

ultimateSAM

CAREL

Direct Steam Humidification System

Sistema di umidificazione ultimateSAM



(ENG) User manual

(ITA) Manuale d'uso

→ **LEGGI E CONSERVA
QUESTE ISTRUZIONI** ←
**READ AND SAVE
THESE INSTRUCTIONS**

  **NO POWER
& SIGNAL
CABLES
TOGETHER**
READ CAREFULLY IN THE TEXT!

Integrated Control Solutions & Energy Savings



GENERAL WARNINGS

The CAREL Industries humidifiers are advanced products, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com. Each CAREL Industries product, in relation to its advanced level of technology, requires setup/configuration/programming/commissioning to be able to operate in the best possible way for the specific application. The failure to complete such operations, which are required/indicated in the user manual, may cause the final product to malfunction; CAREL Industries accepts no liability in such cases. The customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment. CAREL Industries may, based on specific agreements, acts as a consultant for the installation/commissioning/use of the unit, however in no case does it accept liability for the correct operation of the humidifier and the final installation if the warnings or suggestions provided in this manual or in other product technical documents are not heeded. In addition to observing the above warnings and suggestions, the following warnings must be followed for the correct use of the product:

- **DANGER OF ELECTRIC SHOCK** : The humidifier contains live electrical components. Disconnect the power supply before accessing inside parts or during maintenance and installation.
- **DANGER OF WATER LEAKS**: The humidifier automatically and constantly fills/drains certain quantities of water. Malfunctions in the connections or in the humidifier may cause leaks.
- **DANGER OF BURNS**: The humidifier contains high temperature components and delivers steam at 100°C/ 212°F.



IMPORTANT

- The installation of the product must include an earth connection, using the special yellow-green terminal available in the humidifier.
- The environmental and power supply conditions must conform to the values specified on the product rating labels.
- The product is designed exclusively to humidify rooms either directly or through distribution systems (ducts).
- Only qualified personnel who are aware of the necessary precautions and able to perform the required operations correctly may install, operate or carry out technical service on the product.
- Only water with the characteristics indicated in this manual must be used for steam production.
- All operations on the product must be carried out according to the instructions provided in this manual and on the labels applied to the product. Any uses or modifications that are not authorized by the manufacturer are considered improper. CAREL Industries declines all liability for any such unauthorized use.
- Do not attempt to open the humidifier in ways other than those specified in the manual.
- Observe the standards in force in the place where the humidifier is installed.
- Keep the humidifier out of the reach of children and animals.
- Do not install and use the product near objects that may be damaged when in contact with water (or condensate). CAREL Industries declines all liability for direct or indirect damage following water leaks from the humidifier.
- Do not use corrosive chemicals, solvents or aggressive detergents to clean the inside and outside parts of the humidifier, unless specifically indicated in the user manual.
- Do not drop, hit or shake the humidifier, as the inside parts and the linings may be irreparably damaged.

CAREL Industries adopts a policy of continual development. Consequently, CAREL reserves the right to make changes and improvements to any product described in this document without prior warning. The technical specifications shown in the manual may be changed without prior warning. The liability of CAREL Industries in relation to its products is specified in the CAREL Industries general contract conditions, available on the website www.carel.com and/or by specific agreements with customers; specifically, to the extent where allowed by applicable legislation, in no case will CAREL Industries, its employees or subsidiaries be liable for any lost earnings or sales, losses of data and information, costs of replacement goods or services, damage to things or people, downtime or any direct, indirect, incidental, actual, punitive, exemplary, special or consequential damage of any kind whatsoever, whether contractual, extra-contractual or due to negligence, or any other liabilities deriving from the installation, use or impossibility to use the product, even if CAREL Industries or its subsidiaries are warned of the possibility of such damage.



DISPOSAL:

The humidifier is made up of metal parts and plastic parts. In reference to European Union directive 2002/96/EC issued on 27 January 2003 and the related national legislation, please note that:

1. WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
2. the public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment;
3. the equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
4. the symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment has been introduced onto the market after 13 August 2005 and that it must be disposed of separately;
5. in the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

Warranty on the materials: 2 years (from the date of production, excluding consumables).

Approval: the quality and safety of CAREL products are guaranteed by the ISO 9001 certified design and



production system, as well as by the



AVVERTENZE

Gli umidificatori CAREL Industries sono prodotti avanzati, il cui funzionamento è specificato nella documentazione tecnica fornita col prodotto o scaricabile, anche anteriormente all'acquisto, dal sito internet www.carel.com. Ogni prodotto CAREL Industries, in relazione al suo avanzato livello tecnologico, necessita di una fase di qualifica/configurazione/programmazione affinché possa funzionare al meglio per l'applicazione specifica. La mancanza di tale fase di studio, come indicata nel manuale, può generare malfunzionamenti nei prodotti finali di cui CAREL Industries non potrà essere ritenuta responsabile. Il cliente (costruttore, progettista o installatore dell'equipaggiamento finale) si assume ogni responsabilità e rischio in relazione alla configurazione del prodotto per il raggiungimento dei risultati previsti in relazione all'installazione e/o equipaggiamento finale specifico. CAREL Industries in questo caso, previ accordi specifici, può intervenire come consulente per la buona riuscita della installazione/start-up macchina/utilizzo, ma in nessun caso può essere ritenuta responsabile per il buon funzionamento dell'umidificatore ed impianto finale qualora non siano state seguite le avvertenze o raccomandazioni descritte in questo manuale, o in altra documentazione tecnica del prodotto. In particolare, senza esclusione dell'obbligo di osservare le anzidette avvertenze o raccomandazioni, per un uso corretto del prodotto si raccomanda di prestare attenzione alle seguenti avvertenze:

- **PERICOLO SCOSSE ELETTRICHE**: L'umidificatore contiene componenti sotto tensione elettrica. Togliere l'alimentazione di rete prima di accedere a parti interne, in caso di manutenzione e durante l'installazione.
- **PERICOLO PERDITE D'ACQUA**: L'umidificatore carica/scarica automaticamente e costantemente quantità d'acqua. Malfunzionamenti nei collegamenti o nell'umidificatore possono causare perdite.
- **PERICOLO DI USTIONE**: L'umidificatore contiene componenti ad alta temperatura, ed eroga vapore a 100°C/ 212°F.



ATTENZIONE

- L'installazione del prodotto deve obbligatoriamente comprendere una connessione di terra, utilizzando l'apposito morsetto di colore giallo-verde presente nell'umidificatore.
- Condizioni ambientali e tensione di alimentazione devono essere conformi ai valori specificati nelle etichette 'dati di targa' del prodotto.
- Il prodotto è progettato esclusivamente per umidificare ambienti in modo diretto o mediante sistemi di distribuzione (condotte).
- Installazione, utilizzo e manutenzione devono essere eseguite da personale qualificato, consapevole delle precauzioni necessarie e in grado di effettuare correttamente le operazioni richieste.
- Per la produzione di vapore si deve utilizzare esclusivamente acqua con caratteristiche indicate nel presente manuale.
- Tutte le operazioni sul prodotto devono essere eseguite secondo le istruzioni contenute nel presente manuale e nelle etichette applicate al prodotto. Usi e modifiche non autorizzati dal produttore sono da considerarsi impropri. CAREL Industries non si assume alcuna responsabilità per tali utilizzi non autorizzati.
- Non tentare di aprire l'umidificatore in modi diversi da quelli indicati nel manuale.
- Attenersi alle normative vigenti nel luogo in cui si installa l'umidificatore.
- Tenere l'umidificatore fuori dalla portata di bambini e animali.
- Non installare e utilizzare il prodotto nelle vicinanze di oggetti che possono danneggiarsi a contatto con l'acqua (o condensa d'acqua). CAREL Industries declina ogni responsabilità per danni conseguiti o diretti a seguito di perdite d'acqua dell'umidificatore.
- Non utilizzare prodotti chimici corrosivi, solventi o detergenti aggressivi per pulire le parti interne ed esterne dell'umidificatore, salvo non vi siano indicazioni specifiche nei manuali d'uso.
- Non fare cadere, battere o scuotere l'umidificatore, poiché le parti interne e di rivestimento potrebbero subire danni irreparabili.

CAREL Industries adotta una politica di continuo sviluppo. Pertanto si riserva il diritto di effettuare modifiche e miglioramenti a qualsiasi prodotto descritto nel presente documento senza preavviso. I dati tecnici presenti nel manuale possono subire modifiche senza obbligo di preavviso. La responsabilità di CAREL Industries in relazione al proprio prodotto è regolata dalle condizioni generali di contratto CAREL Industries pubblicate nel sito www.carel.com e/o da specifici accordi con i clienti; in particolare, nella misura consentita dalla normativa applicabile, in nessun caso CAREL Industries, i suoi dipendenti o le sue filiali/affiliate saranno responsabili di eventuali mancati guadagni o vendite, perdite di dati e di informazioni, costi di merci o servizi sostitutivi, danni a cose o persone, interruzioni di attività, o eventuali danni diretti, indiretti, incidentali, patrimoniali, di copertura, punitivi, speciali o consequenziali in qualunque modo causati, siano essi contrattuali, extra contrattuali o dovuti a negligenza o altra responsabilità derivanti dall'utilizzo del prodotto o dalla sua installazione, anche se CAREL Industries o le sue filiali/affiliate siano state avvisate della possibilità di danni.



SMALTIMENTO:

L'umidificatore è composto da parti di metallo e parti di plastica. In riferimento alla Direttiva 2002/96/CE del Parlamento Europeo e del Consiglio del 27 gennaio 2003 e alle relative normative nazionali di attuazione, informiamo che:

1. sussiste l'obbligo di non smaltire i RAEE come rifiuti urbani e di effettuare, per detti rifiuti, una raccolta separata;
2. per lo smaltimento vanno utilizzati i sistemi di raccolta pubblici o privati previsti dalla legge locali. È inoltre possibile riconsegnare al distributore l'apparecchiatura a fine vita in caso di acquisto di una nuova;
3. questa apparecchiatura può contenere sostanze pericolose: un uso improprio o uno smaltimento non corretto potrebbe avere effetti negativi sulla salute umana e sull'ambiente;
4. il simbolo (contenitore di spazzatura su ruote barrato) riportato sul prodotto o sulla confezione e sul foglio istruzioni indica che l'apparecchiatura è stata immessa sul mercato dopo il 13 Agosto 2005 e che deve essere oggetto di raccolta separata;
5. in caso di smaltimento abusivo dei rifiuti elettrici ed elettronici sono previste sanzioni stabilite dalle vigenti normative locali in materia di smaltimento.

Garanzia sui materiali: 2 anni (dalla data di produzione, escluse le parti di consumo).

Omologazioni: la qualità e la sicurezza dei prodotti CAREL sono garantite dal sistema di progettazione e



produzione certificato ISO 9001, nonché dal marchio

Content

1.	INTRODUCTION AND ASSEMBLY	7
1.1	ultimateSAM Humidification System (SA*)	7
1.2	Distributor dimensions and weights.....	7
1.3	Opening the packaging.....	8
1.4	Assembling the SA****2** frame	8
1.5	Inserting and attaching uprights	9
1.6	Positioning.....	10
1.7	Mounting.....	11
1.8	Upright steam flow-rate.....	13
2.	STEAM INLET CONNECTIONS	14
2.1	Inlet adapters (SAKI*****)	14
2.2	Installing inlet adapters	15
3.	DRAIN CONNECTIONS	16
3.1	Installing P-traps on header drains.....	16
3.2	Trap, strainer, and separator kits for distributor inlets connected to pressurized steam supplies	16
3.3	Inlet drains for distributors connected to atmospheric steam supplies	17
4.	STEAM SUPPLY CONNECTIONS	18
4.1	Control valves (SAKV*****) kits for pressurized steam supplies	18
4.2	Fitting kits (SAKR*****) for threaded control valves.....	18
4.3	Actuator kits for control valves	18
4.4	Connecting pressurized steam to an ultimateSAM distributor.....	19
4.5	Connecting atmospheric steam to a bottom-feed ultimateSAM distributor	19
5.	OPERATION	20
6.	TROUBLESHOOTING	20
6.1	Water is spitting from the nozzles on the uprights	20
6.2	Steam does not discharge from the distributors when the valve is open.....	20
6.3	Steam valve will not open	20
6.4	Steam valve will not close.....	20
6.5	Steam valve is leaking.....	20
6.6	Humidity exceeds set point.....	20
6.7	Humidity remains below set point.....	20
6.8	Condensate in duct	21
6.9	Steam leaks from P-traps	21
7.	MAINTENANCE	21
8.	SPARE PARTS	21
8.1	Adjustable feet Kit for SAB* / SAT*	21
8.2	Horizontal manifold Kit (steam feed – condensate drain) for SAB* / SAT*	21
8.3	Uprights kit for SAB* / SAT*	22
8.4	Frame element and top side Kit for SAB* / SAT*	22
8.5	Corner Kit for SAB* /	22
8.6	Retainer ring kit for SAB*	23
8.7	Gaskets kit.....	23
8.8	Filter "Y" kit.....	23
8.9	Condensate drain separator Kit.....	23
8.10	F&T Condensate drain Kit.....	23
8.11	Inverted bucket Condensate drain Kit.....	24
8.12	Spare upright kit, SA0 (single-pipe) versions.....	24
8.13	Spare manifold kit, SA0 (single-pipe) versions.....	24

9.1	Distributor details / <i>Dettagli distributore</i>	25
9.2	Distributor details / <i>Dettagli distributore</i>	25
9.3	Distributor weight tables / <i>Tabella pesi distributore</i>	26
9.4	Distributor weight tables / <i>Tabella pesi distributore</i>	26
9.5	Distributor weight tables / <i>Tabella pesi distributore</i>	27
9.6	Inlet adapters / <i>Adattatori ingresso vapore</i>	28
9.7	Inlet adapters / <i>Adattatori ingresso vapore</i>	29
9.8	Inlet adapters / <i>Adattatori ingresso vapore</i>	30
9.9	Valves and valve fitting kits (flanged) / <i>Kit valvole e connessioni (flangiate)</i>	30
9.10	Valves and valve fitting kits (only for North American markets) / <i>Kit valvole e connessioni (solo per il mercato Americano)</i>	31
9.11	Valves and valve fitting kits (only for North American markets) / <i>Kit valvole e connessioni (solo per il mercato Americano)</i>	31
9.12	Valves and valve fitting kits (flanged) / <i>Kit valvole e connessioni (flangiato)</i>	32
9.13	Valves and valve fitting kits (only for North American markets) / <i>Kit valvole e connessioni (solo per il mercato Americano)</i>	32
9.14	Electrical actuators / <i>Attuatori elettrici</i>	33
9.15	Electrical actuators / <i>Attuatori elettrici</i>	33
9.16	Electrical actuators (only for North American markets) / <i>Attuatori elettrici (solo per il mercato Americano)</i>	33
9.17	Electrical actuators (only for North American markets) / <i>Attuatori elettrici (solo per il mercato Americano)</i>	34
9.18	Electrical actuators (only for North American markets) / <i>Attuatori elettrici (solo per il mercato Americano)</i>	34
9.19	Electrical actuators (only for North American markets) / <i>Attuatori elettrici (solo per il mercato Americano)</i>	35
9.20	Electrical actuators (only for North American markets) / <i>Attuatori elettrici (solo per il mercato Americano)</i>	35
9.21	Trap and strainer F&T kits (flanged) / <i>Kit filtro e scaricatore di condensa F&T (flangiato)</i>	36
9.22	Trap and strainer kits inverted bucket (flanged) / <i>Kit filtro e scaricatore di condensa secchiello rovesciato (flangiato)</i>	36
9.23	Trap and strainer kits F&T (only for North American markets) / <i>Kit filtro e scaricatore di condensa F&T (solo per il mercato Americ.)</i> ..	37
9.24	Trap, strainer and separator kits F&T / <i>Kit filtro separatore e scaricatore di condensa F&T</i>	37
9.25	Trap, strainer and separator kits F&T / <i>Kit filtro, separatore e scaricatore di condensa F&T</i>	38
9.26	Mooth steam inlet kit for SA0 (single pipe) versions / <i>Kit ingresso vapore liscio per versioni SA0 (single pipe)</i>	38
9.27	Thermostatic float steam trap / <i>Scaricatore termostatico</i>	40
9.28	AHU wall cover kit for SA0 (single pipe) / <i>Kit copertura parete UTA per SA0 (single pipe)</i>	40

1. INTRODUCTION AND ASSEMBLY

1.1 ultimateSAM Humidification System (SA*)

Each UltimateSAM Humidification System consists of the following:

- humidifier steam distributor;
- steam trap(s) and strainer(s) (sold separately);
- a controlling humidistat and/or sensor (sold separately);
- a steam control valve & actuator for use with pressurized steam sources (sold separately);
- other optional equipment that may be required.

1.2 Distributor dimensions and weights

1.2.1 Dimensions and weights of the SAB* / SAT* and distributors

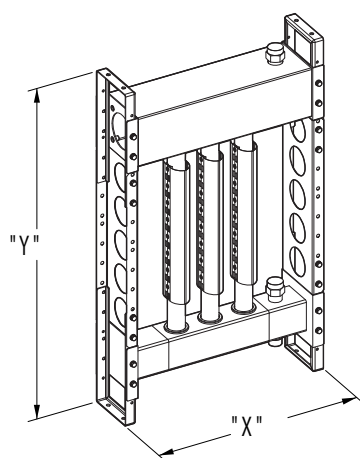


Fig. 1.a

The system for identifying the humidifier steam distributor is shown in Table 1.b. The table also provides the width (Dimension "X") and height (Dimension "Y"). The front-to-back depth of all distributor is the same, 133mm (5.25"). NOTE: The height dimension assumes that the bottom pedestals are in the factory-assembled position (see section 1.4 for details on other pedestal heights).

The weights of the various distributor configurations, including the frame, are shown on Table 1.a. The table shows weights for only the smallest and largest width and height distributors. A complete weight table for all width and height codes can be found in section 9, "Specifications."

	Weight in kg (lb)	
	Height Code	
	A	Q
SABA*SI300	7.5 (17)	21.0 (46)
SABA*LI300	8.0 (18)	22.5 (50)
SABA*HI300	8.5 (19)	25.5 (56)
SABR*SI300	44.0 (97)	126.0 (277)
SABR*LI300	46.0 (101)	139.5 (307)
SABR*HI300	47.5 (105)	202.5 (446)
SATA*SI300	10.0 (22)	23.0 (51)
SATA*LI300	10.0 (22)	24.5 (54)
SATA*H300	10.5 (23)	28.0 (62)
SATR*SI300	55.0 (121)	137.0 (301)
SATR*LI300	56.5 (124)	150.0 (330)
SATR*H300	58.5 (129)	213.5 (470)

Tab. 1.a

SA X X X X X X X 0
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	ID prefix			
②	Feed type:	B= Bottom feed T=Top feed		
③	Width:		No. of uprights	
		Code	Dimension "X" mm (in)	152mm (6") spacing
				76mm (3") spacing
		A=	447 (17.75)	3
		B=	599 (23.75)	5
		C=	751 (29.75)	7
		D=	903 (35.75)	9
		E=	1055 (41.75)	11
		F=	1207 (47.75)	13
		G=	1359 (53.75)	15
		H=	1511 (59.50)	17
		I=	1663 (65.50)	19
		J=	1815 (71.50)	21
		K=	1967 (77.50)	23
		L=	2119 (83.50)	25
		M=	2271 (89.50)	27
		N=	2423 (95.50)	29
		O=	2575 (101.50)	31
		P=	2727 (107.50)	33
		Q=	2879 (113.50)	35
		R=	3031 (119.50)	37
④	Height:		Dimension "Y" mm (in)	
		Code	Bottom feed	Top feed
		A=	598 (23.75)	749 (29.50)
		B=	750 (29.75)	901 (35.50)
		C=	902 (35.75)	1053 (41.50)
		D=	1054 (41.50)	1205 (47.50)
		E=	1206 (47.50)	1357 (53.50)
		F=	1358 (53.50)	1509 (59.50)
		G=	1510 (59.50)	1661 (65.50)
		H=	1662 (65.50)	1813 (71.50)
		I=	1814 (71.50)	1965 (77.50)
		J=	1966 (77.50)	2117 (83.50)
		K=	2118 (83.50)	2269 (89.50)
		L=	2270 (89.50)	2421 (95.50)
		M=	2422 (95.50)	2573 (101.50)
		N=	2574 (101.50)	2725 (107.50)
		O=	2726 (107.50)	2877 (113.50)
		P=	2878 (113.50)	3029 (119.50)
		Q=	3030 (119.50)	3181 (125.25)
⑤	Uprights:		Interasse mm (in)"	OD mm (in)
		Code		
		S=	152 (6.00)	35 (1.50)
		L=	152 (6.00)	45 (1.75)
		H=	76 (3.00)	35 (1.50)
⑥	Insulation:	I= insulated uprights w/ nozzles N= uninsulated uprights w/o nozzles		
⑦	Frame:	0= no frame, unassembled 1= no frame, assembled 2= w/ frame, unassembled 3= w/ frame, assembled		
⑧	Drain:	U= ¾" Male NPT 0= ¾" Male Gas		
⑨	---	---		

Tab. 1.b

For additional dimensions regarding features on the distributor, like drain locations, see section 9, "Specifications." See other sections of this manual for details on other ultimateSAM items, such as valves and traps.

