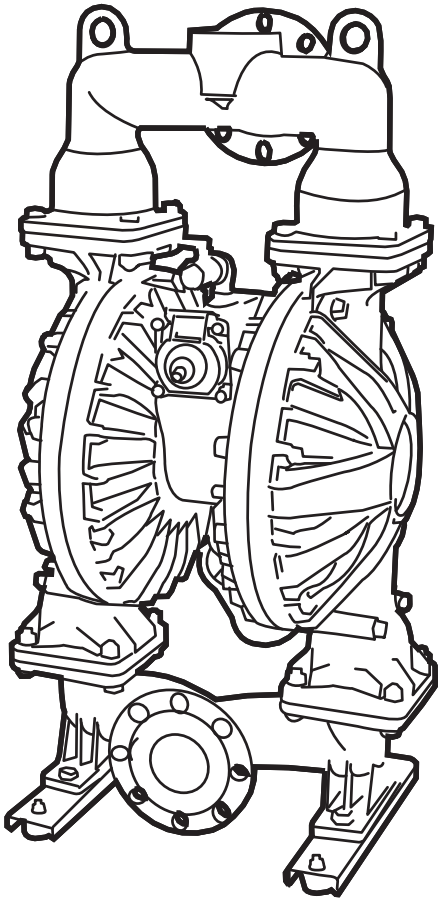
Original Instructions

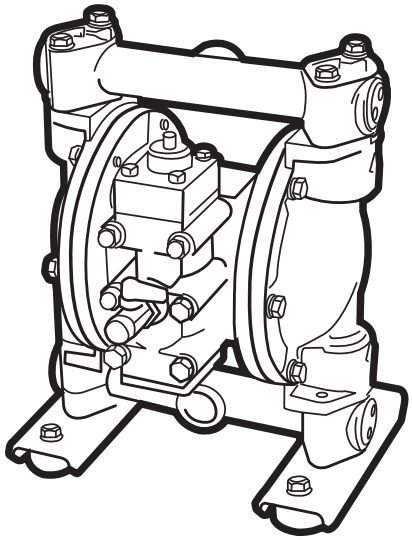
Doc. No. NDP 570U-YE25

YAMADA CORPORATION

DP/NDP/Global/AD Series

Quick Guide





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Quick Guide

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APPENDIX

1. GENERAL

For correct use of the YAMADA Diaphragm Pump and Dampener (hereinafter called Product(s)), make sure to read this document before installation and operation.
After reading, keep it in a place where it can be easily referenced. This document must be stored in a dry and safe location.
This document describes how to safely install, operate and service this product to avoid injury and property damage. Operation and Maintenance Manuals must be also stored and referred to together with this document. It is the responsibility of the purchaser to provide these documents to the operator of this product.
Manuals can be found on the YAMADA website https://www.yamada-europe.com/downloads

PURPOSE OF USE

Diaphragm Pump DP/NDP/Global series (hereinafter called Pump(s)) is a positive displacement pump that reciprocates a diaphragm to transfer fluids through a unique switching mechanism that uses compressed air.

Pulsation Dampener AD series (hereinafter called Dampener(s)) reduces fluid pulsation that is caused by pump operation and obtains stable discharge.

INTENDED USERS

Installation, operation, and inspection of this product should be performed by a qualified person who can safely perform these tasks according to the laws, regulations and codes of the country where the product is located.

INDICATIONS

The precautions are clearly categorized and indicated as “WARNING” or “CAUTION”. Make sure to observe them when using the product.

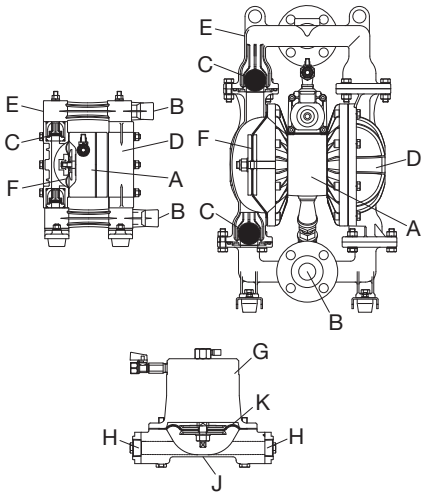
WARNING	Indicates content that could result in death or serious injury if not followed and handled correctly.
CAUTION	Indicates content that is expected to cause personal injury and property damage if not followed and handled correctly.

SYMBOLS

In every chapter in this document, the following icons provide advice on what to wear when performing the described actions.

- Wear a protective face mask
- Wear protective safety gloves
- Wear protective clothing
- Wear safety helmets
- Wear hearing protection
- Wear eye protection
- Wear safety shoes

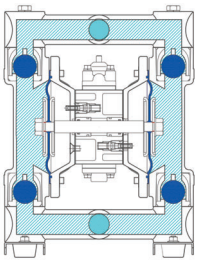
DESCRIPTION OF PARTS



Diaphragm Pump
A. Centre Body
B. Inlet / Discharge Port
C. Ball / Flat Valve
D. Out Chamber
E. Manifold
F. Diaphragm

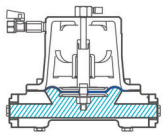
Pulsation Dampener
G. Air Chamber
H. Inlet / Discharge Port
J. Liquid Chamber
K. Diaphragm

PRINCIPLE OF PUMP AND DAMPENER



Diaphragm Pump

There are two diaphragms fixed to the centre rod, one at each end. When compressed air is supplied to the right side air chamber, the centre rod moves to the right, the fluid in the out chamber is pushed out, and at the same time fluid is sucked into the out chamber on the other side. When the centre rod is moved full-stroke to the right side, the air switch valve is switched, compressed air is distributed to the left side air chamber, and the centre rod moves to the left. The fluid in the left side out chamber is pushed out, and at the same time fluid is sucked into right side out chamber. Through repetition of this operation, fluid is repeatedly taken in and discharged out.



Pulsation Dampener

It consists of a liquid chamber that receives pulsating fluid, a diaphragm that increases or decreases the volume of the liquid chamber, an air chamber that regulates the pressure in the liquid chamber, and valves that regulate the pressure in the air chamber.
When the pressure in the liquid chamber rises due to the pulsation of the pump operation, the diaphragm rises to the air chamber to absorb the pulsating fluid pressure.
When the pressure in the liquid chamber drops, the pressure in the air chamber causes the diaphragm to drop to compensate for the pressure.
Air in the air chamber is exhausted when the diaphragm drops to the lower limit by the valve connected to the diaphragm, exhaust is stopped when the diaphragm rises, and the pressure in the air chamber is kept within a certain range. The diaphragm is controlled to the intermediate position to keep the pulsation cushioning at all times.

SERVICE LIFE

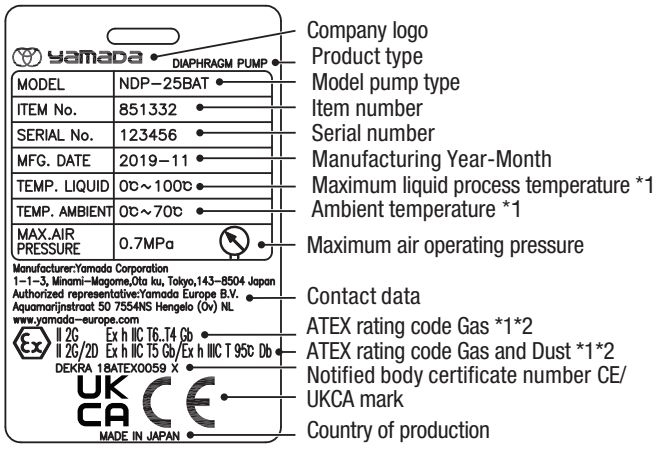
Frequency of the regular service or maintenance is determined by the application of the pump. Regularly check the functionality of the product. In case of malfunction or capacity reduction, always consult your local authorized YAMADA Distributor or download the operation and maintenance manual. Technical data can be found on the YAMADA website at
https://www.yamada-europe.com/downloads

2. MARKING AND INDICATIONS

On the product, the following markings and tags are present:

TYPE PLATE

The type plate is attached to the product. Refer to DOC-4 in the APPENDIX, for the location of the markings and tags.



