

Ground Power Equipment & Tugs





About Red Box Aviation

Red Box Aviation design and manufacture high quality and reliable Ground Support Equipment (GSE) and is now part of the LPA Connection Systems family.

We offer a wide range of aircraft ground power equipment, ranging from aircraft start and continuous power units, cable harnesses and electric aircraft tugs.

Designed for use in both civil and military markets, Red Box Aviation delivers bespoke power solutions to its customers. With a global network of distributors, we provide comprehensive local support and after-sales care to our international customers across all ground support equipment and solutions.

To find out more visit www.redboxaviation.com

Who are LPA Connection Systems?

LPA Connection Systems design and manufacture power connection solutions for the aviation industry and are based in the UK.

With over 70 years of experience in the aviation market, the acquisition of Red Box Aviation is key to our commitment to provide a comprehensive range of high quality and reliable ground power equipment to our customers.

LPA supports a range of customers including major UK and international airports, OEMs, specialist aviation suppliers, and the military. We understand the importance of reliable ground power equipment and are committed to the development and innovation of both the Red Box and LPA product range.

LPA has EN 9100, ISO 9001, ISO 14001 certification and many of our products are NATO codified.

To find out more visit www.lpa-group.com

Providing Ground Support Equipment







Ground Power Equipment

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Tugs

| Move up to 4,500 Kg | 12 |
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| Electric Powered | 13 |

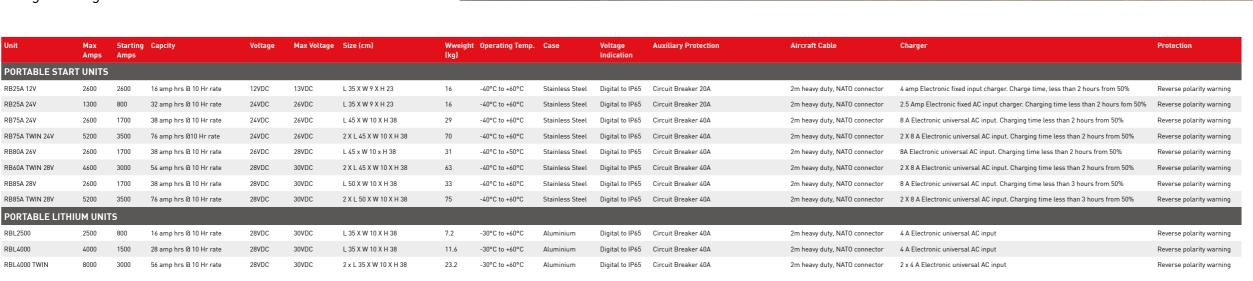
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Start Units

Our comprehensive range of start units are designed to cover every possible start requirement.

The Red Box start units offer 12V, 24V, 26V and 28V starts using either gel lead acid or lithium batteries.



From light weight to high power, there is a start unit to match your requirements.

RB75A 1700A

| Unit | | Starting Amps | Capcity | Voltage | Max Voltage | Size (cm) | Weight (kg) | Operating Temp. | Case | Voltage Indication | Auxiliary Protection | Aircraft Cable | Charger | Protection | Towbar | Handlebar and Castors |
|----------|---------|------------------|-------------------------|---------|----------------|--------------------|----------------|-----------------|-------------------|-----------------------|----------------------|-------------------------------|---|--------------------------|-------------------------|-----------------------|
| START CA | RT UNIT | | | | | | | | | | | | | | | |
| TC400/6 | 7800 | 5000 | 114 amp @10 Hr rate | 24VDC | 26VDC | L 78 X W 35 X H 30 | 135 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty, NATO connector | 20A Electronic 110/230v. Charging time less than 2 hours from 50% | Reverse polarity warning | 50mm ball (optional) | Optional |
| TC400/8 | 10400 | 7000 | 152 amp @10 Hr rate | 24VDC | 26VDC | L 78 X W 35 X H 30 | 165 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty, NATO connector | 20A Electronic 110/230v. Charging time less than 2 hours from 50% | Reverse polarity warning | 50mm ball (optional) | Optional |
| TC400/28 | 5200 | 3500 | 115 amp hrs @10 Hr rate | 28VDC | 30.3VDC | L 78 X W 54 X H 30 | 140 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty, NATO connector | 20A Electronic 110/230v. Charging time less than 2 hours from 50% | Reverse polarity warning | 50mm ball (optional) | Optional |

