Dear Madam or Sir,

One of the key success factors of managing a medium sized Group like HYDRO has always been the direct involvement and accessibility of top management to what we call the voice of the customer. My personal view is that there is simply no better way than the direct contact with customers. In many cases it has proven the right way to just get down into the trenches to really comprehend what is going on and what needs immediate attention. Additionally I can assure you that this spirit is flown down from all of us in management and ownership to all of our employees.

With HYDRO I can personally assure you, you will have a strong partner who is not seeking short-term objectives, but who will be there to support you for decades to come. HYDRO started up in 1965 as a small engineering business in Biberach, a picturesque village in Germany’s Black Forest. Today, about 750 employees worldwide are always near to our customers.

We stand for innovation, experience and reliability. In 2015, we repurchased one of our axle-jacks from Helvetic Airways. It was in service for nearly 50 years. You see — our product promise is truly unique.

A constant quest for improvement and close cooperation with our customers are important parts of our culture. HYDRO employees are people with a strong passion for customer satisfaction and entrepreneurial genes.

Yours sincerely

Peter Prinz
CEO
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WITH HYDRO YOU ARE IN SAFE HANDS!

With over half a century of experience in the aircraft industry and a strong passion for precision, we are the single source that can meet all of your requirements. Our whole life cycle solutions are designed to perfectly fit your needs, from the development of turn-key systems, the manufacturing of Ground Support Equipment and Tooling, and a diverse range of services. We measure our success based on the complete satisfaction of our customers.

Privately owned and financially strong, our global presence makes us always available at your site. We foster an atmosphere of operational excellence, so all of our employees, processes and products are strictly focused on supporting you and your safety.
HYDRO stands for ultimate precision in GSE support. Our passion for precision doesn’t just refer to precision in every detail, it means that we precisely provide products that are fully aligned to the needs of OEMs, airlines and maintenance facilities around the world. Before we launch a new product, it has been rigorously tested in harsh operation conditions. We set standards with uncompromising safety, total functionality, reliability, longevity and user-friendliness. That’s why professionals trust in our products.

PRECISELY THE PROFESSIONAL CHOICE
AIRFRAME AND ENGINE TOOLING

We understand and accompany every tool throughout its life cycle, supporting it to perfection from cradle to grave. Every tool has a life, and we create, manage and support this life. Our well-known design capabilities, global supply chain presence, and project management experience in supporting OEMs from requirement capture to operation readiness and validation make this possible. We not only make tools to fit for function, we go the extra mile so you don’t have to.

IT’S NEVER JUST A TOOL
Safeguarding your valuable engine assets requires a whole chain of events to be carefully managed, which is simplest with a HYDRO engine transport system at the very heart of your operation. Over the years, HYDRO has set the standard for safe engine transportation. Our products stand between your engine and potential harm. We ensure every detail delivers simple operation and total safety, paired with extreme robustness for the harshest conditions.

State-of-the-art lean production ensures world-class on-time delivery of new stands to our customers. Robotic-welding, laser-tracked inspection and dedicated assembly technicians help ensure complete reliability. Our Engine Transportation stands are supported by ten strategically located service stations around the world. Why accept any risk?

SIMPLY THE SAFEST WAY FOR YOUR ENGINE
Your future relies on your actions today. HYDRO is a competent partner that can accompany you on your path forward. For several decades, we have supported the aviation world with future leading solutions. We are the experts for even the most complex installation challenges, and our products are found in nearly all assembly lines and maintenance facilities around the world. With the support of our excellent, certified project management, you can be confident knowing that your projects will proceed properly, 100% on time and on budget. Be assured, we will always integrate state-of-the-art technologies to provide solutions tailored exactly to your needs.

FACILITATING YOUR FUTURE
With over 50 years of OEM service experience and more than ten service stations worldwide, we are always available to take care of your issues. From proof load testing to complete full service management, we provide you with a customized care solution that ensures the ongoing operation readiness of your equipment. We deliver total reliability. With the comprehensive know-how that only the true expert can supply, we maintain, repair, train and optimize, so that you can take full advantage of the safety and efficiency of your products.

TRUSTED CARE FAR BEYOND
ACU — Aircraft Control Unit  A unit with facilities and personnel, including controllers, for conducting aircraft control and which exercises tactical control of aircraft or a unit(s).

APU — Auxiliary Power Unit  The APU is a small jet engine that is used to start the larger jet engines. In airliners it’s usually at the very rear of the aircraft, below the tail.

AVAD — Automatic Vertical Adjustment Device  The Automatic Vertical Adjustment Device allows automatic fast and precise vertical alignment of tripod-jack at any time during the tripod positioning process.

CSD — Constant Speed Drive  A constant speed drive is a mechanical gearbox that takes an input shaft rotating at a wide range of speeds, delivering this power to an output shaft that rotates at a constant speed, despite the varying input. It is used to drive mechanisms, typically electrical generators, that require a constant input speed.

EJAL — Electronic Jacking And Levelling  The EJAL system is a fully automated system for synchronized aircraft lifting and lowering with a tripod-jack set.

EPS — Engine Pedestal Sets  Engine Pedestal Sets (EPS) are multi-purpose systems which can be used for various engine types from different engine manufacturers for engine storage and maintenance tasks.
Fly-away version  Shorter and lighter version of a product, to be stored in an aircraft. This version is not intended to be used in everyday application.

HGPU — Hydraulic Ground Power Unit  The Hydraulic Ground Power Unit is used for maintenance and testing of mainline aircraft hydraulic systems.

IDG — Integrated Drive Generator  The IDG is the world standard for constant frequency power in aircrafts. It is part of the engine.

IglooMX  Patent protected aircraft maintenance shelter as "hangar-in-a-back".

LTS — Laser Target System  The mobile laser target system allows faster positioning of tripod-jacks for aircraft jacking. It can be universally used on all tall HYDRO tripod-jacks.
1_INDEX

MLG — Main Landing Gear  The main landing gear is the undercarriage of an aircraft and will be used for either takeoff or landing. The main landing gear is located under the wing or next to the body structure.

NB — Narrow-Body  A narrow-body aircraft or single-aisle aircraft is an airliner arranged along a single aisle permitting up to 6-abreast seating in a cabin below 4 metres (13 ft) of width.

NLG — Nose Landing Gear  The nose landing gear is the undercarriage of an aircraft and will be used for either taxiing, towing, takeoff or landing. The nose landing gear is located under the nose of an aircraft.

RC-Design  Compact axle-jack design. This fly-away axle-jack has been specially designed for removal and installation of aircraft wheels.

RL-Design  Cantilever axle-jack design. The RL axle-jack has been designed for removing and installation of wheels and brakes in recovery conditions.

Standard version  Special designed tool for one aircraft application.
**Universal version**  Special designed tool for a various range of aircraft application.

**WB — Wide-Body**  A wide-body aircraft is a larger airliner usually configured with multiple aisles and a fuselage diameter of more than 5 metres (16 ft) allowing at least seven-abreast seating and often more travel classes.

**WES — Whole Engine Stand**  Engine transportation stand for Rolls-Royce Trent XWB engine. The WES is used for road transport and engine storage, but can not be used for air transport in freighter aircrafts due to its size.
# 2_EQUIPMENT LIST

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## ATA Chapter 38 — Waste Line Cleaning

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## ATA Chapter 54 — Nacelles/Pylon

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<td>Engine</td>
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<td><strong>Engine Sling</strong></td>
<td>Universal Hosting Sling</td>
<td>Engine</td>
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<td><strong>Engine Access Stand</strong></td>
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<td><strong>Hold-open Device</strong></td>
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<td><strong>Others</strong></td>
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<tr>
<td><strong>Proof Load Fixture</strong></td>
<td>All HYDRO Equipment</td>
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<td>PV250</td>
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</table>
3

DIMENSIONS & AREAS

ATA CHAPTER 06
3.1 AIRCRAFT MAINTENANCE ACCESS STAND

DESCRIPTION
This stand is designed with an adjustable scissor lift base to give it the height required to access variable areas on the aircraft. It is designed for multiple aircraft use. For wide-body aircraft the stand facilitates safe access to nose cowls, fan cowls and pylon disconnect zones on PW, GE and RR engines, providing a safe working solution to many of the traditionally difficult under-cowling maintenance locations.

The unit is also designed to safely access the same points outside of cowling, specifically forward and aft pylon service points, as well as hard to reach refuel panels and underwing areas.

PRODUCT FEATURES

- Anti-fatigue ladder rungs rather than narrow ladder rungs (this ensures comfort when using the stands to change LRU’s, adjust components, or connect/ disconnect engines and nacelles)
- Fall-restraint anchor points
- The hydraulic pitch and height adjustment allows for the diverse angles and height variables
- Extensive aluminum construction for easy movement and corrosion-resistant powder coat finish for longevity
- For increased safety and ease of mobility, the stand comes equipped with four corner-levelling jacks, fold-away tow-bars and lift truck fork pockets
- Designed and tested in accordance with ANSI-ASC A14.7 and BS EN 131.7 adjustable scissor lift base
- Padding material equipped
- Controls: Hydraulic
- High-grade materials
- 2 person movement
- Powder coated finish
- Foot pump

APPLICATION POSSIBILITIES ON AIRBUS A320 (A319 / A321 CEO AND NEO)

- Outboard engines
- Wing refuel panel
- APU servicing
- Wing tip nav lights
- Flap canoes / fairings
- Wing landing lights
- Passenger windows
- Wing access
- Main entry door sills
- Windshield inspections
- AOA/ true airspeed probes inspections / replacements

Attention: Usage examples only, validation of usage is under responsible of the operator. Further applications are available.
OPTIONS

- Air-powered pump
- Utilities package
- Extension
- Additional upper platform

BENEFITS

- Flexible use on a wide range of wide-body and narrow-body aircraft
- Safety and reliability
- Unrivalled quality and durability
- Ergonomic design

TECHNICAL SPECIFICATION

AIRCRAFT MAINTENANCE ACCESS STAND

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>DF071554-06</th>
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</thead>
<tbody>
<tr>
<td>Towing speed</td>
<td>10 kph / 6 mph</td>
</tr>
</tbody>
</table>
| Material type | Ladder: Aluminum  
Frame: Steel |
| Certifications | ANSI-ASC A14.7, BS EN 131.7 & CE |
| Dimensions (shipping) | 2,278 mm x 1,638 mm x 4,145 mm  
89.69 inch x 64.5 inch x 163.2 inch |
| Weight | 1,089 kg  
2,400 lbs |
| Height | Low: 3,213 mm / 126.5 inch  
High: 6,077 mm / 239.25 inch |
| Foot print | 2,278 mm x 4,145 mm  
89.7 inch x 163.2 inch |
| Airbus applications | A300 / A310  
A319neo / ceo, A320neo / ceo, A321neo / ceo,  
A330neo / ceo, A340, A350, A380 |
| Boeing applications | B737 (NG and MAX)  
B474, B757, B767, B777, B777X, B787 |
| Other applications | Embraer ERJ |
3.2 MULTI-PURPOSE PLATFORM STAND

DESCRIPTION

The Aviation Platform Stand has been designed for maintenance access points for a multitude of aircraft, as well as the possibility of a safe platform for two person use. The lowered position is designed to clear wheel well entry points and has been tested and is operational on both Airbus and Boeing wide-body aircraft.

The unit is in service at a multitude of operators, MRO’s and manufacturers.

PRODUCT FEATURES

- Telescopic side rails ensure safety compliant access to the forward and aft lower cargo holds
- Anti-fatigue ladder rungs
- Anti-fatigue ladder steps ensuring the safety of your maintenance staff
- Padding material equipped
- Fall restraint anchor points
- Hydraulically actuated via an ergonomically positioned foot pump
- Collapsible guardrails
- High-grade materials
- One person movement and testing
- Powder coated finish ensures corrosion resistance maintaining the longevity of the stand
- Controls: hydraulic foot pump
- Rigorous inspection and testing
- Safe platform for two person use

OPTIONS

- Air-powered pump
- Utilities package
- Tow-bar
- Telescopic rails

APPLICATION POSSIBILITIES ON AIRBUS A320 (A319 / A321 CEO AND NEO)

- Forward and aft lower cargo (-03/-03XP)
- Bulk cargo (-03)
- Aft pressure bulkhead access panel (-03)
- Pitot probe tube inspections/ replacements (-03/ -03XP)
- Static port inspections/ replacements (-03/-03XP)
- Trailing edge actuator inspections/ replacements (-03/ -03XP)

Attention: Usage examples only, validation of usage is under responsible of the operator. Further applications are available.
BENEFITS

- Flexibility for use on all wide-body Boeing aircraft
- Full use on Airbus wide-body aircraft as well as the A320 Family
- Safety and reliability
- Unrivalled quality and durability
- Small footprint and greater geometry
- Ergonomic design

TECHNICAL SPECIFICATION

MULTI-PURPOSE PLATFORM STAND

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<tr>
<td>Material type</td>
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<td>Ladder: Aluminum</td>
</tr>
<tr>
<td>Frame: Steel</td>
<td>Frame: Steel</td>
<td></td>
</tr>
<tr>
<td>Dimensions (shipping)</td>
<td>2,026 mm x 2,038 mm x 2,680 mm x 544 kg</td>
<td>2,337 mm x 2,039 mm x 2,680 mm x 635 kg</td>
</tr>
<tr>
<td></td>
<td>79.8 inch x 80.3 inch x 105.5 inch x 1,200 lbs</td>
<td>92 inch x 80 inch x 105.5 inch x 1,400 lbs</td>
</tr>
<tr>
<td>(Max) possible operators on platform</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Weight</td>
<td>544 kg / 1,200 lbs</td>
<td>635 kg / 1,400 lbs</td>
</tr>
<tr>
<td>Height</td>
<td>Low: 1,854 mm / 73 inch</td>
<td>Low: 1,854 mm / 73 inch</td>
</tr>
<tr>
<td></td>
<td>High: 2,616 mm / 103 inch</td>
<td>High: 2,616 mm / 103 inch</td>
</tr>
<tr>
<td>Foot print</td>
<td>2,026 mm x 2,680 mm</td>
<td>2,337 mm x 2,680 mm</td>
</tr>
<tr>
<td></td>
<td>79.8 inch x 105.5 inch</td>
<td>92 inch x 105.5 inch</td>
</tr>
<tr>
<td>Certifications</td>
<td>ANSI-ASC A14.7, BS EN 131.7 &amp; CE</td>
<td>ANSI-ASC A14.7, BS EN 131.7 &amp; CE</td>
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<tr>
<td>Airbus applications</td>
<td>A300 / A310 / A319 / A320 / A321 CEO / neo / A330 CEO / neo / A340 / A350 / A380</td>
<td>A300 / A310 / A319 / A320 / A321 CEO / neo / A330 CEO / neo / A340 / A350 / A380</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B747, B757, B767, B777, B787, B737 NG and MAX</td>
<td>B747, B757, B767, B777, B787, B737 NG and MAX</td>
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<tr>
<td>Other applications</td>
<td>Embraer ERJ</td>
<td>Embraer ERJ</td>
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4
LIFTING & SHORING
ATA CHAPTER 07
4.1 FORTEVO TRIPOD-JACKS

DESCRIPTION

Our high-end tripod-jack series for narrow-body aircraft is called FortEvo (FEN). It has been engineered primarily for use in aircraft maintenance. Our FortEvo tripod-jack series has been engineered and developed using state-of-the-art technology. The modular design used throughout allows the tripod-jack to be configured according to customer requirements.

Various configuration options, from the basic to the high-end versions, are available in combination with the central Electronic Jacking And Leveling (EJAL) control system for safe operation.

HYDRO TRIPOD-JACKS INCLUDE

- Tripod structure
- Dual manual hydraulic pump with high- and low-pressure unit
- Overload relief valve offers protection against overpressurization
- Pressure indicator in bar and psi + conversion table for kN and metric tons
- Safety lock nut offers protection against unintended pressure relief
- Level for vertical alignment verification
- Feet with fixed ground plates
- Spring-loaded castors with locking mechanism
- Hard chromium plated cylinder tube for long and trouble-free service life
- Interchangeable adapters for additional aircraft types
- Secondary cylinder seal for protection against contaminants and to prolong life of primary seal
- Low-friction seal for uniform piston return
- Skydrol-resistant paint and galvanized plating for corrosion protection
- Movable tow-bar
- Ladder with platform or pedestal (according to jack height)
- Interface for HYDRO proof load equipment
- Factory proof load with 150 % of nominal capacity incl. proof load certificate

BENEFITS

- High quality made in Germany
- Airbus validated
- Long life-cycle
- Robust and proven design
- Secondary cylinder seal for protection against contaminants and to prolong life of primary seal
- At least 10 years spare part availability
- Durability
- Convenient maintenance
# TECHNICAL SPECIFICATION

## STANDARD TRIPOD-JACK SET A320 FAMILY INCL. NEO

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Nose</th>
<th>Tail</th>
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<tbody>
<tr>
<td><strong>Model-No.</strong></td>
<td>FEN351</td>
<td>FEN10</td>
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<td><strong>Capacity</strong></td>
<td>35 t 38.6 tons</td>
<td>10 t 11 tons</td>
<td>6 t 6.6 tons</td>
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<tr>
<td><strong>Min. height</strong></td>
<td>2,400 mm 94.5 inch</td>
<td>1,800 mm 70.9 inch</td>
<td>2,765 mm 108.9 inch</td>
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<td><strong>Hydr. lift</strong></td>
<td>1,800 mm 70.9 inch</td>
<td>1,440 mm 56.7 inch</td>
<td>2,000 mm 78.8 inch</td>
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<td><strong>Screw ext.</strong></td>
<td>340 mm 13.4 inch</td>
<td>180 mm 7.0 inch</td>
<td>450 mm 17.7 inch</td>
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<tr>
<td><strong>Max. height</strong></td>
<td>4,540 mm 178.7 inch</td>
<td>3,420 mm 134.6 inch</td>
<td>5,215 mm 205.3 inch</td>
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<td>A318 / A319 / A319neo / A320 / A320neo / A321 / A321neo</td>
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<td>B757</td>
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<td><strong>Other applications</strong></td>
<td>C-130 / MC-21 / C919</td>
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# TECHNICAL SPECIFICATION

## UNIVERSAL NARROW-BODY TRIPOD-JACK SET

<table>
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<td><strong>Capacity</strong></td>
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<td>10 t</td>
<td>15 t</td>
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<tr>
<td></td>
<td>38.5 tons</td>
<td>11 tons</td>
<td>16.5 tons</td>
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<tr>
<td><strong>Min. height</strong></td>
<td>1,750 mm</td>
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<tr>
<td></td>
<td>68.9 inch</td>
<td>59.1 inch</td>
<td>102.4 inch</td>
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<tr>
<td><strong>Hydr. lift</strong></td>
<td>2,100 mm</td>
<td>1,985 mm</td>
<td>1,800 mm</td>
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<tr>
<td></td>
<td>82.6 inch</td>
<td>78.1 inch</td>
<td>70.9 inch</td>
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<td><strong>Screw ext.</strong></td>
<td>660 mm</td>
<td>450 mm</td>
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<tr>
<td></td>
<td>25.9 inch</td>
<td>17.7 inch</td>
<td>9.8 inch</td>
</tr>
<tr>
<td><strong>Max. height</strong></td>
<td>4,510 mm</td>
<td>3,935 mm</td>
<td>4,650 mm</td>
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<tr>
<td></td>
<td>177.5 inch</td>
<td>154.9 inch</td>
<td>183.0 inch</td>
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**Application**

|                        | A318       | A318       | A318       |
|                        | A319 / A319neo | A319 / A319neo | A319 / A319neo |
|                        | A320 / A320neo | A320 / A320neo | A321 / A321neo |

**Boeing application**

|                      | B727       | B707       | B707-7120 / B |
|                      | B737-100 to -900 | B737-100 to -900 | B707-320 / B,C / -420 |
|                      | B737 MAX -7 / -8 / -9  | B737 MAX -7 / -8 / -9  | B707-720 / B |
|                      | B707       | B737-100 to -900 | B737 MAX -7 / -8 / -9  |
|                      | B737 MAX -7 / -8 / -9  | B737 MAX -7 / -8 / -9  | B757       |

**Other applications**

|                   | RRJ-95     | RRJ-95     | TU-204     |
|                   | MC-21      | C919       | MC-21      |
|                   | MD-80 / 90 | Dash 8Q-400|            |
|                   | Embraer E190-E2 | Embraer E190-E2 |            |
|                   | MD-90      | MD-90      |            |
|                   | MC-21      | C919       |            |
|                   | C919       |            |            |
## Available options

### Overview

### Drive Units
- Air-hydraulic pump
- Electro-hydraulic pump

### Safety lock nut
- Manually operated safety lock nut
- Automatically operated safety lock nut*

### Castors
- Hydraulically-adjustable heavy-duty swivel castors
- Spring-loaded heavy-duty dual swivel castors

### Transportation
- Forklift adapter
- PowerCat (electrical towing unit) interface

### Positioning
- Fixed mounted laser target system
- Mobile laser target system

### Levelling
- Automatic Vertical Adjustment Device (AVAD)

### Lifting & Lowering
- Mechanical stroke measuring system
- Electronical stroke measuring system*
- Fast lowering system*
- Electronic Jacking And Levelling system (EJAL) — synchronized aircraft jacking*

### Corrosion Protection
- Hard-chromium-plated piston

### Load Cell System
- Load indication
- Overload warning system
- A/C weighing — upon request

*only in combination with electro-hydraulic pump
ELECTRONIC-HYDRAULIC PUMP

DESCRIPTION OF OPTIONS

DESCRIPTION
Electrically driven hydraulic pump unit for HYDRO tripod-jack use.

PRODUCT FEATURES
- Electrically driven
- Robust design
- Maximum user comfort and best view to the jacking point area during jacking operation due to the cable connected hand held controller

AVAILABILITY
- Available for all electric narrow- and wide-body HYDRO tripod-jacks

BENEFITS
- Increased operational performance
- Prepared for later update with our EJAL system and automatically operated safety lock nut
- Hand held controller
AUTOMATICALLY OPERATED SAFETY LOCK NUT

DESCRIPTION OF OPTIONS

DESCRIPTION
Electrically driven safety lock nut; specially designed for HYDRO tripod-jacks.