*1 For details of temperature classes and temperature limits, refer to the chapter TEMPERATURE LIMITS IN ATEX ENVIRONMENT
*2 For details of equipment groups (for gas), refer to the type plate attached to each pump and the chapter SUITABILITY OF DIAPHRAGM MATERIALS.

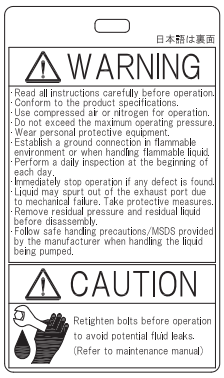
WARNING Without the type plate, CE-ATEX/UKCA certification is no longer valid.

WARNING LABELS AND TAGS

Attached as a yellow plastic tag together with the type plate to the products.
It states:

WARNING

- Read all instructions carefully before operation.
- Conform to the product specifications.
- Use compressed air or nitrogen for operation.
- DO NOT exceed the maximum operating pressure.
- Wear personal protective equipment.
- Establish a ground connection in flammable environment or when handling flammable liquid.
- Perform a daily inspection at the beginning of each day.
- Immediately stop operation if any defect is found.
- Liquid may spurt out of the exhaust port due to mechanical failure. Take protective measures.
- Remove residual pressure and residual liquid before disassembly.
- Follow safe handling precautions/SDS provided by the manufacturer when handling the liquid being pumped.



CAUTION

- Retighten bolts before operation to avoid potential fluid leaks. (Refer to maintenance manual.)

IN/OUT LABELS

The product typically has two fluid ports: the fluid inlet port indicated with “IN” and the fluid discharge port indicated with “OUT”. This indication can also be marked on the product’s casting parts.

CAUTION/INSTRUCTION LABELS (PLASTIC CASING ONLY)

For plastic casings, additional caution should be taken during installation. The white sticker label on the body/pump chamber of the pump states:
When connecting joint for piping or hose connector to manifold, never fasten it too strongly. Otherwise, manifold may be damaged.
Connect it to manifold as follows:
1) Bind sealing tape doubly on the screws of joint or connector to be connected to manifold.
2) Screw it into manifold correctly and fasten it fully by hand.
3) Then, fasten it further for two rounds with a tool. If there would be a leakage, fasten it little by little additionally.

MODEL NUMBER

Refer to DOC-2 in the APPENDIX.

ATEX 114 (2014/34/EU)

The product models listed in the Declaration of Conformity may be used in some potentially explosive atmospheres.

WARNING Products must be used in an environment which comply with the marking. Otherwise products can be the source of ignition.

The specific models are marked:

II 2G	**Ex h .... Gb**
II 2G / 2D	**Ex h .... Gb / Ex h .... Db**

CONCEPT OF EXPLOSION PROTECTION

For this product the type of protection constructional safety “c” is applied, as indicated by the marking Ex h. The product can be used with flammable liquids as process medium and can be installed in hazardous areas classified as zone 1 or zone 2 caused by the presence of flammable gas and/or vapour (as indicated by the marking 2 G) or in hazardous areas classified as zone 21 or zone 22 caused by the presence of combustible dust or fibers (as indicated by the marking 2 G / 2 D). The explosion protection is only valid if the product is operated within the specifications and if all applicable specific conditions of use are fulfilled.

ATEX CODING DESCRIPTION

Refer to DOC-3 in the APPENDIX.

GB

SUITABILITY OF DIAPHRAGM MATERIALS

The relation between the diaphragm material and its suitability for use with the process liquid is given in the table below, based on the test method of EN ISO 80079-36, Annex D.

Diaphragm Material	Pump Size	Diaphragm Type	Suitable for Process Liquids of Gas Group
PTFE	80	T	IIA
PTFE	32, 40 and 50	T	IIB
PTFE	25 and smaller	T	IIC
TPO	80	S	IIB
TPO	all sizes except for 80	S	IIC
TPEE	all sizes	H	IIC
EPDM	all sizes	E	IIC
FKM	all sizes	V	IIC
NBR	all sizes	N	IIC
CR	all sizes	C	IIC
PTFE/EPDM	all sizes	TU	See Specific Conditions of Use
PTFE/CR	all sizes	G	See Specific Conditions of Use

SPECIFIC CONDITIONS OF USE

The user of the pump and dampener shall provide relevant information regarding the intended use (e.g. process liquid) to the manufacturer for selection of suitable materials.
The external non-metallic parts of the products should be protected from ultraviolet light at all times, including during installation.

The actual use shall be within the specified limits and within the ratings as shown on the nameplate of the pumps and dampeners.

Depending on the applied pump materials and the intended use; e.g. a non-conductive process liquid and a high liquid flow, electrostatic charging of these materials may be possible. The user shall conduct an assessment regarding the risk of electrostatic charging and, if applicable, shall take appropriate measures to reduce this risk to an acceptable level. For the diaphragm materials the suitability as shown above can be used for the assessment.
In case of application of diaphragm type TU or G the assessment shall show its suitability.
In case of application of diaphragm type T or S the assessment may show a wider suitability

3. SAFETY PRECAUTIONS

The safety precautions described here are important for the safe and correct use of the product, to prevent harm to yourself and to others, and damage to property.
Always confirm all applicable local laws, regulations and codes in order to be able to take all necessary precautions and to ensure correct usage of the product.
Before using the product, make sure you completely understand all cautions and notes.

- Each product's wetted parts (parts that come into contact with fluid) will be different depending on the product model. Check a chemical resistance chart to make sure your product's materials are suited to the fluid that is to be pumped. Never use a chemical that is not suitable for the material of the product or any of its parts. This may cause permanent damage to the product, environmental damage, possible injury or death.
- If the product is to transfer hazardous fluids (flammable, acidic, chemically reactive, environmentally dangerous, hot etc.), prepare safeguards such as placing the product in a pit or protective box and use appropriate sensors to warn against failure or to stop the product. Also make sure that appropriate warnings are displayed on the product and surrounding areas, and that all other safeguards are carried out.
- Over time the torque tolerances on all parts comprising the product may loosen. Periodically retighten all bolts to their specified tolerances (please refer to the maintenance manuals).
- When you operate the pump, you may hear a loud operating noise depending on the circumstances (such as fluids to be transferred, supplied air pressure and fluid discharge pressure). When necessary, for example if any law or regulation is applicable for the use of the pump, take appropriate measures for soundproofing it.
- If a diaphragm of the product is damaged, the supplied air is mixed into the fluid or the fluid flows into the air switching section of the product. Do not use the product, if the supplied air or dust mixed in the supplied air affects the damaged diaphragm, or if the chemical resistance of any part consisting the main unit is not appropriate for any chemical.
- If a diaphragm were to fail, the fluid being pumped will be blown out of the exhaust along with compressed air. Make sure that all precautions are carried out to restrict the possible environmental damage or injuries that may result. Also make sure the chemical resistance and corrosion resistance is compatible with any material that it may come into contact with.
- If the product remains unused for a long period of time, or you have misgivings about running the pump, consult the dealer where you purchased the product.
- Make sure any fluid pipes or containers as well as the exhausted air from the pump, does not affect or will not affect any persons, animals, facilities or equipment.
- Follow all laws and instructions regulating the containment, storage and use of any particular liquid.
- While the pump is operating, do not place your hand or any other object near the material inlet.
- In some cases an additional risk may arise due to vapours (for example gasoline, alcohols, solvents) or gases resulting from escaping process fluids caused by leaking, component failure or improper maintenance.
- Check chemical compatibility of all wetted components (incl. seals) with all process and cleaning fluids to minimize the risk of chemical reactions. Compatibility may change with concentration and/or temperature.
- Incorrect material compatibility may cause corrosion of materials, which may lead to leakages and very dangerous situations for the environment, and can lead to fire, explosions or even death.
- Process lines can be hot. When a diaphragm is damaged, process fluids may extrude from the exhaust. A pipe or hose may be connected to the exhaust to lead the exhaust air away from the pump.
- Never block a leakage with any body part. Injected materials can cause severe injury or death.

