

BreathSafe 963K Variable Speed Pressuriser Loader Owner's Manual

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INSTALLATION OVERVIEW	
Manufacturer	CATERPILLAR
Type	Loader
Model	963K 973D
Cabin Pressure Max	
Set Auto Cabin Pressure	

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WARNING

THE PRESSURISATION SYSTEM DESCRIBED IN THIS MANUAL HAS THE FOLLOWING AREAS WHICH MAY BE DANGEROUS IF NOT TREATED WITH GREAT CARE.

QUALIFIED STAFF MUST WEAR THE CORRECT PERSONAL PROTECTIVE EQUIPMENT WHEN CLEANING AND SERVICING THIS UNIT DUE TO DUST AND FIBRES WHICH MAY BE CAUGHT BY THE STAGES OF AIR FILTRATION DURING NORMAL UNIT OPERATION.

THE ELECTRICAL POWER SYSTEM IS SUPPLIED BY 12V DC OR 24V DC AND NO WORK SHOULD BE CARRIED OUT ON THE PRESSURISER SYSTEM WITHOUT THE CORRECT SAFE WORK PROCEDURES AND ELECTRICAL SAFETY MEASURES BEING TAKEN, AND ALL RELEVANT CIRCUIT BREAKER OPENED TO ISOLATE THE CIRCUIT.

THE AIR FILTRATION SYSTEM MAY HAVE SEVERAL TYPES OF HIGH-SPEED ROTATING EQUIPMENT INSTALLED WITH VERY SHARP EDGES. ENSURE ALL SAFETY GUARD ARE IN PLACE WHILE THE SYSTEM IS RUNNING.

Please be aware that HEPA filters cannot be cleaned and must be replaced at the end of their lifecycle or if filter media has been damaged.

- Hard Hat
- Eye Protection
- Dust Mask
- Ear Protection
- Protective Clothing

Particulate Behaviour

This is the length of time it takes for a particle to drop from a height of 1.5m in STILL air.

Warehouses and workshops do not have still air, so hazardous airborne particulates may remain in air for longer, increasing chance for workers to breathe in dust. Ensure PPE is worn when installing this system.

Maintenance Schedule

The following tables show our suggested maintenance schedule for all units. Please note that site conditions may alter this. Excludes high corrosion environments.

Data download is required to claim the 3-year warranty on Brushless Blower Motor.

Inspect every 500 Hours and replace when filter is full*

Component / System	Action Required
Turbo Pre-cleaner	Check operation of the Turbo Pre-Cleaner.
Pressuriser Blower	Ensure blower is operational.
HEPA Primary Filter p/n: 500000	Inspect filter capacity indicator. Replace HEPA filter when 80% or greater. Vacuum out housing before replacing the filter elements.
HEPA Return Air Filter P/N: 500016	Vacuum inside cabin floor before replacing filter.
Filter Frame Assembly, Mounts, Seals and Filter Housing	Check door seals, all bolts, screws, and all mounts are secure. Check the filter canister & ensure it is correctly fitted. Check latches are operational and in good order. Replace / Re-tension fixtures and fittings required.

15,000 Hours / 36 months*

Component / System	Action Required
500 Hour Inspection	All 500-hour inspection actions.
Pressuriser's Blower 200002	Replace BRUSHLESS Pressuriser blower.

Critical Parts				
Item	Part Number	Qty.	Description	Service Interval
1	500000	1	Fresh Air HEPA H14 Filter (Tested as per EN1822)	1000* Hours (>80% fan capacity)
2	500016	1	HEPA Return Air Filter	500* Hours
3	200002	1	Brushless Blower Motor – 24V	15,000 Hours
4	200027	1	BreatheSafe Digital Display – DataRecorder (LNPRESS TS)	

Filter service hours are subject to cab sealing efficiency, site conditions and correct system

use.

Suggested Schedule Servicing*

Fan Capacity Indicator

The filter is serviceable if the motor capacity is between 10% & 80%. We recommend that the filter is changed if the capacity is over 80%.