PRODUCT FEATURES
- Automatically operated safety lock nut during aircraft lifting and lowering operation
- Product requirement: electric driven hydraulic jack
- Electrically driven
- Robust design

AVAILABILITY
- Available for all narrow- and wide body HYDRO tripod-jacks

BENEFITS
- Cost-efficient
- Reduction of man power
- Increased operational performance
- Especially useful for tall tripod-jacks
- Absolutely recommended for tripod-jack systems with a high level of automation
- One-man operation
HYDRAULICALLY HEIGHT-ADJUSTABLE HEAVY-DUTY SWIVEL CASTORS

DESCRIPTION OF OPTIONS

DESCRIPTION
Hydraulically height-adjustable swivel castors with central operation unit.

PRODUCT FEATURES
- Simple application
- Central operation of all three castors with hand pumps — close to the bubble level
- Heavy duty swivel casters with brakes for storage and swivel locks for improved towing

AVAILABILITY
- Available for all electric driven narrow- and wide-body HYDRO tripod-jacks
- Recommended for all bigger narrow- and wide-body tripod-jack models from a total weight of 700 kg upwards

BENEFITS
- Increased operational performance — time reduction for jack levelling and positioning
- Higher precision in jack levelling
- Especially useful for big and heavy tripod-jacks
- Increased ground clearance during towing
FORKLIFT ADAPTER

DESCRIPTION OF OPTIONS

DESCRIPTION
Forklift adapters allow easy movement of tripod-jacks with a forklift even on bad surfaces or over gaps and cracks.

PRODUCT FEATURES
- Fast and cost-saving way for moving big and heavy tripod-jacks over long distances or onto a truck with a forklift
- Robust welded steel frame
- Simple application

AVAILABILITY
- Available for nearly all narrow- and wide-body HYDRO tripod-jack models

BENEFITS
- Movement of tripod-jack with forklift also on bad surfaces or over gaps and cracks possible
- Increased operational performance
POWERCAT (ELECTRICAL TOWING UNIT) INTERFACE

DESCRIPTION OF OPTIONS

DESCRIPTION
Fast and cost-saving way for moving and positioning of big heavy tripod-jacks or other equipment

Product features
- Max. towing capacity 14,000 kg (30,800 lbs)
- All operating elements integrated in the handle/tow-bar (similar to electric powered pallet trucks)
- Battery driven (24 V – 240 Ah)
- Battery charger [option — not part of delivery]
- Different jack adapters available
- Heavy duty rollers
- Simple application

AVAILABILITY
- Developed and recommended for A380 Main Jacks
- Applicable and adaptive for all other big and heavy HYDRO tripod-jacks

BENEFITS
- Significant reduction of manpower
- Master Mover
- Increased operational performance — time reduction for jack positioning
- Higher precision in jack positioning
- Useful for all heavy tripod-jacks
**FIXED MOUNTED LASER TARGET SYSTEM**

**DESCRIPTION OF OPTIONS**

**DESCRIPTION**

The fixed mounted laser target system allows precise and faster positioning of tripod-jacks for aircraft jacking.

**PRODUCT FEATURES**

- The system projects a red laser cross for easy positioning of the jack under the aircraft jacking point
- Simple application: activation by push button on jacks handheld controller

**AVAILABILITY**

- Laser system is available for all HYDRO narrow- and wide-body tripod-jack models
- Available only for electric powered HYDRO tripod-jack models

**BENEFITS**

- Increased operational performance — time reduction for aircraft jacking
- Higher precision in jack positioning
- Useful for tall tripod-jacks
- Installed on each tripod-jack
MOBILE LASER TARGET SYSTEM

DESCRIPTION OF OPTIONS

DESCRIPTION
The mobile laser target system allows precise and faster positioning of tripod-jacks for aircraft jacking. It can be universally used on all tall HYDRO tripod-jacks.

PRODUCT FEATURES
- The unit projects a laser cross for easy positioning of the jack under the aircraft jacking point
- Simple application: remove jacking adapter from the jack and replace it with LTS adapter, turn on the laser, level and position the jack under the jacking point. Universal use — system includes two adapters which cover all HYDRO narrow- and wide-body tripod-jack models (excluded optional A380 main jack adapter)
- Battery driven
- Plastic storage and carrying case with foam cushioning (includes space for optional A380 adapter)

AVAILABILITY
- System can be used in combination with all HYDRO narrow and wide-body tripod-jack models (excluded A380 main jack — optional adapter is available)

BENEFITS
- Increased operational performance — time reduction for jack levelling and positioning
- Higher precision in jack positioning
- Reduction of manpower
- Useful for tall tripod-jacks
- Universal use on all tall HYDRO tripod-jacks possible
AVAD (AUTOMATIC VERTICAL ADJUSTMENT DEVICE)

DESCRIPTION OF OPTIONS

DESCRIPTION
The Automatic Vertical Adjustment Device allows automatic fast and precise vertical alignment of tripod-jack at any time during the tripod positioning process.

PRODUCT FEATURES
- Fully automated vertical alignment device for the individual tripod-jacks
- Inclination sensor
- Proportional hydraulic valves
- Simple application: activation by push button on jacks handheld controller
- Robust design

AVAILABILITY
- Available for all narrow- and wide-body electric powered HYDRO tripod-jacks which are equipped with hydraulic height adjustable wheels

BENEFITS
- Automatic fast and precise vertical alignment of tripod-jack at any time during tripod positioning process
- Cost-efficient
- Increased operational performance
- Faster jack positioning
- Absolutely recommended for tripod-jack sets on a high level of automation
- Universal use on all tall HYDRO tripod-jacks possible
MECHANICAL STROKE MEASURING SYSTEM

DESCRIPTION OF OPTIONS

DESCRIPTION
The mechanical stroke measurement system monitors the working stroke of the hydraulic cylinders of tripod-jacks.

PRODUCT FEATURES
- Mounted outside of the cylinder
- Main components made of aluminum
- Robust and proven design

AVAILABILITY
- Available for all narrow- and wide-body HYDRO tripod-jacks

BENEFITS
- Different jacking levels can be reached repeatable
- Robust and proven design
- Failsafe
- Maintenance free
- Pure mechanical system
- Also usable as a simple synchronous lifting system
ELECTRONICAL STROKE MEASURING SYSTEM

DESCRIPTION OF OPTIONS

DESCRIPTION
The electrical stroke measurement system monitors the working stroke of tripod-jacks hydraulic cylinder. The measured stroke will be shown on a display.

PRODUCT FEATURES
- Measured stroke will be shown on display (if tripod-jack is equipped with) or on EJAL control desk
- Mounted outside of the cylinder
- Robust and proven design
- Only recommended for EJAL systems

AVAILABILITY
- Available for all electric narrow- and wide-body HYDRO tripod-jack

BENEFITS
- Different aircraft jacking levels can be reached repeatable
- In conjunction with the EJAL system: measured stroke of each tripod-jack will be transmitted to the control desk. This enables precise synchronous control of all tripod-jacks during aircraft lifting and lowering
- Can also be used for limitation of hydraulic lift to prevent aircraft damage
FAST LOWERING SYSTEM

DESCRIPTION OF OPTIONS

DESCRIPTION
The Fast Lowering System increases the lowering speed of the hydraulic cylinder of tripod-jacks without load.

PRODUCT FEATURES
- Pressure sensor integrated in the hydraulic system (can also be used for limitation of jacks lifting capacity)
- The fast lowering function is automatically activated when lowering movement is activated and the cylinder-/system-pressure drops under the limit value
- Fast lowering function is automatically deactivated during movement operations of loaded cylinder
- Hydraulic system pressure will be shown on display (if tripod-jack is equipped with)
- Only recommended for tripod-jacks with automatically operated safety lock nuts

AVAILABILITY
- Available for all narrow- and wide-body HYDRO tripod-jacks

BENEFITS
- Increased lowering speed of the hydraulic cylinder without load
- Reduction of process time
- Can also be used for limitation of tripod-jacks lifting capacity (maintenance panel required)
ELECTRONIC JACKING AND LEVELLING SYSTEM (EJAL)

DESCRIPTION OF OPTIONS

DESCRIPTION
The EJAL system is a fully automated system for synchronized aircraft lifting and lowering with a tripod-jack set.

PRODUCT FEATURES
- Individual operation of jacks also possible
- Electrical system — universal useable for different tripod-jack sets
- Aircraft inclination sensor
- Touch panel display
- Cable drums with spring return for power supply of tripod-jacks and for main power supply
- Heavy duty casters with brakes
- Robust design
- Simple application

BENEFITS
- Reduction of manpower
- Cost-efficient
- Increased operational performance
- Faster jacking operation
- Permanent control of aircraft inclination
- Minimized risk for the operator and aircraft through synchronized lifting and lowering operation
- Maximum safety
- High level of automation for aircraft lifting and lowering process

AVAILABILITY
- Available for all narrow- and wide-body electric powered HYDRO tripod-jack sets.
SMART-LINE TRIPOD-JACKS

DESCRIPTION
Our standard tripod-jack series for narrow-body aircraft called Smart-Line. It has been engineered primarily for use in aircraft maintenance.
Lean production and a high production volume enable us to achieve maximum efficiency and value for money with our Smart-Line tripod-jack series. Various configuration options like an air-hydraulic or electrically driven pump unit are available.

PRODUCT FEATURES
- Tripod structure
- Frame with hydraulic cylinder
- Manual hydraulic pump
- Mechanical extension; extractable by crane or forklift
- Manually operated safety lock nut
- Pressure indicator in kN / bar; short tons / psi; metric tons / bar or kN / psi
- Pressure relief valve to protect against overload
- Bubble level indicator to verify the vertical alignment
- Tripod legs with height-adjustable ground plates
- Platform for easy operation of manual safety lock nut
- Low friction seal for constant piston return
- Tow-bar
- Low-friction seal for uniform piston return
- Skydrol-resistant paint and galvanized plating for corrosion protection
- Ladder with platform or pedestal (according to jack height)
- Interface for HYDRO proof load equipment
- Factory proof load with 150 % of nominal capacity incl. proof load certificate

BENEFITS
- High quality made in Germany
- Long life-cycle
- Robust and proven design
- Ergonomic design
- Very user-friendly and low-maintenance design
- Durability
- Secondary cylinder seal to protect against contaminants and to prolong life of primary seal
- Convenient maintenance
- At least 10 years spare part availability
- On-site service
## TECHNICAL SPECIFICATION

### STANDARD TRIPOD-JACK SET A320 FAMILY INCL. NEO

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Nose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model-No.</strong></td>
<td>TJS1E03501</td>
<td>TJS1E01001</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>35 t</td>
<td>10 t</td>
</tr>
<tr>
<td></td>
<td>38.5 tons</td>
<td>11 tons</td>
</tr>
<tr>
<td><strong>Min. height</strong></td>
<td>3,000 mm</td>
<td>1,840 mm</td>
</tr>
<tr>
<td></td>
<td>118.1 inch</td>
<td>72.4 inch</td>
</tr>
<tr>
<td><strong>Max. height</strong></td>
<td>4,400 mm</td>
<td>3,260 mm</td>
</tr>
<tr>
<td></td>
<td>173.2 inch</td>
<td>128.4 inch</td>
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<tr>
<td><strong>Hydraulic lift</strong></td>
<td>1,400 mm</td>
<td>1,420 mm</td>
</tr>
<tr>
<td></td>
<td>55.1 inch</td>
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<tr>
<td><strong>Applications</strong></td>
<td>A318</td>
<td>A318</td>
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<tr>
<td></td>
<td>A319 / A319neo</td>
<td>A319 / A319neo</td>
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<tr>
<td></td>
<td>A320 / A320neo</td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
<td>A321 / A321neo</td>
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</tbody>
</table>

### UNIVERSAL NARROW-BODY TRIPOD-JACK SET

<table>
<thead>
<tr>
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<th>Wing</th>
<th>Nose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model-No.</strong></td>
<td>TJS1E03501</td>
<td>TJS1E01001</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>35 t</td>
<td>10 t</td>
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<tr>
<td></td>
<td>38.5 tons</td>
<td>11 tons</td>
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<tr>
<td><strong>Min. height w/o mech. extension</strong></td>
<td>1,850 mm</td>
<td>1,840 mm</td>
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<td></td>
<td>72.8 inch</td>
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<tr>
<td><strong>Min. height with mech. extension</strong></td>
<td>3,027 mm</td>
<td>2,220 mm</td>
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<tr>
<td></td>
<td>119.2 inch</td>
<td>87.4 inch</td>
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<tr>
<td><strong>Max. height w/o mech. extension</strong></td>
<td>3,220 mm</td>
<td>3,260 mm</td>
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<tr>
<td></td>
<td>126.8 inch</td>
<td>154.9 inch</td>
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<td><strong>Max. height with mech. extension</strong></td>
<td>4,397 mm</td>
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<td>173.1 inch</td>
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<td><strong>Airbus applications</strong></td>
<td>A318</td>
<td>A318</td>
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<tr>
<td></td>
<td>A319 / A319neo</td>
<td>A319 / A319neo</td>
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<td>A320 / A320neo</td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
<td>A321 / A321neo</td>
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<tr>
<td><strong>Boeing applications</strong></td>
<td>B737 -300 to -900 Tail</td>
<td>B737 -300 to -900 Tail</td>
</tr>
<tr>
<td></td>
<td>B737 MAX -7 / -8 / -9 Tail</td>
<td>B737 MAX -7 / -8 / -9 Tail</td>
</tr>
</tbody>
</table>
## Available options

### Overview

| Drive Units | - Air-hydraulic pump  
|             | - Electro-hydraulic pump supply voltage: 3/PE AC 380-420 V 50 Hz or 3/PE AC 440-480 V 60 Hz |
| Castors     | - Fixed undercarriage  
|             | - Mechanically height-adjustable undercarriage |
| Transportation | - Forklift adapter |
| Positioning | - Mobile laser target system |
| Levelling   | - Automatic Vertical Adjustment Device (AVAD) |
| Load Cell System | - Load indication  
|             | - Overload warning system |

*For more detailed information on our options, please see the previous pages.*
MECHANICALLY HEIGHT-ADJUSTABLE UNDERCARRIAGE

DESCRIPTION OF OPTIONS

DESCRIPTION
Mechanically height-adjustable undercarriage

PRODUCT FEATURES
Simple application

AVAILABILITY
- Available for all electric driven narrow Smart-Line HYDRO tripod-jacks
- Recommended for all narrow models

BENEFITS
- Increased operational performance, time reduction for jack levelling and positioning
- Higher precision in jack levelling
- Especially useful for big and heavy tripod-jacks
- Increased ground clearance during towing
4.3 SHORING STANCHION

DESCRIPTION
Our stabilization stanchions for narrow-body aircraft are called “MS”. They have been engineered primarily for use in aircraft shoring maintenance. Lean production and a high production volume enable us to achieve maximum efficiency and value for money with our MS-series.

PRODUCT FEATURES
- Tripod frame with spindle and hand wheel for height adjustment
- Undercarriage with 3 ea swivel casters
- Tripod legs with height-adjustable ground plates via hand wheel
- Tow-bar for towing of the stanchion
- Bubble level indicator
- Stanchion is foldable for easier transportation
- Label with A/C applications
- Skydrol-resistant paint and galvanized plating for corrosion protection
- Interface for HYDRO proof load equipment
- Factory proof load with 150 % of nominal capacity incl. proof load certificate

BENEFITS
- High quality made in Germany
- Long life-cycle
- Robust and proven design
- Ergonomic design
- Very user-friendly and low-maintenance design
- Convenient maintenance
- At least 10 years spare part availability
- On-site service
## TECHNICAL SPECIFICATION

### STANDARD SHORING STANCHION

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<tr>
<th>Model-No.</th>
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<th>MS43</th>
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<tr>
<td><strong>Capacity</strong></td>
<td>12 t</td>
<td>10 t</td>
</tr>
<tr>
<td></td>
<td>13.2 tons</td>
<td>11 tons</td>
</tr>
<tr>
<td><strong>Min. height</strong></td>
<td>2,300 mm</td>
<td>3,000 mm</td>
</tr>
<tr>
<td></td>
<td>90.6 inch</td>
<td>118.1 inch</td>
</tr>
<tr>
<td><strong>Screw ext.</strong></td>
<td>700 mm</td>
<td>1,000 mm</td>
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<tr>
<td></td>
<td>27.6 inch</td>
<td>39.4 inch</td>
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<tr>
<td><strong>Max. height</strong></td>
<td>3,000 mm</td>
<td>4,000 mm</td>
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<td></td>
<td>118.1 inch</td>
<td>157.5 inch</td>
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<td><strong>Airbus applications</strong></td>
<td>shoring</td>
<td>shoring</td>
</tr>
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</tr>
<tr>
<td>A321 / A321neo</td>
<td>A321 / A321neo</td>
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</tr>
</tbody>
</table>
4.4 AXLE-JACKS | STANDARD AXLE-JACKS (RT-DESIGN)

DESCRIPTION
Our standard axle-jack series called "RT" has been engineered primarily for use in aircraft maintenance. The series can be used with most common narrow-body and wide-body aircraft types.

The RT axle-jacks have been developed with the latest state of technology. Our axle-jacks are built to withstand the harshest environmental conditions and rugged use. Safety and "Made in Germany" quality have the highest priority.

The RT axle-jacks offer optimum performance for professional use.

PRODUCT FEATURES
- Integrated pneumatically-driven hydraulic pump with maintenance unit
- Integrated automatic retraction system for a quick removal of the axle-jack
- Very short extension time to jacking point (full extension in less than 1 minute)
- Manual hand pump (operated by the tow-bar)
- Optimized undercarriage for easy maneuvering
- All functional parts protected by a stainless steel cover against damage during rough operation and weather
- Cover for cylinder
- Tow-bar for operating the jack
- Stainless steel cover: all other parts are Skydrol-resistant painted
- Label with A/C applications
- Factory proof load at 150 % of nominal capacity including Proof Load Certificate
AVAILABLE ACCESSORIES

Transport Trolley

Single Transport Trolley SG158

Twin Transport Trolley SG169
(Only necessary for 3 axis landing gears)

Wheel Refill Unit
Tire inflation gauge RFM940RF80-25
Hose lines:
- for small tire valves VG8 - NB A/C’s (00180-104-000)
- for big tire valves VG12 - WB A/C’s (00180-106-000)

Fly-Away Version
Shorter and lighter version of the standard RT axle-jack model

Maintenance
Interface for HYDRO proof load equipment

BENEFITS

- High quality made in Germany
- Long service life
- Robust and proven design
- Easy maneuvering due to optimized undercarriage
- Best handling and extreme repair-friendly due to modular design and available spare parts
- Leak-proof operation because of elements integrated into the oil tank
- Stainless steel cover — all parts are protected against dirt, harsh environment and UV-radiation
- Worldwide unique manufacturing process for the components of the hydraulic cylinder subject to high stress
- Documented verification for each manufacturing step for each part
- At least 10 years spare part availability
- On-site service
- Interface for HYDRO proof-load equipment
## TECHNICAL SPECIFICATION

### STANDARD AXLE-JACK (RT-DESIGN)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>RT4550</th>
<th>RT6050</th>
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<tbody>
<tr>
<td>Capacity</td>
<td>45 t (49.6 tons)</td>
<td>60 t (66.1 tons)</td>
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<tr>
<td>Min. height</td>
<td>190 mm (7.5 inch)</td>
<td>246 mm (9.7 inch)</td>
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<tr>
<td>Hydr. lift</td>
<td>313 mm (12.3 inch)</td>
<td>328 mm (12.9 inch)</td>
</tr>
<tr>
<td>Screw ext.</td>
<td>70 mm (2.8 inch)</td>
<td>121 mm (4.8 inch)</td>
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<tr>
<td>Max. height</td>
<td>573 mm (22.6 inch)</td>
<td>695 mm (27.4 inch)</td>
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# TECHNICAL SPECIFICATION

## STANDARD AXLE-JACK (RT-DESIGN)

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<td></td>
<td>A319</td>
<td>A300</td>
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<td></td>
<td>A318</td>
<td>A330</td>
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<td>A319/ A319neo</td>
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<td>A330-200 / -300F / -300 / -600 / -900</td>
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<td>A320/ A320neo</td>
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<td>A340-200 / -300 / -500 / -600</td>
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<td>A321/ A321neo</td>
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<td>A350-900 / -1000</td>
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<tr>
<td></td>
<td>A319</td>
<td>A330</td>
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<tr>
<td>A319/ A319neo</td>
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<td>A330-200 / -300 / -600 / -900</td>
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<tr>
<td>A320/ A320neo</td>
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<td>A340-200 / -300 / -600</td>
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<td>A321/ A321neo</td>
<td></td>
<td>A350-900 / -1000</td>
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<td>A350-900 / -1000</td>
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<td>A350-900 / -1000</td>
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<td>B737-300 / -400 / -500 / -600 / -700</td>
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<td>B767-200 / -300 / -400ER</td>
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<td>B707, B717, B727-100 / -200</td>
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<td>B737 MAX / -100 / -200 / -200C</td>
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<td>Embraer 170 / -175 / -190 / -195</td>
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<td>L-1011</td>
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<td>MD80, MD90</td>
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<td>MC-21, RRJ95</td>
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<tr>
<td>Other applications</td>
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<td></td>
</tr>
<tr>
<td>CLG</td>
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</tr>
</tbody>
</table>
4.5 AXLE-JACKS | FLY-AWAY AXLE-JACKS (RC-DESIGN)

DESCRIPTION
Our fly-away axle-jack series called “RC” has been engineered primarily for use in aircraft maintenance. The series can be used with most common narrow-body and wide-body aircraft types. The RC axle-jacks have a compact and modular design used throughout that allows them to be configured according to your specific requirements. Our products are built to withstand harsh environmental conditions and rugged use. Safety and “Made in Germany” quality have the highest priority. The RC axle-jacks offer optimum performance for professional use.