PERSONAL PROTECTIVE EQUIPMENT

- Always wear appropriate safety glasses and other safety equipment during installation, operation, inspection and maintenance. Use safety protection to avoid contact with process fluids, cleaning fluids and other fluids. Gloves, coveralls, face masks and other equipment may be required to protect personnel.
- Always review the Safety Data Sheet (SDS) of the fluid and follow all handling instructions.

POSSIBILITY OF HAZARDS

FIRE AND EXPLOSION HAZARDS

Always confirm all applicable local laws, regulations and codes in order to be able to take all necessary precautions and to ensure correct usage of the product.
(When pumping flammable fluids, always check the applicable local environmental and workplace safety laws in order to be able to take all necessary precautions and to ensure correct usage of the product.)

- Improper grounding, poor ventilation, or unshielded fire or spark can create a danger of fire or explosion.
- All peripheral equipment and piping connected to this product should be properly grounded.

- Whenever you notice any spark while operating the product, immediately stop its operation, and do not start using it again unless you are sure of the cause and corrective actions have been taken.
- Depending on the type of fluid being pumped, bubbles of flammable gas may be generated. Make sure that ventilation is satisfactory.
- The product itself, its fluid piping and air exhaust ports should be kept away from unshielded fire, spark and other causes of ignition.
- Do not operate heating devices that create flames or have heating filaments anywhere near the pump or its piping.
- Do not leave flammable fluids inside of the product.
- Machinery and other equipment near the place of installation of this product should be properly insulated to prevent conduction with each other.
- Take sufficient safety precautions when operating the product in flammable atmospheres. Flammable atmospheres can be caused by the presence of gases, dusts or vapours.
- Lubricating compressed air with a flammable oil substance creates an oil vapour coming out of the exhaust.
- Depending on the type of fluid being pumped and the installation environment, static electricity could cause a fire.
- When installing the product, be sure to mount a ground wire from the specified location on this product. When the product is installed and operated without being properly connected to a ground wire, friction may generate static electricity. The ground wire must be 4.0 mm^2 or more. Refer to DOC-4 in the APPENDIX for mounting locations. (⏚ Ground connection point)
- The products should not be powered by flammable gases. Be aware of the hazards associated with the specific application and the application environment. Comply with all applicable laws, regulations and codes. Do not use the product if there is any doubt about the safety of the application.

⚠ CAUTION If you use the CSA certified model, please consult with the dealer where you purchased the product.

- The surface temperature of the product must be kept below the ignition temperature of any potential explosive atmosphere.

⚠ CAUTION The surface temperature is affected by several factors such as application, process fluids or atmosphere. The end user shall ensure that all temperatures are acceptable.

HEALTH HAZARDS

Always confirm all local laws, regulations and codes applicable where you are operating the pump for protecting operators from the health hazards.

- Depending on the type of fluid being pumped and the installation environment, static electricity could cause electric shocks.
- Hazardous fluids (acidic or alkali, flammable or toxic) or gas bubbles generated by such fluids may cause serious injury or even death if accidentally inhaled or consumed, or if they come into contact with the eyes or adhere to skin.
- Always install the piping and exhaust port of this pump away from areas where humans or animals pass through.
- If a dangerous fluid such as a(n) poison, acid, alkali, chemical etc. comes into contact with your skin or eyes or is ingested or aspirated, it may cause serious or fatal injuries to yourself or others.
- Make sure you understand the characteristics of the fluid, and that all precautions are carried out as specified by the manufacturer of the fluid; also ensure that all workplace safety laws and other applicable regulations are adhered to correctly, before installing and operating the product. Make sure the correct safety equipment such as gloves, glasses, masks and protective clothes are used, and correct handling procedures are followed. Always review the Safety Data Sheet (SDS) and follow all handling instructions.

ENVIRONMENTAL HAZARDS

- When a diaphragm is damaged, fluid will gush out together with air through the exhaust port. Also, when the pump has a positive suction head, liquid will be forced out from the air exhaust port due to positive inlet pressure when a diaphragm is damaged. Also be sure you are using a model with appropriate corrosion resistance for the fluid to be pumped.
- In case of diaphragm failure, the exhaust from the product may contain some sludge. Make sure environmental regulations are observed when operating the product in a location where this may have an impact on the environment.

4. BEFORE USE

METHOD OF TRANSPORTATION

Be aware that the pump may be very heavy. When lifting, use a hoist or crane, using the specific lift point(s). Refer to DOC-4 in the APPENDIX. (Lifting point(s))

When you transport the product, release pressure from the products and all piping, take away all hoses and piping and drain all fluids from inside the product.

⚠ WARNING If the product is moved while under pressure, any shock caused by dropping etc., may damage the product or even cause an explosion.

RETIGHTENING

Over time, the torque tolerances of all parts of the product may loosen. Before initial use as well as after that, periodically retighten all bolts to their specified tolerances.
Regularly check the torque value table and instructions.

⚠ WARNING Incorrect torque values can lead to early breakdown or leakage, which may create very dangerous situations.

RETIGHTENING TORQUE

Refer to DOC-1 in the APPENDIX.

TEMPERATURE LIMITS IN ATEX ENVIRONMENT

To use ATEX-certified products in an ATEX environment, the process temperature limit depends on the materials used and the required temperature class or maximum surface temperature.

The minimum process temperature of the product in an ATEX environment is determined by the highest minimum process temperature among the air motor, wetted parts, and diaphragm materials.
The minimum process temperature for each material is specified in the Process Temperature values in the table under TEMPERATURE LIMITS IN NON-ATEX ENVIRONMENT.

The maximum process temperature of the product in an ATEX environment is determined by the lowest value among the maximum process temperatures of the air motor, wetted parts, and diaphragm materials and the maximum process temperature based on the ATEX Temperature Class.
The maximum process temperature for each material is specified in the Process Temperature values in the table under TEMPERATURE LIMITS IN NON-ATEX ENVIRONMENT.
The relationship between ATEX temperature class, ambient temperature, process temperature, and maximum surface temperature is specified as follows.

Temperature Class	Maximum Ambient Temperature (°C)	Maximum Process Temperature (°C)	Maximum Surface Temperature T… (°C)*
T6	55	55	95
T5	70	70	95
T4	70	100	-

*The maximum surface temperature has been determined without the presence of a dust layer.

TEMPERATURE LIMITS IN NON-ATEX ENVIRONMENT

Casing		Process Temperature (°C)		Material Temperature (°C)	
Material		Min.	Max.	Min.	Max.
A	Aluminium	0	100		
S	Stainless Steel	0	100		
F	Cast Iron	0	100		
V	PVDF	0	60	-15	100
D	POM	0	60	0	82
T	PTFE	0	100	0	100
P	PPG	0	60	0	70

Diaphragm		Process Temperature (°C)		Material Temperature (°C)	
Material		Min.	Max.	Min.	Max.
C	CR	0	70	-20	82
N	NBR	0	70	-20	82
E	EPDM	0	80	-20	100
H	TPEE	0	80	-30	82
V	FKM	0	100	-5	105
T	PTFE	0	100	0	100
S	TPO	0	100	-20	100
TU	PTFE/EPDM	0	90	-10	90
G	PTFE/CR	0	90	-10	93

The minimum and maximum temperature limits are determined by all the materials of the product that come into contact with the liquid to be pumped.