Site dependent

OPERATORS CHECKLIST	
PRE-START	
1.	Visually inspect the BreatheSafe system for any damage.
2.	Visually inspect the cabin for any damage to doors, windows, seals.
3.	Please remove dust & debris from shoes and clothes before entering the cabin.
4.	Ensure door(s) and windows are closed correctly.
5.	Start engine and turn HVAC on to speed 2 (medium speed).
6.	After fixed speed delay, the BreatheSafe display will show 50 Pascals or pre-set value.
The system is working correctly when the pascal value is green.>> There is no further action required < <	

NORMAL OPERATING CONDITION

Cab Air Conditioning

BreatheSafe recommends OEM air conditioning fan is set at mid speed or greater to circulate air around the breathing zone and minimise CO₂.

Acceptable operating range for BreatheSafe fan 10-80%. >80% recommend maintenance.

ALERTS	
Fixed Fan Start Delay	Allows the operator to carry out pre-start checks – limiting at 30% fan speed, press the red text to disable.
CO₂ Level Alert (if equipped)	Ensure air conditioning fan is set at mid speed or greater to circulate air and minimise CO ₂ .
Low Pressure Alarm	Cabin is not maintaining positive pressure – check doors and windows are closed correctly. Refer to maintenance department to check filters and cabin sealing. Ensure filters are serviceable
Check Filter	Reminder to inspect or replace filter. Service hour meter requires re-set. Refer to maintenance department.

Specifications High-Capacity HEPA Pressuriser

Blower : Brushless Blower P/N 200002.

Protection : Locked Rotor Protection (Sub Zero Environments) Under Voltage, Under/Over Current & Over Temperature.

Voltage : 24VDC.

Current Draw : 11 amps (peak). *Note: Motor has slow start to stop excessive in-rush current.

Air Flow : Up to 30-300 m³ /h or 50-215 CFM.

Pre-cleaner : Integrated VLR (Very Low Restriction). Turbo Pre-Cleaner.

Filter Element : BreatheSafe HEPA Primary Filter (H14=99.99% MPPS) TESTED AS PER EN1822 – P/N

500000.

Plugs & Fittings : Mining Spec. Deutsch electrical plugs as standard.

Construction : High strength composite construction.

Serviceability : Easy access HEPA filter with twist-lock (TL) dust cap single assembly.

Mounting : Heavy Duty adjustable mounting brackets.

Design : Fully designed in SolidWorks 3D CAD & Ansys Engineering Simulation Software.

FEA Testing : Critical components FEA (Finite Element Analyst) tested in Solid Works Simulation.

CFD Testing : CFD (Computational Fluid Dynamics) simulations in Flow Works to ensure optimum air flow through the system

SPECIFICATIONS HIGH-CAPACITY HEPA PRESSURISER

List of Abbreviations	
DH	Dual HEPA
DHPR	Dual HEPA Powered Recirculation
DHAC	Dual HEPA Activated Carbon
DHACPR	Dual HEPA Activated Carbon Powered Recirculation
CPM	Cabin Pressure Monitor
CPU	Central Processing Unit
DB	Decibel Sensor
DPM	Diesel Particulate Matter
GAS	Gas Sensor
HEPA	High-Efficiency Particulate Air Filter
HPAFU	High Pressure Air Filtration Unit
HRAF	HEPA Return Air Filter
HVAC	Heating Ventilation and Air Conditioning
MAF	Mass Air Flow
OEM	Original Equipment Manufacturer
PM	Particulate Mass
RH	Relative Humidity
TEMP	Temperature
TS	Touch screen
UI	User Interface
VMS	Vehicle Monitoring System
VS	Vibration Sensor
OGSP	OnGuard Sensor Pod
CO2s	CO2 Sensor INPRESS TS

Item No.	Qty.	Description	Part No.
1	1	Pre-cleaner Hood & Rotor Assy	200004
2	4	Pre-cleaner Injector Ring	200005
3	1	TL Fan Blade (inc. in #7)	200006
4	1	TL Nose Cone / Pre-cleaner	200007
5	1	TL Motor Housing	200008
6	1	TL Filter Housing	200009
7	1	24v DC Brushless VSD Motor & TL Fan Blade	200002
8	1	O Ring Seal Kit 2 Parts	200010
9	1	Included in 8	200011
10	1	Wiring Sleeve	200012
11	1	HEPA H14 Filter	500000
12	3	M6 Nyloc Nut	300218 (M6NYL)
13	3	M6 x 55mm Hex Bolt	300982 (M655B)
14	4	M8 x 190 Hex Bolt	301136 (M8190B)
15	8	M8 x 22mm O/D HD Washer	300230 (M8222HTW)
16	4	M8 Nyloc Nut	300249 (M8NYL)
17	5	M4 x 75mm Pan Head Phillips Screw	300162 (M475PBH)