PRODUCT FEATURES
- Hand pump with low and high pressure unit
- Nitrate cylinders and rams to guarantee a long and trouble-free life
- With two wheels and a handle bar, for transportation on the ground (not for all models)
- All non-painted parts galvanized
- Factory proof load at 150% of nominal capacity
- Including Proof Load Certificate
- Skydrol-resistant paint; all other parts are plated for corrosion protection
- Label with A/C applications
- Interface for HYDRO proof load equipment
- High quality made in Germany
- Long service life
- Robust and proven design
- Easy maneuvering by one person
- At least 10 years spare part availability
- On-site service

AVAILABLE ACCESSORIES
Drive Units
- Air-hydraulic pump
Castors
- Spring loaded castors with tow-bar
- Spring loaded castors with dampened tow-bar
## TECHNICAL SPECIFICATION

### COMPACT AXLE-JACK (RC-DESIGN)

<table>
<thead>
<tr>
<th>Model-No.</th>
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<th>RC6010</th>
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<td>60 t</td>
</tr>
<tr>
<td></td>
<td>50 tons</td>
<td>66.1 tons</td>
</tr>
<tr>
<td><strong>Min. height</strong></td>
<td>190 mm</td>
<td>246 mm</td>
</tr>
<tr>
<td></td>
<td>7.5 inch</td>
<td>9.7 inch</td>
</tr>
<tr>
<td><strong>Hydr. lift</strong></td>
<td>313 mm</td>
<td>328 mm</td>
</tr>
<tr>
<td></td>
<td>12.3 inch</td>
<td>12.9 inch</td>
</tr>
<tr>
<td><strong>Screw ext.</strong></td>
<td>70 mm</td>
<td>121 mm</td>
</tr>
<tr>
<td></td>
<td>2.8 inch</td>
<td>4.8 inch</td>
</tr>
<tr>
<td><strong>Max. height</strong></td>
<td>573 mm</td>
<td>695 mm</td>
</tr>
<tr>
<td></td>
<td>22.6 inch</td>
<td>27.4 inch</td>
</tr>
</tbody>
</table>

### Airbus applications

**NLG**
- A300 / A310
- A318
- A319 / A319neo
- A320 / A320neo
- A321 / A321neo
- A330
- A340-200 / -300 / -500 / -600
- A350-900

**MLG**
- A300 / A310
- A318
- A319 / A319neo
- A320 / A320neo
- A321 / A321neo
- A330
- A340-200 / -300
- A340-500 / -600
- A380

### Boeing applications

**NLG**
- B707 / B727
- B747-100 / -200 / -300
- B747-400 / -400ER / -8
- B757-200 / -300
- B767-200 / -300 / -400ER
- B777-200 / -300ER / -300
- B787-8 / -9

**MLG**
- B707 / B727
- B747-100 / -200 / -300 / -400
- B747-8 / -9
- B757 / B767 / B787-8 / -9

### Other applications

**NLG**
- Embraer 170 / -175 / -190 / -195
- DC-10 / MD11
- L1011

**MLG**
- MD80 / MD90
- MS-21
- Embraer 170 / -175 / -190 / -195

**NLG**
- DC-10 / MD-11 / L-1011
- CS100 / CS300

**MLG**
- DC-10 / MD-11 / L-1011
- CS100 / CS300
- Embraer 190 / 195
- MC-21
Our hand-carry axle-jack series called “RH” has been engineered primarily for use in aircraft maintenance. The series can be used with most common narrow-body and wide-body aircraft types.

The RH axle-jacks are a smaller version of the RC axle-jacks and designed for carrying by one person. Our products are built to withstand harsh environmental conditions and rugged use. Safety and “Made in Germany” quality have the highest priority. The RH axle-jacks offer optimum performance for professional use.

**PRODUCT FEATURES**

- Single manual hand pump
- Nitrated cylinders and rams to guarantee a long and trouble-free life
- Grab handle for hand transportation
- Fixed undercarriage for easy manoeuvring
- With two wheels and handle bar, for transportation on the ground
- Skydrol-resistant paint; all other parts are galvanized for corrosion protection
- Label with A/C applications
- Interface for HYDRO proof load equipment

**AVAILABLE ACCESSORIES**

- Wooden box
- Aluminium box
- Air-hydraulic pump

**BENEFITS**

- High quality made in Germany
- Long life-cycle
- Robust and proven design
- Easy maneuvering by one person
- At least 10 years spare part availability
- On-site service
## TECHNICAL SPECIFICATION

### HANDCARRY AXLE-JACK (RH-DESIGN)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>RH1606</th>
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</thead>
</table>
| **Capacity** | 16 t  
17.6 tons |
| **Min. height** | 158 mm  
6.2 inch |
| **Hydraulic lift** | 172 mm  
6.8 inch |
| **Screw ext.** | 60 mm  
2.4 inch |
| **Max. height** | 390 mm  
15.4 inch |

**Airbus applications**
- NLG
- A220
- A318
- A319 / A319neo
- A320 / A320neo
- A321 / A321neo

**Boeing applications**
- NLG
- B737 all
- B737 MAX

**Other applications**
- NLG
- CS100 / 300
- Embraer 170 to 195
- RRJ-95
- AN-140
- Fokker 50
- Fokker 100
- DC-9
**DESCRIPTION**

Our recovery axle-jack series called “RL” has been engineered primarily for use in aircraft recovery maintenance tasks. The series can be used with most common narrow-body and wide-body aircraft types. The key feature of the RL axle-jack is the extremely low lifting point. Our products are built to withstand harsh environmental conditions and rugged use. Safety and “Made in Germany” quality have the highest priority. The RL recovery jacks offer optimum performance for professional use.

**PRODUCT FEATURES**

- Hand pump with low and high pressure unit
- Ram set salt-bath nitrided and polished
- Manually operated safety lock nut
- Force indicator, e.g. bar / kN, bar, psi
- Tow-bar
- Interface for HYDRO proof load equipment
- Height-adjustable undercarriage
- Skydrol-resistant paint
- Label with A/C applications
- Interface for HYDRO proof load equipment
- Factory proof load at 150% of nominal capacity, including Proof Load Certificate
- High quality made in Germany
- Long life-cycle
- Robust and proven design
- Easy maneuvering due to optimized undercarriage
- At least 10 year spare part availability
### TECHNICAL SPECIFICATION

#### RECOVERY AXLE-JACK (RL-DESIGN)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>RL3015</th>
<th>RL4014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>30 t</td>
<td>40 t</td>
</tr>
<tr>
<td></td>
<td>33 tons</td>
<td>44 tons</td>
</tr>
<tr>
<td><strong>Min. height</strong></td>
<td>73 mm</td>
<td>70 mm</td>
</tr>
<tr>
<td></td>
<td>2.9 inch</td>
<td>2.7 inch</td>
</tr>
<tr>
<td><strong>Hydr. lift</strong></td>
<td>564 mm</td>
<td>500 mm</td>
</tr>
<tr>
<td></td>
<td>22.2 inch</td>
<td>19.7 inch</td>
</tr>
<tr>
<td><strong>Max. height</strong></td>
<td>637 mm</td>
<td>637 mm</td>
</tr>
<tr>
<td></td>
<td>25.1 inch</td>
<td>25.1 inch</td>
</tr>
</tbody>
</table>

**Airbus applications**

- **NLG**
  - A318
  - A319 / A319neo
  - A320 / A320neo
  - A321 / A321neo
  - A330-300
  - A340-300

- **A300-B2**
- **A300-B4**
- **A300-600**
- **A300F4-600**
- **A310**
- **A318**
- **A320**
- **A321**
- **A340-300**

**Boeing applications**

- **NLG**
  - B737-100 to -900

- **B737 Family incl. MAX**
- **B737-600/ -700/ -800/ -900**
- **B777**
- **B787**

- **MLG**
  - **B737-300/ -400/ -500**
  - **B737-600/ -700/ -800/ -900**
  - **B757**

**Other applications**

- **NLG**
  - AN-148 / -158
  - EMB170 / 175
  - EMB190 / 195
  - CS-100 / -300

- **BAe 146 / AVRO RJ / CRJ700 / CRJ900**
- **DHC-8 / DC-9 / MD-80 / MD-90**
- **Embraer 170 / 175 / 190**
- **Fokker 27 / 28 / 50**
- **Fokker 70 / 100**
- **CS100 / CS300 / MC-21 / SSJ100**

- **MLG**
  - An-140
  - Fokker 27 / 28 / 50
  - CRJ100 / CRJ200
RECOVERY AXLE-JACK BEAM

DESCRIPTION
The universal 16 t recovery beam is specially designed for use in jacking the A320 / B737 NG in emergency dual flats or on rim conditions.
The 16 tons recovery beam will work in conjunction with two axle-jacks.
The recovery beam kit is the alternative solution for recovery jacks.

PRODUCT FEATURES
- Recovery beam with a capacity of 16 tons.
- Interface to axle-jacking point
- Four handles for ease of handling
- Castors for easy positioning
- Two bubble level indicator for horizontal lifting
- Two floating axle-jack interfaces for side load compensation
- Fly away transport box with fork lift pockets
- Easy and fast setup
- Skydrol-resistant paint
- 150 % proof loaded

BENEFITS
- Quick and easy to set up
- Can be used with various axle-jack series
- Integrated side load compensation
- Flexible and universal solution
- Quickly available and transportable via box
- Meeting the maintenance needs of tomorrow
- High premium quality made in Germany
# TECHNICAL SPECIFICATION

## RECOVERY AXLE-JACK BEAM

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>RAJB1601</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>16 t</td>
</tr>
<tr>
<td></td>
<td>17.6 tons</td>
</tr>
<tr>
<td>Height</td>
<td>85 mm</td>
</tr>
<tr>
<td></td>
<td>3.4 inch</td>
</tr>
<tr>
<td>Width</td>
<td>180 mm</td>
</tr>
<tr>
<td></td>
<td>7.1 inch</td>
</tr>
<tr>
<td>Length total</td>
<td>1,505 mm</td>
</tr>
<tr>
<td></td>
<td>59.25 inch</td>
</tr>
<tr>
<td>Weight adapter l/r</td>
<td>35 kg</td>
</tr>
<tr>
<td></td>
<td>77.2 lbs</td>
</tr>
<tr>
<td>Weight beam</td>
<td>75 kg</td>
</tr>
<tr>
<td></td>
<td>165.3 lbs</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>NLG A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B737</td>
</tr>
</tbody>
</table>
4.9

**AXLE-JACK HOSE PRESSURE KIT**

**DESCRIPTION**
The axle-jack hose pressure kit is primarily designed to allow the aircraft tyre gas to operate the axle jack.

The axle-jack hose kit features an overall length of 4-meters to allow good flexibility around the aircraft when changing the wheel and operating the axle jack as well as allowing a safe working distance for the operator.

Equipped with an integrated isolation valve, the operator can accurately control the gas flow from the wheel to the axle jack making for a safe operation. The hose features a safe screw-on valve adapter which interfaces with the aircraft wheel offering added safety to the user when working with high pressure gases.

**PRODUCT FEATURES**
- 4-meter length hose
- Isolation valve to control gas flow
- Double braided hose with rubber covering
- Safe screw-on tyre valve adapter

**AVAILABLE ACCESSORIES**
- Fitment to 8 V size tire valves and axle jack
- Fitment to 12 V size tire valves and axle jack
- Fitment to 8 V and 12 V size tire valves and axle-jack

**BENEFITS**
- Optimal efficiency
- Accurate gas flow control
- Allows the operator flexibility when in use

**TECHNICAL SPECIFICATION**

**AXLE-JACK HOSE PRESSURE KIT**

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>PO-54665</th>
<th>PO-54665-1</th>
<th>PO-54665-SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variant</td>
<td>Small tyre valve to axle-jack hose kit</td>
<td>Large tyre valve to axle-jack hose kit</td>
<td>Small and large size tyre valves to axle-jack kit</td>
</tr>
</tbody>
</table>
4.10 STEERING TEST EQUIPMENT

DESCRIPTION
This special jack has been engineered primarily for steering tests.

PRODUCT FEATURES
- RT axle-jack design with special tilted lift cylinder (6.5°) with friction lining on the cylinder base
- Manual hand pump (operated by the tow-bar)
- Max. load of 80 kN (8.8 short tons)
- Tow-bar for operating the jack
- Stainless steel cover: all other parts are painted to be Skydrol-resistant

BENEFITS
- High quality made in Germany
- Long life-cycle
- Robust and proven design
- Easy maneuvering due to optimized undercarriage
- Best handling and extreme repair-friendly due to modular design and available spare parts
- At least 10 year spare part availability
- On-site service

TECHNICAL SPECIFICATION

STEERING TEST EQUIPMENT

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>SG196</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>8 t</td>
</tr>
<tr>
<td></td>
<td>8.8 tons</td>
</tr>
<tr>
<td>Applications</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
</tbody>
</table>
5

TOWING & TAXING
ATA CHAPTER 09
5.1 TOW BAR (STANDARD)

DESCRIPTION
Our standard tow-bar series for most common commercial, business and military aircraft is called “TOW”. It has been engineered primarily for use in aircraft maintenance. This standard tow-bar covers one dedicated aircraft type. Our tow-bars are designed in accordance with the requirements from aircraft manufacturers and the applicable norms and standards. They fit perfectly to the operator’s needs. The free-floating axle enables easy connection to the NLG. The maintenance-free hand pump with integrated spring and dead man’s circuit guarantees high safety and outstanding accuracy. Customers all over the world trust in the outstanding quality made in Germany.

PRODUCT FEATURES
- Revolving tow-head, clamp or lock pin type
- Rigid tow eye diameter 3 inch / 76.2 mm
- Main tube made of high strength steel
- Maintenance free hand pump with integrated spring and dead man circuit for high safety
- Shear pin for push/pull and torque and retaining pin for maximum safety
- Hydraulically height-adjustable undercarriage with floating axle system and pneumatic tires
- Tube-mounted spare shear pin holder incl. four spare shear pins and two retaining pins
- Skydrol-resistant paint
- Label with A/C applications

OPTIONS
Tow Eye
Revolving tow eye
Undercarriage
Height-adjustable undercarriage with solid rubber tires
TECHNICAL SPECIFICATION

TOW-BAR (STANDARD)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>TOWA320S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>5,720 mm</td>
</tr>
<tr>
<td></td>
<td>1225.2 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>260 kg</td>
</tr>
<tr>
<td></td>
<td>573.2 lbs</td>
</tr>
<tr>
<td>Towing speed with A/C</td>
<td>15 km/h</td>
</tr>
<tr>
<td></td>
<td>9 mph</td>
</tr>
<tr>
<td>Towing speed w/o A/C</td>
<td>925 km/h</td>
</tr>
<tr>
<td></td>
<td>15.5 mph</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
</tbody>
</table>

BENEFITS

- High quality made in Germany
- Designed to norms
- Long life-cycle
- Ergonomic design
- Worldwide unique new hand pump system
- All in one system (integrated cylinder, hand pump, oil reservoir and return spring)
- Encapsulated hydraulic system (no rubber hoses, no fittings)
- Death man circuit
- Maintenance free
- Fast and easy replacement of the hand pump
- Wide range of available options
- Easy maneuvering due to optimized undercarriage with integrated floating axle system
- Tow-head design integrated shear pins and retaining pin
- At least 10 year spare part availability
- On-site service
TOW-BAR (UNIVERSAL)

DESCRIPTION
Our universal tow-bar series for most common narrowbody and wide-body aircraft is called “TOWUNIV”. It has been engineered primarily for use in aircraft maintenance. This universal tow-bar covers several aircraft types. Our tow-bars are designed in accordance with the requirements from aircraft manufacturers and the applicable norms and standards. They perfectly match the operator’s needs and fit various aircraft types. The free-floating axle enables an easy connection to the nose landing gear. The maintenance-free hand pump with integrated spring and dead man’s circuit guarantees high safety and outstanding accuracy. Customers all over the world trust in the outstanding quality made in Germany.

PRODUCT FEATURES
- Rigid tow head, clamp or lock pin type
- Rigid tow eye diameter 3 inch / 76.2 mm
- Main tube made of high strength steel
- Maintenance free hand pump with integrated spring and dead man’s circuit for high safety
- Shear pin for push/pull and torque and retaining pin for maximum safety
- Tube-mounted spare shear pin holder including four spare shear pins and two retaining pins
- Skydrol-resistant paint
- Label with A/C applications

OPTIONS
Tow Eye
Revolving tow eye

Undercarriage
Height-adjustable undercarriage with solid rubber tires

BENEFITS
- High quality made in Germany
- Designed to norms
- Long life-cycle
- Ergonomic and light design
- Easy maneuvering due to convertible undercarriage
- Tow head design: integrated shear pins and retaining pin
- At least 10 year spare part availability
- On-site service
# TECHNICAL SPECIFICATION

## TOW-BAR (UNIVERSAL)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>TOWUNIV3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>5,300 mm</td>
</tr>
<tr>
<td></td>
<td>208.7 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>258 kg</td>
</tr>
<tr>
<td></td>
<td>568.8 lbs</td>
</tr>
<tr>
<td>Towing speed with A/C</td>
<td>15 km/h</td>
</tr>
<tr>
<td></td>
<td>9 mph</td>
</tr>
<tr>
<td>Towing speed w/o A/C</td>
<td>25 km/h</td>
</tr>
<tr>
<td></td>
<td>15.5 mph</td>
</tr>
<tr>
<td>Airbus application</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B737-300 to 900</td>
</tr>
<tr>
<td></td>
<td>B737 MAX</td>
</tr>
</tbody>
</table>
5.3 TOW-BAR (FLY-AWAY)

DESCRIPTION
Our fly-away tow-bar series has been designed for most common commercial, business and military aircraft. It has been engineered primarily for use in aircraft maintenance. This fly-away tow-bar covers one dedicated aircraft type, is weight optimized and easily to disassemble.

Our tow-bars are designed in accordance with the requirements from aircraft manufacturers and the applicable norms and standards. They fit perfectly to the operator’s needs. Customers all over the world trust in the outstanding quality made in Germany.

PRODUCT FEATURES
- Rigid tow head, clamp type
- Rigid tow eye diameter 3 inch / 76.2 mm
- Main tube made of high strength steel
- Shear pin for push/pull and torque and retaining pin for maximum safety
- Convertible undercarriage for easy handling
- Skydrol-resistant paint
- Label with A/C applications

AVAILABLE ACCESSORIES
Transportation Box
- Plastic case [33066-009-000]
- Aluminum box [00181-102-000]

BENEFITS
- High quality made in Germany
- Designed to norms
- Long service life
- Ergonomic and light design
- Easy maneuvering due to convertible undercarriage
- Tow-head design integrated shear pins and retaining pin
- At least 10 years spare part availability
- On-site service
## TECHNICAL SPECIFICATION

### TOW-BAR (FLY-AWAY)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>TOWA320F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>3,200 mm</td>
</tr>
<tr>
<td></td>
<td>126 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>67 kg</td>
</tr>
<tr>
<td></td>
<td>147.7 lbs</td>
</tr>
<tr>
<td>Towing speed with A/C</td>
<td>15 km/h</td>
</tr>
<tr>
<td>Applications</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
</tbody>
</table>
5.4 DEBOGGING KIT

DESCRIPTION
Our Debogging Kit has been designed for cable towing of the main landing gear, especially for aircraft recovery.

PRODUCT FEATURES
- Equipment is for debogging A/C at MLG in case of emergency
- System integrated shearpins for overload protection
- All kit-parts stored in a wooden box

BENEFITS
- Ergonomic design
- User friendliness

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>DEBOGGING KIT</th>
<th>SG237-001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model-No.</td>
<td>A318</td>
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<tr>
<td>Airbus applications</td>
<td>A319</td>
</tr>
<tr>
<td></td>
<td>A320</td>
</tr>
<tr>
<td></td>
<td>A321 (Single axle)</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B757-200 / -300</td>
</tr>
</tbody>
</table>
6
SERVICING
ATA CHAPTER 12
6.1 NITROGEN SERVICE CART

DESCRIPTION
The Nitrogen service cart is available as two or four bottle variants, the unique design allows all nitrogen cylinders to be loaded or off-loaded simultaneously by a single person. This specific design incorporates all relevant occupational health and safety requirements for manual handling and allows operators to undertake their desired tasks safely and efficiently.

The dual use colour coded low and high pressure certified nitrogen charging panel housed within a waist-height weather-proof cabinet features one calibrated inlet pressure gauge, one calibrated low outlet pressure gauge and one calibrated high outlet pressure gauge.

The low pressure 330 psi and high pressure, 3,300 psi nitrogen charging configuration is operated by self-venting regulators, secondary isolation valves and features built-in excess pressure relief valves, allowing for optimum pressure settings to be achieved when undertaking nitrogen servicing and replenishment tasks.

PRODUCT FEATURES
- Self-venting regulators and secondary isolation valves
- Auto retractable hose reels each with 9-metre hose
- Easy load cylinder stowage tray (manual operation for 2-bottle variant and hydraulic operation for 4-bottle variant)
- 50 mm towing eye
- Ground Support Equipment BS EN compliant
- Spare parts and components readily available
- Finish: Zinc phosphate primer with top layer powder-coat finish
- Modular charging system
- Easy-load system
- Safety and reliability
- Unrivalled quality
- Ergonomic design
- On-site service
OPTIONS
- 2-bottle variant or 4-bottle variant
- Fully fitted gas booster allows intensified outlet pressure & full cylinder consumption
- In-situ cylinder re-fill port - Integrated re-fill port allows cylinder refill without removing cylinders
- Any color paint finish - RAL code is required to allow for different paint color
- Different size towing eye
- Weather-proof cover

AVAILABLE ACCESSORIES
- Country compatible cylinder connectors
  - UK Nitrogen bottle connection
  - German Nitrogen bottle connection
  - French Nitrogen bottle connection
  - USA/North America/Singapore bottle connection

BENEFITS
- Modular charging system
- Dual use charging system; Low pressure and high pressure charging systems are integrated inside a single box
- Easy-load system
- Pressure relief and isolation valves
- Safety and reliability
- Unrivalled quality
- Ergonomic design
- On-site service

TECHNICAL SPECIFICATION

NITROGEN SERVICE CART

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>NBNT-2 (two bottle cart)</th>
<th>NBNT-4 (four bottle cart)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenght</td>
<td>2,700 mm</td>
<td>2,700 mm</td>
</tr>
<tr>
<td></td>
<td>106.3 inch</td>
<td>106.3 inch</td>
</tr>
<tr>
<td>Width</td>
<td>1,324 mm</td>
<td>1,324 mm</td>
</tr>
<tr>
<td></td>
<td>52.1 inch</td>
<td>52.1 inch</td>
</tr>
<tr>
<td>Height</td>
<td>1,641 mm</td>
<td>1,641 mm</td>
</tr>
<tr>
<td></td>
<td>56.7 inch</td>
<td>56.7 inch</td>
</tr>
</tbody>
</table>
6.2 OXYGEN SERVICE CART

DESCRIPTION

The Oxygen service cart is available as two or four bottle variants, the unique design allows all oxygen cylinders to be loaded or off-loaded simultaneously by a single person. This specific design incorporates all relevant occupational health and safety requirements for manual handling and allows operators to undertake their desired tasks safely and efficiently.

