

USER MANUAL

Air Hose

REVISION 7

AKVAGROUP™
EGERSUND NET



SUMMARY

Air hose is equipment used to reduce the volume in a net, mainly in connection with harvesting (slaughter), sorting or treatment of fish.

The air hose is produced in accordance with requirements for extra equipment in NS9415:2021 and Nytek23.

When using a hose, there are some risks that it is important to take into account:

- Air hose is checked before and after use, to ensure that it has no sharpe edges or damage that can cause wear or tear on the net.
- The operation must be interrupted if something unforeseen happens - in such cases, the cause must be investigated in more detail before the operation can continue. An example of this could be that it is suspected that the end piece is about to detach from the hose (sound from air leakage).
- A rope goes through the hose and is attached to end pieces in both ends. This as a safeguard in case the end piece were to come loose. Length of this rope corresponds to length of hose plus rope for splice. Personnel must never be positioned in front of the end piece during operation.

Maintenance of air hose is essential to ensure safe use and optimal service life. Eyebolts, quick couplings and ball valves must be lubricated regularly. Bolts on hose clamps must be retightened.



CONTENT

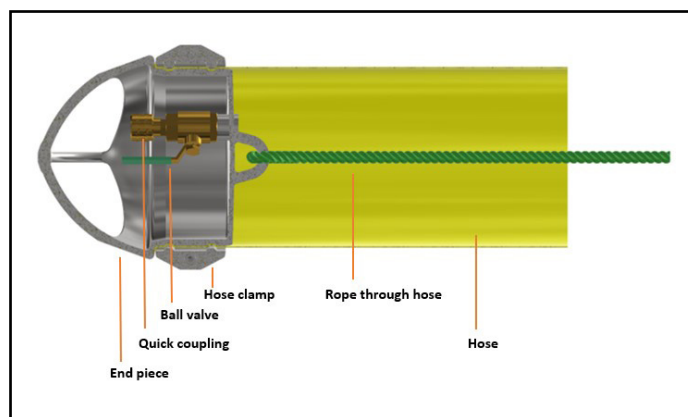
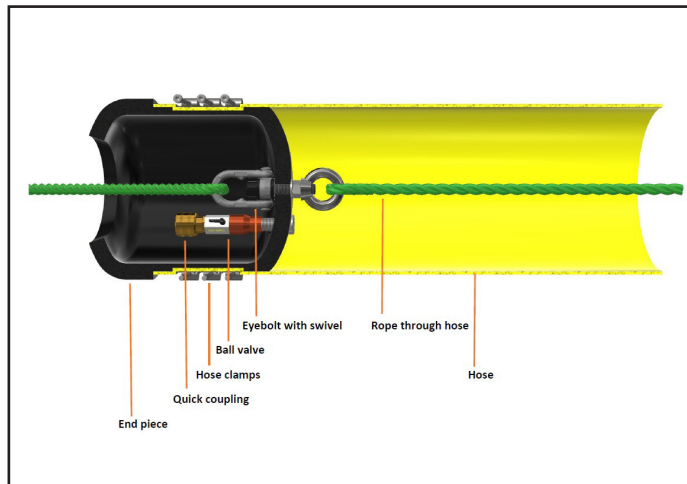
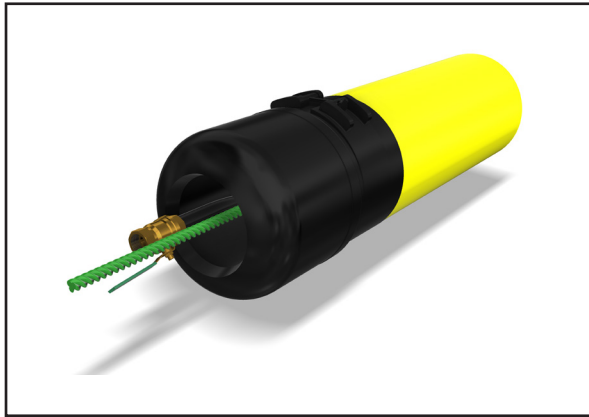
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1 AIR HOSE AND ITS CONSTITUENT PARTS

