

FRONTIER

10 BAR HIGH-PRESSURE LIFTING BAG SYSTEM

Operation • Safety • Inspection • Maintenance

Professional Rescue Equipment for Fire Departments,
Technical Rescue Teams and Industrial Emergency Response

IMPORTANT

Read and understand this manual before operating the Frontier 10 Bar Lifting Bag System. High-pressure lifting bags can move extremely heavy loads. Improper use can cause sudden load movement, crushing injury, equipment damage or death.

AIR SOURCE NOTE: SCBA air bottle/cylinder is customer-supplied and is not included with Frontier lifting bag packages.

Working Pressure: 10 bar / 145 psi

Frontier Models: ALQD-30 • ALQD-50 • ALQD-70

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Important: Frontier two-bag packages include the listed lifting bags and control components. The SCBA compressed-air bottle/cylinder is not included and must be supplied by the customer.

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MANUAL SCOPE

This manual combines the Frontier product specifications supplied by WFR with the operating, safety, maintenance and troubleshooting guidance contained in the manufacturer's lifting-cushion instruction manual. Product labels and WFR documentation govern the rated capacity and pressure of each Frontier model.

1. Product Overview

The Frontier 10 Bar High-Pressure Lifting Bag System is designed for fire departments, rescue teams, industrial emergency response crews and heavy rescue applications requiring controlled lifting power in a compact, portable system.

Frontier lifting bags are intended to lift heavy objects, create working space and assist stabilization or access operations during vehicle rescue, machinery entrapment, structural collapse response, industrial incidents, farm rescue and similar emergency situations.

Operating at 10 bar / 145 psi, the low-profile bags are approximately 2.5 cm / 1 inch thick before inflation, allowing insertion into spaces where many conventional jacks or lifting devices cannot be positioned.

Key Features

- 10 bar / 145 psi rated operating pressure.
- Low-profile design - approximately 2.5 cm / 1 inch thick.
- Available rated capacities: 32 ton, 40 ton and 60 ton.
- Double controller permits independent control of two lifting bags.
- 10 metre colour-coded yellow and blue air hoses identify each bag circuit.
- Pressure reducer assembly connects a compatible customer-supplied SCBA air bottle to the control system. SCBA bottle/cylinder is not included.
- Compact and portable for field deployment.
- Suitable for municipal fire/rescue, industrial response, utilities, public works, mining, agriculture and heavy-equipment incidents.

Common Applications

- Vehicle rescue and extrication
- Heavy truck and equipment rescue
- Machinery entrapment
- Industrial maintenance and emergency response
- Structural collapse / USAR support
- Farm and agricultural rescue
- Rail, fleet and public works applications
- Creating access space for cribbing, stabilization or patient removal

2. Frontier Lifting Bag Specifications

Model	Rated Capacity	Dimensions	Thickness	Working Pressure
ALQD-30	32 ton	50.8 x 50.8 cm / 20" x 20"	2.5 cm / 1"	10 bar / 145 psi
ALQD-50	40 ton	65.8 x 65.8 cm / 25" x 25"	2.5 cm / 1"	10 bar / 145 psi
ALQD-70	60 ton	78 x 78 cm / 31" x 31"	2.5 cm / 1"	10 bar / 145 psi

CAPACITY NOTE

Rated lifting capacity is a model rating, not permission to lift an unstable or inadequately supported load. Actual field performance is affected by bag contact area, lift height, load geometry and stability. Never exceed the product label or use an air bag as the sole support for a raised load.

3. Complete Two-Bag Systems

Frontier 64 Ton Package

AIR BOTTLE NOT INCLUDED: A compatible SCBA compressed-air cylinder must be supplied by the customer.

Package designation based on two ALQD-30 bags. Do not interpret the package name as a guaranteed combined lifting capacity in every configuration.

