COMPACT MULTIPURPOSE
HELIUM LEAK DETECTORS

ASM 142 SERIES

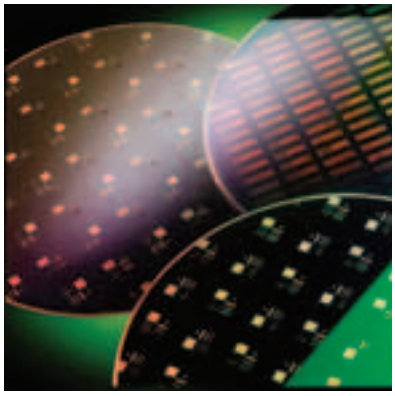
The ASM 142 Series sets a new performance standard for an entry-level unit

General purpose leak detectors have always been synonymous with limited performance units.
This belief was based on limited vacuum and electronic technologies available then to meet the key requirements of size and cost.
Alcatel has once again revolutionized the world of leak detection, proving its prowess in helium leak detection.

The new universal leak detector model is the end result of an innovative engineering approach using the latest electronic technologies and vacuum concepts.
This rugged unit is undeniable proof that multipurpose no longer means compromise.
On the contrary,
the ASM 142 Series delivers unmatched features for a entry-level unit such as,
a roughing capacity of 10 m^3/h (7 cfm) with a usable helium sensitivity in the 10^{-11} atm.cc/s range. In addition, its comprehensive bulletproof display panel loaded with advanced features available at your fingertips delivers a true user-friendly unit.

The simplest solutions for all applications

These universal leak detectors can comply with a virtually limitless list of applications.
Its remarkable versatility based on a smart design, allows many creative possibilities:

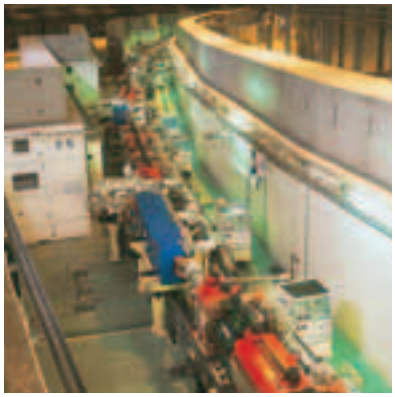


Maintenance applications and quality control of vacuum systems

- High helium pumping speed at the inlet port will deliver fast response time.
- A simple operator interface including a vocal synthesizer will provide a unique tool that will ease the operator tasks.
- A convenient transport cart will allow fast mobility while in operation.

Applications

- semiconductor
- research and development
- cryogenic
- aerospace industry
- industries which use vacuum process



Production or quality control of components

- High roughing capacity will deliver fast cycle time.
- Advanced electronics will provide full automation of the test cycle.
- Integrated software will control and manage the operation with an auxiliary pump.
- Comprehensive interface capabilities such as discrete I/O and RS 232 will ease its interface with a P.L.C or/and a P.C.

Applications

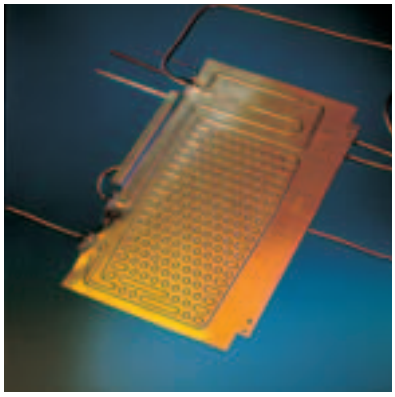
- mechanical industry (seals,valves, various small pieces)
- instrumentation (sensors)

Outboard testing of pressurized parts (sniffing test mode)

- A unique "floating" background suppression device will deliver and guarantee a sensitivity in the 10^{-7} atm.cc/s range.
- The 142's ruggedness will allow its usage in very harsh industrial environments.

Applications

- refrigeration
- air-conditionning



Simplicity

The simple design of this unit results in a quick learning curve for a new user. It takes no more than a few minutes to get familiar with its operation.

In addition, the ASM 142 Series also offers evolved features to assist the operator in his daily test operation:

- Auto-calibration with temperature compensation.
- Auto-Zero function.
- Helium Signal Direct. Readout function.
- Full automation of the test cycle.

Ruggedness

The ASM 142 Series utilizes well proven mechanical vacuum pump technology designed specifically for heavy usage in very harsh industrial environments. The helium stability of the rotary vane pump guarantees excellent stability of the helium signal.
The low rotational speed of the M.D.P. (Molecular Drag Pump) at 27,000 rpm makes this unit totally bullet proof against accidental air inrushes.
Further, it allows the leak detector to be moved while in operation.
The high compression ratio of the M.D.P. facilitates the gross leak test at a high pressure (7.5 Torr / 10 mbar) which speeds up the leak test process of outgassing parts.