1.1 Definitions

END PIECE	End piece is made of PE or Duplex steel material. Are mounted in both ends of the hose, and is equipped with components for filling the hose with air.
QUICK COUPLING	Coupling used to connect and disconnect hose for air filling.
CLAW COUPLING	Coupling used to connect and disconnect hose for air filling.
BALL VALVE	Valve consisting of a ball with a through hole, that is placed in a ball-shaped valve housing. Used to open and close the air supply.
AIR HOSE	Equipment used to reduce the volume in a net, mainly in connection with harvesting (slaughter), sorting or treatment of fish.
FILLING HOSE	Short hose end which is used when filling and draining air. Quick coupling in one end - for connection inside the end piece. Ball valve in the other end - for opening and closing when filling and draining air in the hose.
HOSE CLAMP	To attach the hose to the end pieces.
EYE BOLT	Bolt attached to the end piece. Ropes are attached here, to pull the hose around the net. Applies to PE end pieces.
EYE NUT	Nut used to fasten the eye bolt with - on the outside of the end piece/inside of the hose. Applies to PE end pieces.
ROPE THROUGH HOSE	A rope goes through the hose, and is spliced on the inside of the end piece. This acts as a safeguard if the end piece were to come loose from the hose. Length of rope is a maximum of 30 cm longer than length of hose. Type of rope varies.

1.2 Component with specifications/construction




1.3 Technical information about the hose

INTERNAL DIAMETER		WALL THICKNESS		WEIGHT		BURST PRESSURE		TENSILE STRENGTH	
Inch	mm	Inch	mm	Lbs / Ft	Kg / m	Psi	Bar	x 1000 Lbs	Tons
5	127 + 2.5	0.14	3.5	1.07	1.60	650	45	34.8	15.8
6	152 + 3.0	0.15	3.7	1.34	2.00	650	45	44.0	21.0
7	178 + 3.0	0.16	4.0	1.61	2.40	650	45	70.0	31.8
8	203 + 3.0	0.17	4.2	2.15	3.20	610	42	81.5	37.0
10	254 + 5.0	0.17	4.3	2.73	4.10	520	36	101.2	46.0
12	305 + 5.0	0.18	4.5	3.38	5.05	435	30	120.0	54.5

• NOTE: MINIMUM SAFETY FACTOR BP/WP IS 2:1 (50%) FOR ALL NON-HAZARD AND/OR NON-FLAMMABLE LIQUIDS.


1.4 Buoyancy and length

Diameter hose	Buoyancy each meter
10"	51 kg
12"	75 kg

 Recommended length of air hose, is a minimum of 8-10 meters longer than the diameter of the floater in which the hose is to be used. When the hose has been pulled around the floater and comes out of the net, the hose is re-tied with a certified strap before the operation with volume reduction continues. This in order to ensure the least possible load on the end pieces.

1.5 Reel for storing hose

Air hose can be mounted and stored on a reel. The reel can be moved, and storage on this will ensure that the air hose takes up little space on board a work boat.

 Such a reel is produced in hot-dip galvanized steel. It can be connected to a crane on a workboat, and is then easy to handle. The reel must be firmly attached to the boat, so that it stands steady while the hose is run out or in.

The hose can be mounted single or double on the reel. This depends on how the fish farmer pulls the hose around the net.



1.6 Assumptions and limitations

Air hose from AKVA group Egersund Net is produced for use when the volume in a net needs to be reduced. Air hose must not be used for any other purpose. The size of the hose must be adapted to the purpose for which it is intended. It is important to consider how the air hose and other components in a complete system affect each other. A net covered in marine growth (fouling) will increase the load on the net, floater and moorings, and will cause a greater load on the air hose when it is being used. It is therefore important to monitor the operation with the air hose.

1.7 Modifications, reconstruction and enlargement

Any modification, reconstruction and/or enlargement of air hose must be undertaken in consultation with AKVA group Egersund Net.

AKVA group Egersund Net must be contacted prior to making any improvements to the air hose.

1.8 Discrepancies and managing faults

If any faults or defects are discovered in the air hose, this must immediately be reported to our sales representative or to one of our service facilities. The type of fault or defect will determine the course of action to take:

- whether the fault or defect is to be rectified at the site
- whether the air hose must be returned to the nearest service facility

2 INTERACTION WITH OTHER COMPONENTS

2.1 Interaction with net



Air hose must be adapted to the net it is to be used in, and it must have sufficient length and buoyancy. It is very important that the hose is checked before use, to make sure that there are no wear and tear or sharpe edges that can get stuck in the netting in the net. The air hose must be monitored throughout the operation. When the hose is pulled around the net, it must be ensured that it does not get stuck in loose ropes, like handling ropes.