1.2.2 Dimensions and weights of the SA0 (single-pipe) distributor

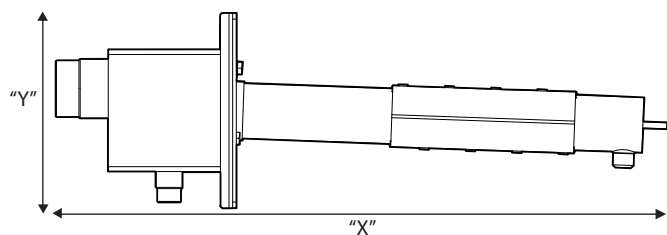


Fig. 1.b

The system for identifying the distributor is shown in 1.b. The table also provides the widths (dimension "X") and heights (dimension "Y").

SA	0	*	*	L	*	0	*	0
1	2	3	4	5	6	7	8	9

Tab. 1.c

1	ID prefix		
2	Feed type:	0	Single-pipe (single upright, double upright)
3	Width:	Code	Dimension "X" [mm (in)]
		A	A = 503mm (19.7in)
		B	B = 655 mm (25.7in)
		C	C = 807 mm (31.7in)
		D	D = 959 mm (37.7in)
		E	E = 1111 mm (43.7in)
		F	F = 1263 mm (49.7in)
		G	G = 1415 mm (55.7in)
		H	H = 1567 mm (61.7in)
		I	I = 1719 mm (67.7in)
		J	J = 1871 mm (73.7in)
		K	K = 2023 mm (79.7in)
		L	L = 2175 mm (85.7in)
4	Single-upright selection mm (in)	Code	Dimension "Y" [mm (in)]
		A	A= single upright 160 mm (6.3 in)
5	Type of upright (diameter) mm (in)	L	L= 45 (1.75) OD
6	Insulation:	I	I = insulated uprights with nozzles
7	Frame:	0	0 = no frame, unassembled
8	Drain	U	U= 1/2" Male NPT
		0	0= 1/2" Male Gas

Tab. 1.d

For other distances and measurements relating to the distributor see section 9, "Specifications". See the remaining sections of this manual for details on the other components of the ultimateSAM system.

1.3 Opening the packaging

- Make sure the humidifier is intact upon delivery and immediately notify the transporter, in writing, of any damage that may be due to careless or improper transport.
- Open the shipping container and check contents for damage. If the humidifier is shipped unassembled, be sure to locate all of the components.
- Move the humidifier to the site of installation before removing internal packaging. For some installations, assembly may need to take place inside the AHU.

1.4 Assembling the SA*****2** frame

1.4.1 Assemblaggio del telaio, versioni SAB/SAT

An unassembled frame is shipped with any SA*****2** ultimateSAM distributor. The frame consists of the following:

- N. 2 Bottom pedestals (a) If a "P" drain is to be mounted inside the duct beneath the bottom header, the optional mounting stand will be needed;
- N. 2 Side channels (c);
- N. 4 Corner brackets (d) used on bottom feed system;
- N. 1 Top channel (e) used on bottom feed system;
- N. 2 Top brackets (a) used on top feed system;
- Fasteners (M6x10 bolts with locking and flat washers).

Assemble (but do not tighten) the following parts described in steps A-D, using the fasteners provided:

- Fasten the bottom pedestals (a) to the bottom header (b). The choice of pedestal mounting position depends on the location of the condensate drain for the bottom header.
 - If an elbow will be attached to the drain, use the mounting holes for "standard position." (Fig.1.c) This is the height at which factory-assembled distributors are built (as pictured on the front cover).
 - If the drain will pass through a hole in the bottom of the duct, use the mounting holes that provide minimum clearance ("minimized position").
 - If the drain is to be installed inside the duct or AHU, use the optional mounting stand (SAKS010000) to provide up to 386mm (15") clearance. (Fig.1.d)
 - Fasten the side channels to the bottom pedestals (a).
 - If assembling a bottom feed system [SAB*****2**], insert retaining rings into the top channel of the frame. Fasten the corner brackets to the side channels. Fasten the top channel to the corner brackets. (Fig.1.e)
 - If assembling a dual feed system [SAT*****2**], fasten the top header (f) and brackets (a) to the side channels. (Fig.1.f).
- Tighten the fasteners using 7-8 Nm torque (5-6 ft lb), checking to ensure that the assembly is square.

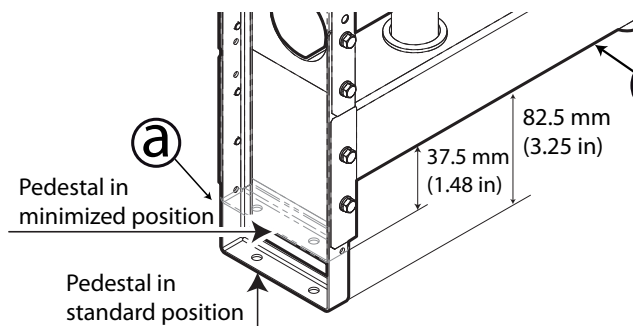


Fig. 1.c

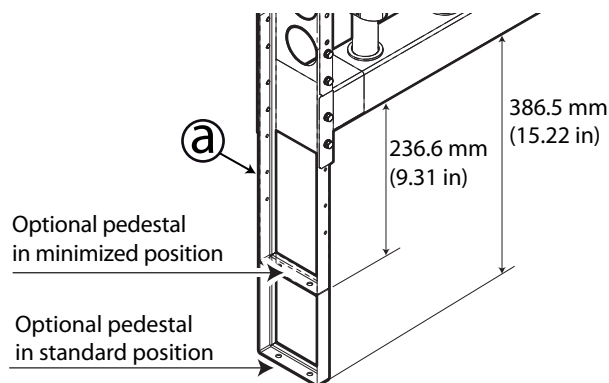


Fig. 1.d

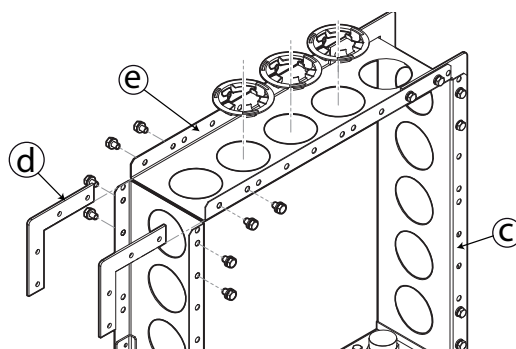


Fig. 1.e

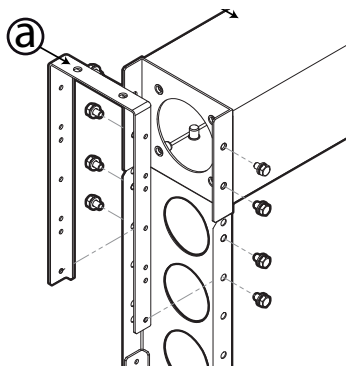


Fig. 1.f

1.4.2 Assembling the frame, SA0 (single-pipe) versions

The ultimateSAM version SA0***** distributors are supplied with a frame to be assembled, which comprises the following components:

- manifold with support flange
- upright
- flange gasket
- upright o-ring
- fastening elements (screws)

To assemble the SA0 distributor, proceed as follows:

- place the upright into the opening on the manifold and align the holes on the flange with those on the manifold.
- Fasten the flange to the manifold by tightening the screws to 7-8 Nm (5-6 ft lb). Use the fastening elements supplied. Before assembly, make sure that the o-ring is correctly inserted between the flange and the manifold.

Manifold

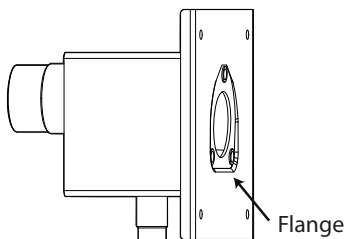


Fig. 1.g

Uprights

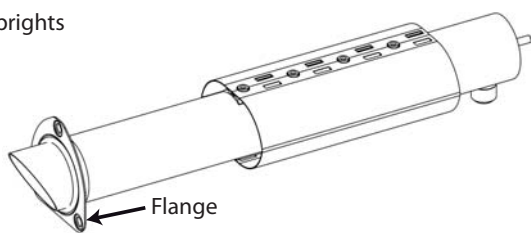


Fig. 1.h

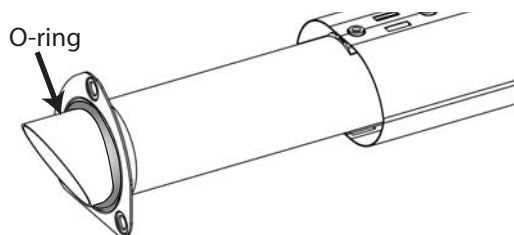


Fig. 1.i

1.5 Inserting and attaching uprights

- For a bottom feed distributor,
 - Tilt the upright, inserting it into the retaining ring in the top bracket. (Fig.1.j)
 - Continue sliding the upright upward until the bottom of the upright can be inserted into the hole in the bottom header.
 - Using 7-8 Nm torque (5-6 ft lb), secure the flange of the upright to the bottom header using the fasteners provided. Before tightening, check to ensure the o-ring is in the proper position between the flange and distributor. (Fig.1.k)
 - Continue until all uprights are installed.

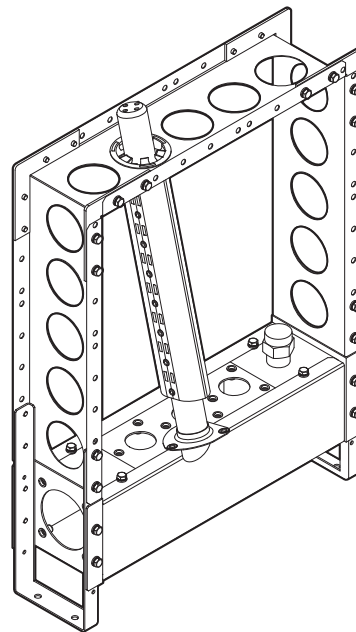


Fig. 1.j

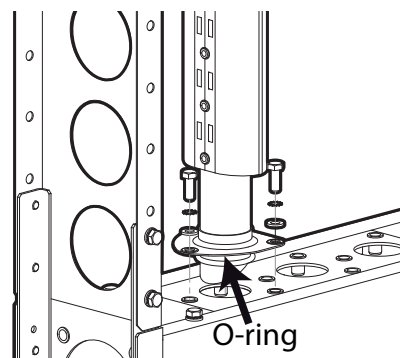


Fig. 1.k

- For a top feed distributor,
 - A. Check that the upper flange with o-ring is properly positioned on the upright.
 - B. Tilt the upright, inserting it into the gasket in the bottom header. (Fig.1.l)
 - C. Continue sliding the upright downward until the top of the upright can be inserted into the opening in the top header.
 - D. Before tightening, check to ensure the o-ring is in the proper position between the flange and distributor. (Fig.1.m)
 - E. Using 7-8 Nm torque (5-6 ft lb), secure the top flange to the top header using the fasteners provided.
 - F. Continue until all uprights area installed.

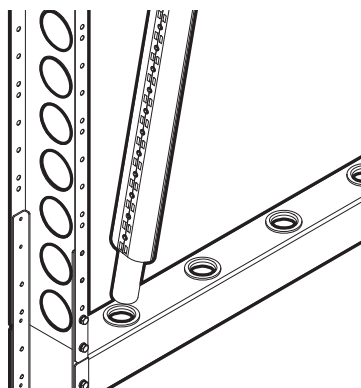


Fig. 1.l

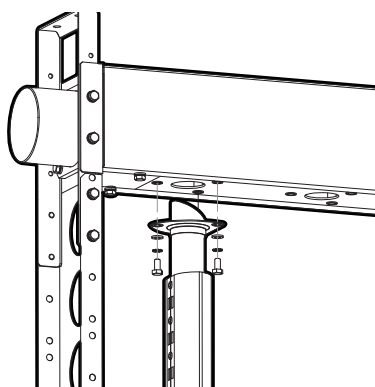


Fig. 1.m

1.6 Positioning

- Determine the proper position for the ultimateSAM distributor in the duct or AHU. (Fig.1.j) Most steam absorption problems are the result of improper positioning.
- Check that the clearance between the distributor and downstream components is not less than the absorption distance of distributor. Refer to the design manual for information on absorption distances for the ultimateSAM distributor.
- Examine all accessories shipped with the distributor. These accessories may influence the positioning and mounting of the distributor as they can facilitate the connection of the steam supply and drains to the distributor. For additional information on these accessories, see the appropriate sections in the manual.
- Before mounting the distributor to the duct or AHU, review the sections of the manual dealing with inlet and drain connections as these connections may need to pass through the walls of the duct.

Possible locations for the distributor:

- A. BEST: locate distributor far enough from fan to avoid turbulence. Maintain adequate evaporation distance.
- B. GOOD: provided there is enough distance from the distributor to the fan inlet for proper evaporation.
- C. OK: provided there is enough distance from the distributor to the heating coil for proper evaporation (particularly if the heating coil is electric)
- D. POOR: workable only if the cooling coil is inactive during humidifier operation. An active cooling coil will remove the moisture the humidifier is trying to put in.
- E. POOR: same problems as C&D plus the air may be very cold, increasing evaporation distance or causing condensation.
- F. POOR: same problems as C, D, & E plus the filters may get wet producing an unsafe condition with growth of biologicals.
- G. POOR: only workable if the system is 100% recirculated air with no exhaust.

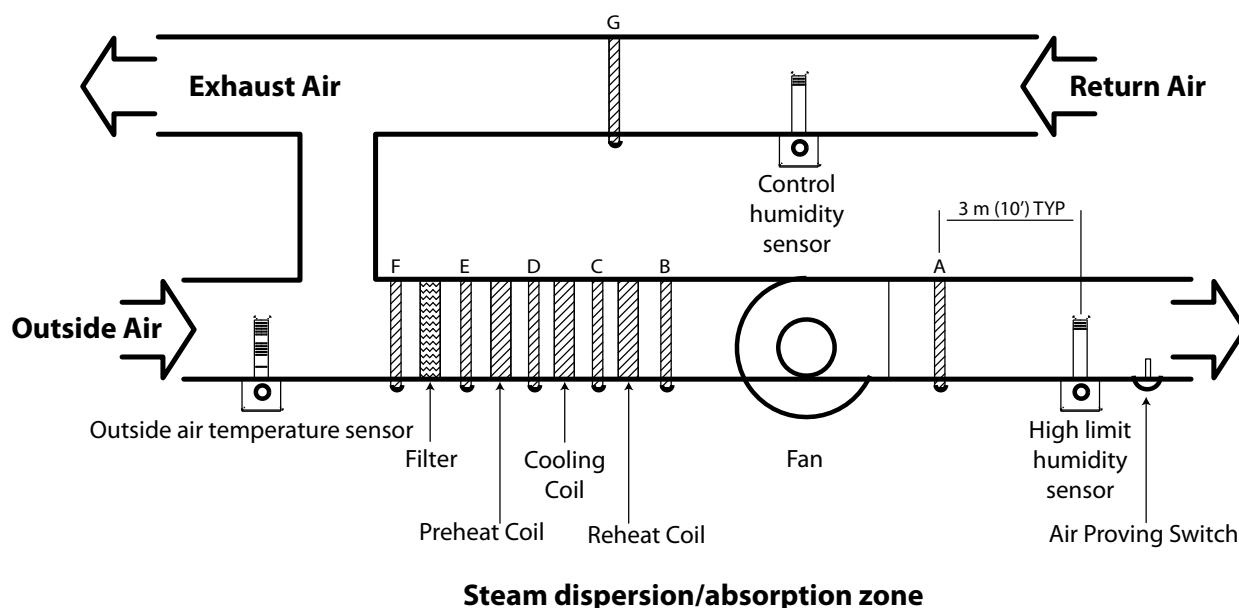


Fig. 1.n

1.7 Mounting

- Before mounting the distributor to the duct or AHU, be sure to review the information in the "Positioning" section of the manual. (See section 1.6.)
- Check that the structural integrity of the duct or AHU is sufficient to support the weight of the distributor where the bottom brackets are located. Reinforce these areas if necessary. Weight tables are provided in section 9.1 of the manual.
- Center the distributor within the duct as much as possible.

1.7.1 Mounting SAB/SAT models

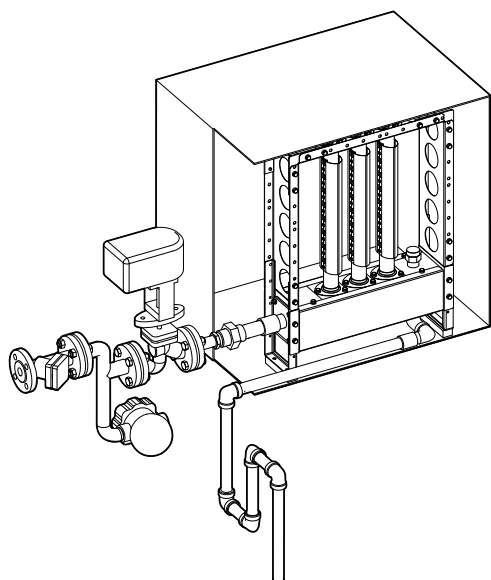


Fig. 1.o

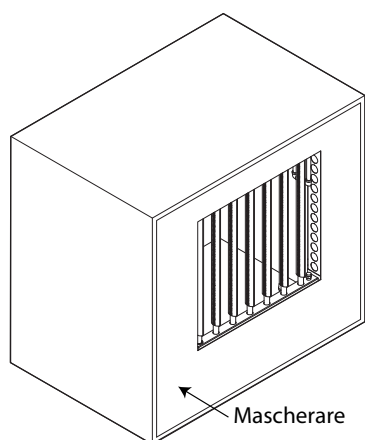


Fig. 1.p

NOTE: The inlet adapter, control valve, actuator, trap, and strainer shown above are available as options. The "P" drains are not provided as part of the ultimateSAM system.