| Unit | Max Amps Starting Amps | Capacity 24/28V | Capacity 12/14V | Voltage | Max Voltage | Size (cm) | Weight (kg) Operating Te | mp. Case | Voltage Indication | Aux | xiliary Protection | Auxiliary Inpu | t Aircraft Cable | Charger | Protection |
|-------------|------------------------|------------------------|-------------------------|----------|-------------|--------------------|--------------------------|----------------|--------------------|------|--------------------|----------------|------------------|--|-------------------------|
| DUAL-VO | LTAGE START UNITS | | | | | | | | | | | | | | |
| RB25A 12/24 | 1600/3200 800/1600 | 17 amp hrs @10 Hr rate | 34 Amp Hrs @ 10 Hr rate | 12/24VDC | 13/26VDC | L 40 X W 23 X H 21 | 23 -40°C to +60°C | Stainless Stee | el Digial IP65 | Circ | cuit Breaker 20A | 29VDC | 2m heavy duty | 4 amp universal AC input. Charging time less than 4 hours from 509 | 6 Reverse polarity warn |

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Continuous Power

Battery Units

Our continuous battery units are designed to provide uninterrupted power to aircraft when mains power isn't available, or when a silent power supply is required.



Our continuous power supplies offer clean 14V and 28VDC power, up to 600 Amps.

From hand portable to mobile units we offer a solution to all DC aircraft requirements.





| Unit | Max Amps | Starting Amps | Capacity | Run Time | Voltage | Max Voltage | Size (cm) | Weight (KG) | Operating Temp | Case | Voltage Indication | Auxiliary Protection | Aircraft Cable | Charger | Optional Extras |
|------------|-------------|------------------|----------------------------|---|---------|----------------|--------------------------|----------------|-------------------|----------------------|-----------------------|-------------------------|------------------------------------|---|-------------------------------------|
| TC400/28C | 5200 | 3500 | 115 amp hrs @10 Hr rate | 95A for 1 hour, 50A for 2 hours, 30A for 3 hours | 28VDC | 30.3VDC | L 78 X W 35 X H 30 | 140 | -40°C to +60°C | Zinc Coated Steel | Digital to IP64 | Circuit Breaker 40A | 3m heavy duty with connector | 20A Electronic 110/230V. Charging time less than 4 hours from 50% (larger chargers available) | Longer cables |
| TC400/28T | 10400 | 7000 | 272 amp hrs @10 Hr rate | 190A for 1 hour, 100A for 2 hours, 65A for 3 hours | 28VDC | 30.3VDC | L 200 X W 108 X H 150 | 400 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty with connector | 20A Electronic 110/230V. Charging time less than 4 hours from 50% (larger chargers available) | Cable horns, longer cables |
| TC400/28TR | 15600 | 10400 | 357 amp hrs @10 Hr rate | 250A for 1 hour, 125 for 2 hours, 85A for 3 hours | 28VDC | 30.3VDC | L 200 X W 108 X H 150 | 500 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty with connector | 40A Electronic 110/230V. Charging time less than 3 hours from 50% (larger chargers available) | Cable horns, longer cables |
| TC400/28QU | 20800 | 14000 | 476 amp hrs @10 Hr rate | 340A for 1 hour, 170A for 2 hours, 120A for 3 hours | 28VDC | 30.3VDC | L 200 X W 108 X H 150 | 600 | -40°C to +60°C | Zinc Coated Steel | Digital to IP65 | Circuit Breaker 40A | 3m heavy duty with connector | 50A Electronic 110/230V. Charging time less than 4 hours from 50% (larger chargers available) | Cable horns, longer cables |

