B723-00-880
Issue B Original

Instruction Manual

EXPT Pumping Station

Description	Item Number
EXPT Pumping Station	B723-00-000

EDWARDS

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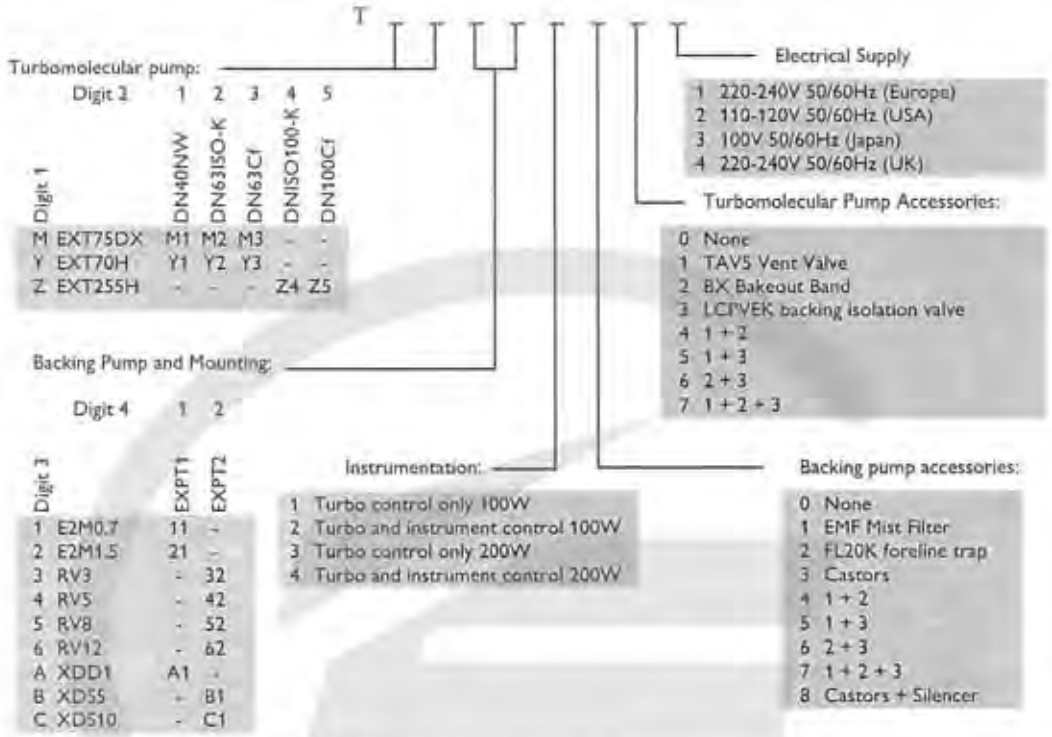
Declaration of Conformity

We. BOC Edwards,
Manor Royal,
Crawley,
West Sussex RH10 9LW, UK

declare under our sole responsibility that the product(s)

EXPT1 and EXPT2 Combined Outfits configured using the following matrix structure:



to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

EN ISO 12100-2 (2003)	Safety of Machinery – Basic Concepts, General Principals for Design.
EN61010-1 (2001)	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use*.
EN1012-2	Compressors and Vacuum Pumps – Safety Requirements, Parts 2: Vacuum Pumps.
EN61326	Electrical Equipment for Measurement, Control and Laboratory Use –
Immunity, Class A	EMC Requirements.
Emissions	

* The pumps comply with EN61010-1 (2001) when installed in accordance with the instruction manual supplied with the pumps.

following the provisions of

73/023/EEC	Low Voltage Directive.
89/336/EEC	Electromagnetic Compatibility Directive.
89/392/EEC	Machinery Safety Directive.

JDWat

Dr J. D. Watson, Director of Technology
Vacuum Equipment and Exhaust Management Product Divisions

29 MAY 2004 BURGESS HILL

Date and Place

This product has been manufactured under a quality system registered to ISO9001

P200-00-040 Issue A

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ITR 21466

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Supplementary publications

Publication title	Publication number
XDD1 115/230 Diaphragm Pump	A746-01-885
Turbo Instrument Controller (TIC)	D397-10-880
EXT75DX Turbomolecular Pump	B722-40-880
XDS Scroll Pump	A726-01-880
Low Voltage EXT Compound Molecular Pumps EXT70H / 255H 24 V	B722-20-880
EXDC Turbomolecular Pump Drive Modules	D396-45-880
RV Rotary Vane Pumps	A652-01-880
E2M Rotary Vane Pumps	A371-22-880
EXPT Pumping Station Instruction Manual (quick guide)	B723-00-860
CD ROM Instruction Manual	B723-00-879

Associated publications

Publication title	Publication number
EXT Pump Accessories	B580-65-880

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1 Introduction

1.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for the Edwards EXPT Pumping Station. You must use the EXPT Pumping Station as specified in this manual.

Read this manual before you install and operate the EXPT Pumping Station. Important safety information is highlighted as WARNING and CAUTION instructions; you must obey these instructions. The use of WARNINGS and CAUTIONS is defined below.

WARNING

Warnings are given where failure to observe the instruction could result in injury or death to people.

