



## INSTALLATION, SERVICE, AND MAINTENANCE INSTRUCTIONS

# Pneumatic Actuator



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## EC DECLARATION OF CONFORMITY

(in accordance with Directive 2006/42/EC, annex II, part A)

The Manufacturer: **INOXPA, S.A.**  
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We hereby declare that the products

**PNEUMATIC ACTUATOR**

Name

**T1 – T2 – T3**

Type

are in conformity with the provisions of the Council Directives:

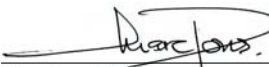
**Machine Directive** 2006/42/EC, and comply with the essential requirements of said Directive and the harmonised standards:

UNE-EN ISO 12100-1/2:2004  
UNE-EN 953:1997  
UNE-EN ISO 13732-1:2007

**Declaration of Incorporation** (Directive 2006/42/EC, annex II, part B):

The above-mentioned equipment shall not be commissioned until the machine into which it will be incorporated has been declared as being in conformity with the Machine Directive.

Banyoles, 2011

  
Marc Pons Bague Technical Manager

# 1. Safety

## 1.1. INSTRUCTION MANUAL.

This instruction manual contains the basic indications that must be followed during installation, start-up, and maintenance. The information published in the instruction manual is based on up-to-date data. INOXPA reserves the right to modify this instruction manual without prior notice.

## 1.2. START-UP INSTRUCTIONS.

This instruction manual contains essential and useful information for the proper handling and maintenance of the actuator. You must comply not only with the safety instructions set forth in this chapter but also the special measures and recommendations added in other chapters of this manual. It is very important to keep these instructions in a determined place near the equipment.

## 1.3. SAFETY.

### 1.3.1. Warning Symbols.



Danger to people in general



Danger of injury caused by rotating equipment parts



Electrical danger



Danger! Caustic or corrosive agents



Danger! Suspended loads



Danger to proper operation of equipment



Obligation to guarantee safety in the workplace



Use of protective goggles compulsory

## 1.4. GENERAL SAFETY INSTRUCTIONS.



Read the instruction manual carefully before installing and starting up the pneumatic actuator. In case of doubt, contact INOXPA.

### 1.4.1. During installation.



The *Technical Specifications* of Chapter 7 must always be observed.

The actuator must always be installed and used in conformity with applicable regulations in the field of health and safety.

Before starting up the pneumatic actuator, check that it has been correctly assembled and is correctly aligned. Incorrect alignment and/or excessive forces when fixing the actuator in place may cause serious mechanical problems in the valve / actuator.

### 1.4.2. During operation.



The *Technical Specifications* of Chapter 7 must always be observed. The specified limit values must NOT be exceeded at any time.



NEVER touch the valve and/or pipes that are in contact with the liquid during operation. If you work with hot fluids, there is a risk of burns.

Do not operate the actuator in case of failure, as the springs are not protected.

### 1.4.3. During maintenance



The *Technical Specifications of Chapter 7* must always be observed.

**NEVER** disassemble the pneumatic actuator if the valve or installation is in operation. Make sure that the compressed air supply is closed.

**Do not leave parts loose on the floor.**

### 1.4.4. In compliance with the instructions.

Any failure to comply with the instructions could cause a risk to operators, the environment, or the machine, and could lead to the loss of rights to claim damages.

Such failure to comply could lead to the following risks:

- Breakdown of important machine / plant functions.
- Failure of specific maintenance or repair procedures.
- Possibility of electrical, mechanical, and chemical risks.
- It would endanger the environment due to the release of substances released.

### 1.5. GUARANTEE.

Any guarantee shall be cancelled immediately and as a matter of law and, in addition, we shall be compensated for any claims of civil liability submitted by third parties if:

- The installation work and maintenance have not been carried out in accordance with the instructions in this manual.
- The repairs have not been carried out by our personnel or have been carried out without our written authorisation.
- The parts used were not original INOXPA parts.
- Modifications have been made to our equipment without prior written authorisation.
- The equipment has been used improperly, incorrectly, or negligently, or has not been used according to indications and its intended use as specified in this manual.

The general conditions of delivery already in your possession are also applicable.

Do not hesitate to contact us if you have any doubts or require more complete explanations on specific data (e.g. adjustments, assembly and disassembly).