| Unit | Output Current | Output Voltage | Output Ripple | Input Frequency | AC Input Supply | Phase | Power Factor Correction | Input Rating | Dims Body (cm) | Weight (kg) | LED Voltmeter/ Ammeter Display |
|---------|-------------------|-------------------|------------------|--------------------|--------------------|----------|----------------------------|--------------|--------------------|-------------|-----------------------------------|
| RBPS25 | 25 amps | 14/28VDC | ←150 mV | 47-63 Hz | 104V-264V | 1Ø | Included | 775 VA | L 13 x W 46 x H 22 | 5 | YES |
| RBPS50 | 50 amps | 14/28VDC | ←150 mV | 47-63 Hz | 104V-264V | 1Ø | Included | 1550 VA | L 13 x W 46 x H 22 | 6.5 | YES |
| RBSC100 | 100 amps | 14/28VDC | ←150mV | 47-63 Hz | 95V-264V | 1Ø | Included | 3000 VA | L 45 x W 20 x H 23 | 9 | YES |
| RBSC150 | 150 amps | 14/18VDC | ←250mV | 45-65 Hz | 95V-270V | 1Ø or 3Ø | Included | 5280 VA | L 94 X W 78 X H 45 | 46 | YES |
| RBSC225 | 225 amps | 14/18VDC | ←250mV | 45-65 Hz | 95V-270V | 1Ø or 3Ø | Included | 7920 VA | L 94 X W 78 X H 45 | 56 | YES |
| RBSC300 | 300 amps | 28VDC | ←250mV | 45-65 Hz | 200V-460V | 3Ø | Included | 10500 VA | L 91 X W 80 X H 61 | 70 | YES |
| RBSC450 | 450 amps | 28VDC | ←250mV | 45-65 Hz | 200V-460V | 3Ø | Included | 16200 VA | L 91 X W 80 X H 77 | 80 | YES |
| RBSC600 | 600 amps | 28VDC | ←250mV | 45-65 Hz | 200V-460V | 3Ø | Included | 21600 VA | L 91 X W 80 X H 77 | 90 | YES |



Combination Start and Continuous

Combining the quality and functionality of both our start and continuous units into a single, easy-to-manoeuvre unit.





Visit www.redboxaviation.com or call us on +44 (0) 1799 512800 for more information on our hybrid units

| Unit | Max Amps | Starting Amps | Capacity | Starting Voltage | Max Start Voltage | Continuous Voltage | Continuous Power | AC Input | Size (cm) | Weight (kg) | Operating Temperature | Case | Voltage Indication | Performance Monitoring | Aircraft Cable | Charger | Handle Bar & Castors Or Towbar |
|--------------|----------|------------------|-------------------------|---------------------|----------------------|-----------------------|---------------------|-------------------|---------------------|----------------|--------------------------|-------------------|-----------------------|---------------------------|----------------|---|-----------------------------------|
| TC3000/50-4 | 5200 | 3500 | 76 amp hrs @10 Hr rate | 24VDC | 26VDC | 28.5VDC | 50 amps | 95v-270V 1Ø | L 94 X W 78 X H 45 | 111 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 50A Electronic inbuilt. Charging time less than 60min from 50% | Optional |
| TC3000/50-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 50 amps | 95v-270V 1Ø | L 94 X W 78 X H 45 | 135 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 50A Electronic inbuilt. Charging time less than 60min from 50% | Optional |
| TC3000/100-4 | 5200 | 3500 | 76 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 100 amps | 95v-270V 1Ø | L 94 X W 78 X H 45 | 115 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 100A Electronic inbuilt. Charging time less than 60min from 50% | Optional |
| TC3000/100-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 100 amps | 95v-270V 1Ø | L 94 X W 78 X H 45 | 139 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 100A Electronic inbuilt. Charging time less than 30min from 50% | Optional |
| TC3000/150-4 | 5200 | 3500 | 76 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 150 amps | 95v-270V 1Ø or 3Ø | L 94 X W 78 X H 45 | 120 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 150A Electronic inbuilt. Charging time less than 30min from 50% | Optional |
| TC3000/150-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 150 amps | 95v-270V 1Ø or 3Ø | L 94 X W 78 X H 45 | 150 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 150A Electronic inbuilt. Charging time less than 30min from 50% | Optional |
| TC3000/225-4 | 5200 | 3500 | 76 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 225 amps | 95v-270V 1Ø or 3Ø | L 94 X W 78 X H 45 | 125 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 225A Electronic inbuilt. Charging time less than 30min from 50% | Optional |
| TC3000/225-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 225 amps | 95v-270V 1Ø or 3Ø | L 91 X W 80 X H 77 | 160 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 225A Electronic inbuilt. Charging time less than 30min from 50% | Optional |
| TC3000/300-4 | 5200 | 3500 | 76 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 300 amps | 200V-460V | L 91 X W 80 X H 77 | 135 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 300A Electronic inbuilt. Charging time less than 30min from 50% | Handle Bar and Castors |
| TC3000/300-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 300 amps | 200V-460V | L 91 X W 80 X H 77 | 160 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 300A Electronic inbuilt. Charging time less than 1 hour from 50% | Handle Bar and Castors |
| TC3000/300-8 | 10400 | 7000 | 152 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 300 amps | 200V-460V | L 91 X W 80 X H 77 | 185 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 300A Electronic inbuilt. Charging time less than 1 hour from 50% | Handle Bar and Castors |
| TC3000/450-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 450 amps | 200V-460V | L 91 X W 80 X H 107 | 210 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 450A Electronic inbuilt. Charging time less than 30min from 50% | Handle Bar and Castors |
| TC3000/450-8 | 10400 | 7000 | 152 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 450 amps | 200V-460V | L 91 X W 80 X H 107 | 235 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | $450 \mbox{A}$ Electronic inbuilt. Charging time less than $30 \mbox{min}$ from 50% | Handle Bar and Castors |
| TC3000/600-6 | 7800 | 5200 | 114 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 600 amps | 200V-460V | L 91 X W 80 X H 107 | 235 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 600A Electronic inbuilt. Charging time less than 30min from 50% | Handle Bar and Castors |
| TC3000/600-8 | 10400 | 7000 | 152 amp hrs @10 Hr rate | 24VDC | 26VDC | 28VDC | 600 amps | 200V-460V | L 91 X W 80 X H 107 | 235 | -40°C to +60°C | Zinc Coated Steel | LED display | LED display | 3m heavy duty | 600A Electronic inbuilt. Charging time less than 30min from 50% | Handle Bar and Castors |