CAUTION

Cautions are given where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

A full list of Supplementary Publications is provided at the end of the Contents list of this manual. A number of these Supplementary Publications will be supplied with your EXPT Pumping Station. The Supplementary Publications supplied will be the instruction manuals for the components in your EXPT Pumping Station.

The Supplementary Publications you receive also contain WARNING and CAUTION instructions. When you install and operate the EXPT Pumping Station, you must refer to these Supplementary Publications and obey all of the WARNING and CAUTION instructions which they contain.

The units used throughout this manual conform to the SI international system of units of measurement.

The following IEC warning labels appear on the product and in the manual.

Warning – refer to accompanying documentation.

Warning – risk of electric shock.

Warning – hot surfaces.

1.2 Description

1.2.1 Overview

The EXPT Pumping Station is a fully automatic pumping system which is suitable for a wide range of applications. The system is capable of utilising an extensive range of standard Edwards backing pumps, turbomolecular pumps and controllers from a single compact unit. The open system configuration allows easy maintenance of the main pumping components.

The function of the controller depends on your system configuration and will control the backing pump and turbomolecular pump plus optional accessories. For systems with turbo and instrument controllers, up to three active gauges may be used using the convenient gauge interface incorporated into the system housing. Both controllers are provided with a large clear graphic display and easy-to-use control interface via a touch sensitive keypad. The system incorporates an RS232/485 interface for control and data monitoring on a remote PC and a logic interface for interface with associated system hardware.

Both systems are base mounted and come in two sizes. The EXPT1 base uses robust rubber feet as standard, castors are optional. The EXPT2 base uses castors as standard to allow ease of transportation.

1.2.2 General description of the EXPT pumping station major components

For the general description of the major components used on the EXPT Pumping Station, click on the appropriate instruction manual reference against each product type.

Diaphragm pump	XDD1 (A746-01-885)
Rotary vane pumps	E2M0.7 / E2M1.5 (A371-22-880 Section 1.2)
	RV3 / RV5 / RV8 / RV12 (A652-01-880 Section 1.2)
Turbomolecular pumps	EXT70H / EXT255H 24 V (B722-20-880 Section 1.2)
	EXT75DX / EXT255DX (B722-40-880 Section 1.2)
Scroll pumps	XDS5 / XDS10 (A726-01-880 Section 1.2)
TIC controller	Turbo controller (D397-12-880 Section 1.2)
	Turbo instrument controller (D397-22-880 Section 1.2)