The certified charging panel is housed within a waist-height weatherproof cabinet and features one calibrated inlet pressure gauge and one calibrated outlet pressure gauge. To minimize static and heat-build up from fast flowing oxygen bottle gas, the charging panel inlet features heavy-duty brass heat-soak stems along with oxygen grade hose and piping.

The charging configuration (2,400 psi) is operated by a self-venting regulator, secondary isolation valve and features a built-in excess pressure relief valve allowing optimum pressure settings to be achieved. All components associated with the oxygen service cart are oxygen cleaned, certified and traceable. The 4-bottle easy load oxygen cart features inert, oxygen safe fluid within the hydraulic cylinder tray operating system.

PRODUCT FEATURES

- Self-venting regulator and secondary isolation valve
- Auto retractable hose reel with 9-metre hose
- Easy load cylinder stowage tray (manually operation for 2-bottle variant and hydraulic operation for 4-bottle variant)
- Earth grounding reel and cable
- 50 mm towing eye
- Ground Support Equipment BS EN Compliant Spare parts and components readily available
- Finish; Zinc phosphate primer with top layer powder-coat finish in RAL1028 (yellow)
- Modular charging system
- Self-venting regulator
- Easy-load system
- Pressure relief and isolation valves
- Heat soak
- Safety and reliability
- Unrivalled quality
- Ergonomic design
- On-site service
**OPTIONS**
- 2-bottle variant or 4-bottle variant
- Fully fitted gas booster allows intensified outlet pressure & full cylinder consumption
- In-situ cylinder re-fill port: Integrated re-fill port allows cylinder refill without removing cylinders
- Any color paint finish: RAL code is required to allow for different paint color
- Different size towing eye
- Weather-proof cover
- Powder fire extinguisher: 3 kg powder fire extinguisher and retaining bracket

**AVAILABLE ACCESSORIES**
- Country compatible cylinder connectors
  - UK Oxygen bottle connection
  - German Oxygen bottle connection
  - French Oxygen bottle connection
  - USA/North America/Singapore bottle connection

**BENEFITS**
- Modular charging system
- Self-venting regulator
- Easy-load system
- Pressure relief and isolation valves
- Heat soak
- Safety and reliability
- Unrivalled quality
- Ergonomic design
- On-site service

**TECHNICAL SPECIFICATION**

**OXYGEN SERVICE CART**

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>NBOT-2 (two bottle cart)</th>
<th>NBOT-4 (four bottle cart)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>2,700 mm</td>
<td>106.3 inch</td>
</tr>
<tr>
<td>Width</td>
<td>1,324 mm</td>
<td>52.1 inch</td>
</tr>
<tr>
<td>Height</td>
<td>1,441 mm</td>
<td>56.7 inch</td>
</tr>
</tbody>
</table>
AIRCRAFT WHEEL AND BRAKE CHANGE TRAILER

DESCRIPTION

The aircraft wheel and brake change service support trailers have been primarily designed to aid with fast, safe and effective wheel and brake change operations on the ramp, around the airport and even within the hangar.

Designed to accommodate any two aircraft wheels (up to A380 size), one wheel and brake change dolly, one axle-jack and a multitude of aircraft tooling, the wheel and brake change trailer is the ultimate aviation mobile service support center. The trailer is accessed via the spring balanced rear ramp door that offers a minimal gradient, which allows one person to easily load and off-load large aircraft wheels and the axle-jack. Inside the trailer is a centrally mounted (removable) workbench that allows operators to undertake any additional tasks.

The front mounted towing arm features an integrated double acting parking brake. The operator can manually engage the parking brake when pushing the towing arm to the vertical position or automatic engagement when towing arm is free hanging in the horizontal position.

The complete trailer consists of a primer and 2-pack paint finish, offering skydrol resilience and added longevity. For optimum efficiency during aircraft turnaround and maintenance cycles, the aircraft wheel and brake change trailer can be offered with a fully certified nitrogen charging system which is externally located at the front of the trailer.

PRODUCT FEATURES

- Fully enclosed or open top
- Spring assisted low gradient rear ramp door
- Towing arm with integrated double acting parking brake
- Front axle and enclosed turntable assembly
- 2-pack paint finish, skydrol resilient
- Operational payload 1000 kg as standard
- Storage for 2 x wheels, 1 x axle-jacks
- Brake pack, 1 x wheel dolly & tooling
- Front mounted tool box or nitrogen
- Charging system
- Internal workbench (removable)
- Ground Support Equipment BS EN and H&S compliant
- Serviceable
- Fully traceable
- Reliable, robust and safe
- NBWBCT-70280 & 70275 feature (extra side ramp door)
- NBWBCT-70280 & 70275 can store additional contents
- Optional modular nitrogen system
- Side and rear access ramps
- Adjustable ride height rear suspension
- Overrun braking system with braked hubs
OPTIONS
- Standard or nitrogen configuration
- Any colour paint finish
- Customer corporate logos possible
- Fully customized solutions available

AVAILABLE ACCESSORIES
- Country compatible gas cylinder connections (N2 option)
- Mobile wheel mover

BENEFITS
- Ground Support Equipment BSEN compliant
- Ergonomic design
- Easy loading and off-loading

TECHNICAL SPECIFICATION

AIRCRAFT WHEEL AND BRAKE CHANGE TRAILER

<table>
<thead>
<tr>
<th>Trailer</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBWBCT-70280</td>
<td>4,666 mm</td>
<td>2,400 mm</td>
<td>2,102 mm</td>
</tr>
<tr>
<td></td>
<td>183.7 inch</td>
<td>94.5 inch</td>
<td>82.8 inch</td>
</tr>
<tr>
<td>NBWBCT-70275</td>
<td>4,666 mm</td>
<td>2,400 mm</td>
<td>2,102 mm</td>
</tr>
<tr>
<td></td>
<td>183.7 inch</td>
<td>94.5 inch</td>
<td>82.8 inch</td>
</tr>
<tr>
<td>NBWBCT</td>
<td>3,486 mm</td>
<td>2,336 mm</td>
<td>1,997 mm</td>
</tr>
<tr>
<td></td>
<td>137.2 inch</td>
<td>92 inch</td>
<td>78.6 inch</td>
</tr>
<tr>
<td>NBWBCT-N2</td>
<td>3,486 mm</td>
<td>2,336 mm</td>
<td>1,997 mm</td>
</tr>
<tr>
<td></td>
<td>137.2 inch</td>
<td>92 inch</td>
<td>78.6 inch</td>
</tr>
<tr>
<td>NBWBCT-70281 (Open top)</td>
<td>3,486 mm</td>
<td>2,336 mm</td>
<td>1,384 mm</td>
</tr>
<tr>
<td></td>
<td>137.2 inch</td>
<td>92 inch</td>
<td>54.5 inch</td>
</tr>
<tr>
<td>NBWBCT-70282 (Open top)</td>
<td>3,486 mm</td>
<td>2,336 mm</td>
<td>1,384 mm</td>
</tr>
<tr>
<td></td>
<td>137.2 inch</td>
<td>92 inch</td>
<td>54.5 inch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trailer</th>
<th>Rear ramp door</th>
<th>Side ramp door</th>
<th>Over-ride brake system for assisted breaking during towing</th>
<th>Adjustable ride (height rear suspens)</th>
<th>Dual use nitrogen system</th>
<th>Hose reels and bottle holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBWBCT-70280</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>NBWBCT-70275</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>NBWBCT</td>
<td>x</td>
<td>optional</td>
<td>optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBWBCT-N2</td>
<td>x</td>
<td>optional</td>
<td>optional</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>NBWBCT-70281</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBWBCT-70282</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
**FLUID DISPENSER**

**DESCRIPTION**
The fluid dispenser allows serving aircraft hydraulic reservoirs, engines, APU, IDG, CSD, landing gear struts, thrust reversers, actuators and many more.

**PRODUCT FEATURES**
- Translucent specially formulated polyethylene reservoir, compatible, for all fluids
- Easy fluid level control
- Screwed filler cap, big size
- Colored fluid placard
- Galvanized steel handle
- Hand pump, stainless steel shaft and laminated aluminum handle
- Double sealed with relief valve

**OPTIONS**
**Dispenser sizes**
2 US gallon (7.6 litres)

**Fluid Designation & Placard**
- A - EXXON 2380
- B - ENGINE OIL
- C - MOBIL 254
- D - 5606
- E - MOBIL JET II
- F - 2197
- G - SKYDROL
- H - HYDRAULIC OIL
- K - HYJET IV
- L - CSD/IDG

**BENEFITS**
- Ergonomic design
- On-site service
# TECHNICAL SPECIFICATION

## FLUID DISPENSER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>BOB02</th>
<th>BOB05</th>
<th>BOB20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir capacity</td>
<td>7.6 litres (2 US gallon)</td>
<td>19 litres (5 US gallon)</td>
<td>76 litres (20 US gallon)</td>
</tr>
<tr>
<td>Pump outlet pressure</td>
<td>175 psi 79 – 83 kPA</td>
<td>175 psi 79 – 83 kPA</td>
<td>175 psi 79 – 83 kPA</td>
</tr>
<tr>
<td>Volume per stroke</td>
<td>7.2 cubic inch / 120 cc</td>
<td>7.2 cubic inch / 120 cc</td>
<td>7.2 cubic inch / 120 cc</td>
</tr>
<tr>
<td>Hose length</td>
<td>2,200 mm 7 inch</td>
<td>4,500 mm 15 inch</td>
<td>2,200 mm 7 inch</td>
</tr>
<tr>
<td>Net weight (empty)</td>
<td>14 lbs / 6.4 kg</td>
<td>48 lbs / 21.8 kg</td>
<td>74 lbs / 33.6 kg</td>
</tr>
<tr>
<td>Filter rating</td>
<td>10 Micron (nominal)</td>
<td>10 Micron (nominal)</td>
<td>10 Micron (nominal)</td>
</tr>
<tr>
<td>Total height</td>
<td>428 mm 16.8 inch</td>
<td>1,028 mm 40.5 inch</td>
<td>1,028 mm 40.5 inch</td>
</tr>
<tr>
<td>Total length</td>
<td>314 mm 12.4 inch</td>
<td>603 mm 23.8 inch</td>
<td>603 mm 23.8 inch</td>
</tr>
<tr>
<td>Width</td>
<td>267 mm 10.5 inch</td>
<td>464 mm 18.3 inch</td>
<td>464 mm 18.3 inch</td>
</tr>
</tbody>
</table>
6.5 AIRCRAFT TYRE PRESSURE GAUGES

DESCRIPTION
The aircraft tyre pressure checking gauges are offered in a wide range of configurations allowing coverage of all make and model aircraft.
Each tyre pressure gauge is calibrated to an accuracy of ±1 % allowing optimum aircraft tyre pressure settings to be achieved.
The 100 mm pressure gauge dial face allows instant visibility of the tyre pressure making the operators task very efficient in any environment.
The wide range of push-on tyre valve adapters are designed to interface with 8 V and 12 V tyre valves and cover any tyre aircraft in service.

PRODUCT FEATURES
- Calibrated accuracy ±1 %
- EN837-1 compliant
- Single scale dial
- 260 psi, 300 psi, 400 psi, 450 psi, 500 psi ranges available
- Shatter proof lens
- 100 mm dial for easy visibility
- Protective rubber cover
- 450 mm air hose assembly
- Wide range of adapter to interface with the tyre valve
- Released with calibration test certificate
- “night glow” dial face which automatically illuminates the dial during dark environments
- Dual scale dial, psi & bar

BENEFITS
- Accurate tyre pressure setting
- Easy to use
- Ergonomic design
- Instant pressure visibility
- Suitable for any aircraft
## AIRCRAFT TYRE PRESSURE GAUGES

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>260 PSI</th>
<th>300 PSI</th>
<th>400 PSI</th>
<th>450 PSI</th>
<th>500 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure gauge with INLINE adapter for 8 V size tyre valves</td>
<td>NTG2604-S</td>
<td>NTG3004-S</td>
<td>NTG4004-S</td>
<td>NTG4504-S</td>
<td>NTG5004-S</td>
</tr>
<tr>
<td>Pressure gauge with INLINE adapter for 12 V size tyre valves</td>
<td>NTG2604-L</td>
<td>NTG3004-L</td>
<td>NTG4004-L</td>
<td>NTG4504-L</td>
<td>NTG5004-L</td>
</tr>
<tr>
<td>Pressure gauge with ANGLED adapter for 8 V size tyre valves</td>
<td>NTG2604-HH1</td>
<td>NTG3004-HH1</td>
<td>NTG4004-HH1</td>
<td>NTG4504-HH1</td>
<td>NTG5004-HH1</td>
</tr>
<tr>
<td>Pressure gauge with ANGLED adapter for 12 V size tyre valves</td>
<td>NTG2604-HH1L</td>
<td>NTG3004-HH1L</td>
<td>NTG4004-HH1L</td>
<td>NTG4504-HH1L</td>
<td>NTG5004-HH1L</td>
</tr>
<tr>
<td>Pressure gauge with 90 degree universal adapter for 8 V and 12 V size tyre valves</td>
<td>NTG2604-D</td>
<td>NTG3004-D</td>
<td>NTG4004-D</td>
<td>NTG4504-D</td>
<td>NTG5004-D</td>
</tr>
<tr>
<td>Pressure gauge with 2 x inline adapters for 8 V and 12 V size tyre valves</td>
<td>NB2604-D</td>
<td>NB3004-D</td>
<td>NB4004-D</td>
<td>NB4504-D</td>
<td>NB5004-D</td>
</tr>
</tbody>
</table>
AIRCRAFT TYRE INFLATION

DESCRIPTION

The aircraft tyre inflation tools and kits are offered in a wide range of configurations allowing coverage of all make and model aircraft.

The 350 psi inflation tool allows accurate inflation of the aircraft tyre as well as vent capability. An optional excess pressure relief valve can be integrated allowing automatic venting of inflation gas, factory pre-set to vent between 0 psi and 350 psi. The tyre inflation kits can be provided with a range of inflation hoses each at a two-metre length to allow a safe working distance for the operator. The inflation hoses all feature safe screw-on thread type inflation adapters offering added safety during the tyre inflation procedure.

PRODUCT FEATURES

- Calibrated accuracy ±1.5 %
- EN837-1 compliant
- Single scale dial
- 350 psi working pressure
- Shatter proof lens
- Inflation & deflation capability
- Pre-use accuracy check
- 2-meter length inflation hoses
- Compatible inflation tool and hoses
- Released with calibration test certificate

OPTIONS

- “Night glow” dial face which automatically illuminates the dial during dark environments
- Excess pressure relief valve fitted to the inflation tool body
## BENEFITS
- Accurate tyre inflation
- Dead-man level for operator safety
- Easy to use
- Compatible inflation tool and hoses
- 2-meter hose allows safe working distance
- Released with calibration test certificate

## TECHNICAL SPECIFICATION

### AIRCRAFT TYRE INFLATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>Inflation Tool 0-350 psi</th>
<th>Inflation Tool 0-350 psi with excess pressure relief valve</th>
<th>Inflation Hose with fill adapter for 8 V size tyre valve</th>
<th>Inflation Hose with fill adapter for 12 V size tyre valve</th>
<th>Inflation hose with long reach fill adapter for 8 V size tyre valve</th>
<th>Inflation hose with long reach fill adapter for 12 V size tyre valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK7ATIS6BC-GH</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK7ATIS6BC-EPRV</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK7ATIS-001</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK7ATIS-002</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK7ATIS-003</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>MK7ATIS-001EL</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>MK7ATIS-002EL</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>MK7ATIS-003EL</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>
### 6.7 OIL FILLING UNIT

#### DESCRIPTION

Filling unit to replenish the APU, or IDG/CSD. The required fluid type is turbine oil.

#### TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>AIT120001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft applications</td>
<td>Universal</td>
</tr>
<tr>
<td>Applications</td>
<td>all</td>
</tr>
</tbody>
</table>
7

ELECTRICAL POWER
ATA CHAPTER 24
LOOP RESISTANCE TESTER
AIRLINER SET

DESCRIPTION
This tool is used to perform Loop Impedance Tests on aircraft wiring. The package includes all equipment required to perform a measurement successfully.

PRODUCT FEATURES
- Full equipment included to perform a measurement
- Very large, easy to read display
- Battery powered, rechargeable in situ or removed
- Galvanically isolated interface for remote control or data exchange
- Automatic residual current compensation
- Range is switched automatically
- Search mode for rapid location of faulty connections
- Including self test unit for function control of the test equipment and the measuring clamps

STANDARD ACCESSORIES
- Self test UUT
- Measurement cable set with two banana plugs and test prods for search mode
- Power supply unit incl. power cable for charging
- Battery “AXCOM”
- Shoulder strap

OPTIONS
Optional measurement clamp set
- Supply clamp
- Current measurement clamp

BENEFITS
- Tool / Equipment bulletin for A320 Family
- Tool / Equipment bulletin for A330 / A340
- Tool / Equipment bulletin for A380
- All equipment included to perform a measurement successfully
## TECHNICAL SPECIFICATION

### LOOP RESISTANCE TESTER AIRLINER SET

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>IM2FSAL1 / IM2FSA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power operation</td>
<td>1 / N / PE AC 50/ 60 Hz 100-240 V</td>
</tr>
<tr>
<td>Battery</td>
<td>14.4 V Li-Ion</td>
</tr>
<tr>
<td>Charging time</td>
<td>6 hours</td>
</tr>
<tr>
<td>Measurement range</td>
<td>up to 400 mΩ</td>
</tr>
<tr>
<td>Data Storage</td>
<td>90 measured valves</td>
</tr>
<tr>
<td>Max. resolution</td>
<td>0.1 mΩ</td>
</tr>
<tr>
<td>Output voltage</td>
<td>max. 70 V</td>
</tr>
<tr>
<td>Output current</td>
<td>max. 1 A</td>
</tr>
<tr>
<td>Accuracy</td>
<td>depends on clamps (e.g. IMZ7 ± 5 % o.m.v., but not less than ± 2 mΩ)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>approx. 250 x 280 x 160 mm 9.8 x 11 x 6.3 inch</td>
</tr>
<tr>
<td>Weight of equipment</td>
<td>approx. 5 kg approx. 11 lbs</td>
</tr>
<tr>
<td>Applications</td>
<td>A318 A319ceo / A319neo A320ceo / A320neo A321ceo / A321neo A330ceo / A330neo A340 all A380</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATION

### LOOP RESISTANCE TESTER AIRLINER SET

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>IM2FSAL1</th>
<th>IM2FSAL2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Set</strong></td>
<td>Set with:</td>
<td>Set combined with:</td>
</tr>
<tr>
<td></td>
<td>▪ Supply clamp IMZ6</td>
<td>Impedance measurement clamp IMZ7</td>
</tr>
<tr>
<td></td>
<td>▪ Current measurement clamp SMZ6</td>
<td></td>
</tr>
<tr>
<td><strong>Measuring</strong></td>
<td>▪ For measurement both one supply and one current measuring clamps are required</td>
<td>▪ Symmetric design</td>
</tr>
<tr>
<td></td>
<td>▪ Apt for use on cables and metal rails of up to approx. 20 mm diameter</td>
<td>▪ Apt for use on cables in a confined area of up to approx. 26 mm diameter</td>
</tr>
<tr>
<td></td>
<td>▪ Spring loaded to close (operating) position</td>
<td>▪ Spring loaded to closed (operating) position</td>
</tr>
<tr>
<td></td>
<td>▪ Modified split standard clamps fluke i200</td>
<td>▪ Combined supply and current measurement clamps Symmetric windings for high repeatability</td>
</tr>
<tr>
<td></td>
<td>▪ Integrated measure button on supply clamps</td>
<td>▪ Measure button</td>
</tr>
<tr>
<td></td>
<td>▪ Both clamps have arrows showing the current direction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Frequency</strong></th>
<th>For test equipment with 1 kHz</th>
<th>For test equipment with 1 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resistance range</strong></td>
<td>400 mΩ</td>
<td>400 mΩ</td>
</tr>
<tr>
<td><strong>UUT diameter</strong></td>
<td>max. 20 mm</td>
<td>max. 26 mm</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>5 % o.m.v. but not less than 2 mΩ</td>
<td>± 5 % o.m.v. but not less than 2 mΩ</td>
</tr>
<tr>
<td><strong>Repeatability of UUT variations position in clamp opening</strong></td>
<td>± 3 % of full scale ± 1 mΩ</td>
<td>± 2 % of full scale ± 0.5 mΩ</td>
</tr>
<tr>
<td><strong>Jaws opening</strong></td>
<td>approx. 21 mm</td>
<td>approx. 31 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>approx. 700 g</td>
<td>approx. 500 g</td>
</tr>
<tr>
<td><strong>Cable length</strong></td>
<td>3 m</td>
<td>3 m</td>
</tr>
<tr>
<td><strong>Overall dimensions (without cable)</strong></td>
<td>50 mm x 30 mm x 135 mm 2 inch x 1.2 inch x 5.3 inch</td>
<td>58 mm x 31 mm x 120 mm 2.3 inch x 1.2 inch x 4.7 inch</td>
</tr>
</tbody>
</table>
HYDRO | Airbus A320 Equipment

**Electrical Power**

Model-No. IM2FSAL1 IM2FSAL2

Set with:

- Supply clamp IMZ6
- Current measurement clamp SMZ6

Set combined with:

- Impedance measurement clamp IMZ7

Measuring

- For measurement both one supply and one current measuring clamps are required
- Apt for use on cables and metal rails of up to approx. 20 mm diameter
- Spring loaded to close (operating) position
- Modified split standard clamps fluke i200
- Integrated measure button on supply clamps
- Both clamps have arrows showing the current direction
- Symmetric design
- Apt for use on cables in a confined area of up to approx. 26 mm diameter
- Spring loaded to closed (operating) position
- Combined supply and current measurement clamps
- Symmetric windings for high repeatability
- Measure button

**Frequency**

- For test equipment with 1 kHz
- For test equipment with 1 kHz

**Resistance range**

- 400 mΩ
- 400 mΩ

**UUT diameter**

- max. 20 mm
- max. 26 mm

**Accuracy**

- 5 % o.m.v. but not less than 2 mΩ
- 5 % o.m.v. but not less than 2 mΩ

**Repeatability of UUT variations position in clamp opening**

- ± 3 % of full scale
- ± 1 mΩ
- ± 2 % of full scale
- ± 0.5 mΩ

**Jaws opening**

- approx. 21 mm
- approx. 31 mm

**Weight**

- approx. 700 g
- approx. 500 g

**Cable length**

- 3 m
- 3 m

**Overall dimensions**

- (without cable)
  - 50 mm x 30 mm x 135 mm
  - 2 inch x 1.2 inch x 5.3 inch
  - 58 mm x 31 mm x 120 mm
  - 2.3 inch x 1.2 inch x 4.7 inch
8

EQUIPMENT / FURNISHING

ATA CHAPTER 25
CABIN INTERIOR ACCESS STAND

DESCRIPTION
This Cabin Interior Access Stand is ideal for use in the economy aisle and is designed to fit over most economy and some business class seats. It has been designed as a single worker unit with a capacity of 149.7 kg (330 lbs). It is collapsible for easy carrying and storage. The ladder is of durable construction made primarily of structural aluminum with stainless steel hardware and a self-weight of only 11.3 kg (25 lbs).