The ASM 142 Series requires little maintenance and its internal layout allows easy access to all the components.
In addition, the rotary vane pump is equipped with a practical oil change device to speed-up the process.

Versatility

With its 10 m^3/h roughing pump capacity, the ASM 142 leak detector (standard version) delivers performance to address any leak detection application. Its unparalleled versatility makes it a truly universal unit, able to perform effectively both inboard and outboard leak tests.
In addition to these superior features, this unit offers a complete set of options and accessories to meet the requirements of any applications (refer to the following pages for more information).

The perfect combination of performance...

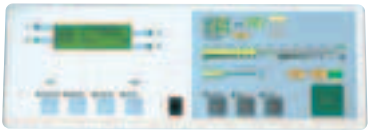
The design of the ASM 142 Series includes Adixen's newest analyzer cell, innovative operator interface, well proven helium stable rotary vane pump and high compression, low rotational speed (27,000 rpm) molecular drag pump.

New Analyzer cell:

- 180° magnetic deflection mass spectrometer.
- Patented amplification system based on an electron multiplier (multi channel plate concept) which provides unmatched stability and sensitivity.
- Two independent filaments for a better reliability and maintainability (automatic switch from one filament to the other with automatic auto-calibration for maximum up time).

Front Panel Display:

- 4 levels of operation menus for enhanced user friendliness.
- Comprehensive display panel with sensing switches for smoother operation.
- Voice synthesizer for additional operator interface ability.



Standard operator interface (ASM 142)

Graph operator interface (ASM Graph)

Rotary Vane Pump or Dry Roughing System:

Well proven technologies:

2-stage helium stable rotary vane pump:

- 10 m³/h (7 cfm) roughing capacity in the standard version for fast test cycle (ASM 142)
- Large capacity mist eliminator.

Dry Roughing System:

The design of the ASM 142 D uses all our cumulated experience in the compact dry pumping systems:

- Diaphragm pump + molecular drag pump which develops an air pumping speed from 1 up to 18 m³/h (0,6 up to 10,5 cfm).

- ASM Graph D+: the ACP 15 multistage roots frictionless pump technology guarantees a high level of cleanliness, reliability and longetivity.

Electronic Interface:

Comprehensive interface to connect easily to a P.L.C and/or to a P.C.

- Discrete I/O interface.
- Complete RS 232 interface.

ASM 142 Series

The modules of the ASM 142 Series are based on the same well proven leak testing concept.
They share the same basic components:

- high sensitivity analyzer cell with dual filaments,
- improved molecular drag pump model AMP007,
- latest generation of electronics,
- plastic cover and metal frame.

ASM 142, conventional version

The ASM 142 is a truly multipurpose unit that complies with a virtually limitless list of applications. It offers inboard and outboard leak testing capabilities, with unmatched features such as a 10 m³/h (7 cfm) roughing capacity for fast cycle time.

The ASM 142 is the perfect answer to all the users who need to perform various types of leak tests, including a vacuum test.

ASM 142 D, the most simple solution in terms of dry helium leak detector

The latest in the famous ASM 142 series, the ASM 142 D is the most simple solution that you can find if you are attracted to the "dry" helium leak detection.

This 100% hydrocarbon-free leak detector not only guarantees total cleanliness during the leak test, but also provides advantages like simplicity of maintenance.

The roughing pump package of the ASM 142 D operates up to 10,000 hours maintenance free and develops an air pumping speed from 1 to 18 m³/h (0,6 to 10,5 cfm) thanks to the association of a diaphragm pump and a molecular drag pump.

ASM Graph D+
Power and sensitivity in a small package

Compact and powerful helium leak detector, the ASM Graph D+ combines 14 m³/h clean, dry, roughing capacity with our high sensitivity analyzer cell in very small foot print clean room compatible package.

Highly manoeuvrable, the system is mounted on a unique cart equipped with four large, full swivel wheels with brakes for easy movement through and around cluttered areas and over grilled floors such as Semiconductor Fabs.

Compartments for convenient storage of vacuum hardware and provisions for a helium bottle, are part of this clever package, all in a foot print of just 0.5m x 0.35m (20" x 16").

ASM Graph D+

ACP15, 14 m³/h frictionless technology

ASM Graph D+ accessories

Description	PART NUMBER
Helium bottle holder Dia. 135/126 mm	112532
Helium bottle holder Dia. 177 mm	112533
Remote control holder	112534

Various types of options...

Interface board

It accommodates automation of the leak detector through a P.C or a P.L.C.
The interface board includes several types of interface:

- Analog signal (Helium signal).
- Discrete input/output (for remote control through a P.L.C).
- A complete RS 232 (for remote control through a supervision system).

Automatic test chambers

- Small model: hemispherical test chamber ø 72 mm, depth 31 mm, with start of cycle contact.
- Medium model: cylindrical test chamber ø 85 mm, depth 68 mm, with start of cycle contact.