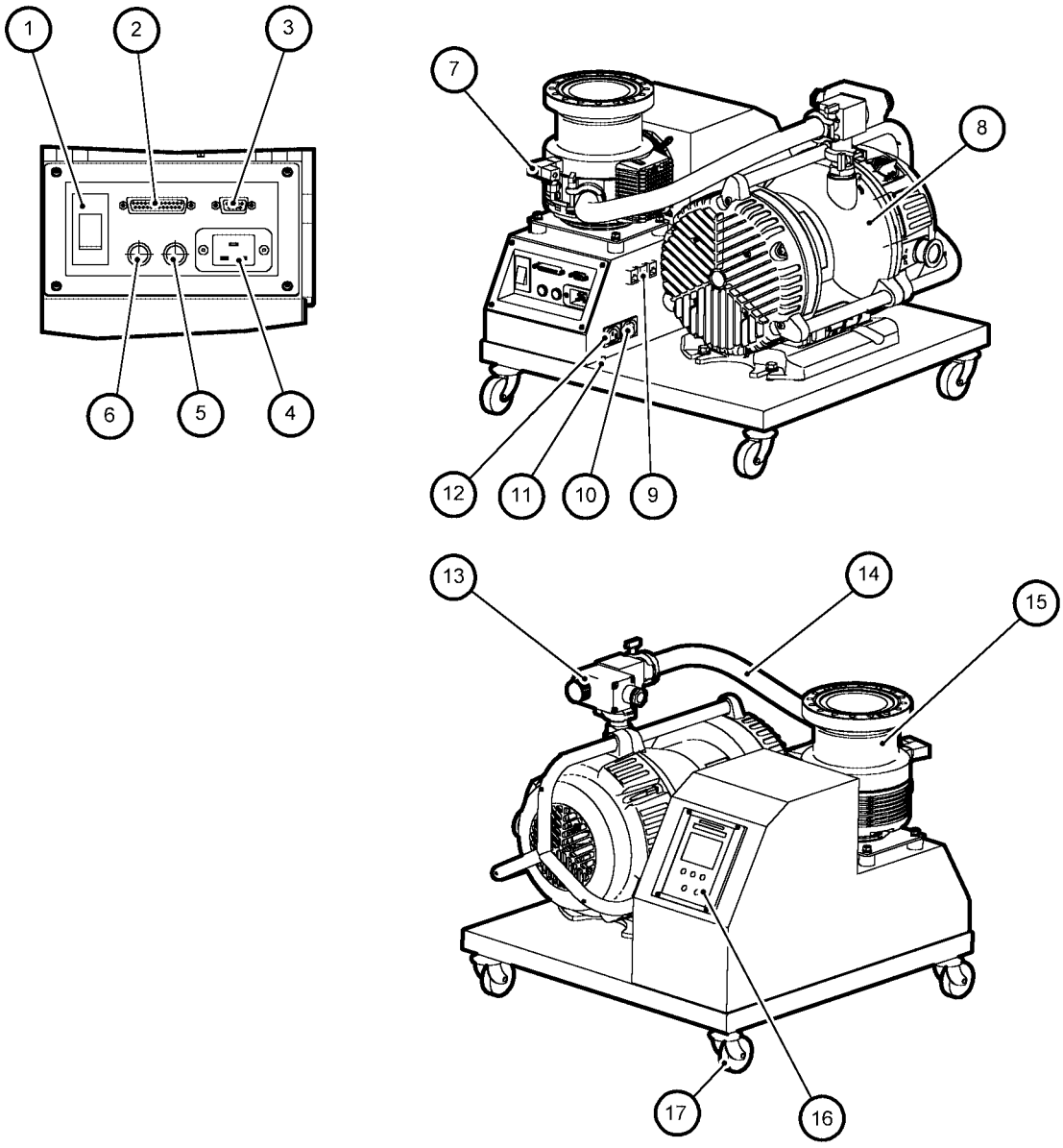
1.2.3 Electrical protection

The EXPT Pumping Station has a double-pole thermal circuit breaker which provides short circuit protection. The backing pump and TIC Controller both have overload protection.

1.2.4 Accessories

A wide range of standard accessories is available for the major components of the EXPT Pumping Station; refer to Section 7.

Figure 1 - Components of the EXPT pumping station (typical system shown)



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1. Mains ON/OFF
2. Logic interface
3. Serial communications port
4. Mains input
5. Heater fuse
6. Backing pump fuse
7. TAV vent valve
8. Backing pump
9. Vacuum gauge inputs
10. Backing pump supply
11. Earth stud
12. Heater supply (turbomolecular pump remote use only)
13. Backing line valve
14. Flexible bellows
15. Turbomolecular pump
16. TIC controller
17. Castors (standard on EXPT2 systems)

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2 Technical data

Note: The operating, storage conditions and performance of the EXPT Pumping Station depends on the major components fitted to the EXPT Pumping Station; refer to the technical data in the appropriate supplementary publications.

2.1 General

Dimensions	Refer to Figure 2
Mass	Refer to Tables 1 and 2
Electrical data	Refer to Table 3
Degree of protection (to IEC34-5: 1981)	IP20
Initial force required to push the EXPT pumping station* (for systems with castors)	3.5 kgf max.

* Measured under ideal conditions and will increase on uneven floor surfaces, slopes etc.

Table 1 - EXPT1 pumping station mass

EXT pump	TIC controller	Backing pump	Inlet flange	Mass (kg)
70H / 75DX	TIC (100W)	XDD1	NW40	22.9
			DN63ISO-K	23
			DN63CF	24.9
		E2M0.7/1.5	NW40	26.4
			DN63ISO-K	26.5
			DN63CF	28.4
255H / 255DX	TIC (200W)	XDD1	DN100 ISO-K	25.5
			DN100CF	27.75

Table 2 - EXPT2 pumping station mass

EXT pump	TIC controller	Backing pump	Inlet flange	Mass (kg)
70H / 75DX	TIC (100W)	RV3 / 5	NW40	38
			DN63ISO-K	38.1
			DN63CF	40
		RV8 / 12	NW40	42.7
			DN63ISO-K	42.8
			DN63CF	44.7
		XDS5	NW40	39.4
			DN63ISO-K	39.5
			DN63CF	41.4
		XDS10	NW40	40.9
			DN63ISO-K	41
			DN63CF	42.9

Table 2 - EXPT2 pumping station mass (continued)

EXT pump	TIC controller	Backing pump	Inlet flange	Mass (kg)
255H / 255DX	TIC (200W)	RV3 / 5	DN100 ISO-K	40.6
			DN100CF	42.85
		RV8 / 12	DN100 ISO-K	45.3
			DN100CF	47.55
		XDS5	DN100 ISO-K	42
			DN100CF	44.25
		XDS10	DN100 ISO-K	43.5
			DN100CF	45.75

2.2 Electrical data

Table 3 lists the electrical requirements for the different EXPT Pumping Stations.

Table 3 - Electrical data

Backing pump	TIC controller	Supply voltage 50/60Hz	Current (A)		Maximum power kW
			Full load	Start *	
XDD1	100W	100	4.67		0.355
		110-120	4.04		
		220-240	2.07		
	200W	100	6.02		0.49
		110-120	5.14		
		220-240	2.57		
E2M0.7	100W	110-120	4.34	8.14	0.365
		220-240	2.27	4.07	
	200W	110-120	5.44	9.24	0.5
		220-240	2.77	4.57	
E2M1.5	100W	110-120	5.54	14.44	0.435
		220-240	2.67	6.77	
	200W	110-120	6.64	15.54	0.57
		220-240	3.17	7.27	
RV3 / 5	100W	100	8.15	33.94	0.575
		110-120	7.04	20.875	
		220-240	3.67	16.87	
	200W	100	9.5	43.1	0.71
		110-120	8.14	35.04	
		220-240	4.17	17.37	

Table 3 - Electrical data (continued)