Anti-slip ladder rungs ensure maintenance staff and employee safety during operation. The Cabin Interior Access Stand is ideal for ramp use and can easily be carried up ramp stairs. The ladder is designed and tested in accordance with ANSI-ASC A14.7 and BS EN 131.7.

PRODUCT FEATURES
- Padding material
- One person movement
- Material type: Polished aluminum
- Collapsible
- Anti-slip ladder rungs
- High grade materials
- Rigorous inspection and testing

BENEFITS
- Avoiding damages at passenger seats during maintenance
- Safety and reliability
- Ergonomic design
- Unrivalled quality and durability
## TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>DF071553-01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Certifications</strong></td>
<td>ANSI-ASC A14.7, BS EN 131.7</td>
</tr>
<tr>
<td><strong>Dimensions (shipping)</strong></td>
<td>419 mm x 1,209 mm x 918 mm x 55 kg  &lt;br&gt;16.5 inch x 47.6 inch x 36.125 inch x 25 lbs</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>lowered: 1,209 mm  &lt;br&gt;47.6 inch</td>
</tr>
<tr>
<td><strong>Foot Print</strong></td>
<td>419 mm x 918 mm  &lt;br&gt;16.5 inch x 36.1 inch</td>
</tr>
</tbody>
</table>
Hydraulic Power
9
HYDRAULIC POWER
ATA CHAPTER 29
HYDRAULIC POWER

DESCRIPTION

Hydraulic Ground Power Units are mainly used inside the hangar. A crucial factor for these operators is the noise. With a noise level of 72 dB, full load, at a distance of 1 meter makes communication hassle-free. The well-engineered design of the hydraulic cart has many advantages. One of the highlights is its clean functioning. The hydraulic installations and the cooling are separated. Therefore it is impossible that Skydrol contaminates the environment. Neither the aircraft nor the operator will suffer from oil contamination, saving a lot of time and hassle in cleaning processes.

PRODUCT FEATURES

- Electric or Diesel power
- Single system or dual circuit
- Easy pressure control using the 0 psi, 3,000 psi/5,000 psi push buttons as applicable
- The stainless steel hydraulic reservoir has a capacity of 240 l (63 USgal)
- Hydraulic reservoir selection (A/C or HGPU) via illuminated buttons on the control panel
- Very suitable hydraulic supply for “Ram Air Test Ground Checks” (together with the Airbus certified RAT Tester PGRAT 1, RATMK, RATMK 350, RATMK 380)
- Automatic over temperature shutoff feature at 70 °C (160 °F)
- Ramp function for soft pressure build-up
- Pressure and flow rates are infinitely variable and limitable
- Easy draining and filling of the aircraft reservoirs is carried out by “Fill”/“Drain” push buttons
- Two large fan operated oil-air coolers ensure optimum cooling
- Easy access is provided by the hydraulically operated cover
- Free from Skydrol vapours
- Automatic over-temp protection
- Separate low pressure circuit for anti-cavitation
- Entire life cycle support and spares
- Special low pressure circuit guarantees constant cleaning and cooling of hydraulic medium
- Simple but sophisticated design
- Waterproof cover made of GRP, Skydrol resistant
- OEM quick disconnect couplings available
- Change the filter only upon indication
- Customer specific color options
- Maximum towing speed is 15mph (25 km/h)
- Dual system without a transfer gear box (to prevent the possibility of hydraulic/lubricating oil contamination)
OPTIONS

- Flow measurement with digital indicator
  - Single system 2 to 66 USgpm (10 to 250 l/min), ±1% of full scale
  - Dual System (independent) 1.3 to 42 gpm (5 to 160 l/min), ±1% of full scale
- Flushing circuit with loading system
- Filter (25 micron) in the return line
- Sampling points
- Comfortable filling neck outside of the housing

- External filling level indicator
- 180 degree swivel adapters
- PLC operation
- IoT gateway

BENEFITS

- User friendly ergonomic setup and operation
- Worldwide support locations
- Expert support
- On-hand spares
- Extended warranty
- Fleet support programs available

- Easy calibration
- World-wide universal connection (compatible with multiple voltages)
- For hangar and outdoor usage
- Certified for all Airbus aircraft
## TECHNICAL SPECIFICATION

### HYDRAULIC POWER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>HGPU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating conditions</strong></td>
<td>Ambient temperature: -25 to +45 °C (-13 to +113 °F)</td>
</tr>
<tr>
<td></td>
<td>Noise emission: Electrical power supply: max. 75 dB(A) at 1,000 mm (39.4 inch) distance. Diesel power supply: approx. 84 dB(A) at the operating panel (at 2200 rpm, approx. 50 USgpm. 3000psi)</td>
</tr>
<tr>
<td><strong>Dimensions and empty weight</strong></td>
<td>Assembly 1 (5000 psi - HGPU60-50-1) 3,950 mm x 1,800 mm x 1,700 mm x 2900 kg (155.5 inch x 70.9 inch x 66.9 inch x 6393 lbs)</td>
</tr>
<tr>
<td></td>
<td>Assembly 2 (3000 psi - HGPU50-30-1, HGPU60-30-1, HGPU25-30-2, HGPU30-30-2) 3,800 mm x 1,800 mm x 1,700 mm x 2,500 kg (149.6 inch x 70.9 inch x 66.9 inch x 5,511 lbs)</td>
</tr>
<tr>
<td></td>
<td>Assembly 0: (Diesel) (HGPU50-30-1, HGPU60-50-1) 4,600 mm x 1,800 mm x 2,100 mm x 3,200 kg (181.1 inch x 70.9 inch x 82.7 inch x 7,055 lbs)</td>
</tr>
<tr>
<td><strong>Measurement accuracy</strong></td>
<td>Supply pressure (analog): 0 - 400 bar (0 - 5,800 psi), cl. 1 (EN 837)</td>
</tr>
<tr>
<td></td>
<td>Return pressure (analog): 0 - 10 bar (0 - 145 psi), cl. 1.6 (EN 837)</td>
</tr>
<tr>
<td></td>
<td>Oil temperature indicator: 0-100° C (32-212° C)</td>
</tr>
<tr>
<td></td>
<td>Flow measurement: Single circuit: 0.32 - 250 lpm (0.08 - 66 USgpm) ± 1 % of full scale. Dual circuit 0.32 - 160 lpm (0.08 - 42 USgpm) ±1% of full scale</td>
</tr>
<tr>
<td><strong>Filter</strong></td>
<td>3 micron filling circuit, 6 micron in each low and high pressure circuit 25 micron in return</td>
</tr>
<tr>
<td><strong>Depending on the type of the equipment, the following hydraulic oils can be used</strong></td>
<td>Phospate-Ester Hydraulic Oil (&quot;Skydrol&quot; or &quot;Hyjet&quot;) or Mineral Oil based Hydraulic Oil (&quot;MIL-H-5606&quot;, &quot;MIL-H-83282&quot;, &quot;MIL-H-87257&quot;)</td>
</tr>
<tr>
<td><strong>Airbus applications</strong></td>
<td>A220, A300, A310, A320/ A320neo/ ceo, A330/ 340, A350, A380</td>
</tr>
<tr>
<td><strong>Boeing applications</strong></td>
<td>B737, B737MAX/ Classic, B747, B757, B767, B777, B787</td>
</tr>
<tr>
<td><strong>Other applications</strong></td>
<td>ERJ135/ 145, E-Jets, CRJ Series, AN 124, AN 148, SuperJet 100, MS21</td>
</tr>
</tbody>
</table>
## Aircraft System

<table>
<thead>
<tr>
<th>Aircraft System</th>
<th>Type</th>
<th>Engine</th>
<th>System</th>
<th>Flow (USGPM)*</th>
<th>Motor (KW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3,000 psi</strong></td>
<td>HGPU50-30-1</td>
<td>Electric or Diesel</td>
<td>Single</td>
<td>50</td>
<td>75 - electric/ 114 - diesel</td>
</tr>
<tr>
<td><strong>3,000 psi</strong></td>
<td>HGPU30-30-2</td>
<td>Electric</td>
<td>Dual (Independent)</td>
<td>2 x 30</td>
<td>2 x 45</td>
</tr>
<tr>
<td><strong>5,000 psi or 3,000 psi</strong></td>
<td>HGPU60-50-1</td>
<td>Electric or Diesel</td>
<td>Single</td>
<td>60</td>
<td>132 electric/ 173 - diesel</td>
</tr>
</tbody>
</table>

Other versions possible

*The specified values are based on the nominal flow at 50 Hz supply, the values are proportionately higher at 60 Hz.*
9.2 WATER SEPARATOR SYSTEM

DESCRIPTION

This equipment is mainly used to separate water from hydraulic fluid (phosphate ester based medium of type IV and V), to remove particles and air.

The unit is capable to significantly reduce water content in phosphate ester based hydraulic media (Skydrol, Hyjet).

It can be used with all HGPUs to purify A/C or HGPU hydraulic fluid (works directly on the A/C connected in the return line) and can be applied during the course of routine maintenance activities.

In general Airliners can choose between oil change or purification. Purification of the hydraulic fluid increases the life time and unscheduled ground times and disposal of tons of oil can be avoided.

Also oil from drum can be refreshed - did you know that often new oil has too much water inside?

The unit was developed in cooperation with and tested at Austrian and Lufthansa.

PRODUCT FEATURES

- The system is developed to separate water from phosphate ester based medium of type IV and V
- The equipment drains the A/C system during regular maintenance tasks, when the A/C is supplied via a hydraulic supply
- The hydraulic medium in the hydraulic supply can be drained as well
- The system reaches water concentrations below 1000 ppm
- Compact and robust design - double axle chassis with steering axle and tow-bar
- Mechanic safety brake for usage without drawing vehicle
- Integrated humidity sensor
- Filter to separate particles from oil
- Oil-oil heat exchanger for energy recovery
- Developed for transport by forklift truck

INCLUDED ACCESSORIES

Couplings for the following A/C:

- All Airbus types (except A350/ A380)
- Boeing 737NG (-600/ -700/ -800/ -900 series)
- B737 MAX (-7/ -8/ -9 series)
- B747, B757, B767, B777
- DC-10
- MD-11

OPTIONS

Couplings A350, A380, B787
## BENEFITS
- Drains the A/C system during regular maintenance tasks, when the A/C is supplied via a hydraulic supply
- The hydraulic medium in the hydraulic supply can be drained as well
- Easy operation
- Reaches water concentrations below 1000 ppm
- Certified for all Airbus A/C in accordance with Tool/Equipment bulletin

## TECHNICAL SPECIFICATION

### WATER SEPARATOR SYSTEM

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>WSS4</th>
</tr>
</thead>
</table>
| **Electrical supply (requirement)** | Mains connection: 3/PE AC 50 Hz 400 V  
Performance: approx. 12 kVA  
Nominal current: max. 17 A  
Back-up fuse: 20 Agl |
| **System pressure** | Drain A/C: 3.1 to 8 bar (45 to 120 psi)  
Drain HGPU: 20 to 345 bar (300 to 5000 psi) |
| **Flow** | Inlet: max. 200 l/min (limited) [52.8 gal/min] |
| **Medium** | Skydrol and Hyjet type IV and V |
| **Operating conditions** | Ambient temperature: 5 to 45 °C (41 to 113 °F)  
Storage temperature: -25 to +50 °C (-13 to 122 °F)  
Rel. air humidity: 50 to 95% (non-condensing) |
| **Filter** | Inlet: 25 mic.  
Outlet: 3 mic.  
System: 10 mic. |
| **Weight** | approx. 850 kg  
1,874 lbs |
| **Length** | 2,250mm  
88.6 inch |
| **Width** | 1,170 mm  
46 inch |
| **Height** | 1,150 mm  
61 inch |
9.3 SAMPLING VALVE ADAPTER

DESCRIPTION
The adapter is developed to take oil samples of all Airbus A/C hydraulic systems (green, blue and yellow) as safely and carefully as possible.
It is developed in collaboration with Airbus.

PRODUCT FEATURES
- Safe oil sample taking for the operator directly on the A/C manifold
- By direct coupling to the needle of the manifold valve, proper taking of the oil sample is ensured without any pollution from the environment
- Appropriate for the valve 71190400010NCOA (A300, A310, A320, A330, A340) and D2428000C (A380)
- Regulable flow
- With detailed installation instructions and identification on the device
- Stable transport case with accessories included in the scope of delivery

BENEFITS
- Airbus certified
- User-friendly ergonomic setup and operation
- For hangar and outdoor usage
9.4 TEST EQUIPMENT FOR RAM-AIR TURBINE

DESCRIPTION
This test equipment is necessary to accomplish a functional test of the Ram-Air Turbine (RAT).

PRODUCT FEATURES
- Compact stainless steel construction
- Storage space for RAT-motor, cables and hoses in the test device
- Skydrol-resistant construction with sealed electrical chamber and safety glass cover plate
- RAT-motor available in two versions
- Operation with battery / mains or aircraft supply

OPTIONS
PGRAT1
- Test equipment for RAM-Air turbines, consisting of: Test equipment RAT (PGRAT1)

PGRAT1-1
- Test equipment for RAM-Air turbines, consisting of: Test equipment RAT (PGRAT1) and RAT-motor (RATMK Version 1)

PGRAT1-2
- Test equipment for RAM-Air turbines, consisting of: Test equipment RAT (PGRAT1) and RAT-motor (RATMK Version 2)

PGRAT1-1-RS
- Test equipment for RAM-Air turbines, consisting of: Test equipment RAT (PGRAT1) and RAT-motor (RATMK Version 1) and RAT safety interface kit (RSIK1)

PGRAT1-2-RS
- Test equipment for RAM-Air turbines, consisting of: Test equipment RAT: PGRAT1 and RAT-motor: RATMK Version 2 and RAT safety kit: RSIK1

STANDARD ACCESSORIES
- Hose l = 13 ft [4.0 m] with Aeroquip-Coupling with protective cap, [AE 95074 N]
- Hose l = 13 ft [4.0 m] with Aeroquip-Coupling with protective cap [AE 94186 P]
- Supply and test cable <PKL 730-1> for RAM-AIR pressure- and speed indicator and 28 V DC A/C supply
- Supply cable for 28 V DC A/C supply [PKL 730-2]
- Charging- and supply cable for test equipment RAT [range 90-260 V AC, 47 - 63 Hz] [PKL 730-3]
## AVAILABLE ACCESSORIES

- RAT motor: RATMK Version 1
- RAT motor: RATMK Version 2
- RAT safety Kit: RSIK1
- Collecting bin for RSIK1: ABRSIK1

## BENEFITS

The test device and RAT-motor are Airbus certified (PGRAT1, RATMK, RSIK1)

## TECHNICAL SPECIFICATION

### TEST EQUIPMENT FOR RAM-AIR TURBINE

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>PGRAT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions and weight</td>
<td>920 mm x 900 mm x 1,200 mm x 245 kg</td>
</tr>
<tr>
<td></td>
<td>36.2 inch x 35.4 inch x 47.2 inch x 540 lbs</td>
</tr>
<tr>
<td>Hydraulic parameter</td>
<td>Measurement circuit with loading throttle</td>
</tr>
<tr>
<td></td>
<td>High pressure filter with mechanic contamination indication, 6 mic</td>
</tr>
<tr>
<td></td>
<td>Oil relief valve G 1/4 &quot;</td>
</tr>
<tr>
<td>Measurements</td>
<td>Flow measurement, digital 1.3 - 40 gpm (5-150 lpm) Cl.1.0</td>
</tr>
<tr>
<td></td>
<td>Temperature indicator, analog 0 – 100 °C (32 – 212 °F) Cl.1.0</td>
</tr>
<tr>
<td></td>
<td>Pressure indicator, analog 0 – 3600 psi (0-250 bar) Cl.1.0</td>
</tr>
<tr>
<td></td>
<td>RAM-Air pressure indicator, digital 0 - 4000 psi (0-275 bar) Cl.1.0</td>
</tr>
<tr>
<td></td>
<td>RAM-Air speed indicator, digital 0 - 9999 rpm ± 2 rpm</td>
</tr>
</tbody>
</table>

### Applications

- A318
- A319ceo / A319neo
- A320ceo / A320neo
- A321ceo / A321neo
- A330-200 / -300
- A340-200 / -300 / -500 / -600
9.5 RAT SAFETY INTERFACE KIT

DESCRIPTION
Developed to protect aircraft components from damage during RAT ground test. This damage could occur when the gasket (drive shaft seal) of the RAT ground check motor fails.
The RAT Safety Interface Kit can be used in conjunction with all Airbus approved RAT Ground Check Motors.

PRODUCT FEATURES
- Airbus approved, Certificate-number: D29057
- Intermediate flange suitable for every RAT Ground Check Motor product
- Comes with detailed instructions
- Scope of delivery includes rugged transport case

BENEFITS
The RAT Safety Interface Kit can be used in conjunction with all Airbus approved RAT Ground Check Motors [Certificate-Number: D 29057].

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>RAT SAFETY INTERFACE KIT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model-No.</strong></td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Dimensions (Transport case)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Operation conditions</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Applications</td>
</tr>
</tbody>
</table>
TEST EQUIPMENT FOR RAM-AIR TURBINE

DESCRIPTION
This ground check motor, driven by a hydraulic ground power unit is necessary to accomplish a functional test of the Ram-Air Turbine (RAT).

PRODUCT FEATURES
- Aluminum light-weight construction
- Storage in the drawer of the test equipment RAT PGRAT1
- Equipment is available in two versions

OPTIONS
RATMK Version 1
- Supply and return hoses for the RAT-Motor are part of the delivery
- RAT-Motor is equipped with leak-free industrial couplings
- Appropriate to the RAT-Motor one end of the hose is equipped with a leak-free industrial couplings, the other end is equipped with standard Aeroquip couplings (AE 96997 M, AE 96996 P)
- Supply hose with integrated flow regulator
- Equivalent to RAT-Motor-Kit AGE 10600 A

RATMK Version 2
- No hoses for RAT-Motor
- RAT-Motor is equipped with standard Aeroquip couplings (AE 96997 M, AE 96996 P)

STANDARD ACCESSORIES
RATMK Version 1
- Supply hose with integrated flow regulator
- Return hose
- Leak-free industrial coupling for connecting the RAT-Motor
- Inlet coupling with protective cap, Aeroquip (AE 96997 M)
- Outlet coupling with protective cap, Aeroquip (AE 96996 P)
- Transport case

RATMK Version 2
- Rigid supply and return connections
- Inlet coupling with protective cap, Aeroquip (AE 96997 M)
- Outlet coupling with protective cap, Aeroquip (AE 96996 P)
- Transport case

AVAILABLE ACCESSORIES
RAT Safety interface kit: RSIK1
- Intermediate flange suitable for every RAT ground check motor product
- Scope of delivery includes rugged transport case

Collecting bin for RSIK1: ABRSIK1
- Serves as collecting bin for possible leakage of the RAT Safety interface kit
### TECHNICAL SPECIFICATION

#### TEST EQUIPMENT FOR RAM-AIR TURBINE

<table>
<thead>
<tr>
<th>Model-No. - Motor</th>
<th>RATMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Skydrol</td>
</tr>
<tr>
<td>Rated pressure</td>
<td>210 bar (3,000 psi)</td>
</tr>
<tr>
<td>Speed</td>
<td>6000 rpm</td>
</tr>
<tr>
<td>Max. speed</td>
<td>6500 rpm at min. 267 lb/inch (30 Nm)</td>
</tr>
<tr>
<td>Torque</td>
<td>≥ 46 Nm at 166 bar Diff.</td>
</tr>
<tr>
<td>Inlet temperature</td>
<td>-20 to + 75 °C, -4 to +165 °F</td>
</tr>
<tr>
<td>Sense of rotation</td>
<td>CW</td>
</tr>
<tr>
<td>Min. load</td>
<td>≥ 15 Nm at 5,000 rpm</td>
</tr>
<tr>
<td>Test pressure - static</td>
<td>Inlet 4,500 psi (310.3 bar) Outlet and Housing 250 psi (17.3 bar)</td>
</tr>
<tr>
<td>Hausing connections</td>
<td></td>
</tr>
<tr>
<td>RAT-Motor-inlet</td>
<td>MS 33656-16</td>
</tr>
<tr>
<td>RAT-Motor-outlet</td>
<td>MS 33656-20</td>
</tr>
<tr>
<td>Minimum performance data of the ground power unit</td>
<td></td>
</tr>
<tr>
<td>Version 1</td>
<td>Pressure: minimum 3,000 psi (210 bar) with pressure regulation Flow: minimum 40 gpm (150 lpm)</td>
</tr>
<tr>
<td>Version 2</td>
<td>Pressure: minimum 3,000 psi (210 bar) with pressure regulation Flow: Minimum 40 gpm (150 lpm) with pressure regulation Connections: Supply hoses minimum 20 ft (6 m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions and weight</th>
<th>RATMK Version 1</th>
<th>RATMK Version 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>1,200 mm 47.2 inch</td>
<td>700 mm 27.6 inch</td>
</tr>
<tr>
<td>Depth</td>
<td>800 mm 31.5 inch</td>
<td>450 mm 17.1 inch</td>
</tr>
<tr>
<td>Height</td>
<td>440 mm 17.3 inch</td>
<td>200 mm 7.9 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 39 kg 86 lbs</td>
<td>approx. 12 kg 26.5 lbs</td>
</tr>
</tbody>
</table>

#### Applications

- **A318**
  - A319ceo / A319neo
  - A320ceo / A320neo
  - A321ceo / A321neo
  - A321
  - A330-200 / -300
  - A340-200 / -300 / -500 / -600

- **A318**
  - A319ceo / A319neo
  - A320ceo / A320neo
  - A321ceo / A321neo
  - A330-200 / -300
  - A340-200 / -300 / -500 / -600

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**BENEFITS**

Test device and RAT-motor are Airbus certified: PGRAT1 (Certificate-Number D29065, D 29066)
10

LANDING GEAR

ATA CHAPTER 32
10.1 WHEEL AND BRAKE CHANGE EQUIPMENT (UNIVERSAL)

DESCRIPTION
Hydraulic wheel trolley for removal of wheels and brake drums on aircraft.