For temperature limits for aluminium, cast iron or stainless steel pumps, refer to the diaphragm material temperature limits. The air motor is made of aluminium, except for types NDP-5 and 15 with PPS air motor, and NDP-P20 and P25 with PPG air motor. For PPS, the material temperature range is -20 °C to +100 °C. For PPG, the material temperature range is 0 °C to +70 °C.

For products with a plastic compound body material, the maximum allowed air pressure may be limited by the fluid temperature.

The material temperatures only indicate that the materials can keep certain strength under certain conditions. Product application and operation should be decided by the characteristics of what is being pumped combined with the temperature, pressure and physical characteristics or requirements of the application itself.

AMBIENT TEMPERATURE RANGE

Casing pumps and dampeners 0 °C to +70 °C
For ATEX Environment Class T6 0 °C to +55 °C

WARNING Always use the temperature range suitable for all materials.

OPERATING AIR

The pump must be operated by compressed air or nitrogen.

WARNING Use of compressed air other than the above may cause air pollution, damage to the pump, or even an explosion.

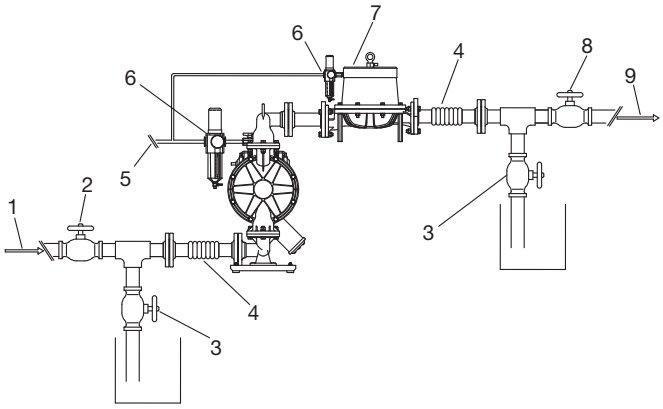
OPERATING PRESSURE RANGE

Series	Pressure Limits (MPa)
DP, NDP, AD	0.2 to 0.7
NDP-H (Plastic Casing)*	0.1 to 0.7
NDP-H (Metal Casing)*	0.1 to 0.85
DP-F (PTFE casing) size 5 to 20	0.2 to 0.5
DP-F (PTFE casing) size 25 to 38	0.2 to 0.7
Global	0.2 to 0.7

* PTFE diaphragm must be operated within 0.15 to 0.7 MPa

5. INSTALLATION

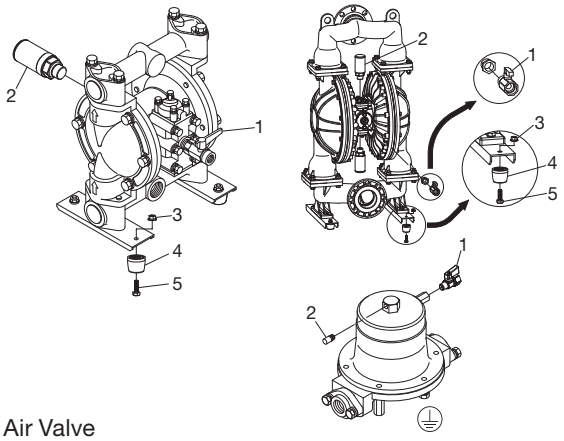
Make sure that appropriate warnings are displayed on the pump and surrounding area and all other safeguards are carried out.



1. Inlet fluid port
2. Inlet flow valve
3. Drain valve
4. Flexible connection
5. Air supply
6. Air filter regulator
7. Pulsation dampener (optional)
8. Discharge flow valve
9. Outlet fluid port

INSTALLATION OF ACCESSORIES

- Install cushions under the pump base as shock absorbers.
- Attach the air valve on the air inlet of the product.
- Attach the silencer on the exhaust position of the product.
- Use sealing tape for both accessories to avoid leakage.



1. Air Valve
2. Silencer
3. Nut
4. Cushion
5. Bolt

INSTALLATION OF THE PUMP

1. Determine the position of the pump.
2. Install the pump horizontally.
3. When fixing the pump in place, use the pump base, and secure the pump by tightening the tied-down bolts a little at a time.

For detailed installation instructions and inlet pressure range, refer to the operation manual.

WARNING Pumps are not valves and may never be used or treated as valves.

WARNING Protective materials and labels for transportation should be removed before use.

INSTALLATION OF THE DAMPENER

1. Determine the position of the dampener. Preferably, install the dampener within 1 meter from the pump.
2. Install the dampener horizontally.
3. Connect the pump and dampener with a hose or flexible material.

For detailed installation instructions and inlet pressure range, refer to the operation manual.

WARNING Dampeners are not valves and may never be used or treated as valves.

WARNING Protective materials and labels for transportation should be removed before use.

ARRANGING EARTH CONNECTION

When installing the product, be sure to mount the ground wire at the specified position. For the specified mounting location for the ground wire, refer to DOC-4 in the APPENDIX. The ground wire must be 4.0 mm^2 or more. (Ground connection point)

ARRANGING THE EXHAUST

When the exhaust point needs to be set up away from the pump, arrange the exhaust.
Use a pipe/hose of the same diameter as the exhaust port.

CAUTION Blocking the exhaust or using more than 5 meters length of exhaust pipe/hose may lead to a decreased pump performance.

CAUTION When operating the product, it may generate loud operating noise, depending upon the circumstances.

WARNING Protect humans, animals and surrounding facilities against the exhaust port.

CONNECTING AIR PIPING

Connect a filter regulator between the compressor and the pump, and use a lubricator if required. Use a flexible air hose with a diameter equal to the inlet air valve and the air consumption. Keep the air line as short as possible for best performance.

WARNING Make sure the air valve is placed in such a way, that it can be reached in case of emergency.

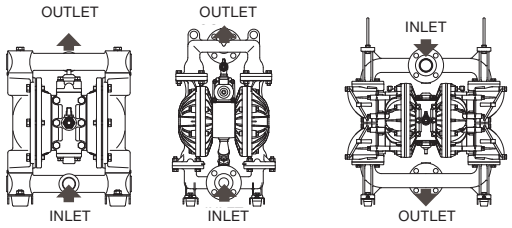
WARNING Always use Class 1 turbine oil (ISO VG32) only for lubrication in non-explosive environments.

CONNECTING FLUID PIPING

When connecting a pipe or hose to the manifold, never tighten it too strongly. Otherwise, the manifold may be damaged.
Connect to manifold as follows:

1. Apply sealing tape to a thread of a joint or the connector, which need to be connected to the manifold.
2. Screw into the manifold correctly and tighten fully by hand.
3. Then, screw the thread further for two rounds with a tool. In case of a leakage, tighten it little by little additionally.

When using a rigid pipe, connect flexible connections on both the inlet and the discharge port.
Pipe and hose diameters should be the same as or bigger than the pump port size. Long suction and discharge lines can decrease pump performance.
Refer to the diagram under “INSTALLATION OF THE PUMP” for an installation example.



CAUTION For NDP-50FAN, the inlet port is located on top of the pump. It discharges liquid from the bottom side port.

GB

6. OPERATION

Before connecting any pipes or hoses to the pump, make sure that the system has been bled of all compressed air.