Make sure that the hose does not bend too much when it is pulled around the net. It can than get stuck in the netting and potentially tear a hole in the net. To prevent this from happening, one can fill a little more air into the hose. It will then stretch out again. An alternative is to remove the load from nock or crane, and pull the hose back until it straightens.

2.2 Interaction with floater

Contact between air hose and floater occurs mainly when the hose

- is taken out from boat
- is pulled out from floater in the area where the fish is held - this is often a well boat or a work boat for treating fish
- is removed from the floater after finished operation



3 ASSEMBLY



3.1 Checking documentation - checklist prior to assembly

Before you start using the air hose, you must ensure that user manual is available. Check the air hose. Visible damage to the product is a sign that something has happened to the air hose during transport or storage. The air hose must in such cases be specially checked.

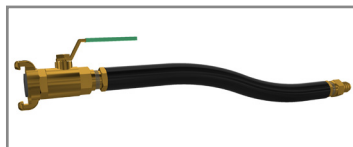
3.2 Additional equipment required for the assembly of air hose



We recommend that you use one or more boats with sufficient crane capacity when using an air hose. We also recommend using a nock or crane to pull the hose into place. These are high-risk operations and you must have reliable procedures in place for this type of work in order to avoid any injuries.

Before air hose can be used, you must ensure you have the necessary equipment in place:

- A compressor is used for filling the hose with air, and this must have sufficient capacity. It is an advantage if the compressor has a manometer, then you can pay attention to the air pressure in the hose.
- Couplings for connecting air hose and compressor. New air hoses come with a filling hose. This consists of a ball valve, where air supply can be opened and closed. In the end of the ball valve a claw coupling (see picture below) or a quick coupling can be installed. Instead of the filling hose, claw coupling or a quick coupling can be assembled directly into the air connection in the end piece - this mainly regards hoses with a steel end piece.



- Rope for pulling the air hose must have sufficient capacity, and without knots or damages.
- When the end of the hose has come around the net, a strap is used around the hose to further reduce the volume. This is repeated until desired volume is achieved.
- It is recommended that the hose is stored in a box or reel. If it is stored on a reel, make sure you have the correct parts for connecting to for example crane panel on a work boat.

4 USE OF AIR HOSE



Before the operation starts, fish farmer must review the current procedures. Operation manager/person with experience and correct competence must be in charge of the operation, and the various tasks must be distributed. The right kind of safety equipment must be used, and when using crane the right kind of lifting equipment must be used. Additional equipment must be removed or moved, for example cleaner fish hides.

Make sure that the hose is intact, and that it has no damages. If weight under net is to be removed, this must be done before the operation starts.

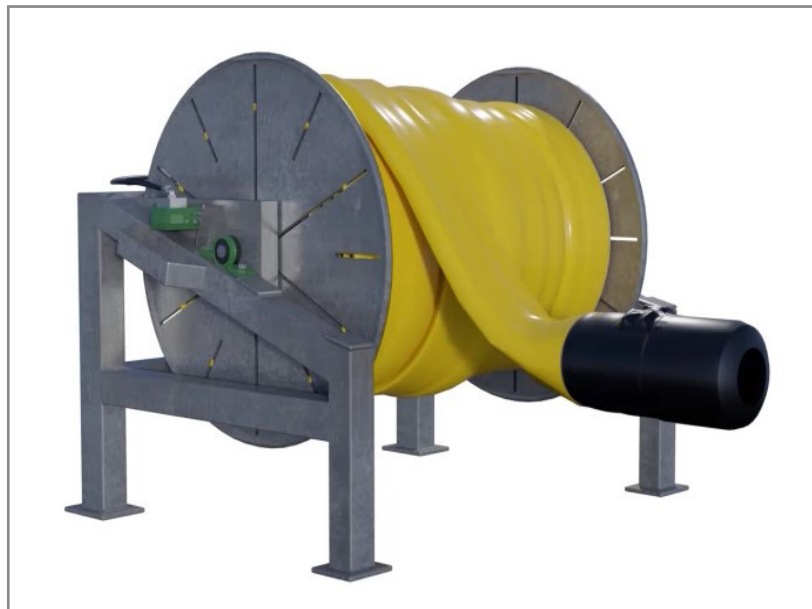
The operation must be monitored.



- Cut ropes can be attached to the railing on the floater (loops to put the hose through). Put the hose through these, it will then slide along the floater (on the outside of the net) instead of going into the floater.



- If the air hose is installed on a reel, it is connected and ready to take out into the floater. Reel must be fastened and secured to the work boat, so that it is steady during the operation.