Backing pump	TIC controller	Supply voltage 50/60Hz	Current (A)		Maximum power kW
			Full load	Start *	
RV8 / 12	100W	100	10.35	36.44	0.825
		110-120	10.24	22.375	
		220-240	5.27	19.27	
	200W	100	11.7	45.6	0.96
		110-120	11.34	37.54	
		220-240	5.77	19.77	
XDS5/10	100W	100	10.75		0.575
		110-120	9.64		
		220-240	4.87		
	200W	100	12.1		0.71
		110-120	10.74		
		220-240	5.37		

Note: ***** *If the EXPT Pumping Station uses a rotary vane pump, the system may draw up to the start current value shown in Table 3. You must use a slow blow fuse to prevent unnecessary fuse failures, the start current could typically last for several seconds and generally occurs when the rotary vane pump oil is cold.*

2.3 Legislation and standards

The legislation and standards with which the EXPT Pumping Station complies are listed in full on the Declaration of Conformity shown on the front inside cover of this manual.

2.4 Operating and storage data

Table 4 - Operating and storage data

General items	Reference data
Ambient operating temperature range	0 °C to 35 °C
Ambient storage temperature range	-30 °C to 70 °C
Maximum ambient operating humidity	Max 90% RH non cond at 40 °C
Maximum operating altitude	3000 m max.

2.5 Fuse ratings

Table 5 - Fuse ratings

General items	Reference data
BX bakeout band fuse (Heater)	
90 to 132 V a.c. electrical supply	1 A, type F 20 mm
180 to 264 V a.c. electrical supply	0.5 A, type F 20 mm
Backing pump	
Refer to backing pump documentation	10 A, type T 20 mm (maximum)

2.6 Earth stud

Table 6 - Earth stud

General items	Reference data
Earth stud	M5

2.7 Electrical connections

Table 7 - Electrical connections

General items	Reference data
Electrical supply (refer to Figure 1, item 4)	
Inlet plug type	CEE/IEC 320 (16A)
Backing pump (refer to Figure 1, item 10)	
Outlet socket type	CEE/IEC 320
Max power	600 W
Bakeout band (refer to Figure 1, item 12)	
Outlet socket type	CEE/IEC 320
Max power	150 W

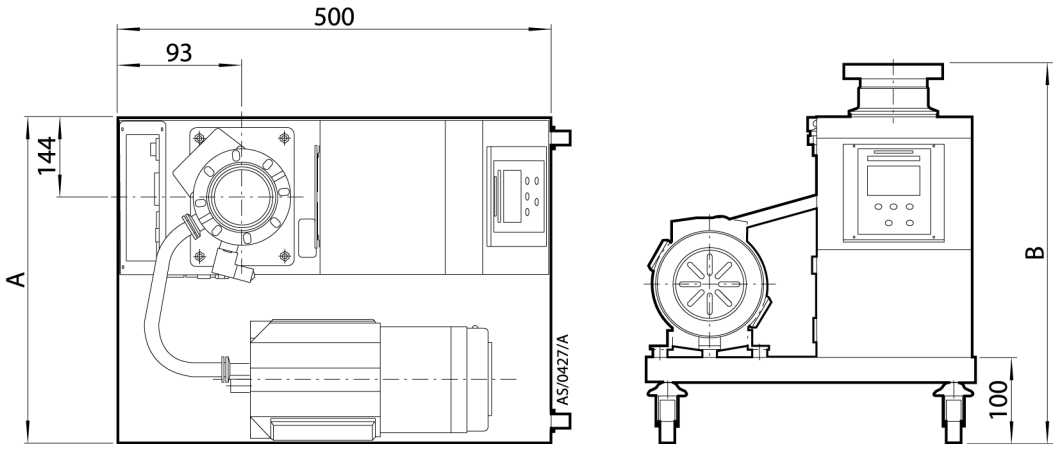
2.8 Connections

Note: The connectors listed in Table 8 offer the same functionality as the connectors on the TIC Controller. Refer to the TIC instruction manual for full details for these connectors.

Table 8 - Connections

General items	Reference data
Active gauge connectors	
Connector type	FCC/RJ45, 8-way
Power supply	24 V d.c.
Logic interface	
Connector type	25-way sub-miniature ‘D’ type socket
Power supply	24 V d.c.
Serial communications	
Connector type	9-way sub-miniature ‘D’ type socket

Figure 2 - Equipment dimensions (mm) (XDD1 and EXT75DX shown)



Position	Base or pump description		Dimension
A	EXPT1		380.0
	EXPT2		500.0
B	EXT70H	ISO63/CF63	415.0
		NW40	422.0
	EXT75DX	ISO63	415.0
		NW40	427.0
		CF63	434.0
	EXT255H/ EXT255DX	ISO100	450.1
		CF100	450.1

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3 Installation

3.1 Safety

WARNING

Obey the safety instructions given below and take note of appropriate precautions. If you do not, you can cause injury to people and damage to equipment.