PRODUCT FEATURES
- Flexible and ergonomic wheel trolley for the easy removal of wheels and brake drums
- High lifting height (710 mm) makes it ideal for lifting e.g. wheels and brake drums off a transport wagon
- Adjustable lifting arms for wheel sizes ø 270–1300 mm
- Lifting arms with roller bearings for easy rotation of wheel into correct position
- Pedal operated pump leaving both hands free for working
- Hand operated dead man’s release for optimum safety whilst lowering
- Two swivel castors and two 360° revolving castors
- Skydrol-resistant paint [standard color: yellow RAL 1028]

AVAILABLE ACCESSORIES
Crane boom [WTK]  Bracket support assembly [24010-031-000]
BENEFITS

- User friendly ergonomic setup and operation
- Universal application
- On-site service

TECHNICAL SPECIFICATION

WHEEL AND BRAKE CHANGE EQUIPMENT (UNIVERSAL)

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>WTA500AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal load</td>
<td>350 kg</td>
</tr>
<tr>
<td>Max. height</td>
<td>1,897 mm / 74.7 inch</td>
</tr>
<tr>
<td>Min. height</td>
<td>1,180 mm / 46.5 inch</td>
</tr>
<tr>
<td>Wheel diameter</td>
<td>270 – 1,420 mm / 10.6 - 55.9 inch</td>
</tr>
<tr>
<td>Applications</td>
<td>Most of all narrow- and wide-body aircrafts, except B737</td>
</tr>
</tbody>
</table>
10.2 WHEEL AND BRAKE CHANGE EQUIPMENT

DESCRIPTION
Hydraulic wheel trolley for removal of wheels and brake drums on aircraft.

PRODUCT FEATURES
- Flexible and ergonomic wheel trolley for the easy removal of wheels and brake drums
- Fixed lifting arms
- Chain for easy securing of wheel during handling and transportation
- Hand operated lifting spindle
- Four swivel castors
- Skydrol-resistant paint (standard color: yellow RAL 1028)

AVAILABLE ACCESSORIES
- Tow-bar
- Crane boom

Bracket support assembly (24010-031-000)
BENEFITS

- User friendly ergonomic setup and operation
- Universal application
- On-site service

### TECHNICAL SPECIFICATION

#### WHEEL AND BRAKE CHANGE EQUIPMENT

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>MH12-005</th>
<th>MH13-003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal load</td>
<td>260 kg</td>
<td>260 kg</td>
</tr>
<tr>
<td></td>
<td>270 lbs</td>
<td>270 lbs</td>
</tr>
<tr>
<td>Max. height</td>
<td>1,350 mm</td>
<td>1,465 mm</td>
</tr>
<tr>
<td></td>
<td>53.1 inch</td>
<td>57.7 inch</td>
</tr>
<tr>
<td>Min. height</td>
<td>600 mm</td>
<td>980 mm</td>
</tr>
<tr>
<td></td>
<td>23.6 inch</td>
<td>38.6 inch</td>
</tr>
<tr>
<td>Wheel diameter</td>
<td>950 – 1,500 mm</td>
<td>820 - 1,500 mm</td>
</tr>
<tr>
<td></td>
<td>37.4 – 59 inch</td>
<td>32.3 – 59 inch</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>A300 / A310</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A318</td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
<td>A321 / A321neo</td>
</tr>
<tr>
<td></td>
<td>A320</td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A330</td>
<td>A330</td>
</tr>
<tr>
<td></td>
<td>A350 – 900 / -1000</td>
<td>A340-500 / -600</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B707 / B727 / B757 / B767 B777 / B787</td>
<td>B747-300 / -400 / -400ERF B767 B777</td>
</tr>
<tr>
<td>Other applications</td>
<td>DC – 10</td>
<td>MD11</td>
</tr>
<tr>
<td></td>
<td>MD – 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L – 1011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IL – 96</td>
<td></td>
</tr>
</tbody>
</table>
10.3 LANDING GEAR TRANSPORTATION DOLLY

DESCRIPTION
The Landing Gear Dolly has been specially designed for transportation and storage of A320 Family incl. neo main landing gears.

PRODUCT FEATURES
- Rigid steel frame
- Tow-bar for easy towing and moving
- Two swivel and two fixed castors
- Four landing gear clamps
- Skydrol-resistant paint

AVAILABLE ACCESSORIES
- Frame for MLG transportation with brakes and wheels

BENEFITS
- User friendly ergonomic setup and operation
- Universal application
- On-site service

TECHNICAL SPECIFICATION

LANDING GEAR TRANSPORTATION DOLLY

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>LGD11-001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319 / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320 / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321 / A321neo</td>
</tr>
<tr>
<td>NLG Configuration</td>
<td>Extended</td>
</tr>
<tr>
<td></td>
<td>Without wheels</td>
</tr>
<tr>
<td>MLG Configuration</td>
<td>Compressed</td>
</tr>
<tr>
<td></td>
<td>Without wheels</td>
</tr>
<tr>
<td></td>
<td>Without brakes</td>
</tr>
</tbody>
</table>
10.4 MAIN LANDING GEAR INSTALLATION TROLLEY

DESCRIPTION
The MLGTMULTI-1 is a one-base platform that efficiently uses changeable frame kits, to replace the main landing gears without wheels and brakes of various narrow body aircraft. This one-base platform makes the MLGTMULTI-1 a versatile, convenient, and cost-saving trolley choice for servicing the main landing gears on the most popular small aircraft in the world.

PRODUCT FEATURES
- One-base platform without frame kits
- Skydrol-resistant paint

STANDARD OPTIONS
- **MLGTMULTI-1-AC**: Electrically driven lifting
  Supply voltage: 3/ PE AC 380 - 240 V, 50 Hz or 3/ PC AC 440 - 480 V, 60 Hz, Cable length: 30 m
- **MLGTMULTI-1-AB**: Pneumatically driven lifting
  Explosion proofed according to NEC500: CI I DIV 2 GP D T3

BENEFITS
- User friendly ergonomic setup and operation
- Versatile application
- Outstanding accuracy
- On-site service
- Low total costs of ownership
TECHNICAL SPECIFICATION

MAIN LANDING GEAR TROLLEY

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>MLGTMULTI-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>10 kN</td>
</tr>
<tr>
<td>Weight</td>
<td>950 kg</td>
</tr>
<tr>
<td></td>
<td>2,094 lbs</td>
</tr>
<tr>
<td>Width</td>
<td>1,882 mm</td>
</tr>
<tr>
<td></td>
<td>74.1 inch</td>
</tr>
<tr>
<td>Length</td>
<td>2,893 mm</td>
</tr>
<tr>
<td></td>
<td>113.9 inch</td>
</tr>
<tr>
<td>Min. height</td>
<td>1,793 mm</td>
</tr>
<tr>
<td></td>
<td>70.6 inch</td>
</tr>
<tr>
<td>Longitudinal movement</td>
<td>± 175 mm</td>
</tr>
<tr>
<td></td>
<td>± 6.9 inch</td>
</tr>
<tr>
<td>Transverse movement</td>
<td>± 125 mm</td>
</tr>
<tr>
<td></td>
<td>± 4.9 inch</td>
</tr>
<tr>
<td>Yaw (rotation around)</td>
<td>± 4 °</td>
</tr>
<tr>
<td>Pitch (rotation around)</td>
<td>+ 7 ° (-3 °/+4 °)</td>
</tr>
<tr>
<td>Total lift</td>
<td>800 mm</td>
</tr>
<tr>
<td></td>
<td>31.5 inch</td>
</tr>
<tr>
<td>Towing speed with MLG</td>
<td>3 km/h</td>
</tr>
<tr>
<td></td>
<td>1.9 mph</td>
</tr>
<tr>
<td>Towing speed without MLG</td>
<td>6 km/H</td>
</tr>
<tr>
<td></td>
<td>3.73 mph</td>
</tr>
<tr>
<td>Admissible operating temperature</td>
<td>0 °C to +40 °C</td>
</tr>
<tr>
<td></td>
<td>32 °F to +104 °F</td>
</tr>
</tbody>
</table>

The MLGTMULTI-1 is an one-base platform. It can be used in conjunction with additionally available frame kits that are specifically tailored to each type of aircraft.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Aircraft</th>
<th>Base platform</th>
<th>Frame kit MLG</th>
<th>Frame kit NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus</td>
<td>A318, A319, A320, A321, A319neo, A320neo, A321neo</td>
<td>MLGTMULTI-1</td>
<td>MLGFA320</td>
<td>NLGFA320</td>
</tr>
<tr>
<td>Boeing</td>
<td>B737-600 to -900</td>
<td>MLGTMULTI-1</td>
<td>MLGFB737NG</td>
<td></td>
</tr>
<tr>
<td>Embraer</td>
<td>170/175, 190/195</td>
<td>MLGTMULTI-1</td>
<td>MLGFE1</td>
<td></td>
</tr>
</tbody>
</table>
**LANDING GEAR ACCESS STAND**

**DESCRIPTION**

This Landing Gear and Fuselage Access Stand was primary designed to handle all wide-body landing gear and nose gear applications. The access stand provides safe access to all maintenance locations of the main and nose landing gear.

For several aircraft types the stand in addition can be used to get access to several other maintenance access locations at the aircraft fuselage.

The base frame is designed to adjust to most wheel assembly configurations on main and nose landing gear. The hydraulic height adjustment, one hand lateral operation and full swivel and lock casters allow single technician placement and use.

**PRODUCT FEATURES**

- Anti slip, anti-fatigue ladder rungs
- Corrosion-resistant powder coat finish for longevity
- For increased safety and ease of mobility, the stand comes equipped with four corner-levelling jacks
- Designed and tested in accordance with ANSI-ASC A14.7 and BS EN 131.7
- Paddling material equipped
- Fall restraint anchor points on the upper ladder
- Controls: Hydraulic foot pump
- Ergonomic design
- High-grade materials
- One person movement
- Powder coated finish

**AVAILABLE ACCESSORIES**

- Air-powered pump
- Utilities package
- Side mount tow-bar
- Lift truck fork pockets

**APPLICATION POSSIBILITIES ON AIRBUS A320 (A319 / A321 CEO AND NEO)**

- Main gear
- Aft pressure bulkhead access panel
- Pitot probe tube inspections/ replacements
- Static port inspections/ replacements
- Trailing edge actuator inspections/ replacements

Attention: Usage examples only, validation of usage is under responsible of the operator. Further applications are available.
BENEFITS

- Flexible usage at different aircraft types and maintenance access points
- Safety and reliability
- Ergonomic design
- Unrivalled quality and durability
- Flexibility for use on a wide range of Airbus, Boeing and Embraer aircraft
- Rigorous inspection and testing
- Small footprint and greater geometry

TECHNICAL SPECIFICATION

LANDING GEAR ACCESS STAND

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>DF071592-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material type</td>
<td>Ladder: Steel Frame: Steel</td>
</tr>
<tr>
<td>Certifications</td>
<td>ANSI-ASC A14.7, BS EN 131.7</td>
</tr>
<tr>
<td>Dimensions (shipping)</td>
<td>2,210 mm x 2,438 mm 87 inch x 96 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>499 kg 1,100 lbs</td>
</tr>
<tr>
<td>Height</td>
<td>Low: 2,178 mm / 85.75 inch Extended: 3,534 mm / 139.125 inch</td>
</tr>
<tr>
<td>Foot Print</td>
<td>2,210 mm x 2,438 mm 87 inch x 96 inch</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>A300/ A310 A319/ A320/ A321ceo and neo A330 A340 A350</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B747, B757, B767, B777 B787, B787NG and MAX</td>
</tr>
<tr>
<td>Other applications</td>
<td>Embraer ERJ, Bombardier CR</td>
</tr>
</tbody>
</table>
10.6 AIRCRAFT WHEEL CHOCS

DESCRIPTION
The aircraft wheel chocks are manufactured from a solid rubber extrusion and feature a weather-resistant hand rope along with high visibility strips on each face of the chock.

PRODUCT FEATURES
- Solid rubber
- Heavy duty
- 1-metre hand rope
- High visibility strip on all three sides
- Non-slip design

BENEFITS
- Easy to handle
- Solid rubber extrusion
- Visible at night
- Suitable for all wheel sizes

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>NBWC-6</th>
<th>NBWC-9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 kg wheel chock</td>
<td>6 kg wheel chock</td>
</tr>
<tr>
<td>Variant</td>
<td>Suitable for medium/large wheels</td>
<td>Suitable for small/medium size wheels</td>
</tr>
<tr>
<td>Dimensions</td>
<td>250 mm x 220 mm x 235 mm</td>
<td>250 mm x 170 mm x 150 mm</td>
</tr>
<tr>
<td></td>
<td>9.8 inch x 8.7 inch x 9.3 inch</td>
<td>9.8 inch x 6.7 inch x 5.9 inch</td>
</tr>
</tbody>
</table>
10.7 AIRCRAFT STRUT & ACCUMULATOR SERVICE TOOL

DESCRIPTION
The aircraft strut and accumulator service tool is fully universal and can be used with any make and model aircraft.
The 800 psi and 3500 psi gauges features a pre-use accuracy check, perspex lens and protective rubber cover.
Equipped with a 2-meter length inflation hose allows the operator to undertake the desired high-pressure inflation task whilst remaining at a safe and secure working distance.
The unit consists of an inlet flow isolation valve with none return valve and an additional excess pressure valve, allowing optimum inflation pressures to be achieved.

PRODUCT FEATURES
- Calibrated accuracy ± 1 %
- EN837-1 Compliant
- Single scale dial
- Up to 3500 psi working pressure
- 100 mm diameter gauge
- Shatter proof lens
- Inflation & deflation capability
- Pre-use accuracy check
- Released with calibration test certificate

OPTIONS
- “Night glow” dial face which automatically illuminates the dial during dark environments
- Customer specific inflation hose lengths can be offered

BENEFITS
- Accurate strut inflation
- Easy operator visibility when in use
- Accurately adjustable pressures
- Safe working distance

TECHNICAL SPECIFICATION

AIRCRAFT STRUT & ACCUMULATOR SERVICE TOOL

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>SIC8000-001</th>
<th>SIC3500-001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variant</td>
<td>Low Pressure Strut &amp; Accumulator Service Tool</td>
<td>High Pressure Strut &amp; Accumulator Tool</td>
</tr>
<tr>
<td>Pressure Range</td>
<td>0-800 psi</td>
<td>0-3500 psi</td>
</tr>
</tbody>
</table>
**DESCRIPTION**

The mobile aircraft wheel handling dolly is designed to facilitate the storage and transportation of aircraft wheels or tyres. Offered as a single or double bay unit, the operator can easily place one or two wheels inside the frame for safe handling and manoeuvring. Equipped with four castor wheels (rear swivelling with footbrake) and a heavy-duty low-level loading tray, the task can be undertaken by a single person.

The aircraft wheels can be fully secured into the frame by positioning the drop-fit bar into the locators. Additional straps and restraints are not required. The unit is suited to the hangar or airport environment and offers additional user health & safety compliance when handling heavy aircraft wheels or tyre.

**PRODUCT FEATURES**

- Safe & efficient handling and moving of aircraft wheels & tyres
- Available as a single or double bay unit
- Fully mobile
- Heavy-duty low-level loading tray for one person use
- Castor wheels (rear swivelling with foot brake)
- Powder coat finish (RAL 1028 standard)
- Available to cover all size aircraft wheels and tyres
- Single or double wheel handling
- Manual handling is health and safety compliant

**BENEFITS**

- One person use
- Easy transportation of wheels or tyres
## TECHNICAL SPECIFICATION

### AIRCRAFT WHEEL & TYRE HANDLING

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>Variant</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBWS-2WB</td>
<td>2-Bay wide-body wheels</td>
<td>1,540 mm x 1,390 mm x 1,200 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60.6 inch x 54.7 inch x 47.2 inch</td>
</tr>
<tr>
<td>NBWS-1WB</td>
<td>1-Bay wide-body wheel</td>
<td>1,540 mm x 720 mm x 1,200 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60.6 inch x 28.3 inch x 47.2 inch</td>
</tr>
<tr>
<td>NBWS-2NB</td>
<td>2-Bay narrow-body wheels</td>
<td>1,440 mm x 1,190 mm x 1,200 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>56.7 inch x 24.4 inch x 47.2 inch</td>
</tr>
<tr>
<td>NBWS-1NB</td>
<td>1-Bay narrow-body wheel</td>
<td>1,440 mm x 620 mm x 1,200 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>56.7 inch x 24.4 inch x 47.2 inch</td>
</tr>
</tbody>
</table>
11

WASTE LINE CLEANING

ATA CHAPTER 38
WASTE LINE CLEANING

DESCRIPTION
The importance of proper vacuum waste tube maintenance is obvious; to avoid unscheduled events and lavatory malfunctions. The Waliclean has been developed as full automatic vacuum waste line cleaning systems for a wide range of aircraft types. Waliclean is the outcome of a joint development project of Austrian Airlines (Lufthansa Group), vacuum waste tube maintenance technicians (inventors) with decades of specific work experience and TEST-FUCHS a leading manufacturer of high-tech GSE and aerospace test equipment. The main targets of the development have been a very cost effective operation (without the need of costly special chemicals), a easy and fast processing and in a safe and predictable way (best possible cleaning results independent of operator experience). After pushing “start” no further action required until cleaning is completed – A cleaning during overnight stops is possible.

PRODUCT FEATURES
- Fully automatic cleaning process (no monitoring required)
- Automatic leakage test of vacuum waste line system before cleaning process start-up
- Implementation during standard maintenance tasks (e.g. Line Maintenance Check)
- Preselectable cleaning time enables high flexibility, perfect cleanliness is provided within a few hours
- Implementation for already significantly clogged waste lines as well as for preventive cleaning
- Environmental friendliness is ensured by usage of water and citric acid as cleaning agents

OPTIONS
- Continuous-flow heater
- Motor drive for hose reel
- Tool box with drawer and storage shelf for citric acid
- Spring-loaded chassis
- Cover paint alternative to standard
- Connection for waste service truck
- Drain pump

- 2 electronically controlled pumps
- 2 pressure sensors (supply and return) 2 EA strain relief for cleaning hoses
- Large heated reservoir (100 gal)
- Permanent automatic observation and regulation of the pressure (vacuum)
- Automatic change of flow direction (wide-body)
- Concurrent cleaning of two systems (wide-body)
- Heated HEPA (High-efficiency particulate absorption) filter for reservoir air vent

AVAILABLE ACCESSORIES
- Dust cover
- Additional waste water hose 10 m (33 ft) with couplings and caps, stored in a separate shelf between the fork lift access points
STANDARD ACCESSORIES

- 1 EA water supply hose, 20 m (65 ft), on hose reel with standard claw coupling (GEKA)
- 3 EA cleaning hose, 20 m (65 ft) each, on hose reel with couplings
- 2 EA blanking caps for cleaning hose
- 2 EA A/C sensor head, each with a sensor cable (40 m [130 ft]) on cable reel for measurement and monitoring
- 1 EA A/C adapter 0.4 m, 0° to connect cleaning hoses to the vacuum waste line system
- 1 EA A/C adapter 0.4 m, 90° to connect cleaning hoses to the vacuum waste line system
- 1 EA electrical connection cable, 20 m (65 ft), with CEE-plug (32 A)
- 1 EA rope, 20 m (65 ft), with carabiner to lift the cleaning hoses up to cabin height and bag for storage
- 2 EA strain relief for cleaning hoses
- 3 EA blanking caps A/C Waste Line (in case, leaking toilets can be repaired and pipes can be blanked off)
- 1 EA waste water hose, 10 m (33 ft), with couplings and caps, stored in an extractable drawer
- 1 EA ball valve “SUPPLY” (to avoid leaking of cleaning fluid in the A/C while connecting or disconnecting)
- 1 EA ball valve “RETURN” (to avoid leaking of cleaning fluid in the A/C while connecting or disconnecting)
- 2 bags of citric acid (25 kg each) for initial cleaning

BENEFITS

- Cleaning during overnight stops is possible
- User friendly ergonomic setup and operation
- Environmental friendliness
- Fully automatic cleaning process
- Minimized service time
- On-site service
- Everything needed is stowed on the WLC1
- Certified for the use on A320 (all), A330/ A340, A350, A380
## TECHNICAL SPECIFICATION

### WASTE LINE CLEANING

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>WLC1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>5 to 50 °C (41 to +104 °F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>0 to 60 °C (32 to +140 °F)</td>
</tr>
<tr>
<td>Noise emission</td>
<td>max. 63 dB (A) in 1 m distance</td>
</tr>
<tr>
<td><strong>Electrical supply</strong></td>
<td></td>
</tr>
<tr>
<td>Main supply</td>
<td>3 / PE AC 50/60 Hz 380 – 480 V</td>
</tr>
<tr>
<td>Nominal current</td>
<td>max. 21 A (max. 32 A with option B)</td>
</tr>
<tr>
<td>Power</td>
<td>14.6 kVA (max. 22.1 kVA with option B)</td>
</tr>
<tr>
<td>Preliminary fuse</td>
<td>25 A gL (max. 32 A gL with option B)</td>
</tr>
<tr>
<td>(electricity- and performance characteristics at 400 V 50 Hz)</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions and weight</strong></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>2,850 mm (112.2 inch)</td>
</tr>
<tr>
<td>Width</td>
<td>1,600 mm (63.0 inch)</td>
</tr>
<tr>
<td>Height</td>
<td>1,500 mm (59.1 inch)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 1,200 kg approx. 2,646 lbs</td>
</tr>
<tr>
<td><strong>Airbus applications</strong></td>
<td></td>
</tr>
<tr>
<td>A318 A319ceo / A319neo A320ceo / A320neo A321ceo / A321neo A330 A350 A380</td>
<td></td>
</tr>
<tr>
<td><strong>Boeing applications</strong></td>
<td></td>
</tr>
<tr>
<td>B737 B767 B747 B777 B787</td>
<td></td>
</tr>
</tbody>
</table>
11.2 MOBILE LAVATORY VACUUM BLOCKAGE REMOVER

DESCRIPTION
No more grounding of the A/C - The Vacuum Toilet Blockage Remover is an all-purpose equipment to clear and remove pipeline blockage of vacuum-lavatory systems on aircraft. It has been developed for daily use after the aircraft returns from a flight and reports a blockage. By negative pressure the blockage in the waste line can be sucked out. The system requires short time and reduces the downtime of aircraft.