- A rope is attached to the end piece, and the air hose is lifted out of the work boat.
- The air hose is towed around the floater. Make sure it does not hook up in anything. It can be a good idea to wait with air filling until it is towed into place - it then slides easier around the floater. Ball valves must be closed.
- If cut ropes are used, they are cut continuously.



- NOTE! If it is absolutely necessary to be close to the end of the air hose when, for example, cutting cut ropes, there must be no load on the end piece of the air hose.
- The air hose is connected to compressor, ball valve is opened and it is filled with air.
- Pay close attention to the air pressure, there is not much air needed before the hose has enough buoyancy. Normally 1-2 bar is sufficient. In some cases it can be necessary with a higher air pressure, for example if the hose bends during operation. Then you can fill some extra air and the hose will straighten out again. A manometer is used when filling air. An alternative is to remove the load from the nock or crane, and pull the hose back a little until it straightens out.
- Filling, emptying and checking the air pressure in the air hose can advantageously be carried out with a compressor on board a work boat. This assumes that this end of the hose remains on board the work boat.



- The operation must be monitored. If something unforeseen should happen, the operation must be stopped until the situation has been resolved.
- Close the compressor when the hose is filled with enough air. Make sure that the valve is closed before connecting hose is disconnected from the compressor.
- The process with reducing volume in the net starts now.



- If there is a need to further reduce the volume when the hose comes around the net, you take hold around the hose. This will ensure the least possible load on the end pieces. A strap is attached around the hose, and it is pulled towards the boat. This is repeated until desired volume is achieved. Rope must not be used for this purpose, as it will damage the hose.
- It is important to fasten the strap/round slings in a way that can not cause damage to the hose.



- The other end of the hose can be loosened from the compressor, and this can now be moved closer to work boat/well boat.
- The air hose can also be slid around the net in two directions, before you start reducing the volume.
- When the operation is finished, the air hose is drained of air. Then you take it back in the boat for storage. Remember to keep the end pieces above water at all times - this is to make sure that the hose is not filled with water.
- Check the hose when it is taken aboard the boat. Make sure that there is no twist in the hose when it is taken on board.

⚠️ 4.1 Special environmental conditions

4.1.1 Current conditions

Extra inspection must be carried out when there is a strong current. Interaction with net must be closely monitored, so that there is not too much load on the hose or the net.

4.1.2 Extreme weather

In the event of potential extreme weather, use of air hose must be postponed.

⚠️ 4.2 Risk assessment - critical points

Air hose must only be used for the purpose it is produced for.

Nevertheless, there are some critical factors that could cause damage to a net:

- Damage or sharpe edges on components on air hose.
- Contact between air hose and net, that can lead to heavy load - for example that end piece gets stuck in a loose handling rope or a loop in the net.
- The air hose bends so much that netting can get stuck.
- The end piece detaches from the hose - it is important that nobody stays in front of the end while using it and while there is air pressure in it.

All these factors must lead to a stop in the operation, until the situation is clarified and the risk is averted.

Educating personnel who handle the air hose and are responsible for the day-to-day monitoring will in many cases minimise the risk of accidents involving fish escaping.

Measures that reduce risks:

- Hose clamps are re-tightened after production and before delivery to fish farmer
- Clear requirements for maintenance and inspection
- Label on hose - information about air pressure
- Length of safety rope is the same as the length of the hose (plus rope for splice)
- Fish farmer must describe in their procedures what distance must be kept to the end of the air hose when it is in use - a safe zone



Information/warning about air pressure in the hose

5 INSPECTION AND MAINTENANCE

5.1 General

Maintenance of the air hose is essential to be able to carry out the work operation in the best possible way. To ensure optimal service life for an air hose, it is important that it is checked regularly. Controls and inspections must reveal any abnormal conditions, and help prevent fish escaping.

The person carrying out the inspection must have knowledge of the air hose, and have experience from fish farming facilities, so that the person concerned is able to observe any abnormal events. All inspections and maintenance must be logged.

If there is a need to replace components on the air hose, this must always be done in consultation with the manufacturer.

Contact AKVA group Egersund Net if there is uncertainty about what the fish farmer can and cannot carry out in terms of maintenance and replacements.

5.2 Checklist for inspections



Inspections aim to uncover possible damage and weaknesses at the earliest possible stage. Fish farmer must incorporate these points into their regular operating routines. If there is suspicion that there is damage to the air hose, this must be investigated immediately.

Before air hose is used, it must be checked to ensure that it has no damage that may cause damage or holes in the net.