- Attach any optional inlet and/or drain connections to the distributor that will need to pass through the wall of the duct. (Fig.1.k) See section 2 for information in inlet connections. See section 3 for information on drain connections.
- Unless the distributor has been assembled inside the duct or AHU, cut an opening in the duct through which the distributor can be inserted. The opening can be in either the side or bottom of the duct, depending on accessibility. (Fig.1.k)
- Cut out any additional openings in the duct or AHU as needed for the inlet and/or drain connections.
- If desired, shim the inlet side of the distributor so that condensate in the header with flow toward the drain pipe. A 1% grade (~1 cm per meter, ~1/8" per foot) is suggested.

1.7.2 Mounting SA0 (single-pipe) versions

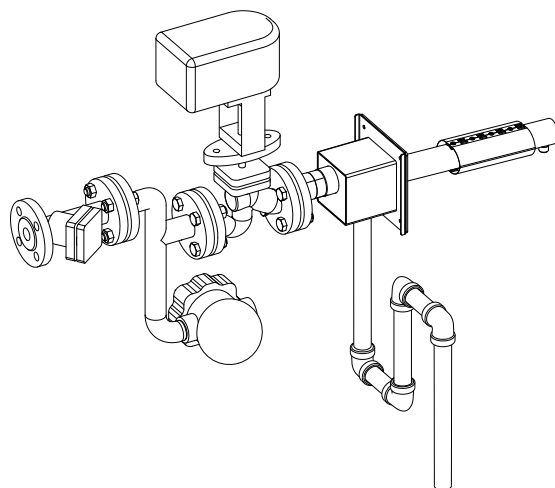


Fig. 1.q

Installation with manifold outside the duct

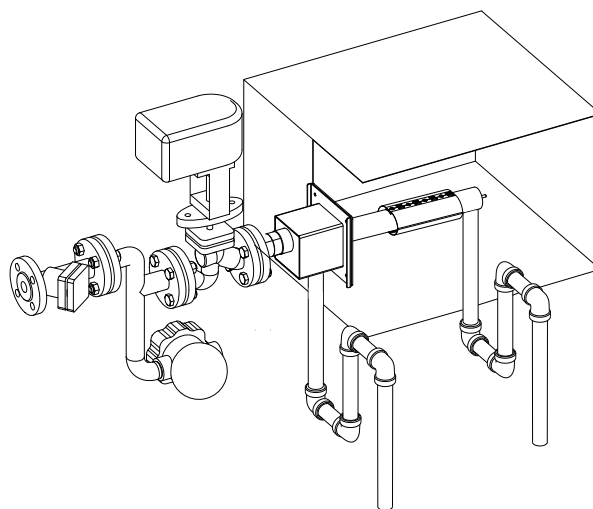


Fig. 1.r

Follow the installation procedure described below:

1. assemble the SA0 steam distributor (see paragraph 1.4.2 Assembling the frame, SA0 versions);
2. apply the drilling template to the duct where the steam distributor will be installed;
3. drill the required holes;
4. insert the gasket and rest it against the support flange;
5. insert the fastening screws to secure the support flange;
6. place the upright in the 100 mm opening made in the duct;
7. tighten the support flange screws to 7-8Nm (5-6ft), using the fastening elements supplied (if necessary, try to remove screws);
8. If necessary, secure the end of the upright.

(see to the end of the manual for details).

Installation inside the air handling unit

Follow the installation procedure described below:

- assemble the SA0 steam distributor (see paragraph 1.4 Assembling the frame, SA0);
- prepare the suitably sized and spaced supports so as to fasten the support flange and the end of the upright (supports not supplied);

If necessary, secure the end of the upright.

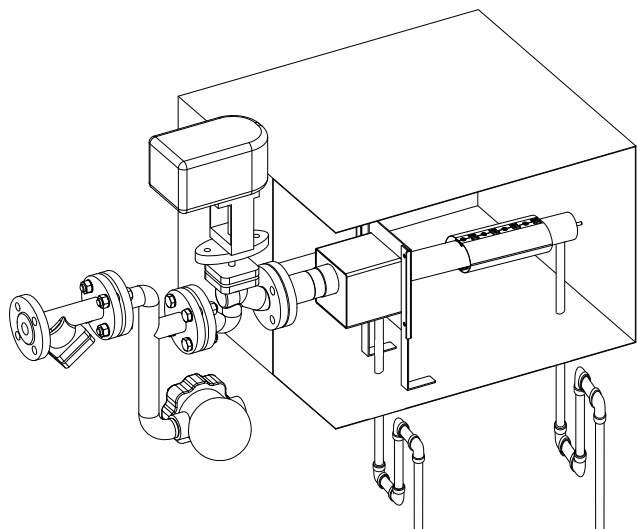
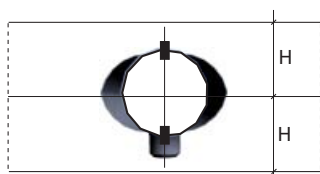


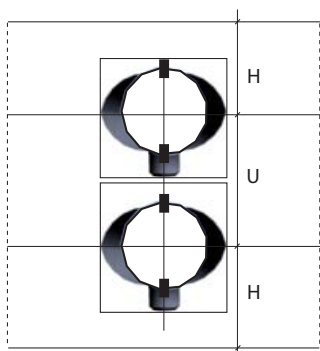
Fig. 1.s

1.7.3 SA0 (single-pipe) minimal clearances

Correct installation of the SA0 distributor means allowing for certain minimum clearances.



Single upright



Double upright

Fig. 1.t

For steam flow-rates less than or equal to 50 kg/h (single upright):

H = 150 mm; U = 160 mm

For steam flow-rates exceeding 50 kg/h (single upright):

H = 200 mm; U = 200 mm

Leave at least 25 mm free space between the device and the wall of the duct.

1.7.4 SA0 (single-pipe) condensate drain kit (optional, sold separately)

For SA0 (single-pipe) version, an optional condensate drain kit is available. The connection on the upright is 3/8" (GAS or NPT). For installation drill the hole in the duct as shown on the drilling template. Il diametro esterno del tubo di scarico condensa è di 10 mm.

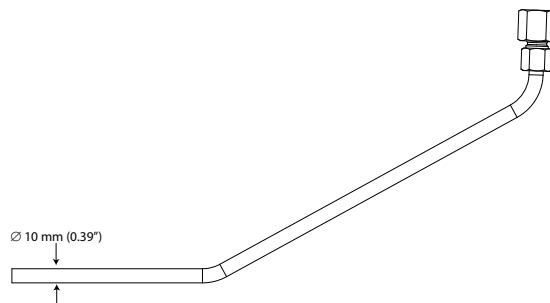


Fig. 1.u

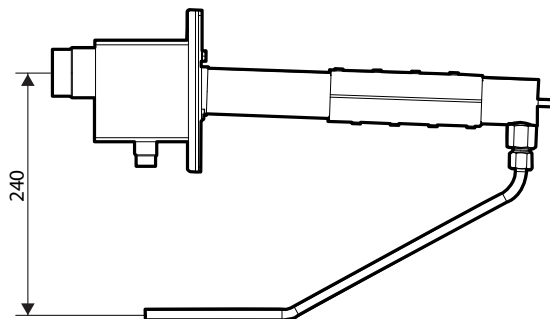


Fig. 1.v

Provvedere alla realizzazione del sifone per il tubo di scarico condensa. Se necessario utilizzare uno scaricatore di condensa al posto del sifone.

(see to the end of the manual for details).

1.8 Upright steam flow-rate

The uprights on the ultimateSAM come in two different diameters. In the "S" configuration (6th digit of the ultimateSAM code) the diameter of the uprights is 35 mm, to increase flow-rate on single uprights there is also the "L" configuration (6th digit of the ultimateSAM code) in which the diameter of the uprights is 45 mm.

1.8.1 Steam flow-rate, SAB/SAT versions

For ultimateSAM multi-upright models (SAB/SAT), the maximum steam flow-rate for each upright also depends on the configuration of the ultimateSAM. In fact, with top feed the upright steam flow-rate increases as condensate flows in the same direction as draining. Below are the flow-rates for the two versions.

Upright configuration	Type "S"	Type "L"
Upright diameter	35 mm (1.37")	45 mm (1.77")
Maximum single upright flow-rate in the ultimate-SAM SAB* configuration	10 kg/h	16.7 kg/h
Maximum single upright flow-rate in the ultimate-SAM SAT* configuration	30 kg/h	50 kg/h

Tab. 1.e

1.8.2 Steam flow-rate, SA0 (single-pipe) versions

For ultimateSAM SA0 (single-pipe) versions, the flow-rate of the upright depends on the application being developed. At atmospheric pressure, i.e. when the distributor is supplied by a steam humidifier, 50 kg/h is the maximum steam flow-rate (maximum 20 kg/h for codes SA0AA***** and SA0BA*****). This physical limit relates to the backpressure that would be generated in the steam humidifier located upstream of the ultimateSAM SA0 distributor.

If the steam inlet is pressurised (pressure higher than 0 bars: 0-4 bars), the maximum load allowed for each upright increases with the length of the SA0 upright (see the table below for the flow-rates).

Table of steam flow-rates for ultimateSAM SA0 versions:

code	Upright length (mm)	Maximum steam flow-rate at atmospheric pressure (SA0 supplied by steam humidifier) (kg/h)	Maximum steam flow-rate with pressurised steam (0-4 bars) (kg/h)	Minimum width of the duct (kg/h)
SA0AALIO*0	358	20	20	383
SA0BALIO*0	510	20	30	535
SA0CALIO*0	662	50	50	687
SA0DALIO*0	814	50	60	839
SA0EALIO*0	966	50	70	991
SA0FALIO*0	1118	50	80	1143
SA0GALIO*0	1270	50	90	1295
SA0HALIO*0	1422	50	100	1447
SA0IALIO*0	1574	50	110	1599
SA0JALIO*0	1726	50	120	1751
SA0KALIO*0	1878	50	130	1903
SA0LALIO*0	2030	50	140	2055

Tab. 1.f

2. STEAM INLET CONNECTIONS

2.1 Inlet adapters (SAKI*****)

2.1.1 Steam inlet adapters (SAKI*****)

The choice of inlet connections for the ultimateSAM distributor is shown in Figure 2.a. The choices include:

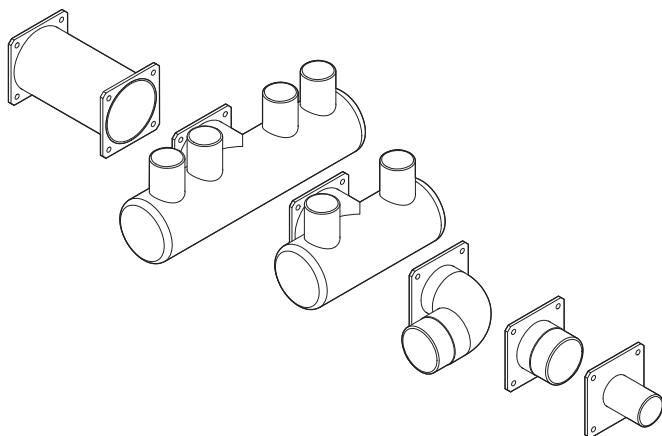


Fig. 2.a

- For atmospheric steam delivery systems,
 - Single, dual, or quad connections for 40 mm ID steam hose
 - Single connection for 80 mm (3 1/8") ID steam hose
- For pressurized steam delivery systems,
 - Straight or elbow threaded pipe connections (1", 1 1/2", 2" and 2 1/2" size)
- 150mm (6") Inlet Extension (if needed to pass through the duct wall), either with or without a condensate drain fitting (3/4" male threaded pipe)

The codes for inlet adapter kits are shown in Table 2.a. Each inlet kit includes the following:

- inlet adapter
- gasket

SAKI **x** **xx** **x** **x** **0**

① ② ③ ④ ⑤ ⑥

①	ID prefix	
②	Style:	E = Threaded Elbow P = Threaded Male Pipe T = Straight Tube X = Extension
③	Size:	40 = 40mm 44 = 1" 64 = 1 1/2" 80 = 80mm 84 = 2" 94 = 2 1/2"
④	Inlets:	1 = Single 2 = Double 4 = Quad 8 = Inlets
⑤	Region:	U = North America 0 = Other
⑥	---	---

Tab. 2.a

For installations requiring an extended inlet for the distributor, a 150 mm (6") extension adapter (SAKIX80100) is also available. The extension adapter has the same mounting flange on both ends.

Specifics regarding the inlet connection on available inlet adapters are shown in Table 2.b. For weights and dimensions of the adapters, see Section 9, "Specifications."

Inlet Size	Inlet connections			
	Style, Region Codes			
	****E***0*	****T***0*	****P***U*	****E***U*
	****P***0*"			
"SAKI*401*0 SAKI*402*0 SAKI*404*0"	n/a	for 40 mm ID hose	n/a	n/a
SAKI*441*0	G male	n/a	NPT male	NPT female ¹
SAKI*641*0	G male	n/a	n/a	n/a
SAKI*801*0	n/a	for 80 mm ID hose ²	n/a	n/a
SAKI*841*0	G male	n/a	NPT male	NPT female ¹
SAKI*941*0	G male	n/a	n/a	n/a

Tab. 2.b

¹ The SAKIE***U* consists of an SAKIP***U* with a female pipe elbow attached.

² 80mm ID steam hose can slide over the OD of 3" copper tubing.

2.1.2 Steam inlet adapters for SA0 (single-pipe)

The ultimateSAM SA0 has a steam inlet with 1 1/2" GAS or 1 1/2" NPT (American market) fitting. When supplied with pressurised steam no adapters need to be used, simply connect the steam inlet on the manifold to a 1 1/2" GAS (1 1/2" NPT) pipe.

If the distributor is supplied with steam at atmospheric pressure, a stainless steel adapter is available for installation directly on the manifold inlet. This adapter features GAS or NPT female thread. The adapter guarantees connections to 40 mm rubber hoses; secure the hoses to the adapter using a clamp.

The codes for the steam inlet kits are shown in Table 2.a.

SAKI **0** **64** **1** **x** **0**

Family prefix ⑤ ⑥⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	type	0	For SA0*
⑥-⑦	dimension	64	1 1/2"
⑧	number of inputs	1	Single
⑨	Region	U	North America (NPT)
		0	Other (GAS)
⑩	Free	0	

Tab. 2.c

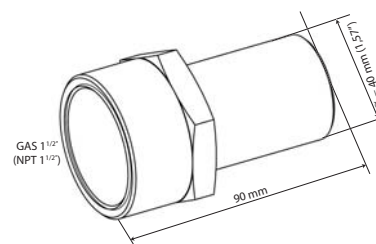


Fig. 2.b

For the dimensions and weights of the adapters, see section 9, "Specifications."

2.2 Installing inlet adapters

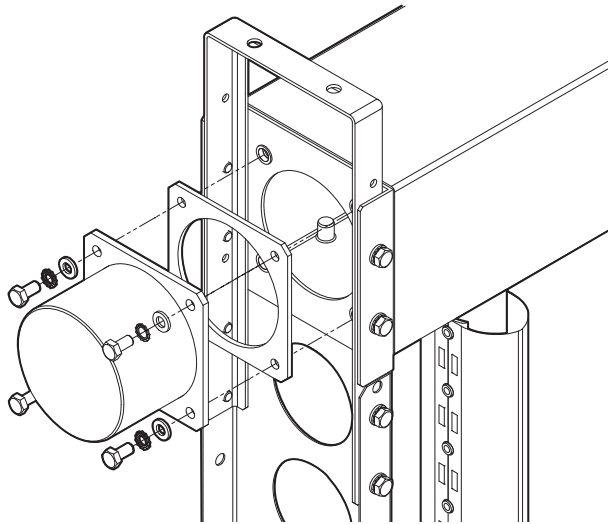


Fig. 2.c

- If installing an inlet extension,
 - A. Place the gasket on the face of the header's inlet.
 - B. Using 7-8 Nm torque (5-6 ft lb), secure the extension adapter to the header using the fasteners provided in the kit containing the inlet adapter that will be secured to the extension.
- Place the gasket on the face of the inlet of the header or extension.
- Using 7-8 Nm torque (5-6 ft lb), secure the inlet adapter using the fasteners provided. (Fig. 2.b) If the inlet adapter is being attached to an inlet extension, use the fasteners included in the extension kit to secure the inlet adapter.
- To connect the steam supply to the distributor, see section 4 for further information.

3. DRAIN CONNECTIONS

3.1 Installing P-traps on header drains

A condensate trap should be installed on the $\frac{3}{4}$ " pipe connection provided on the bottom of each header. The connection is $\frac{3}{4}$ " male NPT for North American markets and $\frac{3}{4}$ " male Gas for other markets (for SA0 single-pipe: $\frac{1}{2}$ " GAS or $\frac{1}{2}$ " NPT). Given the minimal pressure inside the header, a P-trap is generally suitable for the header drains. The fittings and pipe for the P-trap (shown in Fig.3.a) are not included with the ultimateSAM distributor.

If P-traps are used on the drains, the seal height should be sufficient such that the water column creates a pressure at least 500 Pa (50 mm or 2" H₂O) greater than the static pressure in the header. (Refer to the design manual for more information on static pressure of the header.) While a seal height of 150mm (6") is adequate for most installations where the condensate trap drains into a sump inside the duct, check the design manual for details on the back pressure generated by distributor being installed.

NOTE: Check local requirements regarding the minimum recommended seal height and drop height for the installation.

SAB/SAT Models

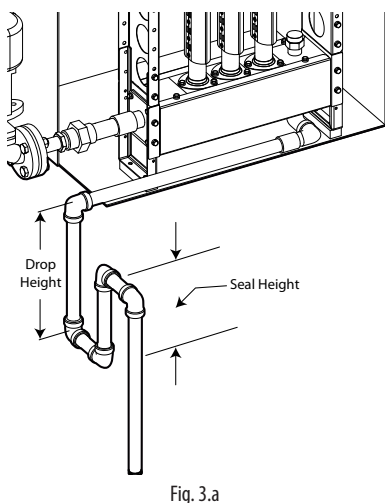


Fig. 3.a

SA0 Models

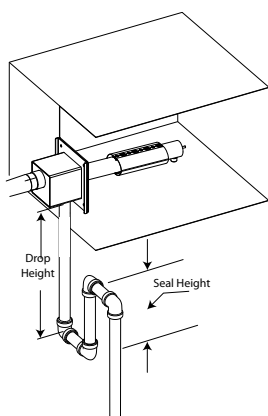


Fig. 3.b

Note: The fittings and pipe for the condensate drain shown in Fig.7.c are not included with the ultimateSAM distributor.

If the P-trap empties outside the duct or AHU as shown in Fig.3.a, the seal height and drop height must allow for the static pressure inside the duct or AHU in addition to the static pressure in the header. If the space limits the seal height for the condensate drain, a different type of trap, e.g., F&T trap could be used, or a distributor having a lower backpressure could be selected.