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# 3. Receipt and Installation

## 3.1. CHECKING THE SHIPMENT

The first thing you must do when you receive the actuator is check it and make sure that it matches the delivery note. INOXPA inspects all its equipment before packing, but it cannot guarantee that the goods will arrive intact to the user. Therefore, the received valve and any other item must be checked and, if not found to be in the proper condition and/or parts are missing, the carrier will make out a report as soon as possible.

## 3.2. DELIVERY AND UNPACKING



**INOXPA shall not be liable if the actuator, its components, and any parts supplied together, are not unpacked correctly.**

### 3.2.1. Delivery:

Check that you have all the parts listed on the delivery note:

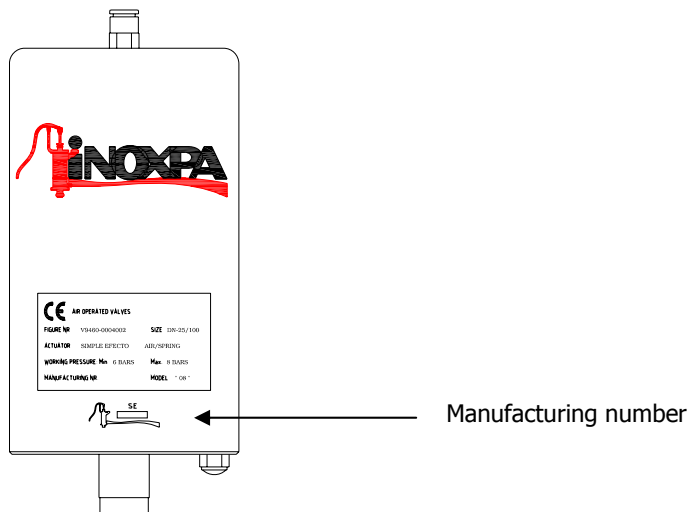
- Delivery note.
- Pneumatic actuator.
- Support and components for assembling the valve (if ordered).
- Instructions manual.

### 3.2.2. Unpacking:

- Remove all traces of packing materials from the pneumatic actuator.
- Inspect the actuator and the components for any damage that may have been caused during transport.

## 3.3. IDENTIFICATION

Every pneumatic actuator has a manufacturing number recorded on it. Enter the manufacturing number on all documents and correspondence.



## 3.4. LOCATION.



**The buyer or user shall be responsible for assembling, installing, starting up, and operating the pneumatic actuator.**

Place the pneumatic actuator so that once it has been assembled to the valve, it will be easy to access for connection to the compressed air system and to inspect and check it, even while operational.



INOXPA shall not be liable if the pneumatic actuator has not been unpacked correctly.



Proceed with caution. Possible physical injury.

Assembly and disassembly of the pneumatic actuator must only be carried out by qualified personnel.

### 3.5. ASSEMBLY OF THE PNEUMATIC ACTUATOR

#### 3.5.1. Assembly.

Three sizes are single or double acting, and are assembled on INOXPA ball valves and butterfly valves by means of a support and screws.

Actuator size	Butterfly valve	Ball valve	Wine ball valve
T1	DN-10/40	DN-25/40	-
T2	DN-50/100	DN-50/65	DN-40/65
T3	DN-125/200	DN-65/100	DN-80

NOTE: DN-200 with double acting actuator only

#### 3.5.2. Assembly operations.

##### Single acting NC (Normally Closed).

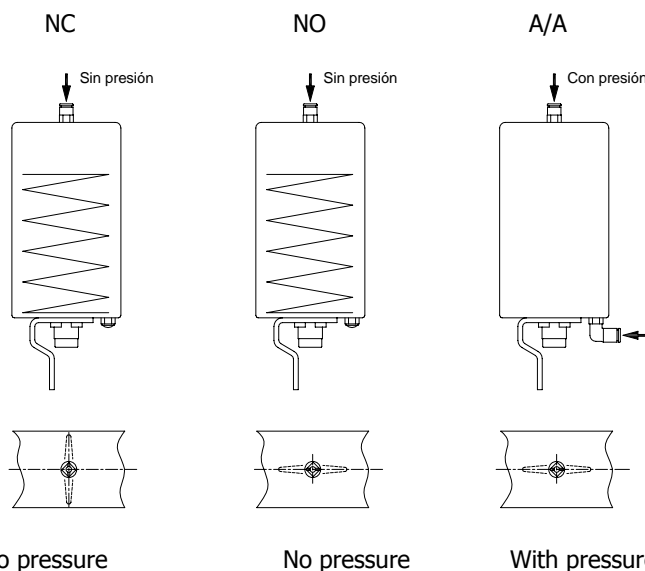
The valve must be in the closed position.