Qty	Component
2	ALQD-30 - 32 Ton Frontier Lifting Bags
1	Double Controller for two-bag operation
1	Pressure Reducer with high-pressure hose
1	10 metre Yellow Air Hose
1	10 metre Blue Air Hose

Frontier 80 Ton Package

AIR BOTTLE NOT INCLUDED: A compatible SCBA compressed-air cylinder must be supplied by the customer.

Package designation based on two ALQD-50 bags. Do not interpret the package name as a guaranteed combined lifting capacity in every configuration.

Qty	Component
2	ALQD-50 - 40 Ton Frontier Lifting Bags
1	Double Controller for two-bag operation
1	Pressure Reducer with high-pressure hose
1	10 metre Yellow Air Hose
1	10 metre Blue Air Hose

STACKING

When two bags are stacked, the manufacturer's instructions state that the smaller bag must be centred on top of the larger bag and the lifting capacity of the stack is determined by the smaller bag.

4. System Components

Component	Purpose
Customer-Supplied SCBA Air Bottle	Provides the compressed-air source for the Frontier rescue lifting system. The SCBA air bottle/cylinder is supplied by the customer and is not included with the Frontier lifting bag package.
Pressure reducer with high-pressure hose	Connects the SCBA bottle to the controller and reduces high bottle pressure to a controlled system supply pressure. WFR system includes a 5/8" high-pressure hose.
Double controller	Provides independent inflation, hold and deflation control for two lifting bags and displays bag pressure.
10 m yellow air hose	Connects one controller outlet to a lifting bag; colour coding identifies the circuit.
10 m blue air hose	Connects the second controller outlet to a lifting bag; colour coding identifies the circuit.
Frontier lifting bag	Reinforced pneumatic lifting element with quick-connect air inlet.
Splitter - optional	Provides additional air distribution where an approved rescue setup requires it.

The manufacturer's system description also identifies quick couplings, shut-off valve arrangements, single-channel control options and alternate inflation accessories. Use only components approved for the Frontier system and its rated pressure.

5. Safety Rules and Personal Protective Equipment

DANGER

NEVER place any part of the body beneath a load supported only by an inflated lifting bag. Crib and mechanically support the load as it rises.

Minimum PPE

- Safety helmet
- Safety goggles or face shield
- Safety gloves
- Full-body protective clothing appropriate to the incident

- Safety footwear with ankle and toe protection

Operational Safety Rules

- Only trained personnel should operate the system.
- Conduct a hazard assessment and establish an exclusion zone before beginning the lift.
- Stabilize the object against unintended rolling, sliding, tipping or collapse.
- Ensure adequate lighting and clear communication between the controller operator and rescue team.
- Use only for intended lifting/rescue purposes and with compatible rated components.
- Keep hoses away from sharp edges, heat, traffic, crushing points and kinks.
- Protect rubber/plastic components from welding or grinding sparks and corrosive substances.
- Stop immediately if a bag shifts, the load becomes unstable, a hose/coupling leaks or any abnormal condition occurs.
- Never exceed 10 bar / 145 psi or the pressure shown on the individual product label.
- Never connect high-pressure SCBA bottle pressure directly to a lifting bag.

6. Pre-Use Inspection

1. Lay out the customer-supplied compatible SCBA bottle, pressure reducer, double controller, hoses, lifting bag(s) and required accessories.
2. Inspect each bag for cuts, punctures, abrasion, deformation, exposed reinforcement, damaged fittings or other deterioration.
3. Inspect hoses and quick couplings for cuts, damage, contamination, blockage and secure operation.
4. Check that controller valves and switches operate smoothly and gauges are readable.
5. Check that all air ports are clean and unobstructed and that hoses are not kinked.
6. Inspect the pressure-reducer connection and confirm its O-ring/seal is intact.
7. Verify the bag model, rated capacity and 10 bar / 145 psi working pressure on the product label.
8. Remove damaged or questionable equipment from service. Do not attempt a rescue lift with defective components.