3.2 Trap, strainer, and separator kits for distributor inlets connected to pressurized steam supplies

For installations in which the ultimateSAM distributor is supplied with pressurized steam, a trap and strainer are required at the inlet of the control valve. A variety of trap and strainer kits are available as accessories. (Fig.3.b)

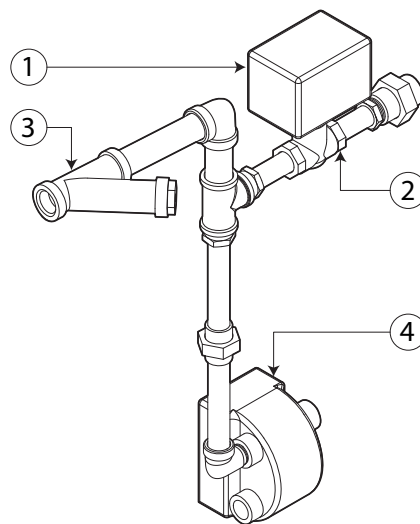


Fig. 3.c

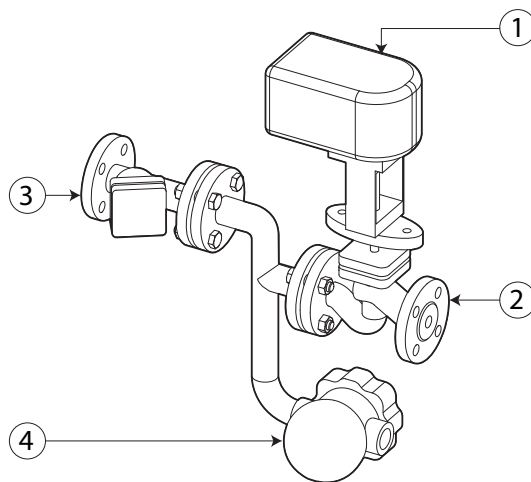


Fig. 3.d

- ① Attuatore
- ② Valvola
- ③ Filtro a Y
- ④ Scaricatore di condensa

The system for identifying trap, strainer, and drain accessories is shown in Table 3.a.

NOTE: Not all of the possible combinations shown on the table are available.

A complete list of available kits, as well as information on other features, is provided in Tab.3.b.

SAKT **X** **X** **XX** **X** **0**
 ① ② ③ ④ ⑤ ⑥

①	ID prefix	
②	Material:	F = Iron S = SS
③	Type:	S = Condensate separator T = Trap & strainer assembly
④	Size:	15 = DN 15 flange 20 = DN 20 flange 25 = DN 25 flange 32 = DN 32 flange 40 = DN 40 flange 44= 1" pipe thread 50= DN 50 flange 65= DN 65 flange 84= 2" pipe thread
⑤	Region:	U = North America 0 = Other
⑥	---	---

Tab. 3.a

Table 3.b provides a complete listing of all of the traps, strainers, and other accessories available for the use with the ultimateSAM distributor. In addition, the table provides information on the size and type of inlet-outlet connection for each accessory.

Inlet-Outlet Connections

Size	Material, Type, Region Codes		
	****FT**0*	****FT**U*	****ST**U*
SAKT**15*0	Flange DN 15	n/a	n/a
SAKT**20*0	Flange DN 20	n/a	n/a
SAKT**25*0	Flange DN 25	n/a	n/a
SAKT**32*0	Flange DN 32	n/a	n/a
SAKT**40*0	Flange DN 40	n/a	n/a
SAKT**44*0	n/a	1" NPT Female	1" NPT Female
SAKT**50*0	Flange DN 50	n/a	n/a
SAKT**65*0	Flange DN 65	n/a	n/a
SAKT**84*0	n/a	2" NPT Female	2" NPT Female

Tab. 3.b

Before installing an optional flanged trap and strainer kit, be sure that the flange size matches the flange on the control valve. For an optional threaded trap and strainer kit, be sure that the kit is properly sized for the control valve. (Refer to the design manual for more information.)

Table 7.c lists the items and quantity of threaded fittings that are included in each threaded trap and strainer kit. Flanged trap and strainer kits are fully integrated.

Item List for SAKT*TU0**

Item (NPT)	SAKT*T44*0	SAKT*T84*0
Y-type strainer	1 (1")	1 (1")
F&T trap	1 (3/4")	1 (3/4")
Bushing F-M (size)	1 (3/4"x1")	1 (3/4"x2")
Elbow F-M (size)	1 (3/4")	1 (3/4")
Elbow F-F (size)	1 (1")	1 (2")
Nipple M-M (size)	2 (3/4"x6") 1 (1"x3") 1 (1"x6")	2 (3/4"x6") 1 (2"x3") 1 (2"x6")
Tee F-F-F (size)	1 (1")	1 (2")
Union F-F (size)	1 (3/4"x3/4")	1 (3/4"x3/4")

Tab. 3.c

3.3 Inlet drains for distributors connected to atmospheric steam supplies

When used with an atmospheric humidifier, as shown in (Fig.3.e and Fig. 3.f), an inlet trap may not be needed on the ultimateSAM distributor. In a typical installation, the condensate in the connecting hose drains back to the humidifier. In special situations when the condensate cannot drain back to the humidifier, an inlet trap may be needed to prevent significant amounts of condensate from entering the distributor.

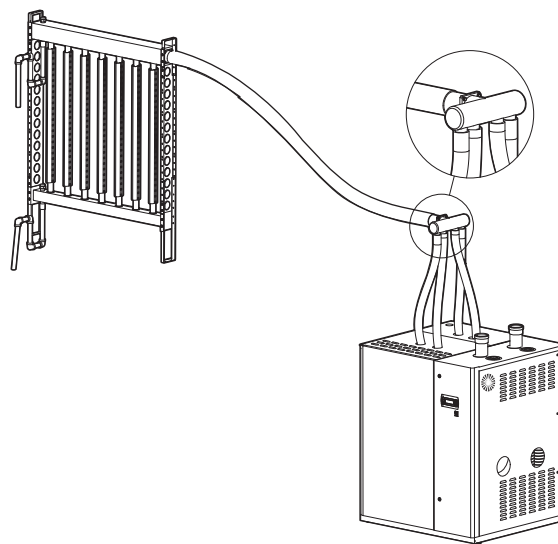


Fig. 3.e

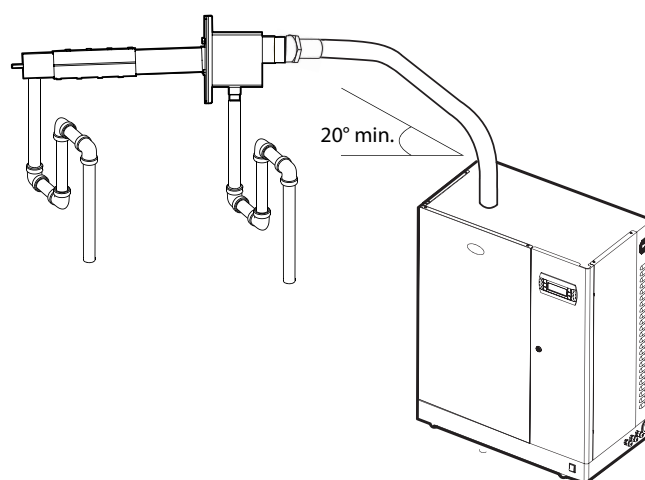


Fig. 3.f

NOTE: The adapters and steam hoses shown above are available as options. The "P" drains are not provided as part of the ultimateSAM system.

4. STEAM SUPPLY CONNECTIONS

4.1 Control valves (SAKV*****) kits for pressurized steam supplies

A control valve is needed to regulate the flow of pressurized steam to an ultimateSAM distributor. Actuators for the control valve are sold separately. If a valve and actuator kit was not ordered with the ultimateSAM distributor, refer to the design manual for information on how to size and select a control valves and actuators. Information on actuators is provided in section 4.2. The codes for valve kits are shown in table 4.a.

SAKV **x** **x** **x** **x** **x** **0**

① ② ③ ④ ⑤ ⑥ ⑦

①	ID prefix	
②	---	---
③	Material:	0 = Brass F = Iron
④	Operating pressure:	0 = Up to 1bar (15psi) for North America 0 = Up to 0,67 bar (8,7psi) for Other H = 1-4bar (15-50psi) for North America H = 0,67-4bar (8,7-50psi) for Other
⑤	Nominal Size: Kv (EU) Cv (US)	A= 0,4 B= 0,63 C= 1 D= 1,6 E= 2,5 F= 4 G= 6,3 H= 10 I= 16 J= 25 K= 40 L= 58
⑥	Region:	U = North America 0 = Other
⑦	---	---

Tab. 4.a

Specifics regarding the inlet connection on available control valves are shown in Table 4.b.

Inlet-Outlet Connections

	Material, Pressure, Region Codes			
Valve Size	****F0*0*	****FH*0*	****00*U*	****0H*U*
SAKV0**A*0	not available	not available	1/2" NPT Female	not available
SAKV0**B*0	not available	not available	1/2" NPT Female	not available
SAKV0**C*0	not available	Flange DN 15	1/2" NPT Female	1/2" NPT Female
SAKV0**D*0	Flange DN 15	Flange DN 15	1/2" NPT Female	1/2" NPT Female
SAKV0**E*0	Flange DN 15	Flange DN 15	1/2" NPT Female	1/2" NPT Female
SAKV0**F*0	Flange DN 15	not available	1/2" NPT Female	1/2" NPT Female
SAKV0**G*0	Flange DN 20	Flange DN 20	3/4" NPT Female	3/4" NPT Female
SAKV0**H*0	Flange DN 25	Flange DN 25	1" NPT Female	1" NPT Female
SAKV0**I*0	Flange DN 32	Flange DN 32	1 1/4" NPT Female	1 1/4" NPT Female
SAKV0**J*0	Flange DN 40	Flange DN 40	1 1/2" NPT Female	1 1/2" NPT Female
SAKV0**K*0	Flange DN 50	Flange DN 50	2" NPT Female	not available
SAKV0**L*0	Flange DN 65	Flange DN 65	not available	not available

Tab. 4.b

If the inlet pressure to the control valve is greater than 0.7 bar (10 psig), the valve may generate significant noise due to the near sonic velocity of the steam. (See section 6.1 of the design manual for more information.) Because the noise and coincident vibration may shorten valve life, frequent inspections of the valve may be required.

For information about the weight, dimensions, construction materials, and rangeability of each valve, see section 9, "Specifications".

4.2 Fitting kits (SAKR*****) for threaded control valves

NOTE: For flanged control valves, the installer must provide the appropriate fittings and piping to connect the valve to the ultimateSAM distributor. For control valves having threaded connections, optional fitting kits are available to facilitate the connection of the valve to both the distributor inlet and the steam traps and strainers (section 4.3). The codes for the fitting kits are shown in table 4.c.

SAKR **0** **x** **xx** **U** **0**

① ② ③ ④ ⑤ ⑥

①	ID prefix	
②	---	---
③	Material:	F = Ghisa S = Inox
④	Size:	24= 1/2" Tubo 34= 3/4" Tubo 44= 1" Tubo 54= 1 1/4" Tubo 64= 1 1/2" Tubo 84= 2" Tubo
⑤	Region:	U = North America
⑥	---	---

Tab. 4.c

Both iron and stainless steel fitting kits for the North American region have NPT threads. The list of threaded pipe fittings provided in each kit is shown in table 4.d.

Fitting List for SAKR0***U0

Pipe Size (NPT)	Bushing F-M (size)	3" Nipple M-M (size)	Union F-F (size)
*****24**	2 (1/2"x1")	2 (1")	1 (1")
*****34**	2 (3/4"x1")	2 (1")	1 (1")
*****44**	n/a	2 (1")	1 (1")
*****54**	2 (1 1/4"x2")	2 (2")	1 (2")
*****64**	2 (1 1/2"x2")	2 (2")	1 (2")
*****84**	n/a	2 (2")	1 (2")

Tab. 4.d

4.3 Actuator kits for control valves

Each control valve needs an actuator to control its motion. The system for identifying actuator kits is shown in Table 4.e. **NOTE:** Not all of the possible combinations shown on the table are available. Tables 4.f and 4.g indicate which electronic or pneumatic actuator can be paired with which control valve.

SAKA **0** **x** **xx** **x** **0**

① ② ③ ④ ⑤ ⑥

①	ID prefix	
②	---	---
③	Type:	E = Electronic P = Pneumatic
④	Identifier:	01 Sequential # 02 ---
⑤	Region:	U = North America 0 = Others
⑥	---	---

Tab. 4.e

Electronic Actuator Selection

	Material, Pressure, Region Codes			
Valve Size	****F0*0*	****FH*0*	****00*U*	****0H*U*
SAKV0**A*0	not available	not available	SAKAE001U0	not available
SAKV0**B*0	not available	not available	SAKAE001U0	not available
SAKV0**C*0	not available	SAKAE00200	SAKAE001U0	SAKAE002U0
SAKV0**D*0	SAKAE00100	SAKAE00200	SAKAE001U0	SAKAE002U0
SAKV0**E*0	SAKAE00100	SAKAE00200	SAKAE001U0	SAKAE002U0
SAKV0**F*0	SAKAE00100	not available	SAKAE001U0	SAKAE002U0
SAKV0**G*0	SAKAE00100	SAKAE00200	SAKAE001U0	SAKAE002U0
SAKV0**H*0	SAKAE00100	SAKAE00200	SAKAE002U0	SAKAE002U0
SAKV0**I*0	SAKAE00100	SAKAE00200	SAKAE002U0	SAKAE002U0
SAKV0**J*0	SAKAE00100	SAKAE00200	SAKAE002U0	not available
SAKV0**K*0	SAKAE00100	SAKAE00200	not available	not available
SAKV0**L*0	SAKAE00100	SAKAE00200	not available	not available

Tab. 4.f

NOTE: for valve types "*****FH*0*" the actuator is included in the valve kit, so the code (SAKAE00200) indicated above is to be used when ordering a spare actuator only.

Pneumatic Actuator Selection

Valve Size	Material, Pressure, Region Codes		
	*****F0*0*	*****00*U*	*****0H*U*
SAKV0**A*0	n/a	SAKAP001U0	n/a
SAKV0**B*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**C*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**D*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**E*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**F*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**G*0	n/a	SAKAP001U0	SAKAP002U0
SAKV0**H*0	n/a	SAKAP001U0	SAKAP003U0
SAKV0**I*0	n/a	SAKAP002U0	SAKAP003U0
SAKV0**J*0	n/a	SAKAP003U0	n/a
SAKV0**K*0	n/a	SAKAP003U0	n/a
SAKV0**L*0	n/a	n/a	n/a

Tab. 4.g

For weights and dimensions of the actuators, see Section 9, "Specifications." This section also provides information regarding control signal requirements for the actuators.

4.4 Connecting pressurized steam to an ultimateSAM distributor

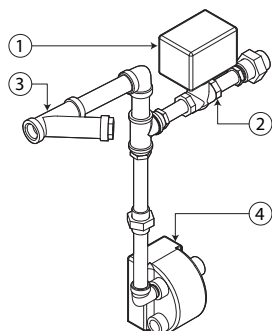


Fig. 4.a

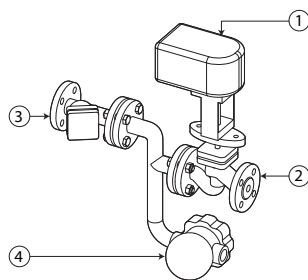


Fig. 4.b

- For threaded control valves, SAKV*****U*, with an optional fitting kit, SAKR*****U*, attach the fittings to the valve as shown in figure 4.a.
- Attach the ① optional actuator, SAKA*****U*, to the ② control valve.
- Connect the valve/actuator assembly to the inlet adapter on the distributor header. For optimal performance, the valve should be attached directly to the inlet. If a connecting pipe is needed between the valve and inlet, the length of the pipe should be as short as possible. The actuator should be oriented in the upright position. See figures 1.k and 4.c.
- Assemble the fittings and components included in the optional ④ trap and ③ strainer kit, SAKT*****U*, and attach the trap assembly to the valve. For steam operation, strainers should be installed in the horizontal position, although it is acceptable to mount the strainer pointing downward. The horizontal position prevents water from collecting in the bonnet thereby reducing the risk of airborne droplets.

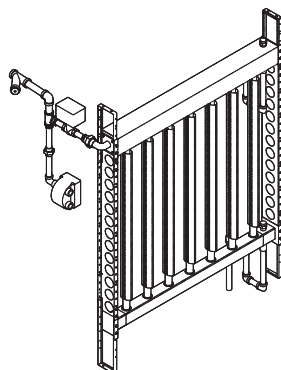


Fig. 4.c

NOTE: The "P" drains shown above are not provided as part of the ultimateSAM system.

4.5 Connecting atmospheric steam to a bottom-feed ultimateSAM distributor

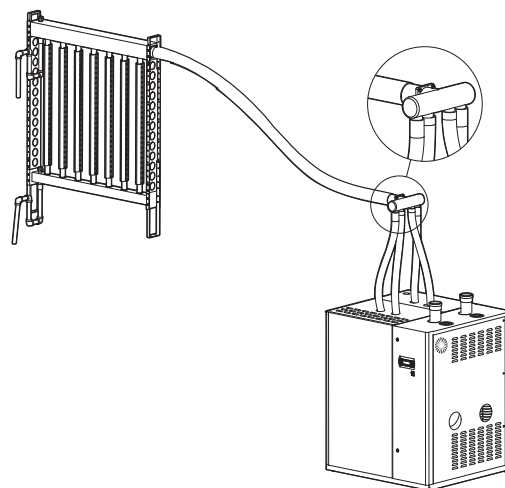


Fig. 4.d

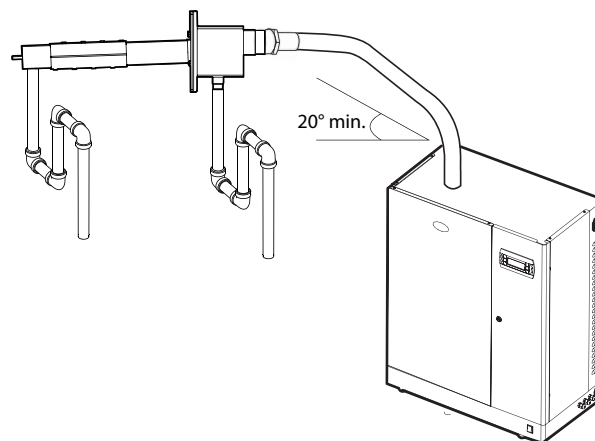


Fig. 4.e

NOTE: The adapters and steam hoses shown above are available as options. The "P" drains are not provided as part of the ultimateSAM system.

- The distributor should be positioned at a height above the humidifier so that condensate drains back to the humidifier.
 - If using flexible steam hose to connect the distributor to the humidifier, a minimum angle of 20° should be allowed from humidifier outlet to distributor inlet.
 - If using rigid steam pipe to connect the distributor to the humidifier, the pipe should have a minimum 1% grade (~1 cm per meter, ~1/8" per foot) to allow for proper drainage back to the humidifier.
- If using a dual or quad inlet adapter, the 150mm (6") inlet extension is recommended. Install the extension inlet to the header. Connect the steam hose from the humidifier such that inlet adapter, making sure that the hose is sloped so that most of the condensate returns to the humidifier.

5. OPERATION

Operationally, the ultimateSAM Humidification System discharges steam into the duct or air handler. The method by which the steam discharge is controlled depends upon whether the steam comes from a pressurized source or an atmospheric source. For pressurized steam supplies, the steam flow rate is controlled by the valve/actuator. The control valve opens or closes in response to a control signal that is sent to the actuator. Both electronic and pneumatic actuators are configured so that there is a linear relationship between the steam flow rate and the control signal.

For atmospheric steam supplies, the flow rate is controlled by the rate at which the humidifier produces steam. All of the steam generated by the humidifier is discharged by the ultimateSAM distributor into the duct or AHU. The control signal for the actuator or atmospheric humidifier is either generated by a humidistat or a humidity sensor and controller. The controller can be either stand-alone or part of a Building Automation System.

6. TROUBLESHOOTING

6.1 Water is spitting from the nozzles on the uprights.

1. The header P-traps are not draining. Clean and check plumbing. Check that height of trap exceeds the static pressure of the duct/AHU, especially if under negative pressure.
2. The steam trap on the valve/trap assembly is not functioning. Clean or replace.
3. The steam line has been taken from the bottom of the steam source or is not sloped properly. Change line to take off from the top and check proper slopes.
4. The steam main is overloaded with water. Locate cause and Correct if necessary.
5. Check valve sizing to maximum distributor capacity. Resize valve within distributor capacity.