Hybrid Units

Providing up to 170A @ 28VDC of continuous and up to 5200A for starting. These compact units are ideal for remote locations.



| Jnit | Continuous Power From Engine | Continuous Voltage | Starting Voltage | Max Start Voltage | Voltage Indication | Max Amps | Starting Amps | Capacity | Engine Size/Fuel | Engine Starting |
|-------------|---------------------------------|-----------------------|---------------------|----------------------|-----------------------|----------|------------------|----------|---|------------------------------|
| HybRED170/4 | 170 amp | 28VDC | 24VDC | 26VDC | Digital IP65 | 5200 | 3500 | | 392CC – Unleaded petrol engine developing 13 HP. EPA compliant integrated fuel filtering | Electric – Hand pull back-up |
| HybRED170/6 | 170 amp | 28VDC | 24VDC | 26VDC | Digital IP65 | 7800 | 5200 | | 392CC – Unleaded petrol engine developing 13 HP. EPA compliant integrated fuel filtering | Electric – Hand pull back-up |



| | Engine Fuel Tank | Engine Exhaust | Engine Battery | Engine Protection | Cooling | Operation | Operating Temperature | Dimensions (cm) | Weight (kg) | Accessories |
|------|---------------------|---|------------------------------|--------------------------|------------|-------------|--------------------------|-----------------------------------|----------------|---|
| с-ир | 7.9 Litre | Super Low tone system spark arrestor in exhaust | Separate isolated 12 volt | Low oil auto shutdown | Fan cooled | All weather | -30°C to +40°C | L 95 X W 55 X H 64 - Main body | | Handle and casters, towbar and longer cable available |
| c-up | 7.9 Litre | Super Low tone system spark arrestor in exhaust | Separate isolated 12 volt | Low oil auto shutdown | Fan cooled | All weather | -30°C to +40°C | L 95 X W 55 X H 64 - Main body | | Handle and casters, towbar and longer cable available |



When mains power is available for both start and continuous power, this unit becomes the ideal choice.

Our TRUs offer 28VDC solid-state Ground Power Supplies that range from 300 A continuous - 1200 A Peak load to 600 A continuous -2400 A Peak load.



SINEGPU 28VDC

Specifications

3 phase 400V/415V AC | ±10%*

| 50/60Hz ± 10% | |
|--|--|
| Input current harmonics \leftarrow 2% @ Full Load | |
| | |
| оитрит | |
| Output 28.5VDC ±1%* | |
| Continuous current capability (at 28.5VDC) 300A/600A* | |
| Maximum Current Limit (at 28VDC) 1200/2400A for up to 5sec | |
| Continuous current capability (at 28.5VDC) 300A/600A* | |
| Current Limit adjusting steps (from 600A) $\pm~0.5\%$ | |
| Voltage regulation up to 600A 1% | |
| Ripple <0.5% | |
| Dynamic Recovery to 90% VDC <40ms | |
| Voltage Compensation 0-4V up to 600A (remote feedback) | |
| Galvanic Isolation 800Hz Transformer | |
| IGBT + DIODE Rectifier | |
| | |

| ENVIRONMENTAL CONDITIONS |
|--|
| Coolant temperature (max) Forced air up to 40°C |
| Ambient temperature (min/max) -40° C to $+40^{\circ}$ C |
| Relative humidity (min/max) 0% to 90% without condensation |
| Pollution degree 2 |
| OVC (Overvoltage Category) 3 |
| Altitude Up to 2000m |

- * Other voltages and frequencies available on request
- * Other Electronic Overload limits available on request

Tugs

Priceless Tugs are designed for use on light aircraft and in maintenance and FBO facilities. Making it easy for one person to maneuver aircraft quickly and safely.