- When you refer to a manual supplied as a Supplementary Publication, you must obey all of the WARNING and CAUTION instructions in the manual.
- A suitably trained and supervised technician must install the EXPT Pumping Station.
- Check that all the required parts are available and of the correct type before you start work.
- Ensure that the installation technician is familiar with the safety procedures which relate to the products pumped. Wear the appropriate safety-clothing when you come into contact with contaminated components.
- Isolate the other components in your system from the electrical supply so that they cannot be operated accidentally.
- Do not reuse 'O' rings and Co-Seals if they are damaged.
- Dispose of components, grease and oil safely (refer to Section 6).
- Take care to protect sealing-faces from damage.
- Leak-test the system after installation and seal any leaks found.

3.2 Unpack and inspect

Remove the outer cover and all packing materials, remove the protective covers from the inlet and outlet ports, inspect the system for any damage. If the EXPT Pumping Station is damaged, notify your supplier and the carrier in writing within three days; state your order number and invoice number. Retain all packing materials for inspection. Do not use the EXPT Pumping Station if it is damaged. Check that your package contains the items listed in Table 9. If any item is missing, notify your supplier within three days.

If the EXPT Pumping Station is not to be used immediately, replace the protective covers. Store the EXPT Pumping Station in suitable conditions as described in Section 6.1.

Table 9 - Checklist of components

Qty	Description	Check (✓)
1	EXPT Pumping Station	❑
1	Instruction Manual Package	❑
1	Logic Interface Interlock D-Connector	❑
1	TMP Flange Inlet Seal	❑
1	Rotary Pump Oil (RV/E2M pumps only)	❑
1	XDS Silencer (optional on systems with XDS pumps)	❑

3.3 Locate the EXPT pumping station

WARNING

Heavy objects can cause muscle strain or back injury. It is advisable to use suitable lifting equipment when moving the EXPT Pumping Station.

WARNING

(Applicable for systems with base castors) For your safety, both front castors must be locked when the system is in operation. If you do not and the turbomolecular pump seizes, movement of the system may damage equipment and injure people.

CAUTION

When lifting the EXPT Pumping Station, do not attempt to support the mass of the system from the backing pump.

CAUTION

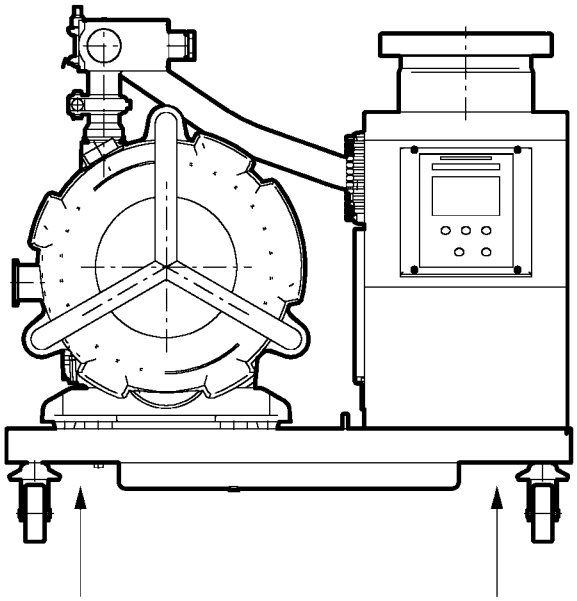
When lifting the EXPT Pumping Station, always use slings with sufficient length to prevent damage of the system components.

Before attempting to lift the EXPT Pumping Station, move the system (on its pallet) close to the operating position. Ensure that you provide a firm level base before removing the system from its pallet. It is advisable to always use mechanical lifting equipment when moving the heavier EXPT2 systems. Use slings around the base of the system from front to back, make sure each sling is routed between the castors or feet and the base guides to prevent slippage. Alternatively use straps with lifting hooks. Refer to Figure 3 which shows where to locate the slings or lifting hooks.

CAUTION

When locating the EXPT Pumping Station, care should be taken not to restrict the ventilation grid located under the base of the system. Failing to observe this may result in over heating of the controller and the turbomolecular pump.

Figure 3 - Position the lifting slings/lifting hooks



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3.4 Fill the rotary pump with oil

If the EXPT Pumping Station uses a EM or RV series rotary or rotary vane pump you must fill it with the correct quantity of oil (supplied with the equipment) before you operate the equipment, as described in the pump Instruction Manual.

3.5 XDS scroll pump silencer

The silencer is used to reduce exhaust noise during pump down and gas ballast operations. This part may be ordered and supplied (not fitted) with the system or can be ordered as an optional extra. To fit the silencer, follow the instructions in manual A505-97-880.

3.6 Fit accessories (optional)

If you wish to fit accessories to the EXPT Pumping Station, fit them now, before you start to install the EXPT Pumping Station into your vacuum system. Install accessories as described in the instruction manuals supplied with the accessories. Refer to Section 7 for further information on the accessories available and for specific fitting instructions to fit the accessories to the EXPT Pumping Station.

Note: The use of water coolers and BX bake-out bands on the EXPT Pumping Station is not permitted. If you wish to fit these accessories, it is advisable to install the turbomolecular pump away from the EXPT Pumping Station. For further details regarding turbomolecular pump remote mounting please contact Edwards UK.

3.7 Connect the EXPT pumping station to your vacuum system

WARNING

If you install your vacuum system directly onto the EXPT Pumping Station, the centre of gravity of the mass must be above and within 300 mm of the centre line.