6.2 Steam does not discharge from the distributors when the valve is open.

1. Verify that valve is open. Correct if necessary.
2. Verify that steam is available and valves are open. Correct if necessary.
3. Verify that the steam pressure has not changed. Too high pressure could jam the valve.
4. Carefully place a mirror or metal object close to one of the steam discharge slots. If it fogs, steam is discharging, but evaporating very quickly. No problem. NEVER PLACE YOUR HAND OVER OR NEAR THE STEAM DISCHARGE NOZZLES.
5. The Y-strainer may be clogged. Clean or replace.

6.3 Steam valve will not open

1. Verify power or air pressure to the valve actuator. Correct if necessary.
2. Verify control signal or pressure range to the valve actuator. Correct if necessary.
3. Verify control signal polarity to the valve actuator. Correct if necessary.
4. Remove actuator and test to see if it operates. Valve may be jammed - clean or replace.
5. Verify that the steam pressure has not changed. Too high pressure could jam the valve.
6. Verify proper valve orientation - electric valves must face up.

6.4 Steam valve will not close

1. Verify control signal to the valve actuator. Correct if necessary.
2. Verify control signal polarity to the valve actuator. Correct if necessary.
3. Remove actuator and test to see if it operates. Valve may be jammed - clean or replace.
4. Verify that the steam pressure has not changed. Too high pressure could jam the valve.
5. Verify proper valve orientation - electric valves must face up.

6.5 Steam valve is leaking

1. Verify full range control signal to the valve actuator. Correct if necessary.
2. Verify control signal polarity to the valve actuator. Correct if necessary.
3. Remove actuator and test to see if it operates. Valve may be jammed - clean or replace.
4. Verify that the steam pressure has not changed. Too high pressure could jam the valve.

6.6 Humidity exceeds set point

1. Verify full range control signal to the valve actuator is compatible. Correct if necessary.
2. Verify control signal polarity to the valve actuator. Correct if necessary.
3. Check calibration of controller. Correct if necessary.
4. Insure humidity sensors are installed correctly and not located in drafts (wall). Correct if necessary.
5. Remove actuator and test to see if it operates. Valve may be jammed - clean or replace.
6. Verify that the steam pressure has not changed. Too high pressure could cause valve to leak.
7. Verify stable boiler pressure. Wide swings in pressure could be fighting the humidity controls.
8. From BAS system, change to P type control (not PI or PID).

6.7 Humidity remains below set point

1. Verify full range control signal to the valve actuator is compatible. Correct if necessary.
2. Verify control signal polarity to the valve actuator. Correct if necessary.
3. Check calibration of controller. Correct if necessary.
4. Insure humidity sensors are installed correctly and not located in drafts (wall). Correct if necessary.
5. Remove actuator and test to see if it operates. Valve may be jammed - clean or replace.
6. Verify that the steam pressure has not changed. Too high pressure could jam valve. Too low will not meet capacity.
7. Verify stable boiler pressure. Wide swings in pressure could be fighting the humidity controls.
8. From BAS system, change to P type control (not PI or PID).
9. Check that air flow switch is not fluttering. Correct if necessary.
10. Check that hi-limit controller is not located too close to steam discharge distributors. Correct if necessary.
11. Humidifier is undersized. Check humidity load calculations.

6.8 Condensate in duct

1. Verify humidifier capacity versus air volume.
2. See section 6.1 in trouble-shooting section of this manual.
3. Verify that hi-limit controller is working. Correct if necessary.
4. Verify evaporation distance to obstructions or elbows. Correct if necessary.
5. Verify steam valve is not leaking. Correct if necessary.
6. Uninsulated duct may be running through an area where ambient temperature is below internal duct dew point. Insulate duct externally.

6.9 Steam leaks from P-traps.

1. Check that height of trap exceeds the static pressure of the duct/AHU, especially if under negative pressure. Correct if necessary.
2. Check valve sizing to maximum distributor capacity. Resize valve within distributor capacity.
3. Check that inlet steam pressure does not exceed the limits of the valve.

7. MAINTENANCE

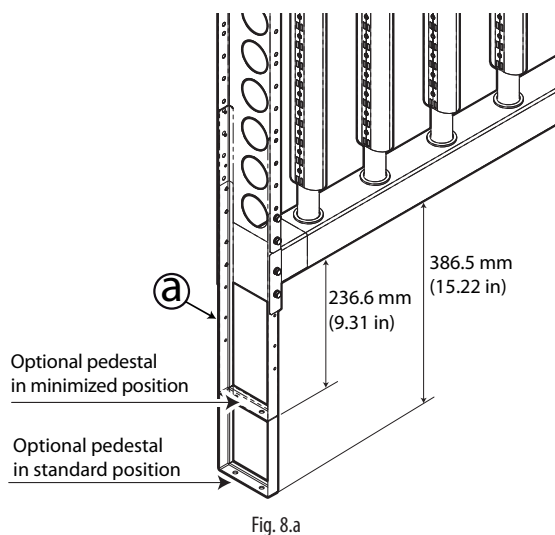
The ultimateSAM distributor itself requires no regular maintenance since its design has no moving parts. It is recommended that the external surfaces of the distributor should be inspected once a year. If there is evidence of a steam leak at one of the static seals, contact Carel.

For optional equipment, such as valves, actuators, traps, and strainers, follow the maintenance instructions in the user manuals that are provided with each of these devices. These accessories should be inspected at least once a year. For systems in which the inlet pressure to the control valve is greater than 0.7 bar (10 psig), more frequent inspections of the valve may be required. In addition, steam hoses should be inspected yearly for evidence of cracking or hardening.

8. SPARE PARTS

8.1 Adjustable feet Kit for SAB* / SAT*

Feet kit to increase the distance between the base of the ultimateSam and the duct.



kIT CODE	Description	Height from the duct	Weight (kg)
SAKS010000	High adjustable feet kit	386,5 mm (15.2in)	0,9
SAKS020000	Standard adjustable feet kit	236,6 mm (9.3in)	1
SAKS030000	Short adjustable feet kit (version without frame)	?	0,8

Tab. 8.a

Each kit contains 2 adjustable feet and 16 screws

8.2 Horizontal manifold Kit (steam feed – condensate drain) for SAB* / SAT*

SAKM ☒ ☒ ☒ ☒ ☐ ☐
Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	Type	S	S = Steam feed (100x100 mm)
		D	D = Condensate drain (70x70 mm)
⑥	Unit width mm (in)	A	A = 447 (18)
		B	B = 599 (23.75)
		C	C = 751 (29.75)
		D	D = 903 (35.75)
		E	E = 1055 (41.75)
		F	F = 1207 (47.75)
		G	G = 1359 (53.75)
		H	H = 1511 (59.50)
		I	I = 1663 (65.50)
		J	J = 1815 (71.50)
		K	K = 1967 (77.50)
		L	L = 2119 (83.50)
		M	M = 2271 (89.50)
		N	N = 2423 (95.50)
		O	O = 2575 (101.50)
		P	P = 2727 (107.50)
⑦	Upright Size & Center distance mm (in)	Q	Q = 2879 (113.50)
		R	R = 3031 (119.50)
		S	S = 35 (1.50) - OD; 152 (6.00)
		L	L = 45 (1.75) - OD; 152 (6.00)
⑧	Insulation	H	H = 35 (1.50) - OD; 76 (3.00)
		I	I = insulated
		N	N = uninsulated no insert

Tab. 8.b

Each SAKMD*00 kit includes the manifold and the gaskets for fastening the uprights:

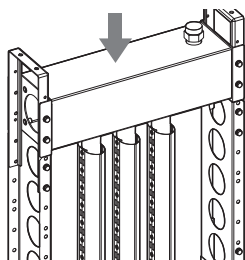


Fig. 8.b

Each SAKMS*00 kit only includes the manifold; the gaskets are not included as the ones already provided are used:

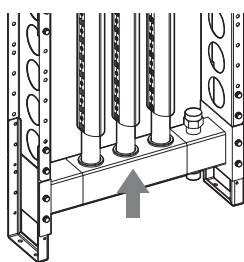


Fig. 8.c

8.3 Uprights kit for SAB* / SAT*

SAKU **X** **X** **X** **X** **0** **0**
Family prefix 5 6 7 8 9 10

Pos.	Meaning	Option	Description
⑤	Steam feed	B	B = Bottom feed
		T	T = Top feed
⑥	Unit height mm (in)	A	A = 598 (23.75)
		B	B = 750 (29.75)
		C	C = 902 (35.75)
		D	D = 1054 (41.50)
		E	E = 1206 (47.50)
		F	F = 1358 (53.50)
		G	G = 1510 (59.50)
		H	H = 1662 (65.50)
		I	I = 1814 (71.50)
		J	J = 1966 (77.50)
		K	K = 2118 (83.50)
		L	L = 2270 (89.50)
		M	M = 2422 (95.50)
		N	N = 2574 (101.50)
		O	O = 2726 (107.50)
		P	P = 2878 (113.50)
		Q	Q = 3030 (119.50)
			If top feed, add 151 (6)
⑦	Upright Size & Center distance mm (in)	S	S = 35 (1.50) - OD; 152 (6.00)
		L	L = 45 (1.75) - OD; 152 (6.00)
		H	H = 35 (1.50) - OD; 76 (3.00)
⑧	Insulation	I	I = insulated w/nozzle insert
		N	N = uninsulated no insert

Tab. 8.c

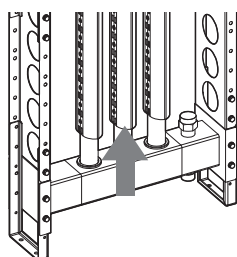


Fig. 8.d

Each SAKU*00 kit includes:

- upright;
- 1 O-ring;
- bolts for fastening the upright to the manifold.

8.4 Frame element and top side Kit for SAB* / SAT*

Frame kit used either as a shoulder (right- or left-hand side) or as a cross-piece for ultimateSAM with bottom steam feed (SAB*). Example: kit SAKFF0G000 is a 1305 mm shoulder with 17 holes, and can be used as:

- Cross-piece (top side) on ultimateSAM with bottom steam feed (SAB*) both with 17 nozzles (pitch 76 mm) or 9 nozzles (pitch 152 mm);
- Shoulder (right- or left-hand side) for uprights with 64 nozzles (height code "G").

SAKF **F** **0** **X** **0** **0** **0**
Family prefix 5 6 7 8 9 10

Pos.	Meaning	Opt.	Description
⑦	Frame element lenght in mm (in)	A	A = 593 (xxxx), 5 holes, 3/2 uprights or 16 nozzles
		B	B = 545 (xxxx), 7 holes, 5/3 uprights or 24 nozzles
		C	C = 697 (xxxx), 9 holes, 7/4 uprights or 32 nozzles
		D	D = 849 (xxxx), 11 holes, 9/5 uprights or 40 nozzles
		E	E = 1001 (xxxx), 13 holes, 11/6 uprights or 48 nozzles
		F	F = 1153 (xxxx), 15 holes, 13/7 uprights or 56 nozzles
		G	G = 1305 (xxxx), 17 holes, 15/8 uprights or 64 nozzles
		H	H = 1457 (xxxx), 19 holes, 17/9 uprights or 72 nozzles
		I	I = 1609 (xxxx), 21 holes, 19/10 uprights or 80 nozzles
		J	J = 1761 (xxxx), 23 holes, 21/11 uprights or 88 nozzles
		K	K = 1913 (xxxx), 25 holes, 23/12 uprights or 96 nozzles
		L	L = 2065 (xxxx), 27 holes, 25/13 uprights or 104 nozzles
		M	M = 2217 (xxxx), 29 holes, 27/14 uprights or 112 nozzles
		N	N = 2369 (xxxx), 31 holes, 29/15 uprights or 120 nozzles
		O	O = 2521 (xxxx), 33 holes, 31/16 uprights or 128 nozzles
		P	P = 2673 (xxxx), 35 holes, 33/17 uprights or 136 nozzles
		Q	Q = 2825 (xxxx), 37 holes, 35/18 uprights or 144 nozzles
		R	R = 2977 (xxxx), 39 holes, 37/19 uprights

Tab. 8.d

Each SAKF0*000 kit includes:

- 1 shoulder;
- Fastening bolts.

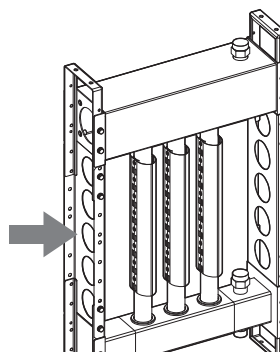


Fig. 8.e

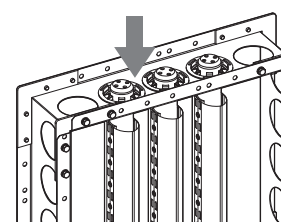


Fig. 8.f

8.5 Corner Kit for SAB* /

SAKF **B** **0** **0** **0** **0** **0**
Family prefix

Each SAKFB00000 kit includes:

- 4 corners
- Fastening bolts
- Unit weight: 0.5 kg (1.1 lbs).

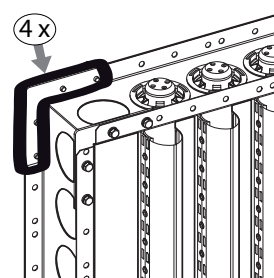


Fig. 8.g

8.6 Retainer ring kit for SAB*

SAKF **R** **x** **0** **0** **0** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑥	Size mm (in)	S	Retainer Ring for uprights O.D. 35
		L	Retainer Ring for uprights O.D. 45

Tab. 8.e

Each SAKFR*0000 kit includes 3 retainer rings

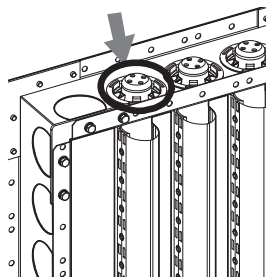


Fig. 8.h

8.7 Gaskets kit

Kit of nozzle O-rings and nozzle gaskets for manifolds with condensate drain.
 Kit of gaskets for steam inlet accessories.

SAKG **x** **x** **0** **0** **0** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	Type	U	U = Uprights Gasket kit
		I	I = Inlet Gasket kit
⑥	Upright size mm (in)	O	for SAKGI00000
		S	SAKGU: S = uprights O.D. 35
		L	SAKGU: L = uprights O.D. 45

Tab. 8.f

Each SAKGU*0000 kit includes:

• 2 O-rings; • 2 gaskets for drain manifold

Each SAKGI00000 kit includes: 2 gaskets.

8.8 Filter "Y" kit

SAKT **x** **F** **x** **x** **x** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	Material:	F	Iron
		S	Stainless steel
⑦ - ⑧	Dimension:	15	Flange DN 15
		20	Flange DN 20
		25	Flange DN 25
		32	Flange DN 32
		34	Threaded pipe 3/4"
		40	Flangia DN 40
		44	Threaded pipe 1"
		50	Flange DN 50
		65	Flange DN 65
		84	Threaded pipe 2"
⑨	Region:	U	0 = Other
		O	U = U.S.

Tab. 8.g

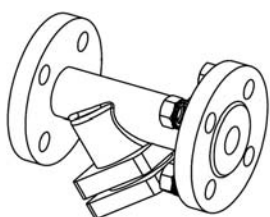


Fig. 8.i

8.9 Condensate drain separator Kit

SAKT **x** **P** **x** **x** **x** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	Material:	F	Iron
		S	Stainless steel
⑦ - ⑧	Dimension:	15	Flange DN 15
		20	Flange DN 20
		25	Flange DN 25
		32	Flange DN 32
		34	Threaded pipe 3/4"
		40	Flangia DN 40
		44	Threaded pipe 1"
		50	Flange DN 50
		65	Flange DN 65
		84	Threaded pipe 2"
⑨	Region:	U	0 = Other
		O	U = U.S.

Tab. 8.h

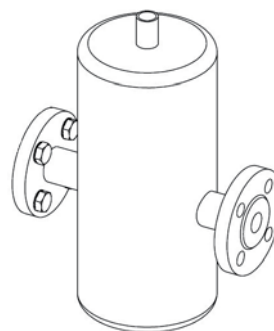


Fig. 8.j

8.10 F&T Condensate drain Kit

SAKT **x** **D** **x** **x** **x** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning	Option	Description
⑤	Material:	F	Iron
		S	Stainless steel
⑦ - ⑧	Dimension:	15	Flange DN 15
		20	Flange DN 20
		25	Flange DN 25
		32	Flange DN 32
		34	Threaded pipe 3/4"
		40	Flangia DN 40
		44	Threaded pipe 1"
		50	Flange DN 50
		65	Flange DN 65
		84	Threaded pipe 2"
⑨	Region:	U	0 = Other
		O	U = U.S.

Tab. 8.i

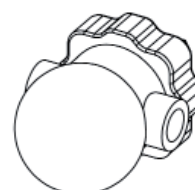


Fig. 8.k

8.11 Inverted bucket Condensate drain Kit

SAKT ☒ **B** ☒ ☒ ☒ ☒ ☒ ☒
Family prefix 5 6 7 8 9 10

Pos.	Meaning	Option	Description
⑤	Material:	F	Iron
		S	Stainless steel
⑦ - ⑧	Dimension:	15	Flange DN 15
		20	Flange DN 20
		25	Flange DN 25
		32	Flange DN 32
		34	Threaded pipe 3/4"
		40	Flangia DN 40
		44	Threaded pipe 1"
		50	Flange DN 50
		65	Flange DN 65
		84	Threaded pipe 2"
⑨	Region:	U	0 = Other
		O	U = U.S.

Tab. 8.j

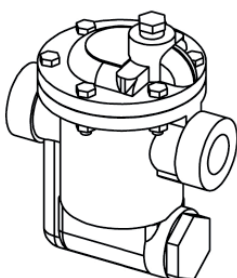


Fig. 8.i

8.12 Spare upright kit, SA0 (single-pipe) versions

SAKU ☒ ☒ ☒ ☒ ☒ ☒ ☒
Family prefix 5 6 7 8 9 10

Pos.	Meaning	Option	Description
⑤	Steam feed:	0	0= SA0*
⑥	Unit height mm (in)	A	A= 358 (14) for SA0AALI0*0
		B	B= 510 (20) for SA0BALI0*0
		C	C= 662 (26) for SA0CALI0*0
		D	D= 814 (32) for SA0DALI0*0
		E	E= 966 (38) for SA0EALI0*0
		F	F= 1118 (44) for SA0FALI0*0
		G	G= 1270 (50) for SA0GALI0*0
		H	H= 1422 (56) for SA0HALI0*0
		I	I= 1574 (62) for SA0IALI0*0
		J	J= 1726 (68) for SA0JALI0*0
		K	K= 1878 (74) for SA0KALI0*0
		L	L= 2030 (80) for SA0LALI0*0
⑦	Upright Size:	L	L= 45 (1.75)
⑧	Insulation:	I	I = insulated with nozzle inserts SA0
⑨	Region:	U	U = U.S.
		0	0 = Other
⑩	Free:	0	

Tab. 7.a

Each SAKU0*LI*0 kit includes:

- upright;
- 1 O-ring;
- bolts for fastening the upright to the manifold.

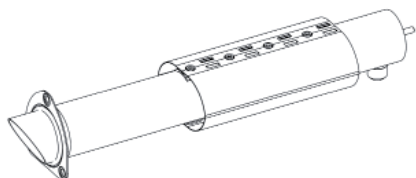


Fig. 8.m

8.13 Spare manifold kit, SA0 (single-pipe) versions

SAKM ☒ ☒ ☒ ☒ ☒ ☒ ☒
Family prefix 5 6 7 8 9 10

Pos.	Meaning	Option	Description
⑤	Steam feed:	0	0 = SA0
⑥	Unit height mm (in)	0	0 = SA0
⑦	Upright Size:	0	0 = SA0
⑧	Insulation:	0	0 = SA0
⑨	Region:	U	North America (NPT)
		0	Others (GAS)
⑩	Free:	0	

Tab. 7.b

Each SAKM0*LI*0 kit includes:

- manifold;
- gasket;
- bolts for fastening the upright to the manifold.