We guarantee our pulling weights.

| Tu | | | | | | | | | Towing Mechanism | |
|----|-----|-------|----------|----------|---------------|-----|-----------|-----------|------------------|----------------|
| 70 | 1E | 400 w | Electric | Electric | 2,050 / 4,500 | Key | Alternate | Aeroplane | Various | Variable Speed |
| 70 | 1EL | 400 w | Electric | Electric | 2,050 / 4,500 | Key | Alternate | Aeroplane | Various | Variable Speed |

Mover Types

Priceless Aircraft Tugs...

For Private Aircraft, Corporate Aircraft, Maintenance Shops & FBO facilities

The latest technology for the movement of aircraft. Priceless Aviation Products make it easy for one person to maneuver aircraft quickly and safely in tightly stacked hangars or staging on the ramp. Our electric tugs can tow up to 4,500 lbs. MGTOW.



Ball Hitch

Designed for moving various trailers for utility purposes. Available on the model 701E, 701EL and 701D.



Axle Attachment

For aircraft with or without wheel pants

The Axle Attachment is used on the the model 701 tug. It's use is for lightweight aircraft and is steered moving handles left to right and pivoting on the drive wheel while connected to the aircraft and shifting positions. Optional adapters available for many aircraft.



Visit www.redboxaviation.com or call us on +44 (0) 1799 512800 for more information on Priceless tugs.



Easily move small aircraft quickly and safely in tight areas. Turn without lifting tug. Optional ball hitch attachment for movement of small trailers & campers. The model 701EL is equipped with an extra-heavy-duty battery for longer life.

Standard Features:

- 400W effective power
- 24VDC electric motor
- 701E battery life approx. 1 hr (fully charged) 2 – 12V sealed lead acid batteries
- 701EL battery life approx. 1 1/2 hour (fully charged) 2 – 12V sealed dry-cell batteries
- Easily control steering with articulating swivel attachment

- Rocker switch for forward/reverse
- Adjustable speed
- Virtually silent when moving
- Environmentally friendly no exhaust
- Universal adaptor for quick toolfree attachment to a wide range of aircraft
- Swivel attachment

Options

Ball hitch attachment for easy movement of campers, boats & trailers.

Snow chains

Headlight















Key features:

- Robust materials ensure long life reliability
- Modular design to ensure ease of maintenance
- Individual tubes/pins can be replaced
- Crimped or soldered contacts
- Suitable for a wide range of cable sizes
- Split control pins and tubes
- Square bung fitted with removable plug to accommodate control cable
- Composite, 3 or 5 single core harness entry

Technical information:

Power components

- 450 amps, maximum continuous current
- 1500 amps for maximum of 1 minute control components
- 35 amps continuous current
- Applicable standards: ISO 461-1, ISO 461-2, BS 45 173
- Compatibility: mates with ISO 461-2

Type M1 Socket Type 20 Plug Type M3 Socket Type 23 Plug

Cable Harnesses

Bespoke assemblies and cable harnesses to meet customer requirements.

Key features:

- Composite cable, 3 single core or 5 single core cable options
- 28VDC supply
- Quick assembly using standard stock items
- Cable lengths in meters, from 5 to 30M and in 5M increments
- Low maintenance and impact resistant
- Ideal for cable retrievers and reelers



Power Harness (PH)
28VDC 5 Single Core Cable
Harness & Type M3

28VDC Flanged Plug & Socket

Easy connection to cable & low maintenance.

Key features:

- Protected flange mounted 28VDC connectors
- Cast aluminium alloy housing and lid
- Epoxy powder coated black finish
- Exterior material: CSPE
- Interior manufactured to ISO 461
- IP54 rated
- Crimped or soldered contacts
- Mounting boxes available

Technical information:

Power components

- 450 A maximum continuous current
- 1500 A for maximum 1 min control components
- 35 A maximum continuous current
- All flanged plugs have a split control pin (part number – 29176) and all flanged sockets have a split control tube (part number – 13196)



Type 19 Plug

28VDC 3 pole Plug

Cable Harness Storage Stand (PCR100)

Designed for use in the hanger or on the airport apron, the PCR100 prevents damage to the cable and can hold up to 100kg per side.

Key features:

- Suits multicore and composite cables
- Holds 100kg per side (maximum)
- Bright yellow finish and fitted with high visibility reflective tape



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