START-UP

Pump

1. Check all bolt torque values on the outside of the pump (refer to DOC-1 in the APPENDIX).
2. Make sure that the supply and pump air valve, regulator and the drain valve on the discharge side are closed. Also, make sure that the inlet flow valve on the suction side is open.
3. Start the air compressor.
4. Open the supply air valve and adjust the supply air pressure with a regulator to within the permissible range (Refer to OPERATING PRESSURE RANGE on page GB-6)
5. Open the flow valve on the discharge side.
6. Press the RESET button (excluding G15P, G15V and G25) and then slowly open the air valve of the pump.
7. Verify that fluid is flowing inside the piping and is being pumped to the discharge side, and then fully open the air valve.
8. Again adjust the supply air pressure with a regulator to within the permissible range in order to adjust the flow rate. (Refer to OPERATING PRESSURE RANGE on page GB-6)

WARNING Do not open the air valve suddenly.

WARNING Never block a leakage with any body part. Injected materials can cause severe injury or death.

CAUTION Slow pump cycles result in less wear and tear.

Dampener

1. Start the air compressor and operate the pump.
2. Set the supply air pressure to the reference level of “pump discharge pressure x 1.1” by using the regulator connected to the dampener and make a fine adjustment in the range of ±0.05 MPa while checking the pulsation as required.

SHUT DOWN

Pump and Dampener

1. Close the supply air valve and the air valve of the pump to shut off the supply air.
2. Close the flow valve on the discharge side, start slowly opening the drain valve, and release the pressure fluid.
3. Open the air valve of the pump, start running the pump, and discharge the remaining air.
4. After making sure that the pump has been shut down and the pressure has been released, fully open the regulator, and close the air valve and drain valve of the pump.
5. Flush the entire system with a proper cleaning liquid, especially if the pumped material is subject to expansion or dry-out when not in use.
6. Disconnect the air line from the pump if it is not going to be active for a longer period.
7. When using a dampener: if the pump is not running, shut off the air supply to the dampener. This to prevent possible damage of the dampener’s diaphragm.

WARNING Cleaning liquid must be compatible with the fluid and pump wetted parts.

WARNING Even though you stop operating the pump and disconnect the pipes from the pump, fluid may remain inside of the pump due to the structure of the pump.

WARNING Store the pump only after draining all fluid from the pump.
If you do not operate the pump for a long time, the fluid may be swollen depending on the ambient environment (such as freezing and heating), and then the pump may be damaged or fluid may leak from the pump.

7. SERVICE

Keep records of service activity and include the pump in your preventive maintenance program.

Contact your local authorized Yamada Distributor for parts, customer service and information. If your local Yamada contact is unknown, contact the nearest Yamada office listed on page GB-9.

WARNING Residue may be extruding from the pump. Use protective equipment.

WARNING Only use genuine Yamada replacement parts. Otherwise, the warranty, CE-ATEX/UKCA certification, and the performance and pressure information on the pump tag are no longer valid.

DISPOSAL

Dispose of the product according to the local regulations, after removing residual material from inside this product.

8. MAINTENANCE

Daily checks and regular maintenance should be done as prescribed in the manuals of the product(s).
Before starting maintenance work, depressurise the product’s air side and fluid side. If air pressure or residue remains in the product, there is a danger of explosion, or possible poisoning resulting in serious injury or death, if chemicals adhere to the skin or are accidentally swallowed. (For details on cleaning the pump, refer to the Operation Manual.)
When it is instructed that special tools must be used, be sure to use the specified tools. Otherwise, the product may be damaged.

For details on maintenance, refer to the maintenance manual or consult the Yamada Europe website https://www.yamada-europe.com/downloads for information.

WARNING Residue may be extruding from the pump. Use protective equipment.

SURFACE CLEANING

The product shall be kept clean from dust and other materials which can cause a possible fire or explosion due to heat or static energy. The maximum water pressure for cleaning the pump is 0.1 MPa.

LIMITED WARRANTY

Refer to the Operation Manual.

9. CONTACT US

Yamada Europe B.V. (Europe, Africa, Middle East, Russia)

Aquamarijnstraat 50, 7554 NS Hengelo (Ov.) the Netherlands

Phone : **+31-(0)74-2422032**
Fax : **+31-(0)74-2421055**
Mail : **sales@yamada.nl**
Web : **www.yamada-europe.com**

Yamada Corporation (Japan)

1-1-3, Minami-Magome, Ota ku, Tokyo, 143-8504 Japan

Phone : **+81-(0)3-3777-4101**
Fax : **+81-(0)3-3777-3328**
Mail : **sales@yamadacorp.co.jp**
Web : **www.yamadacorp.co.jp**

Yamada Corporation International Department (East Asia, South Asia, Oceania)

1-1-3, Minami-Magome, Ota ku, Tokyo, 143-8504 Japan

Phone : **+81-(0)3-3777-0241**
Fax : **+81-(0)3-3777-0584**
Mail : **intl@yamadacorp.co.jp**
Web : **www.yamadacorp.co.jp**

Yamada America, Inc. (US, Canada, South America)

955 E. Algonquin Rd., IL 60005, Arlington Heights, USA

Phone : **+1-847-631-9200**
+1-800-990-7867 (Toll Free)
Fax : **+1-847-631-9273**
Mail : **sales@yamadapump.com**
Web : **www.yamadapump.com**

Yamada Shanghai Co., Ltd. (Mainland China)

Building No. 12, No. 1500 Zuchongzhi Road,
Pudong New District Shanghai 201203, P.R., China

Phone : +86-(0)21-3895-3699

Fax : +86-(0)21-5080-9755

Mail : admin@yamadacorp.com.cn

Web : https://www.yamadapump.cn/

Yamada (Thailand) Co., Ltd. (Southeast Asia)
No. 41/79 Moo 6, (Bangna Trad road Km 16.5)
Bangcha long, Bangplee, Samutprakarn, 10540, Thailand

Phone : +66-(0)2-130-0990

Fax : +66-(0)2-130-0993

Mail : sales@yamada-th.com

Web : www.yamadacorp.co.jp

APPENDIX

DOC-1

RETIGHTENING TORQUE

See DOC-4 (page 82) for a figure of each model.

