gasoline is available), the Portapump will drain a 45 gallon (200 litre) drum in just two minutes while simultaneously filtering the fuel to 5 microns and removing water to less than 2PPM.

Protected against heavy handling by its tough case and quick detachable alloy front panel, the Portapump fits into the baggage hold of most light turbine helicopters and can be operational within two minutes.

Unlike other portable pumping systems, Powervamp's Portapump is designed for single operator refuelling, with safety and reliability key design features.

The modular design means easy and rapid service, with filter changing a five-minute operation under field conditions.

Already in daily use in Africa, Europe, the Middle East, Indian Ocean and the Far East, some operators of Portapump are saving valuable time and money by completing a "Hot Refuel" in less than three minutes from touch-down to take-off where operations permit. Because of the very high filtration performance, the ever-present dangers of fuel contamination when uplifting from any temporary source are eliminated, as are the physical effort and time delays associated with obsolete hand pumps.

Specification

Aviation/military

Volts	25–28v
Amps	Max 14 amps
Filter	Solids to 5 microns, water to 2ppm
Pump output	Nominal 100 litres per minute
Hoses	3M non-degradable flexible both sides
Coupling	All alloy quick connect/disconnect cam lock

Height	Length	Width	Weight
444mm/17.5in	400mm/15.7in	110mm/4.3in	28kg/63lbs

Nato stock number 6913 NCAGE: KD628 NSN: 2910-99-297-

Features

- Runs off the aircraft or vehicle's 24-28 volt DC power.
- Pumps a 45 gallon (200 litre) barrel in two minutes (Jet A1, diesel).
- Filters to 5 microns.
- Removes water to less than 2PPM.
- Compact, fits into baggage hold of most turbine helicopters.
- Connects directly to any Powervamp GPU or mains charger.
- Designed for single operator control.

Options

- Digital fuel flow meter.
- Lightweight carrying trolley.
- 110/220 volt input, 28 volt output all-weather power supply.
- 24 volt battery pack (suitable for turbine starting).
- Plug-in work lamp for night operation.
- **ALSO AVAILABLE** Stainless steel space-framed dual fuel unit. Can pump gasoline, diesel or Jet A1 (flow rate reduced to 85-90 litres/minute).

Useful conversion factors

Length (distance)

inches	x 25.4	=	millimetres	x 0.0394	=	inches
feet	x 0.305	=	metres	x 3.281	=	feet
miles	x 1.609	=	kilometres	x 0.621	=	miles

Volume (capacity)

cubic inches (cu in)	x 16.387	=	cubic centimetres	x 0.061	=	cubic inches
imperial pints	x 0.568	=	litres	x 1.76	=	imperial pints
imperial quarts	x 1.137	=	litres	x 0.88	=	imperial quarts
imperial quarts	x 1.201	=	US quarts	x 0.833	=	imperial quarts
US quarts	x 0.946	=	litres	x 1.057	=	US quarts
imperial gallons	x 4.546	=	litres	x 0.22	=	imperial gallons
imperial gallons	x 1.201	=	US gallons	x 0.833	=	imperial gallons
US gallons	x 3.785	=	litres	x 0.264	=	US gallons

Mass (weight)

Ounces	x 28.35	=	grams	x 0.035	=	ounces
pounds	x 0.454	=	kilograms	x 2.205	=	pounds

Force

ounces-force	x 0.278	=	newtons	x 3.6	=	ounces-force
pounds-force	x 4.448	=	newtons	x 0.225	=	pounds-force
newtons	x 0.1	=	kilograms-force	x 9.81	=	newtons

Pressure

pounds-force per square inch	x 0.070	=	kilograms-force per square centimetre	x 14.223	=	pounds-force per square inch
pounds-force per square inch	x 0.068	=	atmospheres	x 14.696	=	pounds-force per square inch
pounds-force per square inch	x 0.069	=	bars	x 14.5	=	pounds-force per square inch
pounds-force per square inch	x 6.895	=	kilopascals	x 0.145	=	pounds-force per square inch
kilopascals	x 0.01	=	kilograms-force per square centimetre	x 98.1	=	kilopascals

millibar	x 100	=	pascals	x 0.01	=	millibar
millibar	x 0.0145	=	pounds-force per square inch	x 68.947	=	millibar
millibar	x 0.75	=	millimetres of mercury	x 1.333	=	millibar
millibar	x 0.401	=	inches of water	x 2.491	=	millibar
millimetres of mercury	x 0.535	=	inches of water	x 1.868	=	millimetres of mercury
inches of water	x 0.036	=	pounds-force per square inch	x 27.68	=	inches of water

Torque (moment of force)

pounds-force inches	x 1.157	=	kilograms-force centimetre	x 0.868	=	pounds-force inches
pounds-force inches	x 0.113	=	newton metres	x 8.85	=	pounds-force inches
pounds-force inches	x 0.083	=	pounds-force feet	x 12	=	pounds-force inches
pounds-force feet	x 0.138	=	kilograms-force metres	x 7.233	=	pounds-force feet
pounds-force feet	x 1.356	=	newton metres	x 0.738	=	pounds-force feet
newton metres	x 0.102	=	kilograms-force metres	x 9.804	=	newton metres

Power

horsepower	x 745.7	=	watts	x 0.0013	=	horsepower
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Velocity (speed)

miles per hour	x 1.609	=	kilometres per hour	x 0.621	=	miles per hour
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Fuel consumption

miles per gallon, imperial	x 0.354	=	kilometres per litre	x 2.825	=	miles per gallon, imperial
miles per gallon, US	x 0.425	=	kilometres per litre	x 2.352	=	miles per gallon, US

Temperature

degrees Fahrenheit (F) = (C x 1.8) + 32 degrees Celsius (degrees centigrade, C) = (F - 32) x 0.56

Conversion figures are reproduced in good faith. We cannot be held responsible for errors or misprints

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