##### Single acting NO (Normally Open).

The valve must be in the open position.

##### Double acting A/A.

The valve must be in the open position. Before assembly, supply compressed air into the upper connection of the actuator.



Before starting the valve, check that the actuator is firmly fixed to the valve and that there are no loose parts.

#### 3.5.3. Inspecting and checking.

Before use, apply compressed air three or four times, checking that the valve can open and close without difficulties.

## 4. Start-Up

The actuator can now be started up provided the instructions set out in chapter 3 *Receipt and Installation* have been followed.

### 4.1. START-UP.



**Before start-up, the personnel responsible must be duly informed regarding operation of the actuator and the safety instructions to follow. This instruction manual shall be available to personnel at all times.**

Before starting up the actuator, the following must be taken into account:

- Check that the alignment of the valve shaft with the actuator shaft allows for a smooth movement.
- Check that the compressed air pressure at the actuator inlet is as indicated in the technical specifications (*chapter 7*).
- Ensure the quality of the compressed air in accordance with the specifications described in chapter 7 Technical Specifications.
- Check for possible leaks, and ensure that all the pipes and their connections are watertight and without leaks.

### 4.2. OPERATION.



**Do not modify the operating parameters for which the actuator was designed without the prior written authorisation of INOXPA.**

**Do not touch the moving parts of the coupling between the actuator and the valve while the actuator is connected to the compressed air.**



**Danger of burns! Do not touch the valve or pipes when hot liquid is circulating or cleaning and/or sterilisation is being carried out.**



## 5. Operating Problems: Causes and Solutions

PROBLEM	CAUSE/EFFECT	SOLUTION
<b>VALVE JERKING</b>	Insufficient air supply.	<ul style="list-style-type: none"> <li>Check that the valve of the compressed air circuit is open.</li> <li>Check the air pressure.</li> <li>Insufficient flow rate.</li> </ul>
	The actuator does not handle the valve efficiently.	<ul style="list-style-type: none"> <li>Check the compressed-air supply pressure.</li> <li>Replace with a larger pneumatic actuator.</li> </ul>
	Excessive pressure in the line.	<ul style="list-style-type: none"> <li>Check the pressure in the installation and regulate it if necessary.</li> </ul>
<b>THE VALVE DOES NOT OPEN/CLOSE</b>	<p>The compressed-air supply is not open.</p> <p>There is not enough air pressure.</p> <p>Dirt in the actuator.</p>	<ul style="list-style-type: none"> <li>Open the compressed air flow towards the control head.</li> <li>Increase the supply air pressure.</li> <li>Check the compressed air pressure and the channels.</li> </ul>
<b>AIR LEAK</b>	Air is continuously escaping from the connections.	<ul style="list-style-type: none"> <li>Check all the pneumatic connections, replace the connectors.</li> </ul>
<b>WATER-HAMMERING</b>	The valve closes too fast.	<ul style="list-style-type: none"> <li>Fit a flow regulator at the actuator outlet to regulate the flow rate.</li> </ul>

## 6. Maintenance

### 6.1. GENERAL

The pneumatic actuators do not require maintenance. They are completely closed and greased.



Read chapter 7 *Technical Specifications* carefully.

All replaced equipment must be properly removed/recycled according to the guidelines in effect in each region.

Assembly and disassembly of the pneumatic actuator must only be carried out by qualified personnel.

Before starting the maintenance work, make sure that the compressed air is disconnected and the pipes are not pressurised.

### 6.2. MAINTENANCE.

The actuator must be stored in a closed place in the following conditions:

During maintenance pay special attention to the danger warnings indicated in this manual.

- Temperature from 5 °C to 30 °C
- Relative humidity < 60 %

If the actuator is not going to be used immediately, or will only be used from time to time, it is recommended that you operate it at least once every 3 months.

Open-air storage of the equipment is **NOT** allowed.