7. System Connection and Setup

Typical Frontier two-bag connection:

CUSTOMER-SUPPLIED SCBA BOTTLE -> PRESSURE REDUCER -> DOUBLE CONTROLLER -> YELLOW / BLUE HOSES -> LIFTING BAGS

9. Secure the customer-supplied SCBA bottle so it cannot roll or tip.
10. Connect the pressure reducer to the compatible customer-supplied SCBA bottle. Confirm the O-ring/seal is intact.
11. Before opening the bottle, back off the regulator adjustment as specified by the regulator instructions. The manufacturer's procedure calls for turning the regulator handle counter-clockwise approximately 1-2 turns before opening the cylinder.
12. Connect the reducer outlet/high-pressure hose to the controller inlet using the correct quick coupling.
13. Connect the yellow hose to one controller outlet and the blue hose to the other outlet.
14. Connect each hose to its designated Frontier lifting bag and fully engage the quick couplings.
15. Route hoses clear of pinch points and the expected path of load movement.
16. Open the air source in accordance with the regulator/controller instructions and confirm the system is ready without exceeding the rated bag pressure.

PRESSURE

SCBA bottle pressure is much higher than lifting-bag working pressure. The pressure reducer and controller are essential safety components. Frontier lifting bags are rated for 10 bar / 145 psi working pressure.

8. Positioning the Lifting Bag

- Place the bag on a clean, stable supporting surface.
- Insert no less than two-thirds (2/3) of the bag area beneath the load.
- Centre the bag beneath the load and assess the centre of gravity and expected movement.
- Position the load-bearing surface of the bag as close as practical to the supporting surface of the object being lifted.
- Keep the bag away from sharp edges. Where a sharp load surface cannot be avoided, install a suitable protective plate between the bag and the load.
- Prepare adequate cribbing/blocking before inflation begins.

9. Lifting Procedure

17. Confirm the scene is controlled, the load is stabilized and all personnel are clear of crush and pinch zones.
18. Confirm cribbing/blocking is immediately available.
19. Using the controller, begin inflation slowly.
20. Continuously watch the load, lifting bag, hoses, cribbing and pressure gauge.
21. Add cribbing progressively as the load rises, keeping the unsupported gap as small as practical.
22. Stop inflation immediately if the bag moves out of position, the load shifts, the bag contacts a damaging surface, a connection leaks or another unsafe condition develops.
23. Stop when the required working space has been obtained. Do not lift higher than necessary and never exceed 10 bar / 145 psi.
24. Mechanically support the raised load with suitable cribbing/blocking before personnel work in any potential collapse or crush zone.

CRUSH HAZARD

A lifting bag is a lifting device - not a permanent support. The load must be mechanically supported before rescue work proceeds beneath or within the collapse path of the load.

10. Two-Bag Operation and Stacking

Independent Two-Bag Operation

The Frontier double controller permits two bags to be inflated, held and deflated independently. Use the yellow and blue hose circuits to identify which control operates each bag.

- Assign the hose colour and controller side before beginning the lift.
- Make small pressure adjustments and watch load balance continuously.
- Do not assume that two bags automatically double the safe lifting capacity.
- Maintain cribbing and stabilization as each bag changes the load geometry.

Stacking Two Bags

- Where stacking is required, use only two bags unless specific Frontier instructions authorize another arrangement.
- Place the larger bag on the bottom.
- Centre the smaller bag directly on top of the larger bag.
- Do not operate a misaligned stack.
- The manufacturer's manual states that stack lifting capacity is determined by the smaller bag.
- Inflate in a controlled manner while monitoring both pressure and load stability.

11. Completing the Lift and Deflation

25. Install secure cribbing/safety blocks to mechanically support the load at the required height.
26. Confirm the load is stable on the cribbing before releasing lifting-bag pressure.
27. Close the SCBA bottle/air-source valve.
28. Use the controller exhaust/pressure-relief function to deflate in a slow, controlled manner.

29. Allow the load to transfer gradually to the cribbing. Keep personnel clear of pinch points.
30. After the bag is completely unloaded and depressurized, remove it from the work area and expel remaining air.
31. Disconnect hoses and components only after pressure has been released.