Note: If the vacuum system is to be supported by the EXPT Pumping Station, the mass of the vacuum system must not be greater than the maximum mass which can be supported by the turbomolecular pump (refer to the EXT Pump Instruction Manual). Use the co-seal or copper gasket (supplied with the equipment) with a suitable clamp to secure to the vacuum system. Alternatively you may wish to use a pipeline to connect the vacuum system to the inlet of the turbomolecular pump. Refer to the EXT Pump Instruction Manual for further details.

3.8 Connect to your exhaust extraction system

Note: For further information, refer to the instruction manual which corresponds to the backing pump fitted to your EXPT Pumping Station.

3.9 Connect the electrical supply

WARNING

Ensure that the electrical installation of the EXPT Pumping Station conforms with your local and national safety requirements. It must be connected to a suitably fused and protected electrical supply and a suitable earth point.

WARNING

Ensure the mains cord is routed so as not to cause a trip hazard.

Check that your electrical supply is suitable for this equipment. Refer to Table 3 for the electrical requirements for this equipment. The EXPT Pumping Station is supplied with an electrical cable which includes a moulded IEC connector fitted at one end, the other end of the cable will be fitted with a moulded plug suitable for connection to the local electrical supply.

3.10 Additional earth bonding

The electrical supply cable normally provides protective earthing for electrical safety. If this is not the case, or if additional earth bonding is required, the earth stud located on the base at the rear of the EXPT Pumping Station should be connected to your vacuum system.

3.11 Configure the EXPT pumping station

As supplied, the TIC Controller has been reconfigured for the TIC Pumping Station to suit most vacuum applications and will:

When the TIC System ON is selected:

- Switch on both the backing pump and the turbomolecular pump *.
- Close the TAV vent valve.
- Open the backing valve.

When the TIC System OFF is selected:

- Switch off both the backing pump and the turbomolecular pump.
- Close the backing valve.

EXDC pump controllers:

- Open the TAV vent valve fully after the turbomolecular pump has slowed to 50% of its rotational speed.

DX pump controllers:

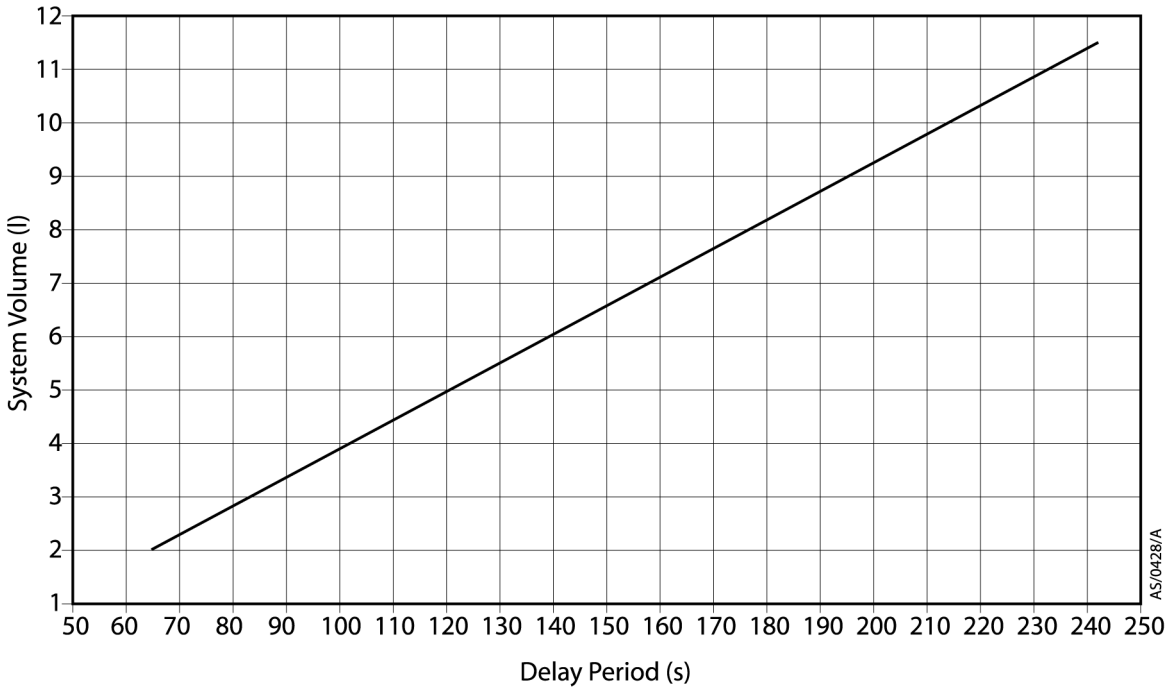
- Open the TAV vent valve (controlled venting) from 100–50% rotational speed, and then open fully from 50% of full rotational speed.