### 6.3. CLEANING.



The use of aggressive cleaning products such as caustic soda and nitric acid may cause burns to the skin.

Use rubber gloves during the cleaning process.



When cleaning the actuator, use non-aggressive liquids that are compatible with the materials of the equipment parts. Check that no dirt is remaining in cavities.



Always use protective goggles.

To remove any remains of cleaning products, ALWAYS perform a final rinse with clean water on completion of the cleaning process.

### 6.4. ASSEMBLY AND DISASSEMBLY.



INOXPA shall not be liable in the case of inappropriate handling of the actuator or its components. Before starting disassembly work, disconnect the air from the actuator.



Proceed with caution. Possible physical injury.

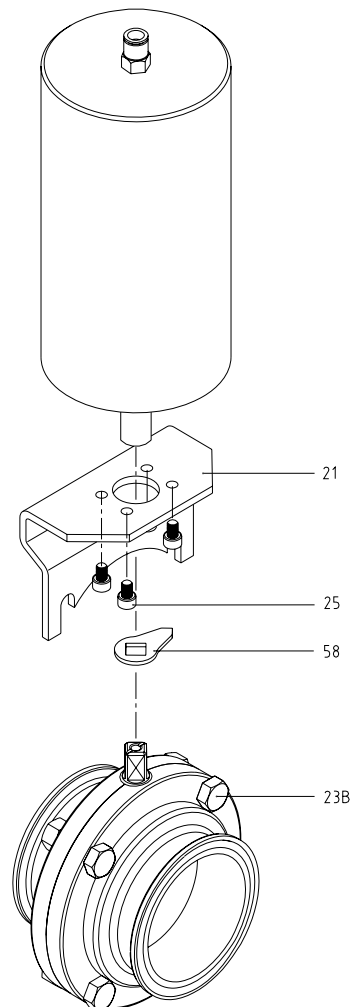
Assembly and disassembly of the pneumatic actuator must only be carried out by qualified personnel.

## Assembly

- Attach the support (21) on the actuator and fasten the screws (25).
- Loosen the two screws (23B) at the top of the valve.
- Mount the support/actuator grouping.
- Fix the support to the valve, ensuring that the actuator is not forced; if necessary, loosen the screws (25).
- Once the actuator has been mounted, fasten all the screws.

## Disassembly

- Disconnect the compressed air from the actuator.
- Remove the screws (23B) that join the support (21) of the actuator with the valve.
- Remove the support/actuator assembly from the valve.
- Remove the screws (25) and then remove the support (21) from the actuator.