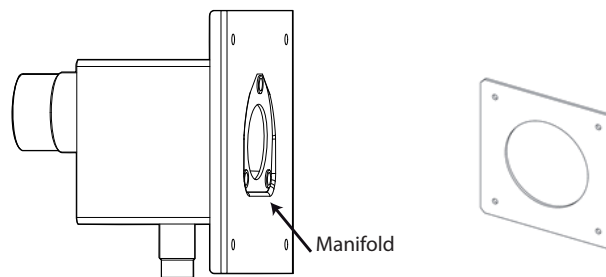


Fig. 7.a

9. SPECIFICATIONS / SPECIFICHE

9.1 Distributor details / *Dettagli distributore*

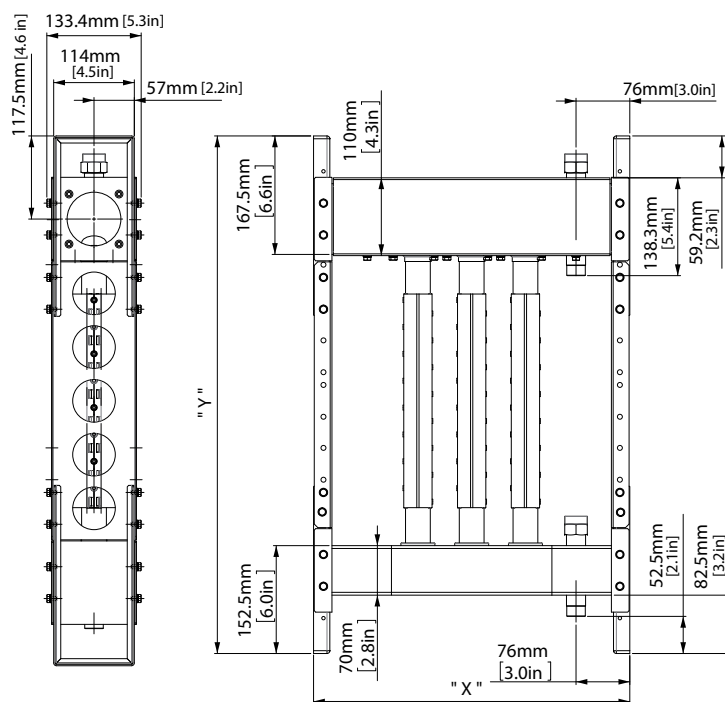


Fig. 9.a

Cod.		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
"X"	mm	447	599	751	903	1055	1207	1359	1511	1663	1815	1967	2119	2271	2423	2575	2727	2879	3031
	(in)	(17.75)	(23.75)	(29.75)	(35.75)	(41.75)	(47.75)	(53.75)	(59.50)	(65.50)	(71.50)	(77.50)	(83.50)	(89.50)	(95.50)	(101.50)	(107.50)	(113.50)	(119.50)
"Y"	mm	749	901	1053	1205	1357	1509	1661	1813	1965	2117	2269	2421	2573	2725	2877	3029	3181	
	(in)	(29.50)	(35.50)	(41.50)	(47.50)	(53.50)	(59.50)	(65.50)	(71.50)	(77.50)	(83.50)	(89.50)	(95.50)	(101.50)	(107.50)	(113.50)	(119.50)	(125.25)	

Tab. 9.a

9.2 Distributor details / *Dettagli distributore*

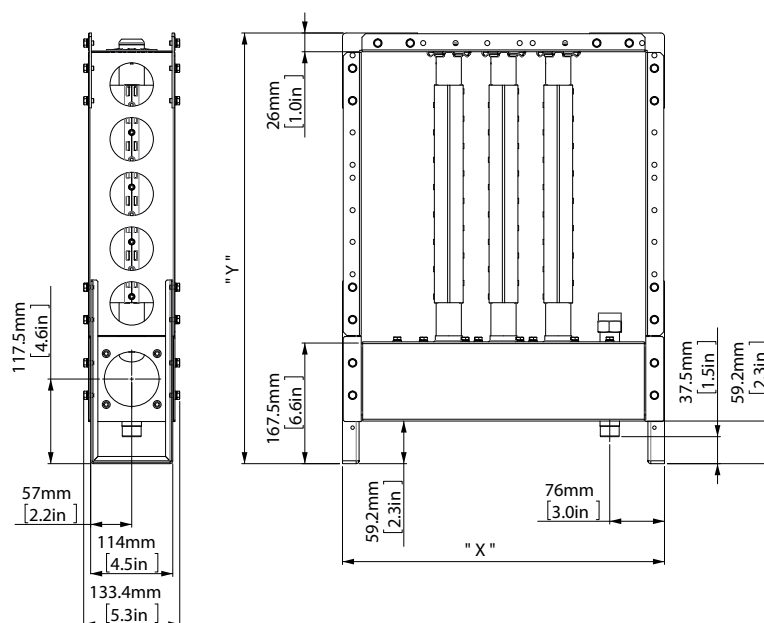


Fig. 9.b

Cod.		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
"X"	mm	447	599	751	903	1055	1207	1359	1511	1663	1815	1967	2119	2271	2423	2575	2727	2879	3031
	(in)	(17.75)	(23.75)	(29.75)	(35.75)	(41.75)	(47.75)	(53.75)	(59.50)	(65.50)	(71.50)	(77.50)	(83.50)	(89.50)	(95.50)	(101.50)	(107.50)	(113.50)	(119.50)
"Y"	mm	749	901	1053	1205	1357	1509	1661	1813	1965	2117	2269	2421	2573	2725	2877	3029	3181	
	(in)	(29.50)	(35.50)	(41.50)	(47.50)	(53.50)	(59.50)	(65.50)	(71.50)	(77.50)	(83.50)	(89.50)	(95.50)	(101.50)	(107.50)	(113.50)	(119.50)	(125.25)	

Tab. 9.b

9.3 Distributor weight tables / *Tabella pesi distributore*

	Weight in kg (lb) / Peso in kg (lb) Bottom-feed, "S" Upright configuration (SAB) / Alimentazione inferiore, configurazione lance "S" (SAB**S****)														
Ht. Cod.	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	7.5 (17)	8.5 (18)	9.0 (20)	9.5 (21)	10.0 (22)	11.0 (24)	11.5 (25)	12.0 (27)	12.5 (28)	13.5 (29)	16.0 (35)	16.5 (36)	17.0 (37)	17.5 (39)	18.5 (40)
B	8.5 (19)	9.5 (21)	10.5 (23)	11.0 (25)	12.0 (26)	13.0 (28)	14.0 (30)	14.5 (32)	15.5 (34)	16.5 (36)	20.0 (44)	21.0 (46)	21.5 (48)	22.5 (50)	23.5 (51)
C	9.5 (21)	10.5 (23)	11.5 (26)	12.5 (28)	14.0 (31)	15.0 (33)	16.0 (35)	17.5 (38)	18.5 (40)	19.5 (43)	24.0 (53)	25.0 (55)	26.5 (58)	27.5 (60)	28.5 (63)
D	10.0 (22)	11.5 (25)	13.0 (28)	14.5 (32)	15.5 (35)	17.0 (38)	18.5 (41)	20.0 (44)	21.0 (47)	22.5 (50)	28.0 (62)	29.5 (65)	31.0 (68)	32.5 (71)	33.5 (74)
E	11.0 (24)	12.5 (28)	14.5 (31)	16.0 (35)	17.5 (39)	19.0 (42)	21.0 (46)	22.5 (49)	24.0 (53)	25.5 (57)	32.5 (71)	34.0 (75)	35.5 (78)	37.0 (82)	39.0 (85)
F	12.0 (26)	13.5 (30)	15.5 (34)	17.5 (38)	19.5 (43)	21.5 (47)	23.0 (51)	25.0 (55)	27.0 (59)	29.0 (63)	36.5 (80)	38.5 (84)	40.0 (88)	42.0 (92)	44.0 (97)
G	12.5 (28)	15.0 (33)	17.0 (37)	19.0 (42)	21.0 (47)	23.5 (51)	25.5 (56)	27.5 (61)	30.0 (66)	32.0 (70)	40.5 (89)	42.5 (94)	45.0 (99)	47.0 (103)	49.0 (108)
H	13.5 (30)	16.0 (35)	18.5 (40)	20.5 (45)	23.0 (51)	25.5 (56)	28.0 (61)	30.0 (67)	32.5 (72)	35.0 (77)	44.5 (98)	47.0 (103)	49.5 (109)	52.0 (114)	54.0 (119)
I	14.5 (31)	17.0 (37)	19.5 (43)	22.0 (49)	25.0 (55)	27.5 (61)	30.0 (66)	33.0 (72)	35.5 (78)	38.0 (84)	48.5 (107)	51.5 (113)	54.0 (119)	56.5 (125)	59.5 (131)
J	15.0 (33)	18.0 (40)	21.0 (46)	24.0 (52)	26.5 (59)	29.5 (65)	32.5 (72)	35.5 (78)	38.5 (84)	41.0 (91)	53.0 (116)	55.5 (123)	58.5 (129)	61.5 (135)	64.5 (142)
K	16.0 (35)	19.0 (42)	22.0 (49)	25.5 (56)	28.5 (63)	31.5 (70)	35.0 (77)	38.0 (84)	41.0 (91)	44.5 (98)	57.0 (125)	60.0 (132)	63.5 (139)	66.5 (146)	69.5 (153)
L	16.5 (37)	20.0 (44)	23.5 (52)	27.0 (59)	30.5 (67)	34.0 (74)	37.0 (82)	40.5 (89)	44.0 (97)	47.5 (104)	61.0 (134)	64.5 (142)	68.0 (149)	71.5 (157)	74.5 (164)
M	17.5 (39)	21.0 (47)	25.0 (55)	28.5 (63)	32.0 (71)	36.0 (79)	39.5 (87)	43.0 (95)	47.0 (103)	50.5 (111)	65.0 (143)	69.0 (151)	72.5 (160)	76.0 (168)	80.0 (176)
N	18.5 (40)	22.5 (49)	26.0 (58)	30.0 (66)	34.0 (75)	38.0 (84)	42.0 (92)	46.0 (101)	49.5 (109)	53.5 (118)	69.5 (152)	73.0 (161)	77.0 (170)	81.0 (178)	85.0 (187)
O	19.0 (42)	23.5 (51)	27.5 (61)	31.5 (70)	36.0 (79)	40.0 (88)	44.0 (97)	48.5 (106)	52.5 (116)	56.5 (125)	73.5 (162)	77.5 (171)	82.0 (180)	86.0 (189)	90.0 (198)
P	20.0 (44)	24.5 (54)	29.0 (64)	33.5 (73)	37.5 (83)	42.0 (93)	46.5 (102)	51.0 (112)	55.5 (122)	60.0 (132)	77.5 (171)	82.0 (180)	86.5 (190)	91.0 (200)	95.0 (210)
Q	21.0 (46)	25.5 (56)	30.0 (66)	35.0 (77)	39.5 (87)	44.0 (97)	49.0 (108)	53.5 (118)	58.5 (128)	63.0 (139)	81.5 (180)	86.5 (190)	91.0 (200)	95.5 (211)	100.5 (221)

Tab. 9.c

	Weight in kg (lb) / Peso in kg (lb) Top-feed, "S" Upright configuration (SAT**S****) / Alimentazione superiore, configurazione lance "S" (SAT**S****)														
Ht. Cod.	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	10.0 (22)	11.0 (24)	12.0 (27)	13.5 (29)	14.5 (32)	15.5 (34)	16.5 (37)	18.0 (39)	19.0 (42)	20.0 (44)	24.5 (54)	25.5 (56)	26.5 (59)	28.0 (61)	29.0 (64)
B	11.0 (24)	12.0 (27)	13.5 (30)	15.0 (33)	16.5 (36)	17.5 (39)	19.0 (42)	20.5 (45)	22.0 (48)	23.0 (51)	28.5 (63)	30.0 (66)	31.5 (69)	32.5 (72)	34.0 (75)
C	11.5 (26)	13.0 (29)	15.0 (33)	16.5 (36)	18.0 (40)	19.5 (43)	21.5 (47)	23.0 (51)	24.5 (54)	26.0 (58)	32.5 (72)	34.5 (76)	36.0 (79)	37.5 (83)	39.0 (86)
D	12.5 (27)	14.5 (31)	16.0 (36)	18.0 (40)	20.0 (44)	22.0 (48)	23.5 (52)	25.5 (56)	27.5 (60)	29.5 (65)	37.0 (81)	38.5 (85)	40.5 (89)	42.5 (93)	44.5 (98)
E	13.5 (29)	15.5 (34)	17.5 (39)	19.5 (43)	22.0 (48)	24.0 (53)	26.0 (57)	28.0 (62)	30.5 (67)	32.5 (71)	41.0 (90)	43.0 (95)	45.0 (100)	47.5 (104)	49.5 (109)
F	14.0 (31)	16.5 (36)	19.0 (41)	21.0 (47)	23.5 (52)	26.0 (57)	28.5 (62)	31.0 (68)	33.0 (73)	35.5 (78)	45.0 (99)	47.5 (104)	50.0 (110)	52.0 (115)	54.5 (120)
G	15.0 (33)	17.5 (39)	20.0 (44)	23.0 (50)	25.5 (56)	28.0 (62)	30.5 (68)	33.5 (73)	36.0 (79)	38.5 (85)	49.0 (108)	52.0 (114)	54.5 (120)	57.0 (126)	60.0 (131)
H	15.5 (35)	18.5 (41)	21.5 (47)	24.5 (54)	27.5 (60)	30.0 (66)	33.0 (73)	36.0 (79)	39.0 (86)	42.0 (92)	53.5 (117)	56.0 (124)	59.0 (130)	62.0 (136)	65.0 (143)
I	16.5 (36)	19.5 (43)	23.0 (50)	26.0 (57)	29.0 (64)	32.5 (71)	35.5 (78)	38.5 (85)	41.5 (92)	45.0 (99)	57.5 (126)	60.5 (133)	63.5 (140)	67.0 (147)	70.0 (154)
J	17.5 (38)	21.0 (46)	24.0 (53)	27.5 (61)	31.0 (68)	34.5 (76)	38.0 (83)	41.0 (91)	44.5 (98)	48.0 (106)	61.5 (135)	65.0 (143)	68.5 (150)	72.0 (158)	75.0 (165)
K	18.0 (40)	22.0 (48)	25.5 (56)	29.0 (64)	33.0 (72)	36.5 (80)	40.0 (88)	44.0 (96)	47.5 (104)	51.0 (112)	65.5 (144)	69.5 (153)	73.0 (161)	76.5 (169)	80.5 (177)
L	19.0 (42)	23.0 (50)	27.0 (59)	30.5 (68)	34.5 (76)	38.5 (85)	42.5 (93)	46.5 (102)	50.5 (111)	54.0 (119)	70.0 (154)	73.5 (162)	77.5 (171)	81.5 (179)	85.5 (188)
M	20.0 (44)	24.0 (53)	28.0 (62)	32.5 (71)	36.5 (80)	40.5 (89)	45.0 (99)	49.0 (108)	53.0 (117)	57.5 (126)	74.0 (163)	78.0 (172)	82.0 (181)	86.5 (190)	90.5 (199)
N	20.5 (45)	25.0 (55)	29.5 (65)	34.0 (75)	38.5 (84)	42.5 (94)	47.0 (104)	51.5 (113)	56.0 (123)	60.5 (133)	78.0 (172)	82.5 (181)	87.0 (191)	91.5 (201)	95.5 (211)
O	21.5 (47)	26.0 (58)	31.0 (68)	35.5 (78)	40.0 (88)	45.0 (99)	49.5 (109)	54.0 (119)	59.0 (129)	63.5 (140)	82.0 (181)	87.0 (191)	91.5 (201)	96.0 (212)	101.0 (222)
P	22.5 (49)	27.0 (60)	32.0 (71)	37.0 (82)	42.0 (92)	47.0 (103)	52.0 (114)	56.5 (125)	61.5 (136)	66.5 (146)	86.5 (190)	91.0 (201)	96.0 (211)	101.0 (222)	106.0 (233)
Q	23.0 (51)	28.5 (62)	33.5 (74)	38.5 (85)	44.0 (96)	49.0 (108)	54.0 (119)	59.5 (131)	64.5 (142)	69.5 (153)	90.5 (199)	95.5 (210)	100.5 (222)	106.0 (233)	111.0 (244)

Tab. 9.d

9.4 Distributor weight tables / *Tabella pesi distributore*

Weight in kg (lb) / Peso in kg (lb)															
Bottom-feed, "L" Upright configuration (SAB**L****) / Alimentazione inferiore, configurazione lance "L" (SAB**L****)															
Ht. Cod.	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	8.0 (17)	10.0 (22)	12.5 (27)	14.5 (32)	17.0 (37)	19.0 (42)	21.5 (47)	23.5 (52)	26.0 (57)	28.0 (62)	37.0 (81)	39.0 (86)	41.5 (91)	43.5 (96)	46.0 (101)
B	9.0 (19)	11.5 (25)	14.0 (30)	16.5 (36)	19.0 (42)	21.5 (47)	24.0 (53)	26.5 (58)	29.0 (64)	31.5 (69)	41.5 (92)	44.0 (97)	46.5 (103)	49.0 (108)	51.5 (114)
C	9.5 (21)	12.5 (28)	15.5 (34)	18.0 (40)	21.0 (46)	24.0 (52)	26.5 (59)	29.5 (65)	32.0 (71)	35.0 (77)	46.5 (102)	49.0 (108)	52.0 (114)	54.5 (120)	57.5 (127)
D	10.5 (23)	13.5 (30)	17.0 (37)	20.0 (44)	23.0 (51)	26.0 (57)	29.0 (64)	32.5 (71)	35.5 (78)	38.5 (85)	51.0 (112)	54.0 (119)	57.0 (126)	60.5 (133)	63.5 (139)
E	11.5 (25)	15.0 (33)	18.5 (40)	21.5 (48)	25.0 (55)	28.5 (63)	32.0 (70)	35.5 (78)	38.5 (85)	42.0 (93)	55.5 (122)	59.0 (130)	62.5 (137)	66.0 (145)	69.5 (152)
F	12.5 (27)	16.0 (35)	20.0 (44)	23.5 (52)	27.0 (60)	31.0 (68)	34.5 (76)	38.0 (84)	42.0 (92)	45.5 (100)	60.5 (133)	64.0 (141)	67.5 (149)	71.5 (157)	75.0 (165)
G	13.5 (29)	17.5 (38)	21.5 (47)	25.0 (56)	29.0 (64)	33.0 (73)	37.0 (82)	41.0 (91)	45.0 (99)	49.0 (108)	65.0 (143)	69.0 (152)	73.0 (161)	77.0 (169)	81.0 (178)
H	14.0 (31)	18.5 (41)	22.5 (50)	27.0 (59)	31.5 (69)	35.5 (78)	40.0 (88)	44.0 (97)	48.5 (106)	52.5 (116)	69.5 (153)	74.0 (163)	78.5 (172)	82.5 (182)	87.0 (191)
I	15.0 (33)	19.5 (43)	24.0 (53)	29.0 (63)	33.5 (73)	38.0 (83)	42.5 (93)	47.0 (103)	51.5 (113)	56.0 (124)	74.5 (164)	79.0 (174)	83.5 (184)	88.0 (194)	92.5 (204)
J	16.0 (35)	21.0 (46)	25.5 (57)	30.5 (67)	35.5 (78)	40.5 (89)	45.0 (99)	50.0 (110)	55.0 (121)	59.5 (131)	79.0 (174)	84.0 (185)	89.0 (195)	93.5 (206)	98.5 (217)
K	17.0 (37)	22.0 (48)	27.0 (60)	32.5 (71)	37.5 (82)	42.5 (94)	48.0 (105)	53.0 (116)	58.0 (128)	63.0 (139)	84.0 (184)	89.0 (196)	94.0 (207)	99.0 (218)	104.5 (230)
L	18.0 (39)	23.0 (51)	28.5 (63)	34.0 (75)	39.5 (87)	45.0 (99)	50.5 (111)	56.0 (123)	61.5 (135)	66.5 (147)	88.5 (195)	94.0 (207)	99.5 (219)	105.0 (230)	110.0 (242)
M	18.5 (41)	24.5 (54)	30.0 (66)	36.0 (79)	41.5 (91)	47.5 (104)	53.0 (117)	59.0 (129)	64.5 (142)	70.0 (154)	93.0 (205)	99.0 (217)	104.5 (230)	110.5 (243)	116.0 (255)
N	19.5 (43)	25.5 (56)	31.5 (70)	37.5 (83)	43.5 (96)	49.5 (109)	55.5 (123)	61.5 (136)	67.5 (149)	73.5 (162)	98.0 (215)	104.0 (228)	110.0 (242)	116.0 (255)	122.0 (268)
O	20.5 (45)	27.0 (59)	33.0 (73)	39.5 (87)	45.5 (101)	52.0 (114)	58.5 (128)	64.5 (142)	71.0 (156)	77.5 (170)	102.5 (226)	109.0 (239)	115.0 (253)	121.5 (267)	127.5 (281)
P	21.5 (47)	28.0 (62)	34.5 (76)	41.0 (91)	48.0 (105)	54.5 (120)	61.0 (134)	67.5 (149)	74.0 (163)	81.0 (178)	107.0 (236)	114.0 (250)	120.5 (265)	127.0 (279)	133.5 (294)
Q	22.5 (49)	29.0 (64)	36.0 (79)	43.0 (94)	50.0 (110)	56.5 (125)	63.5 (140)	70.5 (155)	77.5 (170)	84.5 (185)	112.0 (246)	119.0 (261)	125.5 (276)	132.5 (292)	139.5 (307)