The following points must be checked by fish farmer before use:

Check list item	Scope
Hose	Check that there are no wear and tear on hose, end pieces or ropes used to pull the hose.
End pieces	Check that end pieces are tight, and that they do not leak air.
Hose clamps	Bolts and nuts on hose clamps must be re-tightened, to ensure that the end piece is sufficiently attached to the hose.
Sharpe edges	Check that the air hose has no damage in any components that may cause hole in the net, for example nicks in the end piece. Check also that hose clamps (on PE end pieces) are covered with tape.
Components	Eye bolts, quick couplings, claw couplings and ball valves must be checked.
Rope inside hose	Check that the hose has not been deformed due to skrinkage of the rope.



5.3 Requirements for inspection and maintenance

5.3.1 Requirements for re-tightening of hose clamps

Re-tightening is carried out on new air hoses that are delivered from production or service. It is important that re-tightening is also carried out by fish farmer. Hose clamps are re-tightened after each use the first 3 times, and then every week. If there is suspicion of damage to the clamps or bolts, these must be replaced. Contact the manufacturer for information about tightening torque.

5.3.2 Requirements for maintenance of components

Eyebolts, swivels, quick couplings and ball valves must be lubricated every 4 times of use. If the air hose is to be stored, the components must be rinsed in fresh water and lubricated.

5.3.3 Requirements for an inspection by the manufacturer

The manufacturer of the air hose must be contacted when the product has been used a maximum of 40 times, and every 4 months. They assess whether there is a need to deliver the air hose in for service.

5.4 Check of air hose at service facility

Air hoses can be delivered to a AKVA group Egersund Net service facility for inspection or improvements.

A service may include inspection and testing of the air hose and its components. Components that are damaged or clearly weakened, is replaced.

5.5 Log

All inspections and maintenance of an air hose must be logged.

The log must at a minimum describe:

- The action completed (type of inspection, cleaning, maintenance or repair), with reference to a plan and procedure
- The result of action taken
- The necessary follow-up as a conclusion to the action taken
- Date
- Person/facility responsible
- Signature

5.6 Disposal/recycling

Air hose which will no longer be used, can be returned to one of AKVA group Egersund Net`s service facilities. It will then be handled in accordance with their waste management program.

6 TRANSPORT AND STORAGE

6.1 Receipt



AKVA group Egersund Net recommend that air hoses are packed in a box or on a reel. A bag can also be used.

When receiving a net, you must check the packaging for any damage. Visible damage to the packaging is a sign that something has happened to the air hose during transport. In such cases, you must inspect the air hose before use and notify AKVA group Egersund Net and the carrier. Air hose must always be checked before and after use. This is a requirement even if the product comes straight from service facility.

6.2 Storage of air hose

Air hoses must be stored in such a manner that they are not exposed to external factors capable of causing damage to components. The materials in the hose can be easily damaged by heat, so you must never store the hose near heat sources.

Similarly, work involving strong heat, such as welding, must never be performed near the air hose.

When you receive an air hose, it is your responsibility to ensure that it is stored appropriately.

Storage in box or on reel is considered the best storage location for an air hose.

If an air hose is packed in a bag with loops, it is important to check the capacity of the loops before performing any lifting. Air hose must not be dragged on the ground, as this can damage it.