Nm

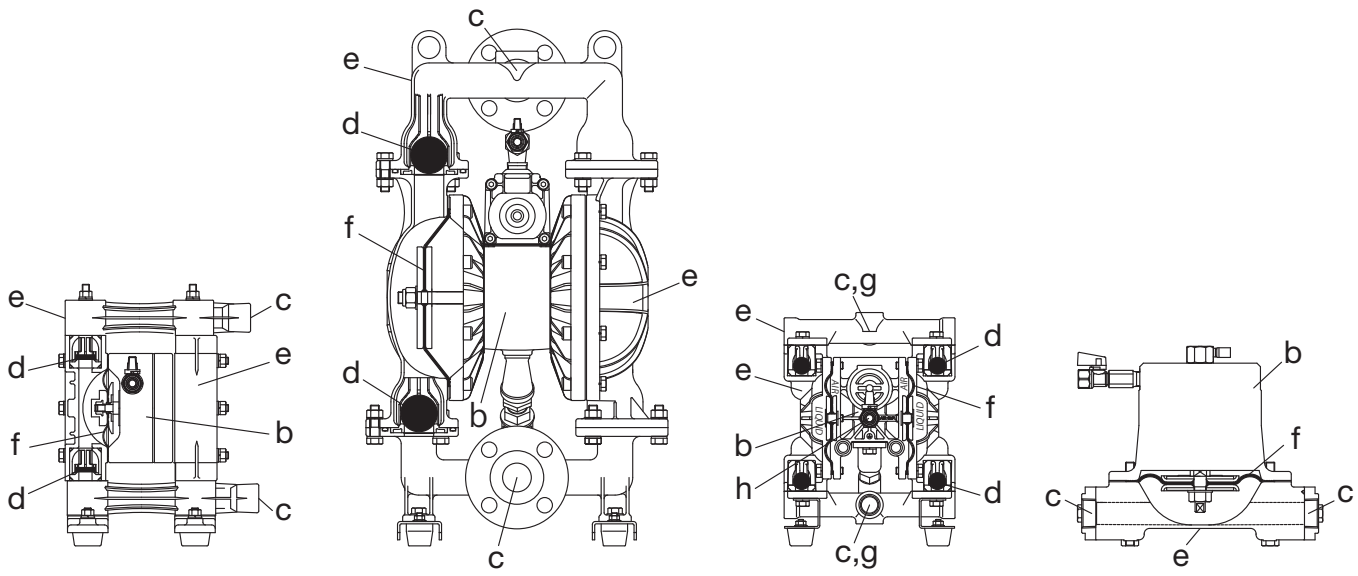
Model	a	b	c
NDP-5FA/BA/FS/FP/FV/FD			
T/G	6	6	
DP-10BA/BS			
C/E/H/N/S/T/V/TU/G	12	12	
DP-10BP			
C/H/N/S/T	8	12	
DP-15FP/BP			
H/N/S/T	12	12	
DP-15FV			
T	12	12	
NDP-15BA/BS/FV			
C/E/H/N/S/T/V/TU/G	12	12	
NDP-15FP/BP			
C/H/N/S/T	12	12	
NDP-(P)20BA/BS			
C/E/N/V	10	10	
H/S	10	13	
T/G/TU	20	13	
NDP-(P)20BP			
C/E/N/V	10	10	
H/S	10	13	
T/TU	12	13	
NDP-23BA/BS			
TU “20”	20	13	
TU “25”	35	20	

Model	a	b	c
NDP-(P)25BA/BF/BS			
C/E/N/V	10	10	
H/S	10	20	
T/TU/G	35	20	
NDP-(P)25BP			
C/E/N/V	10	10	
H/S	10	20	
T/TU	12	20	
NDP-(P)25BV			
C/E/N/V	10	10	
H/S/T/TU/G	12	20	
NDP-32BA			
C/E/N/V	10	10	
H/S	10	20	
T/TU/G	35	20	
NDP-(H)40BA/BF/BS			
NDP-(H)50BA/BF/BS			
NDP-(H)80BA/BF/BS			
C/E/H/N/S/T/V/TU/G	25	40	
NDP-(H)500BS			
C/E/H/N/S/T/V/TU/G	20	40	
NDP-(H)40BP/BV			
NDP-(H)50BP/BV			
NDP-(H)80BP/BV			
NDP-P50BP/BV			
C/E/H/N/S/T/V/TU/G	20	35	
NDP-50FA			
N	20	35	30

Model	a	b	c
G15A/S			
N/S/T	12	12	
G15P			
S/T	10	10	
G25A			
N	10	10	
H/S	10	20	
T	20	20	
G50A			
N/H/S	20	30	
T	20	40	
AD-10A/S			
C/E/H/N/S/T	12	12	
AD-10P			
C/N/S/T	8	12	
AD-25A/S/P			
C/N/E/V	10	10	
H/S	10	20	
T	35	20	
AD-25V			
C/N/E/V	10	10	
H/S	12	20	
T	12	20	
AD-40A/S, AD-50A/S			
C/N/E/V/H/S/T	25	40	
AD-40P/V, AD-50P/V			
C/N/E/V/H/S/T	20	35	

DOC-2

MODEL DESCRIPTION



NDP Series | Global Series | AD Series

a		b	c	d	e	f		g	h	j
NDP	-		25	B	V	T	-			X
G			15		A	T		0	0	
AD	-		40		A	C				

GB

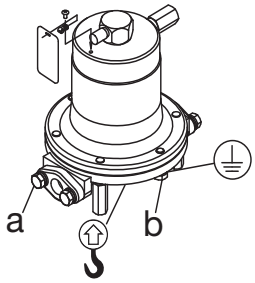
a	Series	DP / NDP / G(Global) / AD
b	Centre Body	P: Centre body PP / H: Mechanical switching / No mark: Standard
c	Liquid connection port size	
d	Valve type	B: Ball / F (NDP-5, 15): Flat / F (NDP-50): Flapper
e	Wetted parts material	
f	Diaphragm and ball material	
g	Liquid connection thread type	0: Rc / 1: NPT
h	Air connection thread type	0: Rc / 1: NPT
j	Special options code	

DOC-3

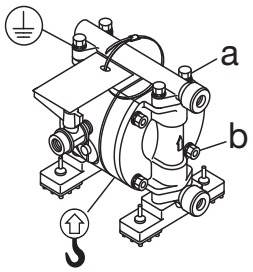
ATEX CODING DESCRIPTION

1	2	3	4		5	6	7	8	9	10		11	12	13	14
	II	2	G				Ex h	IIC	T6/T5/T4	Gb					
	II	2	G	/	2	D	Ex h	IIC	T6/T5/T4	Gb	/	Ex h	IIIC	T95°C	Db

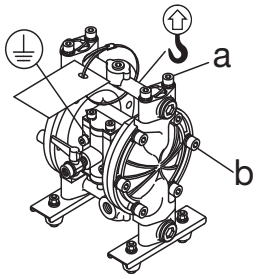
1	Specific marking of explosion protection
2	Equipment of group II
3	Equipment of category 2
4	Explosive atmospheres caused by gases, vapours or mists
5	Equipment of category 2
6	Explosive atmospheres caused by dust
7	Non-electrical equipment for explosive atmospheres
8	Equipment group, based on diaphragm size and material
9	Temperature class, based on its maximum surface temperature internal and external
10	Equipment Protection Level (EPL), “equipment for explosive gas atmospheres”
11	Non-electrical equipment for explosive atmospheres
12	Equipment of Group IIIC
13	Maximum Surface temperature
14	Equipment Protection Level (EPL), “equipment for explosive dust atmospheres”