Tab. 9.e

Weight in kg (lb) / Peso in kg (lb)
Top-feed, "L" Upright configuration (SAT**L****) / Alimentazione inferiore, configurazione lance "L" (SAB**L****)

Ht. Code	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	10.0 (22)	13.0 (28)	15.5 (34)	18.5 (40)	21.0 (46)	24.0 (52)	26.5 (58)	29.5 (64)	32.0 (70)	34.5 (76)	45.5 (100)	48.5 (106)	51.0 (112)	54.0 (118)	56.5 (124)
B	11.0 (24)	14.0 (31)	17.0 (38)	20.0 (44)	23.0 (51)	26.0 (58)	29.0 (64)	32.0 (71)	35.0 (77)	38.0 (84)	50.5 (111)	53.5 (117)	56.5 (124)	59.5 (131)	62.5 (137)
C	12.0 (26)	15.5 (34)	18.5 (41)	22.0 (48)	25.0 (55)	28.5 (63)	32.0 (70)	35.0 (77)	38.5 (85)	41.5 (92)	55.0 (121)	58.5 (128)	61.5 (136)	65.0 (143)	68.0 (150)
D	13.0 (28)	16.5 (36)	20.0 (44)	23.5 (52)	27.5 (60)	31.0 (68)	34.5 (76)	38.0 (84)	41.5 (92)	45.5 (100)	59.5 (131)	63.5 (139)	67.0 (147)	70.5 (155)	74.0 (163)
E	14.0 (30)	17.5 (39)	21.5 (47)	25.5 (56)	29.5 (65)	33.0 (73)	37.0 (82)	41.0 (90)	45.0 (99)	49.0 (107)	64.5 (142)	68.0 (150)	72.0 (159)	76.0 (167)	80.0 (176)
F	14.5 (32)	19.0 (41)	23.0 (51)	27.0 (60)	31.5 (69)	35.5 (78)	40.0 (87)	44.0 (97)	48.0 (106)	52.5 (115)	69.0 (152)	73.0 (161)	77.5 (170)	81.5 (179)	86.0 (189)
G	15.5 (34)	20.0 (44)	24.5 (54)	29.0 (64)	33.5 (74)	38.0 (83)	42.5 (93)	47.0 (103)	51.5 (113)	56.0 (123)	73.5 (162)	78.0 (172)	82.5 (182)	87.0 (192)	91.5 (202)
H	16.5 (36)	21.0 (47)	26.0 (57)	30.5 (68)	35.5 (78)	40.5 (89)	45.0 (99)	50.0 (110)	54.5 (120)	59.5 (131)	78.5 (172)	83.0 (183)	88.0 (193)	92.5 (204)	97.5 (214)
I	17.5 (38)	22.5 (49)	27.5 (60)	32.5 (72)	37.5 (83)	42.5 (94)	47.5 (105)	52.5 (116)	58.0 (127)	63.0 (138)	83.0 (183)	88.0 (194)	93.0 (205)	98.0 (216)	103.5 (227)
J	18.0 (40)	23.5 (52)	29.0 (64)	34.5 (75)	39.5 (87)	45.0 (99)	50.5 (111)	55.5 (122)	61.0 (134)	66.5 (146)	88.0 (193)	93.0 (205)	98.5 (217)	104.0 (228)	109.0 (240)
K	19.0 (42)	25.0 (55)	30.5 (67)	36.0 (79)	41.5 (92)	47.5 (104)	53.0 (117)	58.5 (129)	64.5 (141)	70.0 (154)	92.5 (203)	98.0 (216)	103.5 (228)	109.5 (241)	115.0 (253)
L	20.0 (44)	26.0 (57)	32.0 (70)	38.0 (83)	44.0 (96)	49.5 (109)	55.5 (122)	61.5 (135)	67.5 (148)	73.5 (162)	97.0 (214)	103.0 (227)	109.0 (240)	115.0 (253)	121.0 (266)
M	21.0 (46)	27.0 (60)	33.5 (73)	39.5 (87)	46.0 (101)	52.0 (114)	58.5 (128)	64.5 (142)	70.5 (156)	77.0 (169)	102.0 (224)	108.0 (238)	114.5 (251)	120.5 (265)	126.5 (279)
N	22.0 (48)	28.5 (62)	35.0 (77)	41.5 (91)	48.0 (105)	54.5 (120)	61.0 (134)	67.5 (148)	74.0 (163)	80.5 (177)	106.5 (234)	113.0 (249)	119.5 (263)	126.0 (277)	132.5 (292)
O	22.5 (50)	29.5 (65)	36.5 (80)	43.5 (95)	50.0 (110)	56.5 (125)	63.5 (140)	70.5 (155)	77.0 (170)	84.0 (185)	111.0 (245)	118.0 (260)	125.0 (275)	131.5 (290)	138.5 (304)
P	23.5 (52)	30.5 (68)	38.0 (83)	45.0 (99)	52.0 (114)	59.0 (130)	66.0 (146)	73.5 (161)	80.5 (177)	87.5 (192)	116.0 (255)	123.0 (271)	130.0 (286)	137.0 (302)	144.0 (317)
Q	24.5 (54)	32.0 (70)	39.5 (86)	46.5 (103)	54.0 (119)	61.5 (135)	69.0 (151)	76.0 (168)	83.5 (184)	91.0 (200)	120.5 (265)	128.0 (281)	135.5 (298)	142.5 (314)	150.0 (330)

Tab. 9.f

9.5 Distributor weight tables / Tabella pesi distributore

Weight in kg (lb) / Peso in kg (lb)
Bottom-feed, "H" Upright configuration (SAB**H****) / Alimentazione inferiore, configurazione lance "H" (SAB**H****)

Ht. Code	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	8.5 (18)	10.5 (24)	13.0 (29)	15.5 (34)	17.5 (39)	20.0 (44)	22.0 (49)	24.5 (54)	27.0 (59)	29.0 (64)	38.5 (84)	40.5 (89)	43.0 (94)	45.0 (99)	47.5 (105)
B	9.5 (21)	12.5 (27)	15.0 (33)	18.0 (39)	20.5 (46)	23.5 (52)	26.5 (58)	29.0 (64)	32.0 (70)	34.5 (76)	46.0 (101)	49.0 (107)	51.5 (113)	54.5 (120)	57.0 (126)
C	10.5 (23)	14.0 (30)	17.0 (38)	20.5 (45)	24.0 (52)	27.0 (60)	30.5 (67)	33.5 (74)	37.0 (82)	40.5 (89)	53.5 (118)	57.0 (125)	60.5 (133)	63.5 (140)	67.0 (147)
D	11.5 (26)	15.5 (34)	19.5 (42)	23.0 (51)	27.0 (59)	30.5 (68)	34.5 (76)	38.5 (84)	42.0 (93)	46.0 (101)	61.5 (135)	65.0 (143)	69.0 (152)	73.0 (160)	76.5 (169)
E	12.5 (28)	17.0 (37)	21.5 (47)	25.5 (56)	30.0 (66)	34.5 (76)	38.5 (85)	43.0 (95)	47.5 (104)	51.5 (114)	69.0 (152)	73.5 (161)	77.5 (171)	82.0 (180)	86.5 (190)
F	14.0 (30)	18.5 (41)	23.5 (52)	28.5 (62)	33.0 (73)	38.0 (83)	43.0 (94)	47.5 (105)	52.5 (115)	57.5 (126)	76.5 (169)	81.5 (179)	86.5 (190)	91.0 (201)	96.0 (211)
G	15.0 (33)	20.0 (44)	25.5 (56)	31.0 (68)	36.0 (80)	41.5 (91)	47.0 (103)	52.0 (115)	57.5 (127)	63.0 (138)	84.5 (185)	89.5 (197)	95.0 (209)	100.5 (221)	105.5 (232)
H	16.0 (35)	22.0 (48)	27.5 (61)	33.5 (74)	39.5 (87)	45.0 (99)	51.0 (112)	57.0 (125)	62.5 (138)	68.5 (151)	92.0 (202)	98.0 (215)	103.5 (228)	109.5 (241)	115.5 (254)
I	17.0 (37)	23.5 (51)	29.5 (65)	36.0 (79)	42.5 (93)	49.0 (107)	55.0 (121)	61.5 (135)	68.0 (149)	74.0 (163)	99.5 (219)	106.0 (233)	112.5 (247)	118.5 (261)	125.0 (275)
J	18.0 (40)	25.0 (55)	32.0 (70)	38.5 (85)	45.5 (100)	52.5 (115)	59.5 (130)	66.0 (145)	73.0 (161)	80.0 (176)	107.5 (236)	114.0 (251)	121.0 (266)	128.0 (281)	135.0 (296)
K	19.0 (42)	26.5 (58)	34.0 (75)	41.5 (91)	48.5 (107)	56.0 (123)	63.5 (139)	70.5 (156)	78.0 (172)	85.5 (188)	115.0 (253)	122.5 (269)	129.5 (285)	137.0 (302)	144.5 (318)
L	20.0 (44)	28.0 (62)	36.0 (79)	44.0 (96)	51.5 (114)	59.5 (131)	67.5 (148)	75.5 (166)	83.0 (183)	91.0 (200)	122.5 (270)	130.5 (287)	138.5 (304)	146.5 (322)	154.0 (339)
M	21.5 (47)	29.5 (65)	38.0 (84)	46.5 (102)	55.0 (121)	63.0 (139)	71.5 (158)	80.0 (176)	88.5 (194)	97.0 (213)	130.5 (287)	138.5 (305)	147.0 (324)	155.5 (342)	164.0 (360)
N	22.5 (49)	31.5 (69)	40.0 (88)	49.0 (108)	58.0 (127)	67.0 (147)	75.5 (167)	84.5 (186)	93.5 (206)	102.5 (225)	138.0 (304)	147.0 (323)	156.0 (343)	164.5 (362)	173.5 (382)
O	23.5 (52)	33.0 (72)	42.0 (93)	51.5 (114)	61.0 (134)	70.5 (155)	80.0 (176)	89.0 (196)	98.5 (217)	108.0 (238)	145.5 (320)	155.0 (341)	164.5 (362)	174.0 (382)	183.0 (403)
P	24.5 (54)	34.5 (76)	44.5 (98)	54.0 (119)	64.0 (141)	74.0 (163)	84.0 (185)	94.0 (207)	104.0 (228)	113.5 (250)	153.5 (337)	163.0 (359)	173.0 (381)	183.0 (403)	193.0 (424)
Q	25.5 (56)	36.0 (79)	46.5 (102)	57.0 (125)	67.0 (148)	77.5 (171)	88.0 (194)	98.5 (217)	109.0 (240)	119.5 (263)	161.0 (354)	171.5 (377)	182.0 (400)	192.0 (423)	202.5 (446)

Tab. 9.g

Weight in kg (lb) / Peso in kg (lb)
Top-feed, "H" Upright configuration (SAT**H****) / Alimentazione superiore, configurazione lance "H" (SAT**H****)

Ht. Code	Width Code / Codice Larghezza														
	A	B	C	D	E	F	G	H	I	J	N	O	P	Q	R
A	10.5 (23)	13.5 (30)	16.5 (36)	19.0 (42)	22.0 (48)	24.5 (54)	27.5 (60)	30.5 (67)	33.0 (73)	36.0 (79)	47.0 (104)	50.0 (110)	52.5 (116)	55.5 (122)	58.5 (128)
B	11.5 (26)	15.0 (33)	18.5 (40)	21.5 (48)	25.0 (55)	28.5 (62)	31.5 (70)	35.0 (77)	38.0 (84)	41.5 (91)	55.0 (120)	58.0 (128)	61.5 (135)	64.5 (142)	68.0 (150)
C	13.0 (28)	16.5 (37)	20.5 (45)	24.5 (53)	28.0 (62)	32.0 (70)	35.5 (79)	39.5 (87)	43.5 (95)	47.0 (104)	62.5 (137)	66.5 (146)	70.0 (154)	74.0 (163)	77.5 (171)
D	14.0 (31)	18.0 (40)	22.5 (50)	27.0 (59)	31.0 (69)	35.5 (78)	40.0 (88)	44.0 (97)	48.5 (107)	53.0 (116)	70.0 (154)	74.5 (164)	79.0 (173)	83.0 (183)	87.5 (192)
E	15.0 (33)	20.0 (44)	24.5 (54)	29.5 (65)	34.5 (75)	39.0 (86)	44.0 (97)	49.0 (107)	53.5 (118)	58.5 (129)	78.0 (171)	82.5 (182)	87.5 (192)	92.5 (203)	97.0 (214)
F	16.0 (35)	21.5 (47)	26.5 (59)	32.0 (71)	37.5 (82)	42.5 (94)	48.0 (106)	53.5 (117)	58.5 (129)	64.0 (141)	85.5 (188)	91.0 (200)	96.0 (211)	101.5 (223)	107.0 (235)
G	17.0 (38)	23.0 (51)	29.0 (63)	34.5 (76)	40.5 (89)	46.5 (102)	52.0 (115)	58.0 (128)	64.0 (141)	69.5 (153)	93.0 (205)	99.0 (218)	105.0 (231)	110.5 (243)	116.5 (256)
H	18.0 (40)	24.5 (54)	31.0 (68)	37.0 (82)	43.5 (96)	50.0 (110)	56.5 (124)	62.5 (138)	69.0 (152)	75.5 (166)	101.0 (222)	107.0 (236)	113.5 (250)	120.0 (264)	126.0 (278)
I	19.5 (42)	26.0 (57)	33.0 (73)	40.0 (88)	46.5 (103)	53.5 (118)	60.5 (133)	67.5 (148)	74.0 (163)	81.0 (178)	108.5 (239)	115.5 (254)	122.0 (269)	129.0 (284)	136.0 (299)
J	20.5 (45)	27.5 (61)	35.0 (77)	42.5 (93)	50.0 (110)	57.0 (126)	64.5 (142)	72.0 (158)	79.5 (174)	86.5 (191)	116.0 (255)	123.5 (272)	131.0 (288)	138.0 (304)	145.5 (320)
K	21.5 (47)	29.5 (64)	37.0 (82)	45.0 (99)	53.0 (116)	61.0 (134)	68.5 (151)	76.5 (168)	84.5 (186)	92.5 (203)	124.0 (272)	131.5 (290)	139.5 (307)	147.5 (324)	155.5 (342)
L	22.5 (49)	31.0 (68)	39.0 (86)	47.5 (105)	56.0 (123)	64.5 (142)	73.0 (160)	81.0 (179)	89.5 (197)	98.0 (215)	131.5 (289)	140.0 (308)	148.0 (326)	156.5 (344)	165.0 (363)
M	23.5 (52)	32.5 (71)	41.5 (91)	50.0 (110)	59.0 (130)	68.0 (150)	77.0 (169)	86.0 (189)	94.5 (208)	103.5 (228)	139.0 (306)	148.0 (326)	157.0 (345)	166.0 (365)	175.0 (384)
N	24.5 (54)	34.0 (75)	43.5 (96)	53.0 (116)	62.0 (137)	71.5 (158)	81.0 (178)	90.5 (199)	100.0 (220)	109.0 (240)	147.0 (323)	156.0 (344)	165.5 (364)	175.0 (385)	184.5 (406)
O	25.5 (57)	35.5 (78)	45.5 (100)	55.5 (122)	65.5 (144)	75.0 (165)	85.0 (187)	95.0 (209)	105.0 (231)	115.0 (253)	154.5 (340)	164.5 (362)	174.0 (383)	184.0 (405)	194.0 (427)
P	27.0 (59)	37.0 (82)	47.5 (105)	58.0 (128)	68.5 (151)	79.0 (173)	89.0 (196)	99.5 (219)	110.0 (242)	120.5 (265)	162.0 (357)	172.5 (380)	183.0 (402)	193.5 (425)	203.5 (448)
Q	28.0 (61)	39.0 (85)	49.5 (109)	60.5 (133)	71.5 (157)	82.5 (181)	93.5 (205)	104.5 (229)	115.0 (253)	126.0 (277)	170.0 (374)	180.5 (398)	191.5 (422)	202.5 (446)	213.5 (470)

Tab. 9.h

9.6 Inlet adapters / Adattatori ingresso vapore

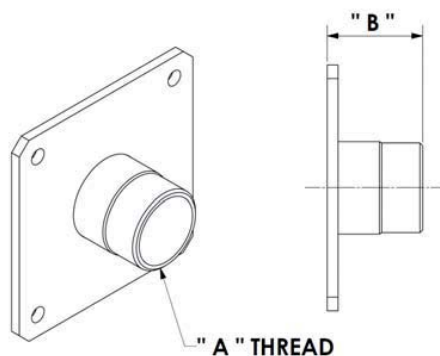


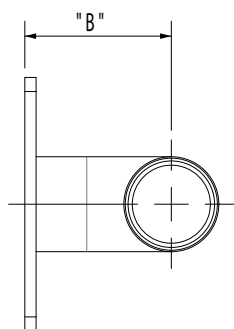
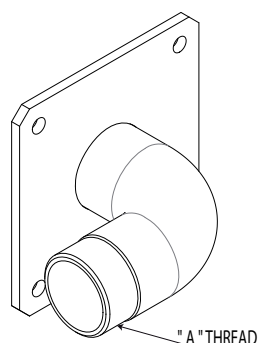
Fig. 9.c