PRODUCT FEATURES
- All-purpose equipment to clear and remove pipeline blockage of vacuum-lavatory systems on A/C
- By negative pressure the blockage in the waste line will be removed
- Flexible by setup on a car trailer
- Connection for tank drainage with waste service truck
- For indoor and outdoor use
- Unit prepared for worldwide operation (universal motor)
- Big reservoir for several applications
- Unit can be used either in electric mode or diesel mode
- Diesel aggregate gives independence of electric supply
- Simple, manual operation

OPTIONS
Transport options:
- Standard chassis
- Trailer platform
- Installation into van

STANDARD ACCESSORIES
Accessory adapter waste tank drain:
Adapter 4 inch waste drain and 2 x 2 m 4 inch suction hose with DIN100 integration

BENEFITS
- Cleaning during overnight stops is possible
- User friendly ergonomic setup and operation
- Environmental friendliness
- Fully automatic cleaning process
- Minimized service time
- On-site service
- Everything needed is stowed on the WLC1
- Certified for the use on A320 (all), A330/ A340 (all), A350 (all), A380 (all)
TECHNICAL SPECIFICATION

MOBILE LAVATORY VACUUM BLOCKAGE REMOVER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>VTBR2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>4,200 mm x 1,860 mm x 2,050 mm 165.4 inch x 73.2 inch x 80.7 inch</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 1350 kg / 2.976 lbs</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>5 to 40 °C 41 to 104 °F</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>0 to 60 °C 32 to 140 °F</td>
</tr>
<tr>
<td>Air humidity</td>
<td>5 to 90 % (non-condensing)</td>
</tr>
<tr>
<td>Altitude</td>
<td>max. 2,600 mmSL (8,530 ft)</td>
</tr>
<tr>
<td>Mains supply</td>
<td>3/Pe AC 50/60Hz 380-480 V</td>
</tr>
<tr>
<td>Power</td>
<td>3.7 kVA</td>
</tr>
<tr>
<td>Performance of vacuum pumps</td>
<td>-0.3 to -0.85 bar</td>
</tr>
<tr>
<td>Tank volume</td>
<td>300 l 79 USgal</td>
</tr>
<tr>
<td>Diesel-engine electrical generator</td>
<td>Cubic capacity 442 ccm Consumption Approx. 1.2 l / h (0.3 USgal)</td>
</tr>
<tr>
<td>Tank content</td>
<td>27 l 7 USgal</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>A318 A319neo A320neo A321neo A330/ A340 A350 A380</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B737 B767 B747 B777 B787</td>
</tr>
</tbody>
</table>
11.3 WASTE WATER TRAILER FOR WLC1

DESCRIPTION
The Waste Water Trailer is developed for easy, clean and comfortable transport of WLC1’s cleaning fluid with optional dosage unit for automatic neutralization.

PRODUCT FEATURES
- Integrated pump to drain WLC1 and itself
- Acid- and alkali-resistant design
- Easy maneuverability trailer with forklift access points
- 20 m power connection cable

OPTIONS
- Fully automatic dosage and injection of caustic soda for neutralization of cleaning fluid
- Indicator lights to show status of neutralization
- Container for dosage pump supply

A wide range of additional options is available.

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>WWT1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic parameter</td>
<td>Max. waste water tank capacity: 1500 l (396 USgal)</td>
</tr>
<tr>
<td>Electrical supply</td>
<td>3 / PE AC 50 / 60 Hz 380 to 480 V</td>
</tr>
<tr>
<td>(requirements)</td>
<td></td>
</tr>
</tbody>
</table>
| Dimensions (length x width x height) | 3,200 mm x 1,800 mm x 1,700 mm  
125.9 inch x 70.8 inch x 66.9 inch  |
| Measurement        | pH-value measurement |
| Operating conditions| Operating temperature: 5 to 45 °C (41 to 113 °F)  
Storage temperature: 0 to 60 °C (32 to 140 °F)  
Usage: In a non-explosive area  
Noise emission: max. 70 dB (A) in 1 m (39.4 inch) distance  |
| Airbus applications| A318  
A319ceo/ A319neo  
A320ceo/ A320neo  
A321ceo/ A321neo  
A330/ A340  
A350  
A380  |
| Boeing applications| B737, B767, B747, B777, B787  |
12

FUSELAGE
ATA CHAPTER 53
The patent protected IglooMX Fuselage Shelter is the ideal tool for fuselage repair tasks. This shelter can be “docked” to the damaged portion of the fuselage to create a fully controlled environment. It is also a very useful tool when any maintenance work is being undertaken in the cargo bay or for repairs around the door entry areas.

The IglooMX Fuselage Shelter is designed to provide a “hand-in-glove” fit against the fuselage. It is supplied with flexible fabric flanges that can be taped to the body of the aircraft to prevent any ingress of dust or moisture. A similar seal is created between the base tubes of the shelter and the ground.

Optional accessories include air-filtration, dehumidification and temperature control. Positive pressure control is also available if required. Ducts are provided as standard to cater for the necessary air-conditioning equipment.

A lighting kit is available on request; however, this is generally only required for night time work as the shelter fabric allows for very good light transmission.

In addition, to composite repair work, the fuselage shelter may be used for window repairs, paint work and aircraft livery.

These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years.

The IglooMX is supplied in a storage bag on wheels, making it easy to move around on the apron or in the hangar. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

The IglooMX kit can be inflated in under 5 minutes and deflated and stored away in approximately 20 minutes.

**PRODUCT FEATURES**

- Installation Crew: four persons
- Inflation time: five minutes
- Folding and re-packing time: 20 minutes
- Strong but lightweight for easy handling
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 25 knots
- 20 year proven track record with leading airlines, airframers and MRO’s
**AVAILABLE ACCESSORIES**

- Air-conditioning
- Air-filtration package
- Lighting set on tripods
- Dehumidifier
- Water filled ballast bag kit

**BENEFITS**

- Can be branded with airline logo
- No previous training required
- Provides privacy from passengers during maintenance
- Can be powered using a 5 kVA generator

---

**TECHNICAL SPECIFICATION**

**FUSELAGE SHELTER**

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>890136</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated (maximal)</td>
<td>6,500 mm x 5,400 mm x 6,100 mm</td>
</tr>
<tr>
<td></td>
<td>255.9 inch x 212.6 inch x 240.2 inch</td>
</tr>
<tr>
<td>Dimensions (stored)</td>
<td>1,400 mm x 5,400 mm x 6,100 mm</td>
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<tr>
<td></td>
<td>55.1 inch x 212.6 inch x 240.2 inch</td>
</tr>
<tr>
<td>Packaged weight</td>
<td>172 kg</td>
</tr>
<tr>
<td></td>
<td>379.2 lbs</td>
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<tr>
<td>Temperature ranges</td>
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</tr>
<tr>
<td></td>
<td>[-22 °F to +158 °F]</td>
</tr>
<tr>
<td>Inflation device</td>
<td>2 H.P. Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V or 220 V models available</td>
</tr>
<tr>
<td>Inflation device</td>
<td>2 H.P. Electric blower</td>
</tr>
<tr>
<td>Applications</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319ceo/ A319neo</td>
</tr>
<tr>
<td></td>
<td>A320ceo/ A320neo</td>
</tr>
<tr>
<td></td>
<td>A321ceo/ A321neo</td>
</tr>
</tbody>
</table>
12.2 IGLOOMX NOSE SHELTER

DESCRIPTION

When your aircraft has been damaged by a bird-strike, lightning-strike or a collision on the apron, it can take a considerable amount of time to source an available hangar to undertake the necessary repairs. The patent protected IglooMX Inflatable Nose Shelter system provides the ideal solution for such events.

This “hangar-in-a-bag” system reduces downtime to a minimum and saves time and money on hangar space rental and towing charges. The Nose Shelter may be used for multiple purposes including windshield replacement, radome composite repairs and nose landing gear maintenance or replacement.

The IglooMX is small enough to ship as part of the fly-away kit. It is inflated and “docked” around the front of the aircraft by following the simple installation instructions provided. Inflation takes less than five minutes with a crew of four to six people.

The Nose Shelter has plenty of space internally for scaffolding, scissors-lift or boom-lift and is supplied complete with heating and filtration ducts.

Once in place, the shelter system will boost your maintenance team’s productivity by providing a warm and safe environment in which to work.

These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tearing resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years.

The IglooMX kit can be deflated and stored away in approximately 20 minutes.

PRODUCT FEATURES

- Installation Crew: 4-6 persons
- Inflation time: 5 minutes
- Folding and re-packing time: 20 minutes
- Strong but lightweight for easy handling
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 25 knots
- 20 years proven track record with leading airlines, airframers and MRO’s
AVAILABLE ACCESSORIES

- Ramp heater
- Air-conditioning
- Lighting set on tripods
- Reusable shipping crate
- Water filled ballast bag kit
- Camcleaner Air-Filtration package
- Dehumidifier package

BENEFITS

- Can be branded with airline logo
- No previous training required
- Provides privacy from passengers during maintenance
- Can be powered by using a 5 kVA generator

TECHNICAL SPECIFICATION

NOSE SHELTER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>890133</th>
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</thead>
<tbody>
<tr>
<td>Dimensions inflated (maximal)</td>
<td>6,500 mm x 9,800 mm x 7,400 mm</td>
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<tr>
<td></td>
<td>255.9 inch x 385.8 inch x 291.3 inch</td>
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<td>Dimensions (stored)</td>
<td>1,500 mm x 1,100 mm x 1,100 mm</td>
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<tr>
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<td>59 inch x 43.3 inch x 43.3 inch</td>
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<td>Packaged weight</td>
<td>200 kg</td>
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<td></td>
<td>440.9 lbs</td>
</tr>
<tr>
<td>Temperatures ranges</td>
<td>can be used from -30 °C to +70 °C</td>
</tr>
<tr>
<td></td>
<td>[-22 °F to +158 °F]</td>
</tr>
<tr>
<td>Inflation device</td>
<td>2 H.P. Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V or 220 V models available</td>
</tr>
<tr>
<td>Applications</td>
<td>A318</td>
</tr>
<tr>
<td></td>
<td>A319ceo / A319neo</td>
</tr>
<tr>
<td></td>
<td>A320ceo / A320neo</td>
</tr>
<tr>
<td></td>
<td>A321ceo / A321neo</td>
</tr>
</tbody>
</table>
MEWP SHELTER

DESCRIPTION
When your aircraft has been damaged by a bird-strike, lightning-strike or a collision on the apron, it can take a considerable amount of time to source an available hangar to undertake the necessary repairs. The inflatable Mobile Elevated Work Platform (MEWP) Shelter system provides the ideal solution for such events.

This universal shelter system reduces downtime to a minimum and saves time and money on hangar space rental and towing charges. The MEWP Shelter will be tailored to the available Elevated Work Platforms.

The MEWP Shelter is small enough to ship as part of the fly-away kit. Inflation takes only 2 minutes with a crew of two people and stays inflated even without further energy supply.

The shelter can be used to get protected access to many different aircraft areas to access the appropriate area from above, below or the side.

Once in place, the shelter system will boost your maintenance team’s productivity by providing a safe environment in which to work.

These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years.

The MEWP Shelter is supplied in a storage box, making it easy to move around on the apron. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

PRODUCT FEATURES
- Installation Crew: two persons
- Inflation Time: two minutes
- Folding and re-packing time: five minutes
- Strong but lightweight for easy handling
- Extremely high strength-to-weight ratio
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 20 knots
OPTIONS

- Dehumidifier
- Air filtration
- Temperature control and positive pressure
- Replacement blower

BENEFITS

- Tailormade for use on existing and available elevated work platforms
- Can be branded with airline logo
- No previous training required
- Provides privacy from passengers during maintenance

TECHNICAL SPECIFICATION

MEWP SHELTER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>892019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated (example only)</td>
<td>3,300 mm x 2,000 mm x 2,500 mm</td>
</tr>
<tr>
<td></td>
<td>129.9 inch x 78.7 inch x 98.4 inch</td>
</tr>
<tr>
<td>Dimensions (stored) (example only)</td>
<td>1,200 mm x 800 mm x 1,000 mm</td>
</tr>
<tr>
<td></td>
<td>47.2 inch x 31.5 inch x 39.4 inch</td>
</tr>
<tr>
<td>Packaged weight</td>
<td>100 kg</td>
</tr>
<tr>
<td></td>
<td>220.46 lbs</td>
</tr>
<tr>
<td>Temperatures ranges</td>
<td>can be used from -30 °C to +70 °C (-22 °F to +158 °F)</td>
</tr>
<tr>
<td>Inflation device</td>
<td>Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
</tbody>
</table>
INFLATABLE MAINTENANCE HANGAR

DESCRIPTION

When your aircraft has been damaged by a bird-strike, lightning-strike or a collision on the apron, it can take a considerable amount of time to source an available hangar to undertake the necessary repairs. The Inflatable Maintenance Hangar shelter system provides the ideal solution for such events. This “hangar-in-a-bag” system reduces downtime to a minimum and saves time and money on hangar space rental and towing charges. The Inflatable Maintenance Hangar may be used for multiple purposes including scheduled and unscheduled maintenance, engine or landing gear replacement.

The shelter is small enough to ship as part of the fly-away kit. It is inflated by following the simple installation instructions provided. Inflation takes less than one hour with a crew of about 6 people. The inflatable Maintenance Hangar has plenty of space internally for scaffolding, scissors-lift or boom-lift and is supplied complete with heating and filtration ducts. Once in place, the shelter system will boost your maintenance team’s productivity by providing a safe environment in which to work.

These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years.

The shelter is supplied in storage bags on wheels, making it easy to move around on the apron. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package. The Inflatable Maintenance Hangar is available in different sizes.

PRODUCT FEATURES

- Installation Crew: six persons
- Inflation Time: 60 minutes
- Folding and re-packing time: 90 minutes
- Strong but lightweight for easy handling
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 20 knots
- 20 year proven track record of different maintenance shelters with leading airlines and MRO’s
- Electrical blower (110 V or 220 V)

AVAILABLE ACCESSORIES

- On-site repair kit
- Installation instructions
OPTIONS
- Ramp heater
- Air-conditioning
- Lighting set on tripod-jacks
- Replacement blower
- Reusable shipping crate
- Water filled ballast bag kit
- Camcleaner air-filtration package
- Dehumidifier package

BENEFITS
- Different sizes available – can be customized to the individual needs
- Suitable for use on smaller aircraft and helicopter types (civil and military)
- No previous training required
- Provides privacy from passengers during maintenance
- Can be powered by using a 5 kVA generator
- Can be branded with airline logo

TECHNICAL SPECIFICATION

INFLATABLE MAINTENANCE HANGAR

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>89XXA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated (example only)</td>
<td>Outside 24,000 mm x 21,000 mm x 11,000 mm 944.9 inch x 326.8 inch x 433.1 inch&lt;br&gt;Inside 21,000 mm x 21,000 mm x 9,000 mm&lt;br&gt;826.8 inch x 826.8 inch x 354.3 inch</td>
</tr>
<tr>
<td>Inflation device</td>
<td>Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
<tr>
<td>Temperature ranges</td>
<td>Can be used from -30° C to +70° C&lt;br&gt;-22° F to +158° C</td>
</tr>
<tr>
<td>Applications</td>
<td>On smaller aircraft and helicopter types (civil or military)&lt;br&gt;Useable also for partial aircraft coverage - e.g. A320 family wing</td>
</tr>
</tbody>
</table>
12.5 HANGAR DOOR INFILL

DESCRIPTION
Maintenance hangar space is a rare resource. In many cases the available hangar resources are too tight for the number of aircraft to be maintained or even too small for the appropriate aircraft type. In these cases it would be beneficial to put only parts of the aircraft into the hangar. Unfortunately usually the hangar would need to be modified with an iris door. Such permanent modifications take long time, are expensive and in some cases need several permissions under building law. Our Hangar Door Infill is an easy, cost effective, flexible and fully reversible solution to create an iris door in the hangar. Every Hangar Door Infill will be tailored to the appropriate hangar environment and is available at very short lead-time. It is small enough to ship as part of the fly-away kit. Inflation takes only 2 minutes with a crew of 2-3 people. Once in place, the shelter system will boost your maintenance team’s productivity by providing a safe environment in which to work. These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years. The Hangar Door Infill is supplied in a storage box. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

PRODUCT FEATURES
- Maximises hangar space
- Controls the temperature within the hangar
- No changes to the existing door frame required
- Installation crew: 2-3 persons
- Inflation time: 2 minutes
- Folding and re-packing time: 5 minutes
- Strong but lightweight for easy handling
- Extremely high strength-to-weight ratio
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 20 knots

AVAILABLE ACCESSORIES
- On-site repair kit
- Installation instructions
- Electrical blower (110 V or 220 V)
- Plastic box
OPTIONS
Customer logo application

BENEFITS
- Flexible and fully reversible solution
- No permanent hangar modification required, no need in permissions under building law
- Tailormade for use on existing hangar doors
- Can be branded with airline logo
- No previous training required

TECHNICAL SPECIFICATION

HANGAR DOOR INFILL

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>892XX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated (example only)</td>
<td>7,300 mm x 6,700 mm x 700 mm</td>
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<tr>
<td>Dimensions stored (example only)</td>
<td>1,200 mm x 800 mm x 1,000 mm</td>
</tr>
<tr>
<td>Inflation device</td>
<td>Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
<tr>
<td>Temperature ranges</td>
<td>Can be used from -30° C to +70° C</td>
</tr>
<tr>
<td>Applications</td>
<td>Tailormade for existing hangars for use on all customer defined aircraft types</td>
</tr>
</tbody>
</table>
DESCRIPTION
Maintenance hangar space is a rare resource. In many cases the available hangar resources are too tight for the number of aircraft to be maintained or even too small for the appropriate aircraft type. In these cases it would be beneficial to put only parts of the aircraft into the hangar.
Hangars with Iris Doors are an adequate solution to win additional capacity – but Iris Doors are designed for specific aircraft types or at least fuselage diameters and need adequate protection bumpers to avoid damages on the fuselage. The inflatable Iris Door Infill solves these problems. During inflation it closes the gap between the fuselage and the hangar iris with fabrics and air only. The fuselage is protected while the hangar is fully sealed.
Every Iris Door Infill will be tailored to the appropriate hangar environment and is available at very short lead-time. It is small enough to ship as part of the fly-away kit. Inflation takes only 2 minutes with a crew of 2-3 people. Once in place, the system will boost your maintenance team’s productivity by providing a safe environment in which to work. These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years. The Iris Door Infill is supplied in a storage box. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

PRODUCT FEATURES
- Maximises hangar space
- Controls the temperature within the hangar
- No changes to the existing door frame required
- Installation crew: 2-3 persons
- Inflation time: 2 minutes
- Folding and re-packing time: 5 minutes
- Strong but lightweight for easy handling
- Extremely high strength-to-weight ratio
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 20 knots

AVAILABLE ACCESSORIES
- On-site repair kit
- Installation instructions
- Electrical blower (110 V or 220 V)
- Plastic box
## BENEFITS

- Flexible and fully reversible solution
- Tailormade for use on existing hangar doors
- Easily installation process
- Can be permanently inflated and fixed for use when required
- No previous training required

## TECHNICAL SPECIFICATION

### IRIS DOOR INFILL

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>892XY</th>
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</thead>
<tbody>
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<td>Dimensions inflated (example only)</td>
<td>4,600 mm x 4,500 mm x 220 mm 181.1 inch x 177.2 inch x 8.7 inch</td>
</tr>
<tr>
<td>Inflation device</td>
<td>Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
<tr>
<td>Temperature ranges</td>
<td>Can be used from -30° C to +70° C -22° F to +158° C</td>
</tr>
<tr>
<td>Applications</td>
<td>Tailormade for existing hangars for use on all customer defined aircraft types</td>
</tr>
</tbody>
</table>
**DESCRIPTION**

Maintenance hangar space is a rare resource. Especially the blockage of hangars for small repairs or modifications with low man-power usage is ineffective. Nevertheless some of the small repairs and modifications e.g. at the Wifi Antenna need a protected environment. Such situation can be easily solved with the use of the Wifi Antenna Shelter. This shelter will be inflated on top of the fuselage and fixed with belts around the fuselage to stay in place. Access to the shelter can be gained via mobile access equipment (e.g. high-lifter, mobile dockings or ladders). Once in place, the shelter system will boost your maintenance team’s productivity by providing a safe environment in which to work. These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years. The Wifi Antenna Shelter is supplied in a storage box. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

**PRODUCT FEATURES**

- Installation crew: 2 persons
- Inflation time: 2 minutes
- Folding and re-packing time: 5 minutes
- Can stay inflated without further air supply
- Strong but lightweight for easy handling
- Extremely high strength-to-weight ratio
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Can withstand windspeeds of up to 20 knots

**OPTIONS**

- Dehumidifier
- Air filtration
- Temperature control
- Replacement blower
- Logo application
BENEFITS

- Eliminates the need for a hangar
- Lightweight, compact & portable
- Quick installation & deinstallation time
- Can be branded with airline logo
- No previous training required
- Provides privacy from passengers during maintenance

TECHNICAL SPECIFICATION

WIFI ANTENNA SHELTER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>890184</th>
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</thead>
<tbody>
<tr>
<td>Dimensions inflated (example only)</td>
<td>4,000 mm x 3,200 mm x 2,600 mm 157.5 inch x 125.9 inch x 102.4 inch</td>
</tr>
<tr>
<td>Dimensions stored</td>
<td>1,200 mm x 800 mm x 1,000 mm 47.2 inch x 31.5 inch x 39.4 inch</td>
</tr>
<tr>
<td>Inflation device</td>
<td>Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
<tr>
<td>Temperature ranges</td>
<td>Can be used from -30° C to +70° C -22° F to +158° C</td>
</tr>
<tr>
<td>Applications</td>
<td>Use on a wide range of aircraft types</td>
</tr>
</tbody>
</table>
DESCRIPTION
This new and innovative unit will allow for the safe removal and installation of the nose cowl without the need for an overhead crane.