This option integrates the interface board.

Metal seal

Allows using the leak detector in very high helium environment.

3 masses option

Hydrogen, helium 3, helium 4.

... and accessories

Remote control

The ASM 142 Series uses the same remote control than all the new generation Adixen leak detectors. It offers all the advanced features such as auto-calibration, auto-zero and zoom function.

Transport cart

This cart allows easy transportation of the leak detector. It also includes a compartment for accessories, maintenance kit and the instruction manual.

Measurements units

The multi-color remote control offers the choice from 3 different measurement units:

- mbar.l/s and mbar.
- Pa.m3/s and Pa.
- Torr.l/s and Torr.

Description		PART NUMBER
Remote control	: mbar.l/s : Pa.m3/s : Torr.l/s	106688 108880 108881
Transport cart		108068
Kit RS 232		107657
Helium spray gun		112535
Helium spray gun "elite"		109951
Standard sniffer probe		SNC1E1T1
Dedicated sniffer probes		*

* For accessories, see "Accessories for helium leak detectors".

Technical specifications

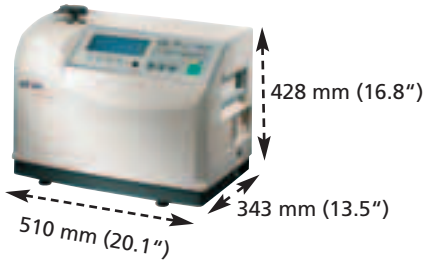
Specifications > vacuum mode		ASM Graph/ASM 142	ASM Graph D/ASM 142 D	ASM Graph D+
Minimum detectable helium leak	5.10^{-12} atm.cc/s	X	X	X
Maximum inlet test pressure	10 mbar (7.5 Torr)	X	X	X
Helium pumping speed at the inlet of the unit	1.3 l/s (78 l/min)	X	X	X
Roughing capacity	10 m³/h (6 cfm)	X		
	1 up to 18 m³/h (0,6 up to 10,5 cfm)		X	
	14 m³/h (8 cFm)			X

Specifications > sniffing mode		ASM Graph/ASM 142	ASM Graph D/ASM 142 D	ASM Graph D+
Minimum detectable helium leak	1.10^{-7} atm.cc/s	X	X	X
Response time	< 1 s	X	X	X

General specifications		ASM Graph/ASM 142	ASM Graph D/ASM 142 D	SM Graph D+
Start-up time (including auto-calibration)	Less than 3 minutes	X	X	X
Power consumption		< 1 kw	< 500 w	< 1 kw

Integrated Functions	ASM Graph/ASM 142	ASM Graph D/ASM 142 D	ASM Graph D+
Auto-calibration, with built-in temperature compensated calibrated leak	X	X	X
Full automation of test cycle including: - cycle sequence - memorization of the last test - test result display	X	X	X
Helium background suppression with “floating zero” to keep the signal from going negative.	X	X	X
Automatic external calibration	X	X	X
Helium pollution prevention	X	X	X
Audio alarm with variable pitch (up to 90 dbA)	X	X	X
Vocal synthesizer	X	X	X

User defined parameters	ASM Graph/ASM 142	ASM Graph D/ASM 142 D	ASM Graph D+
4 user languages	X	X	X
3 pressure and Helium flow units	X	X	X
Weight	56 kg 123 lb	42 kg 92 lb	70 kg 154 lb



Ordering information
ASM 142 - ASM 142 D

			0	0	0	0						0

	Leak detector	
	ASM 142	ASM 142 D
Code	T	W

	Masses	
	Helium	3 Masses
Code	0	3

3 Masses **(3).** This option allows the leak detector to detect masses 2, 3 and 4.

	Seals for the vacuum module and analyzed cell	
	Elastomer	Metal
Code	R	L

The leak detector can be provided with : Elastomer seals (for the high vacuum as well as the inlet block) as standard **(R)** or with metal seals for specific applications (**L**).

	Interface board + test chamber			
	Without RS232 interface	With RS232 interface	Auto. test chamber small model	Auto. test chamber medium model
Code	0	1	2	3

The automatic test chambers integrate the RS232 interface.

	Language			
	French	English	German	Japanese
Code	A	B	C	E

	Voltage	
	100/130 V - 50/60 Hz	220/240 V - 50/60 Hz
Code	7	8

	Cable type					
	U.S.A.	France/Germany	U.K.	Italy	Switzerland	Without plug
Code	1	2	3	4	5	7

For example
You need ...