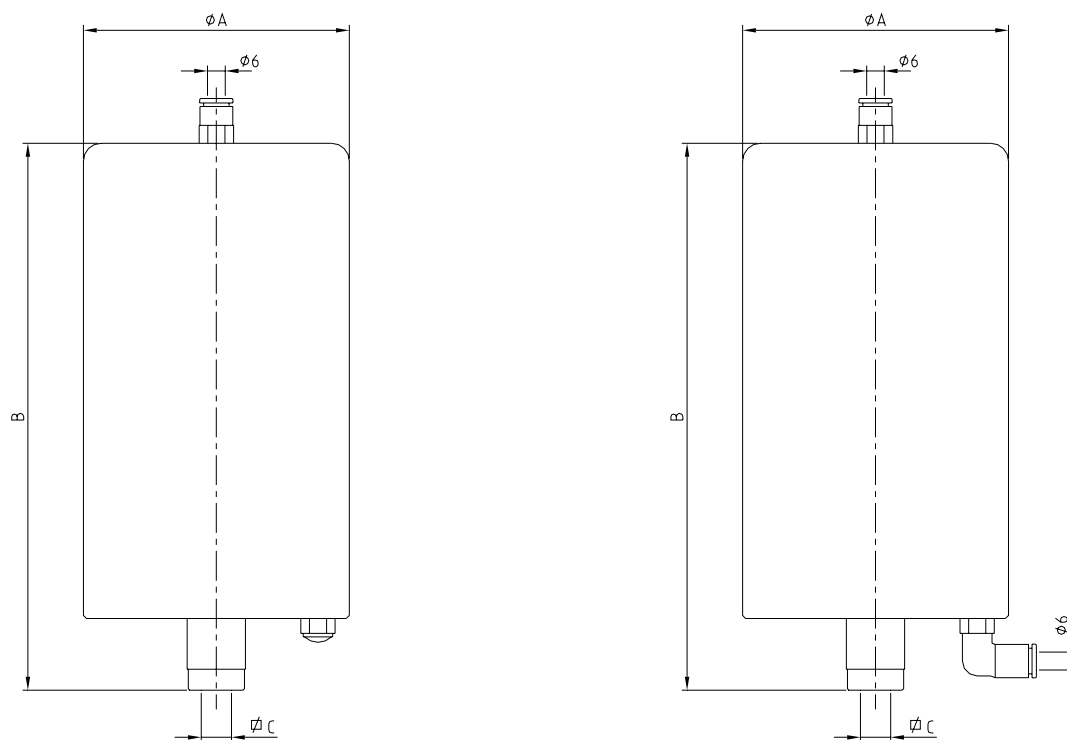


# 7. Technical Specifications

## 7.1. TECHNICAL SPECIFICATIONS

PNEUMATIC ACTUATOR GENERAL DATA	
<i>Compressed air consumption/cycle</i>	T1 - Single acting: 0.15 litres / Double acting: 0.3 litres T2- Single acting: 0.25 litres / Double acting: 0.5 litres T3- Single acting: 0.85 litres / Double acting: 1.7 litres
<i>Compressed air pressure</i>	6-8 bar (87-116 PSI) Single acting / 4-6 bar (58-87 PSI) Double acting
<i>Compressed air quality</i>	In accordance with DIN/ISO 8573.1  <u>Sold particle content</u> : Class-3 quality / Max. particle size 5 microns / Max. particle density 5 mg/m <sup>3</sup>  <u>Water content</u> : Class-4 quality / Max. dew point +2 °C  If the valve is operating at high altitude or low ambient temperature, the dew point must be adjusted accordingly  <u>Oil content</u> : Class-5 quality, preferably free of oil / max. 25 mg oil per 1 m <sup>3</sup> air
<i>Weight</i>	T1- Single acting 2.13 kg / Double acting 1.71 kg T2- Single acting 3.0 kg / Double acting 2.35 kg T3- Single acting 8.34 kg / Double acting 6.37 kg
<i>Angle of rotation</i>	90°
<i>Torque</i>	T1- 15 Nm (Single acting) / 25 Nm (Double acting) T2- 35 Nm (Single acting) / 60 Nm (Double acting) T3- 90 Nm (Single acting) / 150 Nm (Double acting)
<i>Continuous working temperature</i>	-20 °C to + 50 °C
<i>Air connections</i>	R1/8" (BSP) – supplied with quick-coupling for pipe ø6x4