Item No.	Part No.	Rev	Description	Qty	Colour	Category
1	100056A01	2	TL Assembly	1	Satin Black MX88-124	Module
2	100071F01	0	Fresh Air Module	1	Satin Black MX88-124	Module
3	100056P01	0	Pipework Module	1	Satin Black MX88-124	Module
4	100071M01	0	Monitor Mount Module	1	Satin Black MX88-124	Module
5	100071R01	0	R.A.F. Assembly	1	Satin Black MX88-124	Module
6	100071-Q920	1	Cover	1	Satin Black MX88-124	Part

Kit Part Number: 700069

Item No	Part No.	Rev	Description	Qty	Material	Thickness	Category
1	100056A02	2	TL Mount Plate Weldment	1	–	–	Weld Assy
2	100071A03	0	S02 Cannister Mount T Angle RH Assy	1	–	–	Weld Assy
3	100071A04	0	S02 Cannister Mount T Angle LH Assy	1	–	–	Weld Assy
4	KDTQ218-551735	0	Spacer Ø35 x Ø17 x 55L	2	Mild Steel	Ø35 O/D	Stock Item
5	ST100008	[*]	TL Mount Brkt H	1	Mild Steel	3	Stock Item
6	ST100044	[*]	TL Rain Cover / Guard	1	–	–	Stock Item
7	200000	[*]	TL4 24V DC Unit	1	–	–	Stock Item

Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Category
1	100071-F850	1	Duct Main Body (Inner)	1	Zan	1.55	Part
2	100071-F851	2	Duct Main Body (Outer)	1	Zan	1.55	Part
3	100071-F852	0	Duct Top Cover	1	Zan	1.55	Part
4	100071-F853	1	Duct Bottom Cover	1	Zan	1.55	Part
5	100071-F854	0	Spigot	1	Mild Steel Tube	Ø76 O/D x 1.6 WT	Part
6	100071-F855	1	Internal Spacer	3	Zan	1.55	Part
7	100071-F856	1	Bottom Angle	1	Zan	1.55	Part
8	100071-F857	1	Internal Stiffener Angle	1	Zan	1.55	Part
9	100071-F858	1	Side Angle Mount	1	Zan	1.55	Part
10	100071-F859	0	Duct Infill Large	1	Zan	1.55	Part
11	100071-F860	0	Duct Infill Small	1	Zan	1.55	Part

Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Category
1	100071P02	0	3" Pipe Assembly	1	(Prt Dwgs)	(Prt Dwgs)	Pipework
2	300388-006 0	—	76.3 x 1.6 @60mm	1	Stainless Steel	Ø3.0"ODx1.6W/ T	Pipework
3	300388-008 0	—	76.3 x 1.6 @80mm	1	Stainless Steel	Ø3.0"ODx1.6W/ T	Pipework
4	76ODSS25 0	—	76.3 x 1.6 @250mm	1	Stainless Steel	Ø3.0"ODx1.6W/ T	Pipework
5	3" 90 Deg	—	3" x 90* Elbow Long Dr op Sil	2	Silicone	—	Pipework
6	3" 90 Deg	—	3" x 90* Elbow Long Dr op Sil	1	Silicone	—	Pipework
7	200308	—	3" 90Deg Short Elbow	1	Silicone	—	Pipework
8	300851	—	3" Hose	1	Silicone	—	Pipework
9	TQ553376A 1	0	3" Stauff Clamp Assy	1	(Prt Dwgs)	(Prt Dwgs)	Pipework

Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Category
1	100071-R1 42	0	Filter Frame	1	Zan	1.6mm	R.A.F. Frame
2	100071R02 _0	0	Filter Base	1	(Per Dwgs)	(Per Dwgs)	Weld Assy
3	500016	[*]	HEPA Filter 285x165x3 1	1	—	—	—

Documents / Resources



[BreatheSafe 963K Variable Speed Pressuriser Loader](#) [pdf] Owner's Manual
963K Variable Speed Pressuriser Loader, 963K, Variable Speed Pressuriser Loader, Speed Pre
ssuriser Loader, Pressuriser Loader

References

-  [Commissioning - BreatheSafe](#)
- [User Manual](#)

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