ASM 142	**T**
3 masses	**3**
Elastomers seal	**R**
With RS232 interface	**1**
French	**A**
220/240 V 50/60 Hz	**8**
France	**2**

= | T | 3 | R | 0 | 0 | 0 | 0 | 1 | A | 8 | 2 | 0 |

Ordering information
ASM Graph - ASM Graph D

			0	0	0	0					0	

	Leak detector	
	ASM Graph	ASM Graph D
Code	G	H

	Masses	
	Helium	3 masses
Code	0	3

3 Masses **(3).** This option allows the leak detector to detect masses 2, 3 and 4.

	Seals for the vacuum module and analyzer cell	
	Elastomer	Metal
Code	R	L

The leak detector can be provided with : Elastomer seals (for the high vacuum as well as the inlet block) as standard **(R)** or with metal seals for specific applications **(L).**

	Interface board + test chamber			
	Without RS232 interface	With RS232 interface	Test chamber Small model	Test chamber Medium model
Code	0	1	2	3

The automatic test chambers integrate the RS232 interface.

	Language			
	French	English	German	Japanese
Code	A	B	C	E

	Voltage	
	110/130 V - 50/60 Hz	220/240 V - 50/60 Hz
Code	7	8

	Cable type					
	USA/Japan	France/Germany	U.K.	Italy	Switzerland	Without plug
Code	1	2	3	4	5	7

For example
You need ...

ASM Graph	**G**
3 masses	**3**
Elastomers seal	**R**
Without RS232 interface	**0**
English	**B**
220/240 V 50/60 Hz	**8**
Germany	**2**

= | G | 3 | R | 0 | 0 | 0 | 0 | 0 | B | 8 | 2 | 0 |

Ordering information ASM Graph D+

N			0	0	0	0					0

	Leak detector
	ASM Graph D+
Code	N

	Masses	
	Helium	3 masses
Code	0	3

3 Masses **(3).** This option allows the leak detector to detect masses 2, 3 and 4.

	Seals for the vacuum module and analyzer cell	
	Elastomer	Metal
Code	R	L

The leak detector can be provided with : Elastomer seals (for the high vacuum as well as the inlet block) as standard **(R)** or with metal seals for specific applications **(L).**

	Interface board + test chamber			
	Without RS232 interface	With RS232 interface	Test chamber small model	Test chamber medium model
Code	0	1	2	3

The automatic test chambers integrate the RS232 interface.

	Language			
	French	English	German	Japanese
Code	A	B	C	E

	Voltage	
	110/130 V - 50/60 Hz	220/240 V - 50/60 Hz
Code	7	8

	Cable type					
	USA/Japan	France/Germany	U.K.	Italy	Switzerland	Without plug
Code	1	2	3	4	5	7

For example

You need ...

ASM Graph D+	**N**
3 masses	**3**
Elastomers seal	**R**
Without RS232 interface	**0**
French	**A**
220/240 V 50/60 Hz	**8**
U.K.	**2**

= N 3 R 0 0 0 0 **0** **A** **8** **3** 0

adixen

China
Alcatel Vacuum
Technology Shanghai
Tel: (8621) 5027 0628
Fax: (8621) 3895 3815

France (Headquarters)
Alcatel Vacuum
Technology France
Tel: 33 (0)4 50 65 77 77
Fax: 33 (0)4 50 65 77 89

Germany
Alcatel Hochvakuum
Technik GmbH
Tel: (49) 9342 96 10 0
Fax: (49) 9342 96 10 30

Italy
Alcatel Vacuum
Systems S.p.A.
Tel: (39) 039 686 3855
Fax: (39) 039 667 125

India
Alcatel Vacuum
Technology India
Tel: (91) 124 4737777
Fax: (91) 124 4737799

Japan
Alcatel-Lucent Japan Ltd
Tel: (81) 3 6431 7130
Fax: (81) 45 544 0049

Korea
Alcatel Vacuum
Technology Korea
Tel: (82) 31 206 6277
Fax: (82) 31 204 6279

Netherlands
Alcatel Vacuum
Technology Netherlands
Tel: (31) 345 478 400
Fax: (31) 345 531 076

Singapore
Alcatel-Lucent Singapore
Tel: (65) 6254 0828
Fax: (65) 6254 7018

Sweden
Adixen Scandinavia
Tel: (46) 13 35 59 00
Fax: (46) 13 35 59 01

Taiwan
Alcatel Vacuum
Technology Taiwan
Tel: (886) 3 5599 230
Fax: (886) 3 5599 231

United Kingdom
Alcatel Vacuum
Technology (U.K.) Ltd
Tel: (44) 1 506 418 000
Fax: (44) 1 506 418 002

USA
Alcatel Vacuum
Products
Tel: (1) 781 331 4200
Fax: (1) 781 331 4230

Alcatel Vacuum Technology France
98, avenue de Brogny - BP 2069 - 74009 ANNECY CEDEX - FRANCE - Tel.: 33 (0)4 50 65 77 77 - Fax: 33 (0)4 50 65 77 89
www.adixen.com