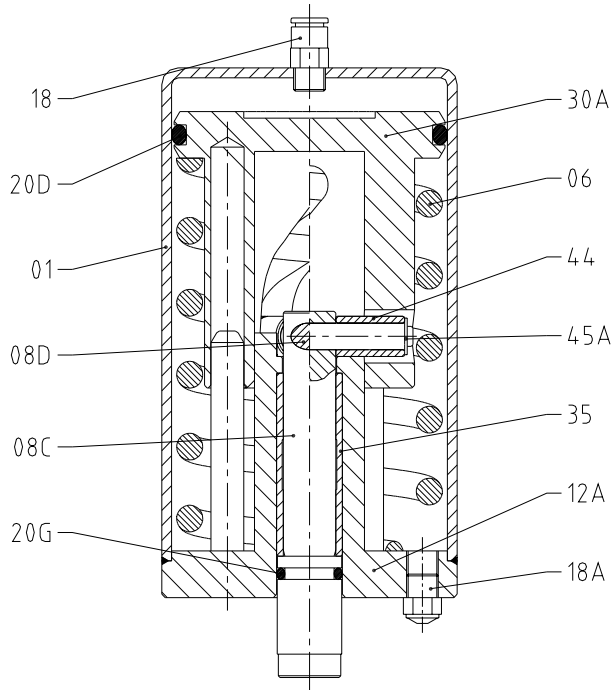
## 7.2. ACTUATOR DIMENSIONS



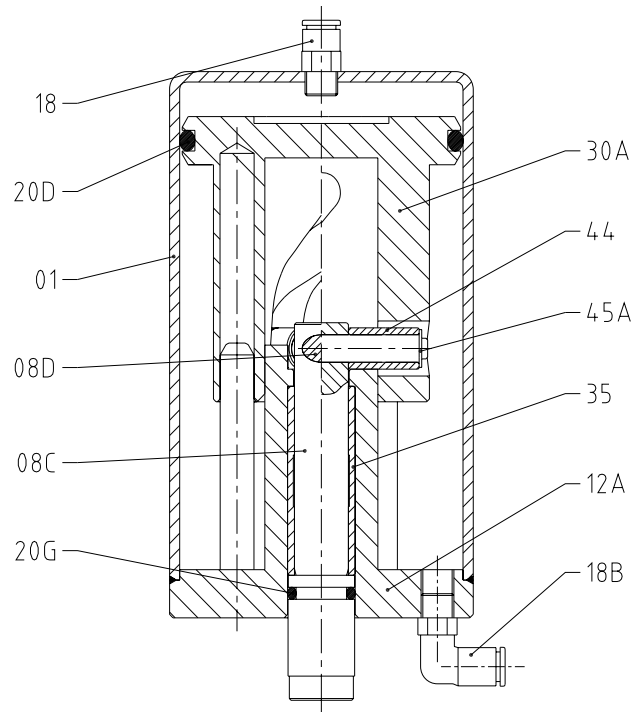
Size	A	B	C
T1	76	157	9.5
T2	90	183	9.5
T3	133	232	9.5
			12
			14

### 7.3. EXPLODED VIEW AND PARTS LIST

Single acting



Double acting



POS.	DESCRIPTION	MATERIAL	QTY
01	Cylinder casing	stainless steel	1
06	Spring	steel	1
08C	Actuator shaft	stainless steel	1
08D	Roller shaft	steel	1
12A	Guide cover	stainless steel	1
18	Air connector - straight	stainless steel	1
18A	Silencer	stainless steel	1
18B	Air connector - elbow	stainless steel	1
20D	O-ring	NBR	1
20G	O-ring	NBR	1
30A	Piston	POM	1
35	Guide bushing	bronze	1
44	Roller	bronze	2
45A	Elastic ring	steel	2

NOTES

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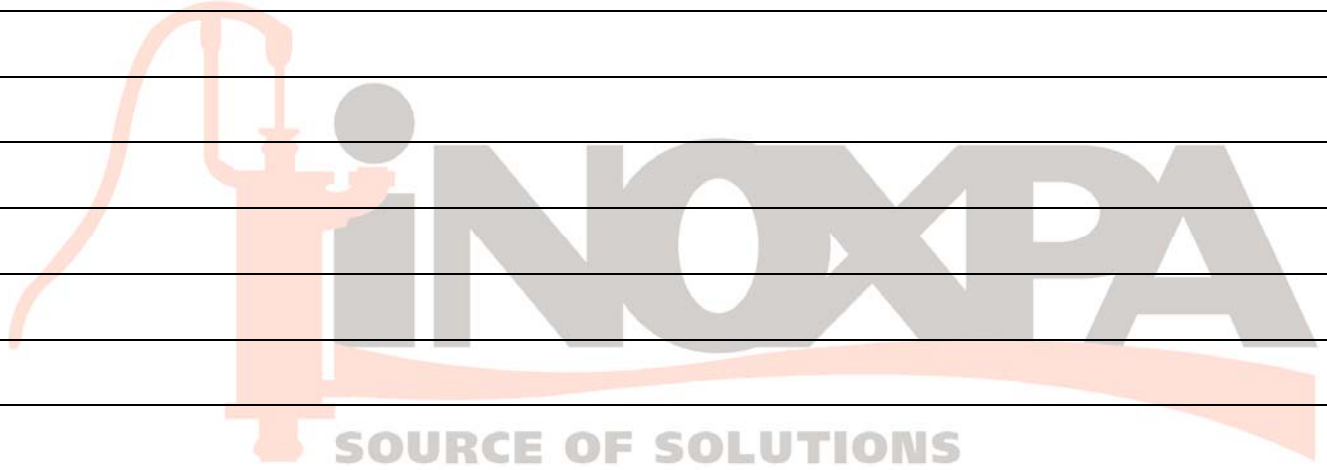
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