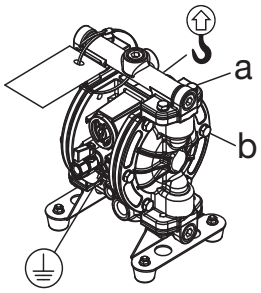
AD



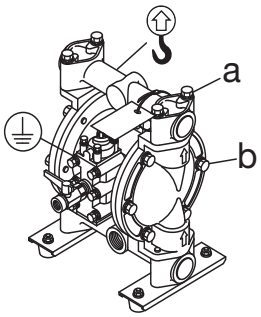
NDP-5, 10, 15



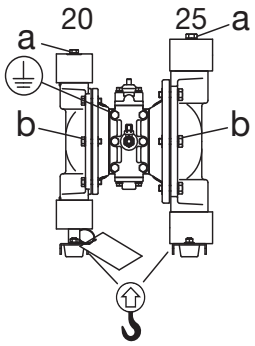
DP-10



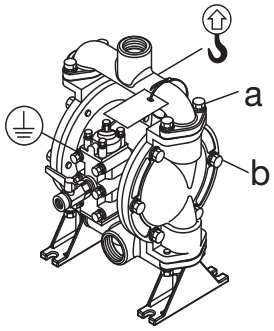
G15



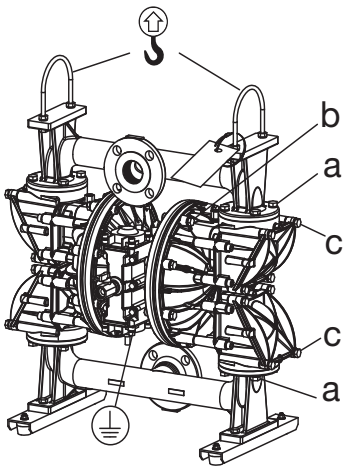
NDP-20, 25, G25



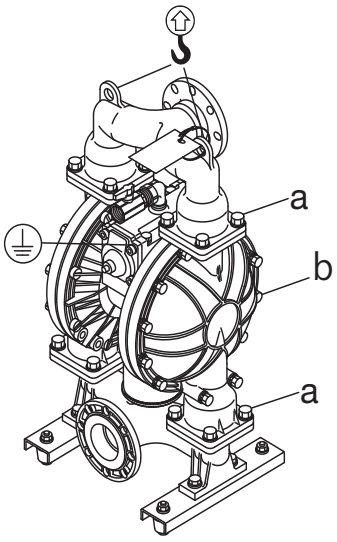
NDP-23



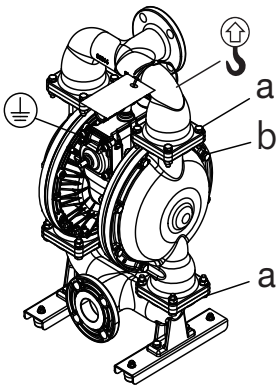
NDP-32



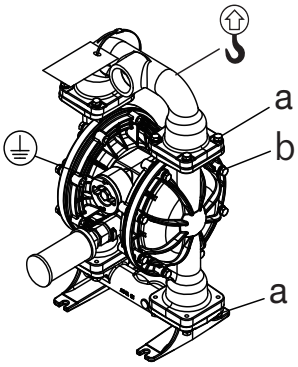
NDP-50FAN



NDP-40, 50, 80



NDP-500



G50

yamada

EU DECLARATION OF CONFORMITY

Equipment	:	Air operated diaphragm for pump series DP, NDP, G And Pulsation Dampeners AD
Model	:	All models, list of models upon request
Serial No.	:	All
Name of company	:	Yamada Corporation
Address	:	1-1-3, Minami-Magome, Ota ku, Tokyo, 143-8504 Japan
Authorized representative and importer	:	Yamada Europe B.V.
Address	:	Aquamarijnstraat 50, 7554NS Hengelo (Ov.) the Netherlands

This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration described above in conformity with the relevant Union harmonisation legislation:

2006/42/EC - Machinery
EN-ISO 12100:2010
EN 809:1998+1A:2009 "pumps and pump units for liquids – Common safety requirements"

Equipment	:	Air operated diaphragm pump series DP, NDP, G. Pulsation Dampeners AD
Model	:	Models as listed below
Serial No.	:	All
Name of company	:	Yamada Corporation
Address	:	1-1-3, Minami-Magome, Ota ku, Tokyo, 143-8504 Japan
Authorized representative and importer	:	Yamada Europe B.V.
Address	:	Aquamarijnstraat 50, 7554NS Hengelo (Ov.) the Netherlands

This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration described above in conformity with the relevant Union harmonisation legislation:

2006/42/EC - Machinery
EN-ISO 12100:2010
EN 809:1998+1A:2009 "pumps and pump units for liquids – Common safety requirements"
2014/34/EU - ATEX
EN-ISO 80079-36 :2016
EN-ISO 80079-37:2016
EN IEC 60079-0:2018

DEKRA Certification BV (NL) notified body number 0344, performed the Product Type examination and issued the certificate: DEKRA 18ATEX0059X.

If the special indication "X" appears after the certification number on the certificate, the certificate contains special conditions for safe use.
Consult the instructions for use mentioned in the ATEX user guide and/or certificate of the pump models.

II 2G Ex h II* T* Gb
II 2G / 2D Ex h II* T* Gb / Ex h IIIC T 95°C Db

NDP-5FAT, NDP-5FAG, NDP-5FST, NDP-5FSG, NDP-5FVT, NDP-5FVG, NDP-5FDT, NDP-5FDG.

DP-10BAC, DP-10BAN, DP-10BAH, DP-10BAE, DP-10BAS, DP-10BAT, DP-10BAV, DP-10BATU, DP-10BAG.

DP-10BSC, DP-10BSN, DP-10BSH, DP-10BSE, DP-10BSS, DP-10BST, DP-10BSV, DP-10BSTU, DP-10BAG.

NDP-15BAC, NDP-15BAN, NDP-15BAH, NDP-15BAE, NDP-15BAS, NDP-15BAT, NDP-15BATU, NDP-15BAG, NDP-15BAV.
NDP-15BSC, NDP-15BSN, NDP-15BSH, NDP-15BSE, NDP-15BSS, NDP-15BST, NDP-15BSTU, NDP-15BSG, NDP-15BSV.
NDP-15FVC, NDP-15FVN, NDP-15FVH, NDP-15FVE, NDP-15FVS, NDP-15FVT, NDP-15FVTU, NDP-15FVG, NDP-15FVV.

NDP-20BAC, NDP-20BAN, NDP-20BAH, NDP-20BAE, NDP-20BAS, NDP-20BAT, NDP-20BATU, NDP-20BAG, NDP-20BAV.
NDP-20BSC, NDP-20BSN, NDP-20BSH, NDP-20BSE, NDP-20BSS, NDP-20BST, NDP-20BSTU, NDP-20BSG, NDP-20BSV.

NDP-23BATU, NDP-23BSTU.

NDP-25BAC, NDP-25BAN, NDP-25BAH, NDP-25BAE, NDP-25BAS, NDP-25BAT, NDP-25BATU, NDP-25BAG, NDP-25BAV.
NDP-25BSC, NDP-25BSN, NDP-25BSH, NDP-25BSE, NDP-25BSS, NDP-25BST, NDP-25BSTU, NDP-25BSG, NDP-25BSV.
NDP-25BFC, NDP-25BFN, NDP-25BFH, NDP-25BFE, NDP-25BFS, NDP-25BFT, NDP-25BFTU, NDP-25BFG, NDP-25BFV.
NDP-25BVC, NDP-25BVC-FLG, NDP-25BVN, NDP-25BVN-FLG, NDP-25BVH, NDP-25BVH-FLG, NDP-25BVE, NDP-25BVE-FLG,
NDP-25BVS, NDP-25BVS-FLG, NDP-25BVT, NDP-25BVT-FLG, NDP-25BVTU, NDP-25BVTU-FLG, NDP-25BVG, NDP-25BVG-FLG,
NDP-25BVV, NDP-25BVV-FLG.

NDP-32BAC, NDP-32BAN, NDP-32BAH, NDP-32BAE, NDP-32BAS, NDP-32BAT, NDP-32BATU, NDP-32BAG, NDP-32BAV.

NDP-40BAC, NDP-40BAN, NDP-40BAH, NDP-40BAE, NDP-40BAS, NDP-40BAT, NDP-40BATU, NDP-40BAG, NDP-40BAV.
NDP-40BSC, NDP-40BSN, NDP-40BSH, NDP-40BSE, NDP-40BSS, NDP-40BST, NDP-40BSTU, NDP-40BSG, NDP-40BSV.
NDP-40BFC, NDP-40BFN, NDP-40BFH, NDP-40BFE, NDP-40BFS, NDP-40BFT, NDP-40BFTU, NDP-40BFG, NDP-40BFV.
NDP-40BVC, NDP-40BVN, NDP-40BVH, NDP-40BVE, NDP-40BVS, NDP-40BVT, NDP-40BVTU, NDP-40BVG, NDP-40BVV.