Note: *The TAV vent valve and LCPVEK backing valve are optional extras.*

Note: *The TIC Controller factory settings have been changed to provide a standard operation for the EXPT Pumping Station, if you replace the TIC Controller you should reconfigure the set up options to suit your application, refer to the TIC instruction manual for further details.*

Note: ** If your EXPT Pumping Station uses an XDD1 diaphragm pump, the turbomolecular pump drive will be delayed for two minutes while the backing pump reduces the pressure to a suitable level, this is typical for a five litre volume and will prevent the turbomolecular pump from running under high pressure for a prolonged period. This delay is adjustable (refer to the TIC instruction manual) and is recommended for system volumes >2 litres, refer to Figure 4 to estimate the turbomolecular start delay if you know your system volume.*

Figure 4 - Turbomolecular pump start delay with XDD1 diaphragm pump



3.12 Commission the installation

WARNING

Do not operate the system with the exhaust pipeline blocked. For example, if your EXPT Pumping Station uses a rotary vane pump, oil mist may be discharged from the oil mist filter and cause injury to people.

After you have installed the EXPT Pumping Station, use the following procedure to test the system.

1. Make sure that all the electrical connections are secure.
2. Switch on the electrical supply and your exhaust-extraction system (if available).
3. Turn ON the EXPT Pumping Station using the ON/OFF switch positioned on the rear panel. To start-up the equipment, refer to the TIC instruction manual. Check that the equipment operates as described in Section 3.11.
4. Inspect the vacuum, exhaust and pipeline connections and check that there are no leaks. Seal if any leaks are found.
5. Wait until the turbomolecular pump has reached full speed, then select OFF on the front panel of the TIC Controller again; check that both pumps stop.

3.13 Connecting an active gauge

CAUTION

Do not connect Barocel capacitance manometers to the TIC Pumping Station gauge connectors. Doing so will result in damage to the gauge and will invalidate the warranty.

Up to three compatible active gauges can be fitted to the gauge connectors on the rear inside of the EXPT Pumping Station housing, refer to Figure 1. Connect the gauges using Edwards active gauge cables to each of the three sockets, the number indicated above each socket corresponds to the same gauge number shown on the TIC Controller display. This option is only available if the EXPT Pumping Station uses a TIC turbo and instrument controller.

Note: Only one AIGX gauge can be connected to the TIC Pumping Station gauge connectors at a time.

3.14 Connecting the logic interface

CAUTION

Do not earth the logic interface 0 V lines (pins 7, 10, 12, and 13). If you do, you will provide an earth return path for any electrical fault in the pump-motor and this could damage your Controller or your control equipment.

CAUTION

Do not connect voltages greater than 24 V to the logic interface.

The logic interface provides a number of signals that can be used for monitoring the status of your vacuum system, and for controlling certain aspects of its operation. These signals can be broadly divided into three groups, control inputs, control outputs and status outputs.

The EXPT Pumping Station is supplied with an interlock D-connector connected into the logic interface at the rear of the equipment. If you do not intend to connect the logic interface to your system you must use the interlock D-connector, failing to do so will disable a number of control outputs which operate the EXPT system.

Note: The user logic interface on the rear panel offers the same functionality as the logic interface on the TIC Controller. Refer to the TIC instruction manual for further details of this connector.

3.15 Connecting the serial interface

The TIC has two serial communications protocols built in, RS232 and RS485. RS232 is the simplest interface and can be used to allow a host PC to control the TIC. RS485 allows a host PC to control a small network of TICs.

Note: The user serial interface on the rear panel offers the same functionality as the serial interface on the TIC Controller. Refer to the TIC instruction manual for further details of this connector.

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4 Operation

4.1 Use of the backing pump controls

If the backing pump has a mode selector and or gas-ballast control, refer to the appropriate backing pump instruction manual to optimise the performance of the pump for your application.

4.2 Start-up

Use the following procedure to start the EXPT Pumping Station. If you wish to reconfigure the operation of the EXPT Pumping Station to suit an application, refer to the TIC instruction manual.

1. Switch on the electrical supply to the EXPT Pumping Station and your exhaust-extraction system (if available).
2. Turn ON the EXPT Pumping Station using the ON/OFF switch positioned on the rear panel.
3. To operate the equipment components, refer to the TIC instruction manual for full operation.

4.3 Shut-down

Use the following procedure to shut down the EXPT Pumping Station.

1. Refer to the TIC Controller instruction manual to stop the turbomolecular pump (TMP) and backing pump operation.
2. Switch off the ON/OFF rocker switch located on the equipment rear panel.
3. Remove the electrical mains supply from the equipment.

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5 Maintenance

5.1 Safety

WARNING

Obey the safety instructions given below and take note of appropriate precautions. If you do not, you can cause injury to people and damage to equipment.

- When you refer to a manual supplied as a Supplementary Publication, you must obey all of the WARNING and CAUTION instructions in the manual.
- A suitably trained and supervised technician must maintain the EXPT Pumping Station.
- Allow the pumps to cool to a safe temperature before you start maintenance work.
- Check that all the required parts are available and of the correct type before you start work.
- Ensure that the maintenance technician is familiar with the safety procedures which relate to the products pumped. Wear the appropriate safety-clothing when you come into contact with contaminated components. Dismantle and clean contaminated components in a fume-cupboard.
- Isolate the EXPT Pumping Station and other components in the system from the electrical supply so that they cannot be operated accidentally.
- Do not reuse 'O' rings and Co-Seals if they are damaged.
- Dispose of components, grease and oil safely (refer to Section 6).
- Protect sealing-faces from damage.
- Do not touch or inhale the thermal breakdown products of fluoroelastomer seals. These breakdown products are very dangerous and may be present if the EXPT Pumping Station has been heated to 260 °C and above.
- Leak-test the system after maintenance and seal any leaks found if you have disconnected any vacuum or exhaust pipeline connections.