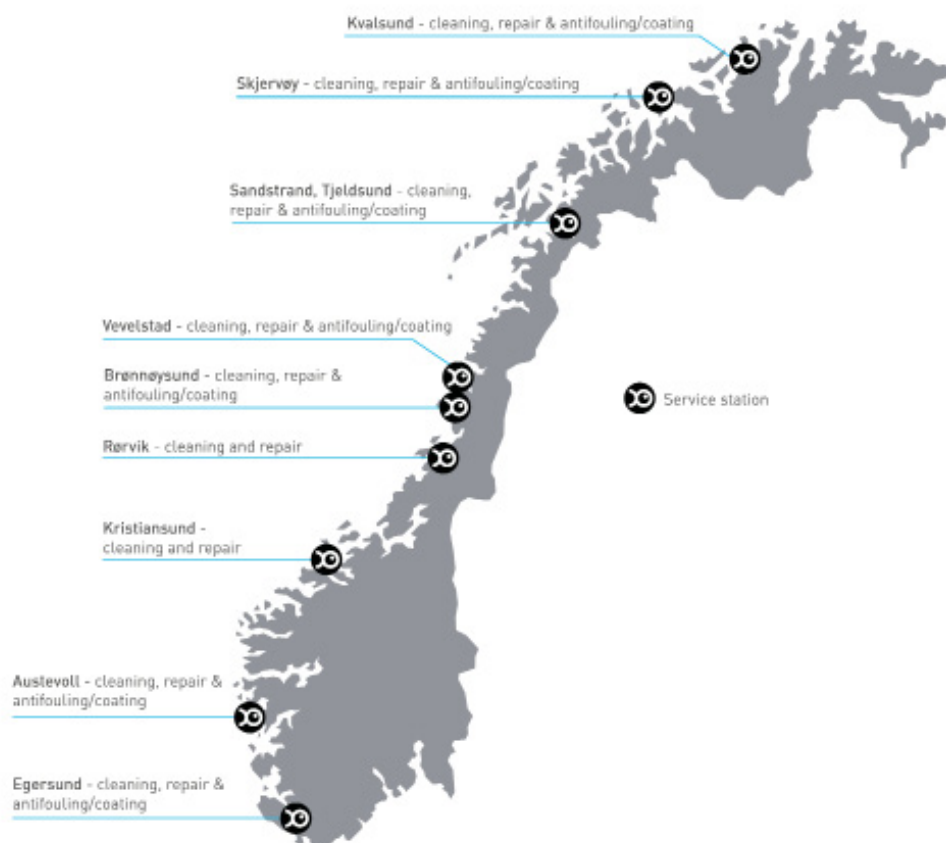
7 MANUFACTURER AND PRODUCT IDENTIFICATION

7.1 Contact

If you have any questions about the air hose, inspection or maintenance, please contact our head office or nearest service facility.

HEAD OFFICE

AKVA group Egersund Net AS
Svanavågveien 30
N-4373 Egersund
Tel.: +47 51 46 29 00
E-mail: post@egersundgroup.no
www.akvagroup.com



7.2 Identification of air hose

Each air hose has a unique production number. All production-related information and maintenance history is registered and stored with reference to the production number. The air hose has a production number in each end.



ID number steel end piece



ID number PE end piece

7.3 Net-Reg

Net-Reg customer portal is a userfriendly equipment log that covers the need for checklists and documentation for all equipment - included air hose. Use of this tool gives the fish farmer a complete overview of their locations and the status of their equipment. For both internal and external audits, the tool is used to produce documentation for each individual component in the entire installation.

7.4 Symbol definitions



REQUIREMENT: This symbol is placed next to text describing requirements



NOTE: This symbol is placed next to text describing potential incidents and other aspects that you should be aware of



TIP: Describes tips and advice in connection with the installation and handling of an air hose



ESCAPE RISK: This symbol is placed next to text describing incidents and/or operations that may increase the risk of fish escaping

8 REVISION HISTORY

8.1 Revision change

Table with an overview of changes in the latest revision of the user manual.

Rev.no	Date	Scope	Reference
7	01.07.2024	New risks described in summary	Page 2
7	01.07.2024	New definitions added	Chapter 1.1
7	01.07.2024	New information about use of air hose	Chapter 4
7	01.07.2024	Updated information about risks	Chapter 4.2
7	01.07.2024	New information in inspection checklist	Chapter 5.2
7	01.07.2024	New requirements for inspection and maintenance	Chapter 5.3

AKVA GROUP EGRSUND NET

Our mission is to deliver solutions and services that optimise production and contribute to sustainable, cost-effective and safe fish farms. We place great emphasis on fish welfare, operational performance and profitability for the customer in everything we do.

AKVA group Egersund Net aims to produce high-quality, durable air hoses, and we describe how they should be used in this user manual.

We wish to make our manual as user-friendly as possible. To achieve this, we rely on your feedback and our collaboration with you as the user of our air hoses. We appreciate every suggestion we receive, as it helps us deliver more effective and safer equipment. If you have any suggestions or ideas that may help improve user-friendliness, we would appreciate hearing from you.

Together, we can make fish farming an even more eco-friendly and sustainable growth industry that produces safe and healthy seafood for the global market.

The manual is designed to meet the requirements of the Norwegian Standard (NS) 9415:2021 and the NYTEK23. Risk assessment for the product is carried out, risks and measures to reduce them are described in the user manual.

AKVA group Egersund Net reserves all rights to this user manual and its contents. Reproduction and distribution to third parties without our clearly expressed prior approval is not permitted. We reserve the right to correct any errors in the text or illustrations.

Best regards,
AKVA group Egersund Net



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