The Nose Cowl Dolly is able to handle the aircraft nose cowls on a variety of aircraft engines.

PRODUCT FEATURES
- Ready to ship AOG unit
- Lightweight and compact shipping configuration
- Caster details: 10 inch with brakes and swivel
- High-grade materials
- Padding material
- One Person movement
- Material type: Aluminum
- Powder coated finish

BENEFITS
- Safety and reliability
- Ergonomic design
- Unrivalled quality and durability
# TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
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</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminum</td>
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| Footprint       | 2,134 mm x 2,737 mm  
                 | 84.0 inch x 107.75 inch |
| Height          | Variable    |
| Weight          | 68 kg       
                 | 150 lbs     |
| Foot Print      | 2,134 mm x 2,737 mm  
                 | 84 inch x 107.75 inch |
| Shipping Dimensions | 447 mm x 699 mm x 2,417 mm  
                      | 17.56 inch x 27.5 inch x 95.125 inch |
| Certifications  | ANSI-ASC A14.7, BS EN 131.7 & CE |
14

POWER PLANT

ATA CHAPTER 71
14.1 ENGINE CHANGE SYSTEM

DESCRIPTION
The COBRA Engine Change System has been designed to ensure a fast engine change and to minimize operational failure and technical risks. This offers you tremendous benefits by reducing your costs through minimal aircraft downtimes. Your maintenance team has been waiting for this technology — now it is here at HYDRO.

STANDARD CHARACTERISTICS
- Universal, innovative engine change system
- Applicable to aircraft with wing-mounted engines
- Interchangeable adapters for flexible and universal handling of engine dollies, cradles and shipping stands
- Accessories available for multi-purpose applications
- Suitable for a wide range of aircraft

PRODUCT FEATURES
- Universal, innovative engine change system for wing-mounted engines
- Interchangeable adapters for flexible and universal handling of engine dollies, cradles and engine transportation stands
- Semi-automatic lifting of engine, dolly and cradle or transportation stand
- Master and an interchangeable slave unit connected with a cable
- 4 pillars: each pillar can be controlled independently via a mobile panel
- Movement in 3 axis
- Suitable for a wide range of aircraft

AVAILABLE ACCESSORIES
- Transportation trailer with or without diesel power unit
- Spare part kit
- Load cell calibration kit
- Diesel power unit
- Flexible and interchangeable adapter concept for most common narrow-body and wide-body aircraft*

*For Leap-1A application a special shift beam will be required
Benefits

- Airbus and Boeing approved
- Up to 70% time saving for engine changes (compared to bootstrap)
- Short amortization period on investment cost
- Protects the aircraft, engine and operator with various safety features
- Easy operation
- On-site service

Technical Specification

Engine Change System

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>Performance</th>
<th>MOVABILITY</th>
<th>Weight</th>
</tr>
</thead>
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<td></td>
<td>Nominal capacity</td>
<td>Max. horizontal movement</td>
<td>Weight master</td>
</tr>
<tr>
<td></td>
<td>16.3 t (36,000 lbs)</td>
<td>± 120 mm (4 inch)</td>
<td>1,200 kg (2,645 lbs)</td>
</tr>
<tr>
<td></td>
<td>Max. lift stroke</td>
<td>Max. transversal movement</td>
<td>Weight slave</td>
</tr>
<tr>
<td></td>
<td>Long pillar</td>
<td>± 150 mm (6 inch)</td>
<td>1,200 kg (2,645 lbs)</td>
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<tr>
<td></td>
<td>Short pillar</td>
<td>5 mm/sec or 10 mm/sec (fast mode)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lifting speed</td>
<td>0.2 inch/sec or 0.5 inch/sec (fast mode)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply</td>
<td>Max. inclination longitudinal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 – 480V; 50 – 60 Hz</td>
<td>10°</td>
<td></td>
</tr>
</tbody>
</table>

- Long pillar: 2,800 mm (110 inch)
- Short pillar: 1,700 mm (67 inch)
- Lifting speed: 5 mm/sec or 10 mm/sec (fast mode)

TECHNICAL SPECIFICATION
14.2 ENGINE PEDESTAL SET

DESCRIPTION
Engine Pedestal Sets (EPS) are multi-purpose systems which can be used for various engine types from different engine manufacturers.
For each new engine combination only a new adapter set is required while the pedestals are universal and used for any combination.
The basic set consists of two pedestals used at the front and two pedestals used at the rear of the engine. Due to the universal application of the basic set less storage space is required.

PRODUCT FEATURES
- Consists of two pedestals used at the front and two pedestals used at the rear engine

AVAILABLE ACCESSORIES
- Spring loaded ball castors for easy positioning of pedestals

BENEFITS
- Universal application
- Cost savings
- Space savings
- On-site service

TECHNICAL SPECIFICATION

ENGINE PEDESTAL SET

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>Nominal capacity</th>
<th>Weight basic set</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS001-003</td>
<td>2.6 t</td>
<td>450 kg</td>
<td>Leap-1A - Airbus A320neo (47001-032-000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>992 lbs</td>
<td>PW1100G - Airbus A320neo (47001-033-000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>V2500-A1/ A5 - Airbus A320 Family (47001-003-000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CFM56-5A/ 5B - Airbus A320 Family (47001-001-000)</td>
</tr>
</tbody>
</table>

OPTIONS
Engine Adapter Kit
Engine adapter kits are available separately for each engine type and are attached to the basic set. Each engine adapter kit includes two rear adaptors and two front adaptors. E.g. 47001-026-000 for A350 — Trent XWB (Please note that additionally 1 x RRT059450-1 is required).
14.3 ENGINE DOLLY / ENGINE CRADLE

DESCRIPTION
Engine Cradles and Engine Dollies has been specially designed for the inshop engine transportation.

PRODUCT FEATURES

**Engine Dolly**
- Rigid steel frame
- Fork lift tubes / interface to COBRA
- 2 axles, fitted with pneumatic tires
- 1 axle steerable
- Tow - Bar
- Fixing brake
- 90 inch rail system
- Skydrol resistant paint
- Label with A/C application

**Engine Cradle**
- Welded steel frame
- Bootstrapping points for engine change
- 4 holes for easy loading of cradle into dolly pins of ED005-009
- Rear fixture without threaded rod in accordance with Swiss requirement
- Skydrol resistant paint

BENEFITS

- Multipurpose application, on one dolly various cradles can be mounted
- Ergonomic and user-friendly design
- On-site service

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Applicable engine cradles</th>
<th>ED005-009 will fit for the following applications in conjunction with the specific engine cradle:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine</td>
<td>Cradle</td>
</tr>
<tr>
<td>CFM56-5A/ 5B</td>
<td>EC004-005</td>
</tr>
<tr>
<td>V2500-A1/ -A5</td>
<td>EC001-002</td>
</tr>
<tr>
<td>Leap-1A</td>
<td>EC024-001</td>
</tr>
</tbody>
</table>
HOISTING SLING

DESCRIPTION
Universal sling for CFM56 and V2500 engines.

PRODUCT FEATURES
- Basic beam
- The basic beam consists of an I-beam and an adjustable suspension unit, which can be adjusted by means of a hand wheel
- Engine adapters
- The front (FWD) and rear (AFT) adapters, which are attached to the basic beam by means of levers, are used to receive and attach V2500 engines
- Wooden storage box
- All adapters, connection- and moving parts are either galvanized or nitrated
- Operation and maintenance manual, including spare parts list
- Test certificate

BENEFITS
- User friendly ergonomic setup and operation
- Universal application
- On-site service
# TECHNICAL SPECIFICATION

## HOISTING SLING

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>HG20</th>
<th>HG20-001</th>
<th>HG49</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.9 t</td>
<td>3.5 t</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>3.2 tons</td>
<td>3.85 tons</td>
<td></td>
</tr>
<tr>
<td><strong>Test load</strong></td>
<td>5.9 t</td>
<td>7 t</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>6.5 tons</td>
<td>7.7 tons</td>
<td></td>
</tr>
<tr>
<td><strong>Extended height</strong></td>
<td>1,500 mm</td>
<td>1,500 mm</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>59.1 inch</td>
<td>59.1 inch</td>
<td></td>
</tr>
<tr>
<td><strong>Extended length</strong></td>
<td>2,450 mm</td>
<td>2,450 mm</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>96.5 inch</td>
<td>96.5 inch</td>
<td></td>
</tr>
<tr>
<td><strong>Screw extension</strong></td>
<td>1,350 mm</td>
<td>1,350 mm</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>53.1 inch</td>
<td>53.1 inch</td>
<td></td>
</tr>
<tr>
<td><strong>Weight basic beam</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>w/o adapter</td>
<td>162 kg</td>
<td>260 kg</td>
<td>tbd</td>
</tr>
<tr>
<td></td>
<td>357.1 lbs</td>
<td>573 lbs</td>
<td></td>
</tr>
<tr>
<td><strong>Applications</strong></td>
<td>CFM56-3; Boeing B737-300 / -400 / -500</td>
<td>CFM56-5B; Airbus A319 / A320 / A321</td>
<td>A320 Family CFM56-5A/ -5B and V2500 A320neo Family LEAP-1A and PW1100G A340 CFM56-5C B737 Classic/NG CFM56-3 and CFM56-7B B737 MAX LEAP-1B COMAC C919 LEAP-1C</td>
</tr>
</tbody>
</table>
14.5 IGLOOMX ENGINE CHANGE SHELTER

DESCRIPTION
AOG incidents can lead to costly delays and scheduling difficulties for operators. The patent protected IglooMX Inflatable Engine Change Shelter system provides the ideal solution for such events. This “hangar-in-a-bag” system reduces downtimes to a minimum and enables the AOG team to get the aircraft back in the air in the least possible time, thereby saving on costly hangar rentals and lost man hours.

The IglooMX Shelter system is small enough to ship as part of the fly-away kit. It may be set up on either engine to encapsulate both engine and pylon. By following the simple installation instructions provided, this kit can be installed in a matter of minutes by a crew of three to four people.

Once in place, the shelter system will boost your maintenance team’s productivity by providing a warm and safe environment in which to work.

These shelters feature specially designed fabrics that are both lightweight and tough, providing excellent abrasion and tear resistance. The unique materials are also fire retardant and resistant to hydraulic fluid and fuels, ensuring that they remain functional for many years.

The IglooMX is supplied in a storage bag on wheels, making it easy to move around on the apron. In the unlikely event that the shelter becomes damaged while in use, an on-site repair kit is supplied as part of the package.

The IglooMX kit can be deflated and stored away in around 15 minutes.

PRODUCT FEATURES
- Installation Crew: 3-4 Persons
- Inflation Time: 5 minutes
- Folding and re-packing time: 15 minutes
- Strong but lightweight for easy handling
- Fire retardant and resistant to fuels, oils and hydraulic fluids
- Unique patented design
- Can withstand windspeeds of up to 25 Knots
- 20 years proven track record with leading airlines, airframers and MRO’s
AVAILABLE ACCESSORIES

- Ramp heater
- Air-conditioning
- Lighting set on tripods
- Reusable shipping crate
- Water filled ballast bag kit

BENEFITS

- Can be branded with airline logo
- No previous training required
- Provides privacy from passengers during maintenance
- Models available for use with HYDRO COBRA Engine Change System
- Airbus approved
- Can be powered using a 5 kVA Generator

TECHNICAL SPECIFICATION

ENGINE CHANGE SHELTER

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>890145</th>
<th>890167</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated (maximal)</td>
<td>8,400 mm x 8,100 mm x 4,300 mm</td>
<td>6,800 mm x 8,100 mm x 4,600 mm</td>
</tr>
<tr>
<td></td>
<td>330.7 inch x 318.9 inch x 169.3 inch</td>
<td>330.7 inch x 318.9 inch x 169.3 inch</td>
</tr>
<tr>
<td>Dimensions (stored)</td>
<td>1,400 mm x 1,000 mm x 1,000 mm</td>
<td>1,400 mm x 1,000 mm x 1,100 mm</td>
</tr>
<tr>
<td></td>
<td>55.1 inch x 39.4 inch x 39.4 inch</td>
<td>55.1 inch x 39.4 inch x 39.4 inch</td>
</tr>
<tr>
<td>Packaged weight</td>
<td>170 kg</td>
<td>175 kg</td>
</tr>
<tr>
<td></td>
<td>374.8 lbs</td>
<td>374.8 lbs</td>
</tr>
<tr>
<td>Temperatures ranges</td>
<td>Can be used from -30 °C to +70 °C -22 °F to +158 °F</td>
<td>Can be used from -30 °C to +70 °C -22 °F to +158 °F</td>
</tr>
<tr>
<td>Inflation device</td>
<td>2 H.P. Electric Blower</td>
<td>2 H.P. Electric Blower</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
<tr>
<td>Airbus applications</td>
<td>A318 A319ceo / A319neo A320ceo / A320neo A321ceo / A321neo</td>
<td>A318 A319ceo / A319neo A320ceo / A320neo A321ceo / A321neo</td>
</tr>
<tr>
<td>Boeing applications</td>
<td>B737</td>
<td></td>
</tr>
<tr>
<td>Other applications</td>
<td>Embraer E-Jets</td>
<td></td>
</tr>
</tbody>
</table>
# TECHNICAL SPECIFICATION

## COBRA ENGINE CHANGE SHELTER*

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>890195</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions inflated</td>
<td>12,600 mm x 12,300 mm x 9,000 mm</td>
</tr>
<tr>
<td></td>
<td>496 inch x 484.3 inch x 354.3 inch</td>
</tr>
<tr>
<td>Dimensions (stored)</td>
<td>2,000 mm x 1,400 mm x 1,100 mm</td>
</tr>
<tr>
<td></td>
<td>78.7 inch x 55.1 inch x 43.3 inch</td>
</tr>
<tr>
<td>Packaged weight</td>
<td>600 kg</td>
</tr>
<tr>
<td></td>
<td>1322.8 lbs</td>
</tr>
<tr>
<td>Power supply</td>
<td>110 V 60 Hz or 220 V 50 Hz models available</td>
</tr>
</tbody>
</table>

*temporarily dimensions
ENGINE ACCESS STAND

DESCRIPTION
This Engine and Aircraft Maintenance Access Stand is designed for the under and over cowling access requirements of several Airbus and Boeing wide-body aircraft as well as the A320 Family and the Bombardier CRJ. The stand facilitates safe access to nose cowls, fan cowls and pylon disconnect zones, providing a safe working solution to many of the traditionally difficult under-cowling maintenance locations. The unit is also designed to safely access the same points outside of cowling, specifically forward and aft pylon service points. The hydraulic pitch and height-adjustment allow for the diverse angles and height requirements frequently used when servicing aircraft. The stand contains extensive aluminum construction for easy movement and corrosion-resistant powder coat finish for longevity.

The design of the unit allows in addition the use for other maintenance access areas at the different aircraft types including the Embraer ERC and the Bombardier CRJ.

PRODUCT FEATURES
- Anti-fatigue ladder rungs rather than narrow ladder rungs. This ensures comfort when using the stands e.g. to change LRU’s
- Fall restraint anchor points
- The height and angle adjustments on this stand allow for diverse angle and height changes frequently required when servicing aircraft
- Extensive aluminum construction for easy movement and a corrosion-resistant powder coat finish for longevity
- 20 years proven track record with leading airlines, airframers and MRO’s
- Designed and tested in accordance with ANSI-ASC A14.7 and BS EN 131.7
- Padding material equipped
- Controls: Hydraulic foot pump
- Ergonomic design
- High-grade materials
- One person movement
- Powder coated finish

APPLICATIONS FOR A320
- Engines under “C” duct
- Pylons
- Bulk Cargo
- Aft pressure nulhead access panel

Attention: Usage examples only, validation of usage is under responsibility of the operator.
AVAILABLE ACCESSORIES

- Air powered pump
- Utilities package
- Extension
- Additional upper platform
- Fold-away tow-bars
- Lift truck fork pockets
- Levelling jacks

BENEFITS

- Flexible use on a wide range of wide-body aircraft
- Safety and reliability
- Unrivalled quality and durability
- Small footprint and greater geometry
- Rigorous inspection and testing

TECHNICAL SPECIFICATION

ENGINE ACCESS STAND

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>DF071554-07-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towing speed</td>
<td>10 KPH/6 MPH</td>
</tr>
</tbody>
</table>
| Material type | Ladder: Aluminum  
| | Frame: Aluminum |
| Certifications | ANSI-ASC A14.7, BS EN 131.7 |
| Shipping dimensions | 2,235 mm x 1,270 mm x 3,124 mm  
| | 88 inch x 50 inch x 123 inch |
| Weight | 476 kg  
| | 1,050 lbs |
| Height | Low: 3,211 mm, High: 4,658 mm  
| | Low: 126.4 inch, High: 183.4 inch |
| Foot print | 2,235 mm x 3,124 mm  
| | 88 inch x 123 inch |
| Airbus applications | A300/A310  
| | A319/A320/A321 (ceo and neo)  
| | A330neo/A330 ceo  
| | A340  
| | A350  
| | A380 |
| Boeing applications | B717, B727, B747, B757, B767, B787 |
| Other applications | Bombardier CRJ  
| | Embraer ERJ |
14.7 HOLD-OPEN DEVICE - AIRBUS AIRFRAME TOOLS

DESCRIPTION
Hold-open device for cowling of the aircraft engine (fan cowl and thrust reverser).

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>AIT710001</th>
<th>AIT710002</th>
<th>AIT710007</th>
<th>AIT710008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft application</td>
<td>A320 Family</td>
<td>A320 Family</td>
<td>A320 Family</td>
<td>A320 Family</td>
</tr>
<tr>
<td>Engine application</td>
<td>CFM56-5A / B</td>
<td>IAE V2500</td>
<td>CFM56-5A / B</td>
<td>IAE V2500</td>
</tr>
<tr>
<td>Version</td>
<td>Bolted version with adjustability</td>
<td>Bolted version with adjustability</td>
<td>Welded version</td>
<td>Welded version</td>
</tr>
</tbody>
</table>
14.8 AIRBUS TOOLING

DESCRIPTION
HYDRO has a long-standing business relationship with Airbus. All sales and material provisioning is done by Airbus/Satair exclusively. Contractually, HYDRO is thus allowed to sell Airbus proprietary tooling directly to the aftersales market and third parties.

Airbus propriety tooling is to be solely procured through Airbus/Satair. HYDRO has a specialized tooling sales team located in Seattle, USA.

BENEFITS
- Short lead times
- Competitive pricing
- High quality products
- Global customer sales and service support

Airbus/Satair tools procurement organization
15 OTHERS
15.1 PROOF LOAD TEST FIXTURE

DESCRIPTION
The HYDRO proof load test fixture has been designed for testing of lifting devices.

The HYDRO proof load test fixtures are used for
- Checking: the hydraulic lift cylinder and hydraulic circuit of tripod- and axle-jacks for leakage
- Controlling: the preciseness of the load indicator of tripod- and axle-jacks testing: the adjustment of pressure relief valves of the hydraulic circuit of tripod- and axle-jacks

Standard characteristics of PV165 and PV250
- Load cell
- Adapter pieces (male ø 19 mm and ø 32 mm, female ø 44.5 mm)
- Laptop with testing software "HyCat" and case
- Color printer for test certificates with case
- Measuring cable
- Storage box
- Power supply AC 240 V / 0.04 kVA / 50 Hz

Standard characteristics of PV050
- Hydraulic load cell (PV165 load cell also usable)
- Adapter pieces (male ø 19 mm and ø 32 mm)
- Storage box

AVAILABLE OPTIONS
- Individual braces for each tripod-jack
- Measuring amplifier and LED-display (instead of laptop with testing software)
- Roll-paper printer for documentation of the measuring points

BENEFITS
- User friendly ergonomic setup and operation
- Universal application
- On-site service
## TECHNICAL SPECIFICATION

### PROOF LOAD TEST FIXTURE

<table>
<thead>
<tr>
<th>Model-No.</th>
<th>PV050</th>
<th>PV165</th>
<th>PV250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. test force</td>
<td>50 t</td>
<td>165 t</td>
<td>250 t</td>
</tr>
<tr>
<td></td>
<td>55.0 tons</td>
<td>181.5 tons</td>
<td>275.0 tons</td>
</tr>
<tr>
<td>Application</td>
<td>For all HYDRO tripod-jacks and axle-jacks with a test capacity up to 50t</td>
<td>For all HYDRO tripod-jacks and axle-jacks with a test capacity up to 165 t</td>
<td>For all HYDRO tripod-jacks and axle-jacks with a test capacity up to 250 t</td>
</tr>
</tbody>
</table>