5.2 Maintenance plan

The following documents list the minimum maintenance operations necessary to maintain the EXPT Pumping Station in normal use.

More frequent maintenance may be necessary if the EXPT Pumping Station has been used to pump corrosive or abrasive gases and vapours. If necessary, adjust the maintenance plan according to your experience.

EXT pumps	
Turbomolecular pumps	EXT70H / EXT255H 24 V (B722-20-880)
	EXT75DX / EXT255DX (B722-40-880)
Backing pumps	
Diaphragm pump	XDD1 (A746-01-885)
Rotary vane pumps	E2M0.7 / E2M1.5 (A371-22-880)
	RV3 / RV5 / RV8 / RV12 (A652-01-880)
Scroll pumps	XDS5 / XDS10 (A726-01-880)

5.3 Inspect the hoses, pipelines and connections

1. If the turbomolecular pump on your EXPT Pumping Station is water-cooled:
   - Inspect all of the cooling-water connections and check that they are secure. Tighten any loose connections.
   - Inspect all cooling-water hoses, pipelines and connections and check that they are not corroded or damaged and that they do not leak. Replace or repair any corroded or damaged component and seal any leaks found.
2. Inspect all of the electrical connections and check that they are secure. Tighten any loose connections.
3. Inspect all of the electrical cables and check that they are not damaged and have not overheated. Replace or repair any damaged or overheated cable.
4. Inspect all of the vacuum and exhaust connections and check that they are secure. Tighten any loose connections.
5. Inspect all of the vacuum and exhaust pipelines and check that they are not corroded or damaged and that they do not leak. Replace or repair any corroded or damaged component and seal any leaks found.

5.4 Trouble-shooting

For trouble-shooting instructions on the EXPT Pumping Station, refer to the following documents:

EXT pumps	
Turbomolecular pumps	EXT70H / EXT255H 24 V (B722-20-880)
	EXT75DX / EXT255DX (B722-40-880)
Backing pumps	
Diaphragm pump	XDD1 (A746-01-885)
Rotary vane pumps	E2M0.7 / E2M1.5 (A371-22-880)
	RV3 / RV5 / RV8 / RV12 (A652-01-880)
Scroll pumps	XDS5 / XDS10 (A726-01-880)
TIC controller	
TIC controller	Turbo controller (D397-12-880)
	Turbo instrument controller (D397-22-880)

6 Storage and disposal

Note: We recommend that you avoid long-term storage of the EXPT Pumping Station. If you will store the EXPT Pumping Station for several months, refer to the storage instructions in the relevant instruction manual.

6.1 Storage

Use the following procedure to store the EXPT Pumping Station:

1. Shut down the EXPT Pumping Station as described in Section 4.3.
2. Isolate the EXPT Pumping Station from the electrical supply and disconnect it from the vacuum system.
3. Drain the oil from the backing pump (rotary vane pumps only) as described in the instruction manual for the pump. Refer to the following documents:

Rotary vane pumps	E2M0.7 / E2M1.5 (A371-22-880) RV3 / RV5 / RV8 / RV12 (A652-01-880)

4. Place protective covers over the inlet and outlet-flanges.
5. For the fastest pump-down after the EXPT Pumping Station is re-installed, seal the turbomolecular pump inside a plastic bag together with a suitable desiccant.
6. Store the EXPT Pumping Station in cool, dry conditions until required for use.

6.2 Disposal

Dispose of the EXPT Pumping Station and any components safely in accordance with all local and national safety and environmental requirements.

Particular care must be taken with components which have been contaminated with dangerous process substances.

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7 Spares and accessories

7.1 Introduction

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, Canada, France, Germany, Hong Kong, Italy, Japan, Korea, Switzerland, United Kingdom, U.S.A and a worldwide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses.

Order spare parts and accessories from your nearest Edwards company or distributor. When you order, state for each part required:

- Model and Item Number of your equipment
- Serial number (if any)
- Item Number and description of the part.

Fit accessories as described in the Supplementary Publications and in the instruction manual supplied with the accessory.

7.2 Spares

The spares available for use with the EXPT Pumping Station (including replacement component parts) are listed in the instruction manuals supplied as Supplementary Publications.

7.3 Accessories

For accessories on the EXPT Pumping Station, refer to the following documents:

EXT pumps	
Turbomolecular pumps	EXT70H / EXT255H 24 V (B722-20-880)
	EXT75DX / EXT255DX (B722-40-880)
Backing pumps	
Diaphragm pump	XDD1 (A746-01-885)
Rotary vane pumps	E2M0.7 / E2M1.5 (A371-22-880)
	RV3 / RV5 / RV8 / RV12 (A652-01-880)
Scroll pumps	XDS5 / XDS10 (A726-01-880)
TIC controller	
TIC controller	Turbo controller (D397-12-880)
	Turbo instrument controller (D397-22-880)

7.3.1 BX bakeout band

The BX bakeout band should only be used on turbomolecular pumps intended to be used remotely away from the EXPT Pumping Station. For further details please contact Edwards UK.

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