12. After-Use Inspection, Cleaning and Storage

- Inspect bags, hoses, couplings, regulator and controller after every use. Do not reuse damaged equipment.
- Clean dirt and contamination before storage.
- If equipment was used in a damp environment, dry it thoroughly.
- Store lifting bags in a dry, cool and well-ventilated location.
- Keep away from high heat, open flame, sparks, corrosive chemicals, oil, grease and sharp objects.
- Keep air ports and quick couplings clean and protected from blockage.
- Do not kink hoses or store them under loads that may cause permanent damage.
- Secure SCBA cylinders during transport to prevent rolling or tipping.

13. Maintenance and Periodic Inspection

Interval	Inspection / Maintenance
Before and after each use	Visual inspection of bags, hoses, couplers, controller, regulator, labels and general condition; clean equipment.
Routine / weekly when in active service	Deep cleaning, connection checks and basic functional checks.
Long-term storage	Perform regular visual inspections even when the equipment has not been used.
Periodic competent-person inspection	Pay particular attention to connectors and load-bearing components. The manufacturer's manual notes additional functional/load testing every three years or whenever equipment safety or reliability is in doubt, subject to applicable regulations.

- Keep all warning and identification labels clearly visible.
- Replace damaged hoses, quick couplings and accessories with approved/recommended components.
- Do not operate equipment showing leaks, abnormal behaviour or unreliable control.
- Depressurize and disconnect the air source before inspection, maintenance or repair.
- Repairs should be performed by qualified/authorized service personnel.

14. Troubleshooting

Problem	Possible Cause	Corrective Action
Bag does not operate	Air source not working / empty	Check SCBA bottle pressure and air supply.
Bag does not operate	Quick coupling or hose blocked	Remove affected component from service and replace/clear with an approved component.
Bag does not operate	Pressure reducer or controller failure	Remove from service; have inspected by qualified/authorized service personnel.
Bag does not operate	Bag damaged or leaking	Remove bag from service and replace.
Insufficient lifting force	Low air supply	Check SCBA bottle pressure.
Insufficient lifting force	Blocked coupling or hose	Replace the blocked/damaged component.
Insufficient lifting force	Leak in air-delivery system	Check connections, hoses and fittings; replace damaged components.
Insufficient lifting force	Bag damaged or leaking	Remove bag from service and replace.

WARNING

Troubleshooting must be performed by qualified personnel. Disconnect and fully depressurize the system before inspection. Never disassemble or inspect a pressurized component.

15. Warranty and Service

The supplied manufacturer's manual states a general one-year warranty from product acceptance, subject to any separate project contract, for qualifying manufacturing defects or raw-material quality issues under normal use and standard operation.

The manufacturer's exclusions include consumable/wear items, misuse, overload, unauthorized disassembly or modification, accidental impact, improper storage or maintenance, environmental damage and repairs not authorized by the manufacturer.

For Frontier products supplied by WFR, the warranty terms stated on the WFR quotation, invoice, product page or written warranty supplied with the equipment govern. Contact WFR before arranging repairs or substituting pressure-system components.

16. Operator Quick Checklist

- ☐ Rated model/capacity and 10 bar / 145 psi pressure verified
- ☐ Bag inspected - no cuts, punctures, abrasion or deformation
- ☐ Hoses and quick couplings inspected and clean
- ☐ Pressure reducer and controller inspected
- ☐ SCBA bottle secured
- ☐ Load hazard assessment completed
- ☐ Load stabilized against rolling/sliding/tipping
- ☐ Bag positioned with at least 2/3 area beneath load
- ☐ Sharp edges protected
- ☐ Cribbing/blocking prepared
- ☐ Exclusion zone established and PPE worn
- ☐ Yellow/blue hose circuits identified
- ☐ Inflation controlled and pressure monitored
- ☐ Cribbing advanced progressively
- ☐ Load mechanically supported before rescue work
- ☐ System fully depressurized before disconnection
- ☐ Equipment cleaned, inspected and correctly stored after use

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WFR / Frontier • Canada

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