NDP-50BAC, NDP-50BAN, NDP-50BAH, NDP-50BAE, NDP-50BAS, NDP-50BAT, NDP-50BATU, NDP-50BAG, NDP-50BAV.
NDP-50BSC, NDP-50BSN, NDP-50BSH, NDP-50BSE, NDP-50BSS, NDP-50BST, NDP-50BSTU, NDP-50BSG, NDP-50BSV.
NDP-50BFC, NDP-50BFN, NDP-50BFH, NDP-50BFE, NDP-50BFS, NDP-50BFT, NDP-50BFTU, NDP-50BFG, NDP-50BFV.
NDP-50BVC, NDP-50BVN, NDP-50BVH, NDP-50BVE, NDP-50BVS, NDP-50BVT, NDP-50BVTU, NDP-50BVG, NDP-50BVV.
NDP-50FAN.

NDP-80BAC, NDP-80BAN, NDP-80BAH, NDP-80BAE, NDP-80BAS, NDP-80BAT, NDP-80BATU, NDP-80BAG, NDP-80BAV.
NDP-80BSC, NDP-80BSN, NDP-80BSH, NDP-80BSE, NDP-80BSS, NDP-80BST, NDP-80BSTU, NDP-80BSG, NDP-80BSV.
NDP-80BFC, NDP-80BFN, NDP-80BFH, NDP-80BFE, NDP-80BFS, NDP-80BFT, NDP-80BFTU, NDP-80BFG, NDP-80BFV.

NDP-H40BAC, NDP-H40BAN, NDP-H40BAH, NDP-H40BAE, NDP-H40BAS, NDP-H40BAT, NDP-H40BAG, NDP-H40BAV.
NDP-H40BSC, NDP-H40BSN, NDP-H40BSH, NDP-H40BSE, NDP-H40BSS, NDP-H40BST, NDP-H40BSG, NDP-H40BSV.
NDP-H40BFC, NDP-H40BFN, NDP-H40BFH, NDP-H40BFE, NDP-H40BFS, NDP-H40BFT, NDP-H40BFG, NDP-H40BFV.
NDP-H40BVC, NDP-H40BVN, NDP-H40BVH, NDP-H40BVE, NDP-H40BVS, NDP-H40BVT, NDP-H40BVG, NDP-H40BVV.

NDP-H50BAC, NDP-H50BAN, NDP-H50BAH, NDP-H50BAE, NDP-H50BAS, NDP-H50BAT, NDP-H50BAG, NDP-H50BAV.
NDP-H50BSC, NDP-H50BSN, NDP-H50BSH, NDP-H50BSE, NDP-H50BSS, NDP-H50BST, NDP-H50BSG, NDP-H50BSV.
NDP-H50BFC, NDP-H50BFN, NDP-H50BFH, NDP-H50BFE, NDP-H50BFS, NDP-H50BFT, NDP-H50BFG, NDP-H50BFV.
NDP-H50BVC, NDP-H50BVN, NDP-H50BVH, NDP-H50BVE, NDP-H50BVS, NDP-H50BVT, NDP-H50BVG, NDP-H50BVV.

NDP-H80BAC, NDP-H80BAN, NDP-H80BAH, NDP-H80BAE, NDP-H80BAS, NDP-H80BAT, NDP-H80BAG, NDP-H80BAV.
NDP-H80BSC, NDP-H80BSN, NDP-H80BSH, NDP-H80BSE, NDP-H80BSS, NDP-H80BST, NDP-H80BSG, NDP-H80BSV.
NDP-H80BFC, NDP-H80BFN, NDP-H80BFH, NDP-H80BFE, NDP-H80BFS, NDP-H80BFT, NDP-H80BFG, NDP-H80BFV.

NDP-500BSC, NDP-500BSN, NDP-500BSH, NDP-500BSE, NDP-500BSS, NDP-500BST, NDP-500BSTU, NDP-500BSG, NDP-500BSV.
NDP-H500BSC, NDP-H500BSN, NDP-H500BSH, NDP-H500BSE, NDP-H500BSS, NDP-H500BST, NDP-H500BSG, NDP-H500BSV.

G15AN00, G15AH00, G15AT00, G15AS00.
G15SN00, G15SH00, G15ST00, G15SS00.
G25AN00, G25AH00, G25AT00, G25AS00.
G50AN00, G50AN11, G50AH00, G50AH11, G50AT00, G50AT11, G50AS00, G50AS11.

AD-10AC, AD-10AN, AD-10AH, AD-10AE, AD-10AS, AD-10AT, AD-10AV.
AD-10SC, AD-10SN, AD-10SH, AD-10SE, AD-10SS, AD-10ST, AD-10SV.

AD-25AC, AD-25AN, AD-25AH, AD-25AE, AD-25AS, AD-25AT, AD-25AV.
AD-25SC, AD-25SN, AD-25SH, AD-25SE, AD-25SS, AD-25ST, AD-25SV.
AD-25FC, AD-25FN, AD-25FH, AD-25FE, AD-25FS, AD-25FT, AD-25FV.
AD-25VC, AD-25VN, AD-25VH, AD-25VE, AD-25VS, AD-25VT, AD-25VV.

AD-40AC, AD-40AN, AD-40AH, AD-40AE, AD-40AS, AD-40AT, AD-40AV.
AD-40SC, AD-40SN, AD-40SH, AD-40SE, AD-40SS, AD-40ST, AD-40SV.
AD-40FC, AD-40FN, AD-40FH, AD-40FE, AD-40FS, AD-40FT, AD-40FV.
AD-40VC, AD-40VN, AD-40VH, AD-40VE, AD-40VS, AD-40VT, AD-40VV.

AD-50AC, AD-50AN, AD-50AH, AD-50AE, AD-50AS, AD-50AT, AD-50AV.
AD-50SC, AD-50SN, AD-50SH, AD-50SE, AD-50SS, AD-50ST, AD-50SV.
AD-50FC, AD-50FN, AD-50FH, AD-50FE, AD-50FS, AD-50FT, AD-50FV.
AD-50VC, AD-50VN, AD-50VH, AD-50VE, AD-50VS, AD-50VT, AD-50VV.

DEKRA Certification B.V., Notified Body number 0344, has received and retains a copy of the technical documentation file DEKRA 18ATEX0059X.

Signed for and on behalf of	: Yamada Corporation
Place and date of issue	: Sagamihara Japan, 20th September 2025
Signed by	: Kotaro Yamada
Position	: Director Sagamihara-Factory

No. UKDOC-001

UK CA

UK DECLARATION OF CONFORMITY

Name of company : YAMADA CORPORATION

Address : 1-1-3, Minami-Magome, Ota ku, Tokyo, 143-8504 Japan

declares, in sole responsibility, that the following product

Equipment : Diaphragm Pumps and Pulsation Dampeners

Type : NDP-, DP-, G and AD- series

Serial Number : All

Referred to in this declaration conforms with the following standard(s) or directive(s):

- Supply of Machinery (Safety) Regulations 2008
- EN-ISO 12100:2010
- EN 809:1998 + A1:2009

YAMADA CORPORATION will keep on file for review the following technical documentation:

- operating instructions as required
- plans
- description of measures designed to ensure conformity
- other technical documentation

Importer / Authorized Representative

Name of company : YAMADA EUROPE B.V.

Address : Aquamarijnstraat 50, 7554NS Hengelo (O), The Netherlands

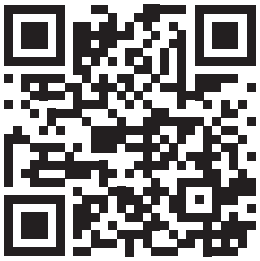
Place and date issued : Sagamihara Factory / September 1, 2022

Name and function : Kotaro Yamada (Director, Sagamihara Factory)

Signature:

K. Yamada.

yamada



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Instrukcje można pobrać z naszej strony internetowej.
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