Inlet flange with straight thread / Flangia di ingresso filettata

Kit code / Codice Kit	Description	Descrizione	"A"	"B"	Fitting weight / Peso installato
SAKIP441U0	Kit steam inlet 1 inch. straight	Kit di ingresso vapore (1 inch.)	1" NPT male	35mm (1.38in)	0.286 Kg (0.63 lbs)
SAKIP841U0	Kit steam inlet 2 inch. straight	Kit di ingresso vapore (2 inch.)	2" NPT male	50mm (1.97in)	0.317 Kg (0.70 lbs)
SAKIP44100	Kit steam inlet 1 inch. 180 gr.	Kit di ingresso vapore 180 gr. (1 inch.)	1" GAS male	35mm (1.38in)	0.286 Kg (0.63 lbs)
SAKIP64100	Kit steam inlet 1½ inch. 180 gr.	Kit di ingresso vapore 180 gr. (1½ inch.)	1½" GAS male	45mm (1.77in)	0.291 Kg (0.64 lbs)
SAKIP84100	Kit steam inlet 2 inch. 180 gr.	Kit di ingresso vapore 180 gr. (2 inch.)	2" GAS male	50mm (1.97in)	0.317 Kg (0.70 lbs)
SAKIP94100	Kit steam inlet 2½ inch. 180 gr.	Kit di ingresso vapore 180 gr. (2½ inch.)	2½" GAS male	45mm (1.77in)	0.366 Kg (0.80 lbs)

Tab. 9.i

Cod.: SAKIE**100



Cod.: SAKIE**1U0

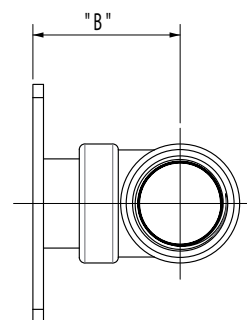
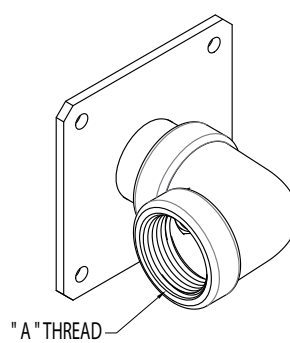


Fig. 9.d

Inlet flange with 90° elbow threaded / Kit flangia filettata con gomito 90°

Kit code / Codice Kit	Description	Descrizione	"A"	"B"	Fitting weight / Peso installato
SAKIE441U0	Kit steam inlet 1 inch. 90 deg Elbow	kit di ingresso vapore con gomito a 90°	1" NPT female	56mm (2.19in)	0.570 Kg (1.25 lbs)
SAKIE841U0	Kit steam inlet 2 inch. 90 deg Elbow	kit di ingresso vapore con gomito a 90°	2" NPT female	88mm (3.47in)	1.119 Kg (2.46 lbs)
SAKIE44100	Kit steam inlet 1 inch. 90 GR.	kit di ingresso vapore con gomito a 90°	1" GAS male	35mm (1.38in)	0.385 Kg (0.85 lbs)
SAKIE64100	Kit steam inlet 1½ inch. 90 GR.	kit di ingresso vapore con gomito a 90°	1½" GAS male	62mm (2.44in)	0.491 Kg (1.08 lbs)
SAKIE84100	Kit steam inlet 2 inch. 90 GR.	kit di ingresso vapore con gomito a 90°	2" GAS male	72mm (2.83in)	0.694 Kg (1.53 lbs)
SAKIE94100	Kit steam inlet 2½ inch. 90 GR.	kit di ingresso vapore con gomito a 90°	2½" GAS male	96mm (3.78in)	0.865 Kg (1.90 lbs)

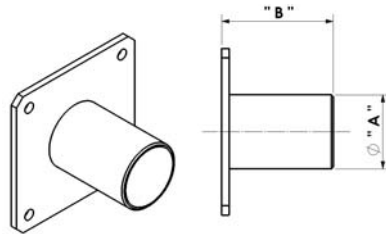
Tab. 9.j

Note: each kit includes gasket and fasteners

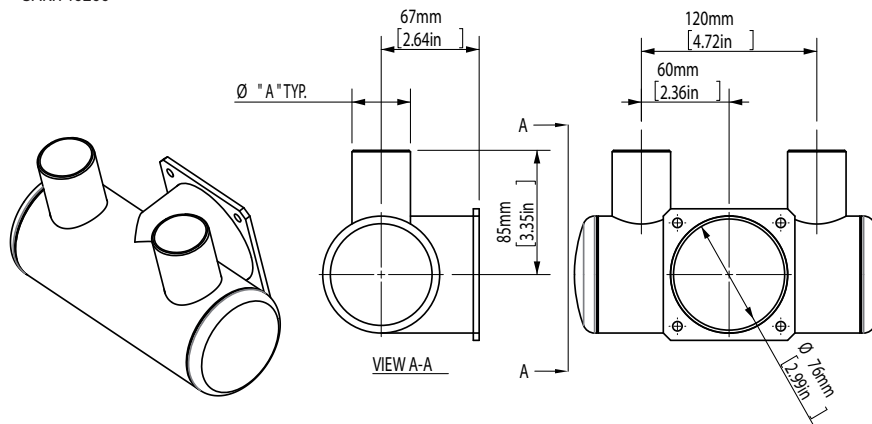
Nota: ogni kit include la guarnizione e le viti

9.7 Inlet adapters / Adattatori ingresso vapore

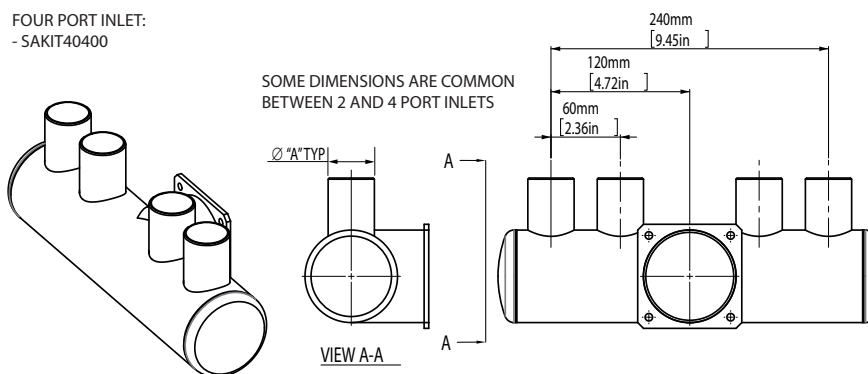
SINGLE PORT INLET:
- SAKIT40100
- SAKIT80100



DUAL PORT INLET:
- SAKIT40200



FOUR PORT INLET:
- SAKIT40400



EIGHT PORT INLET:
- SAKIT40800

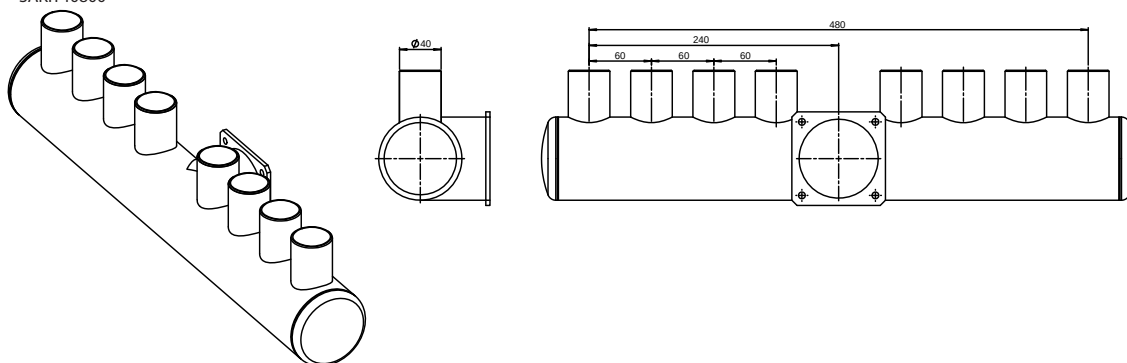


Fig. 9.e

Inlet flange with tube / Ingressi vapore lisci

Kit code / Codice Kit	Description	Descrizione	"A"	"B"	Fitting weight / Peso installato
SAKIT40100	Kit steam inlet Ø40mm SINGLE PORT	kit ingresso vapore Ø=40mm, 1 INGRESSO	40mm (1.57in)	60mm (2.36in)	0.314 Kg (0.69 lbs)
SAKIT40200	Kit steam inlet Ø 40mm DUAL PORT	kit ingresso vapore Ø=40mm, 2 INGRESSI	40mm (1.57in)	—	1.172 Kg (2.58 lbs)
SAKIT40400	Kit steam inlet Ø 40mm FOUR PORT	kit ingresso vapore Ø=40mm, 4 INGRESSI	40mm (1.57in)	—	1.745 Kg (3.84 lbs)
SAKIT80100	Kit steam inlet Ø80mm SINGLE PORT	kit ingresso vapore Ø=80mm, 1 INGRESSO	80mm (3.15in)	80mm (3.15in)	0.354 Kg (0.78 lbs)
SAKIT40800	Kit steam inlet Ø40mm EIGHT PORT	kit ingresso vapore Ø=40mm, 8 INGRESSI	40mm (1.57in)	—	3.500 Kg (5.51 lbs)

Tab. 9.k

Note: each kit includes gasket and fasteners.

Nota: ogni kit include la guarnizione e le viti

9.8 Inlet adapters / Adattatori ingresso vapore

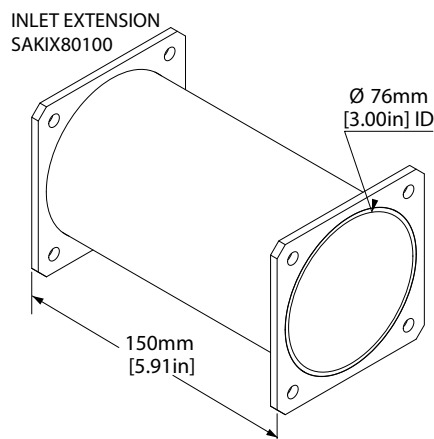


Fig. 9.f

Notes:

1. Each kit includes gasket and fasteners.
2. Part weight = 0.715Kg (1.57 LBS)

Note:

1. Ogni kit include la guarnizione e le viti
2. Peso = 0.715Kg (1.57 LBS)

9.9 Valves and valve fitting kits (flanged) / Kit valvole e connessioni (flangiate)

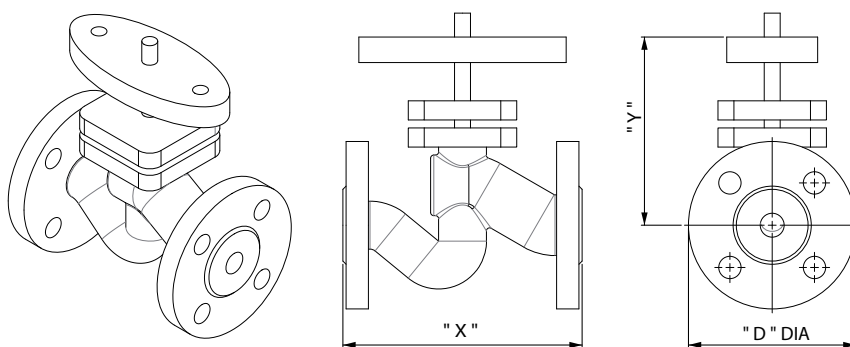


Fig. 9.g

Kit code / Codice Kit	Description	Descrizione	Kv	Max. Rated / Valore massimo Inlet Pressure / Pressione in ingresso		Flange / Flangia PN 16 ISO 7005 DN mm	"D"	"X"	"Y"	Wt.
				kPa	psig					
SAKV0F0D00	Kit valve KV 1.6 (H613S)	Kit valvole KV 1.6 (H613S)	1.6	100	15	15	95	130	118	3,6
SAKV0F0E00	Kit valve KV 2.5 (H614S)	Kit valvole KV 2.5 (H614S)	2.5	100	15	15	95	130	118	3,6
SAKV0F0F00	Kit valve KV 4.0 (H615S)	Kit valvole KV 4.0 (H615S)	4.0	100	15	15	95	130	118	3,6
SAKV0F0G00	Kit valve KV 6.3 (H620S)	Kit valvole KV 6.3 (H620S)	6.3	100	15	20	105	150	118	4,3
SAKV0F0H00	Kit valve KV 10.0 (H625S)	Kit valvole KV 10.0 (H625S)	10.0	100	15	25	115	160	126	5,2
SAKV0F0I00	Kit valve KV 16.0 (H632S)	Kit valvole KV 16.0 (H632S)	16.0	100	15	32	140	180	126	6,8
SAKV0F0J00	Kit valve KV 25.0 (H640S)	Kit valvole KV 25.0 (H640S)	25.0	100	15	40	150	200	133	8,7
SAKV0F0K00	Kit valve KV 40.0 (H650S)	Kit valvole KV 40.0 (H650S)	40.0	100	15	50	165	230	139	11,6
SAKV0F0L00	Kit valve KV 58.0 (H664S)	Kit valvole KV 58.0 (H664S)	58.0	100	15	65	185	290	100	16,7

Tab. 9.I

Material / Materiale				Rangeability / Rapporto di regolazione		Max. Temp	
Body / Corpo	Spindle	Stem / Stelo	Packing / Guarniz. dello stelo	Seat / Sede		°C	°F
Cast iron	SS	SS	PTFE	SS	50:1 (DN15) 100:1 (DN20-65)	150	300

Tab. 9.m

Normally-closed, 2-way valve
 Equal percentage flow characteristic
 Spring-return to closed position during failure
 Valve used for steam pressure $p \leq 0,67$ bar
 These valves are used with Belimo actuators; see par. 8.14 "electrical actuators"
 Information obtained from Belimo S.r.l

Valvola normalmente chiusa, valvola 2 vie
 Portata equipercentuale alla caratteristica del flusso
 Molla di ritorno per la chiusura in caso di mancata alimentazione
 Valvole utilizzate per pressione vapore $p \leq 0,67$ bar
 Queste valvole sono utilizzate con gli attuatori Belimo; vedere par. 8.14
 Informazioni ottenute da Belimo S.r.l

9.10 Valves and valve fitting kits (only for North American markets) / Kit valvole e connessioni (solo per il mercato Americano)

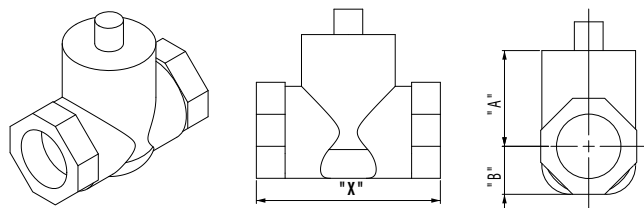


Fig. 9.h

Kit code / Codice Kit	Description	Descrizione	Cv	Max. Rated / Valore max Inlet Pressure / Press. in ingr.		Inlet - Outlet Ports / FPT	"X"	"A"	"B"	Wt.	
				kPa	psig						
SAKV00HCU0	Kit valve CV 1.0 HP (599-03072)	Kit valvole CV 1.0 HP (599-03072)	1.0	345	50	1/2"	2 7/8	1 5/8	2 3/16	3	
SAKV00HCU0	Kit valve CV 1.6 HP (599-03073)	Kit valvole CV 1.6 HP (599-03073)	1.6	345	50	1/2"	2 7/8	1 5/8	2 3/16	3	
SAKV00HEU0	Kit valve CV 2.5 HP (599-03074)	Kit valvole CV 2.5 HP (599-03074)	2.5	345	50	1/2"	2 7/8	1 5/8	2 3/16	3	
SAKV00HFU0	Kit valve CV 4.0 HP (599-03075)	Kit valvole CV 4.0 HP (599-03075)	4.0	345	50	1/2"	2 7/8	1 5/8	2 3/16	3	
SAKV00HGU0	Kit valve CV 6.3 HP (599-03076)	Kit valvole CV 6.3 HP (599-03076)	6.3	345	50	3/4"	3 3/8	1 5/8	2 3/16	4	
SAKV00HHU0	Kit valve CV 10.0 HP (599-03077)	Kit valvole CV 10.0 HP (599-03077)	10.0	345	50	1"	4	1 9/16	2 3/16	5	
SAKV00HIU0	Kit valve CV 16.0 HP (599-03078)	Kit valvole CV 16.0 HP (599-03078)	16.0	345	50	1 1/4"	5	1 5/8	2 3/16	7	
SAKV00HJU0	Kit valve CV 25.0 HP (599-03079)	Kit valvole CV 25.0 HP (599-03079)	25.0	345	50	1 1/2"	5 1/8	1 5/8	2 1/4	8	
SAKV00HKU0	Kit valve CV 40.0 HP (599-03080)	Kit valvole CV 40.0 HP (599-03080)	40.0	345	50	2"	6 1/4	1 15/16	2 9/16	16	Tab. 9.n

Material / Materiale					Rangeability / Rapporto di regolazione		Max. temp		
Body / Corpo	Spindle / Perno	Stem / Stelo	Packing / Guarniz. dello stelo	Seat / Sede			°C	°F	
Bronze / Bronzo (Cv>10)	SS	SS	EPDM	SS	100:1 (Cv>1)		120	250	Tab. 9.o

Normally-closed, 2-way valve

Linear flow characteristic for Cv>10

Spring-return to closed position during failure

Maximum differential pressure for modulating service is 3.45bar [50psi]

Information above was used from Siemens Document Number 155-184P25

Valve used for steam pressure p>1 bar

Valve used for North American markets

Valvola normalmente chiusa, valvola 2 vie

Caratteristica lineare del flusso per Cv>10

Molla di ritorno per la chiusura in caso di mancata alimentazione

La massima differenza di pressione per la modulazione è 3.45bar [50psi]

Informazioni ottenute Siemens documento 155-184P25

Valvole utilizzate per pressione di vapore p>1 bar

Valvole per il mercato Americano

9.11 Valves and valve fitting kits (only for North American markets) / Kit valvole e connessioni (solo per il mercato Americano)

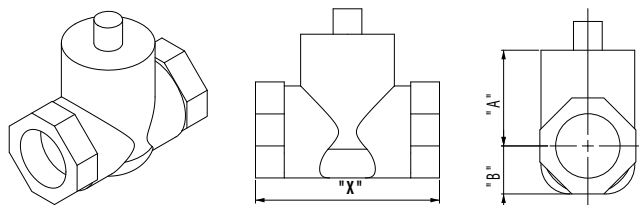


Fig. 9.i

Kit code / Codice Kit	Description	Descrizione	Cv	Max. Rated / Valore massimo Inlet Pressure / Pressione in ingresso		Inlet - Outlet Ports /	"X"	"A"	"B"	Wt.	
				kPa	psig						
SAKV000AU0	Kit valve CV 0.4 (599-02015)	Kit valvole CV 0.4 (599-02015)	0.4	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000BU0	Kit valve CV 0.63 (599-02017)	Kit valvole CV 0.63 (599-02017)	0.63	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000CU0	Kit valve CV 1.0 (599-02019)	Kit valvole CV 1.0 (599-02019)	1.0	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000DU0	Kit valve CV 1.6 (599-02021)	Kit valvole CV 1.6 (599-02021)	1.6	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000EU0	Kit valve CV 2.5 (599-02023)	Kit valvole CV 2.5 (599-02023)	2.5	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000FU0	Kit valve CV 4.0 (599-02025)	Kit valvole CV 4.0 (599-02025)	4.0	100	15	1/2"	2 3/4	15/16	15/16	0.96	
SAKV000GU0	Kit valve CV 6.3 (599-02027)	Kit valvole CV 6.3 (599-02027)	6.3	100	15	3/4"	3 1/4	15/16	11/16	1.13	
SAKV000HU0	Kit valve CV 10.0 (599-02029)	Kit valvole CV 10.0 (599-02029)	10.0	100	15	1"	3 7/8	19/16	13/16	1.7	
SAKV000IU0	Kit valve CV 16.0 (599-03024)	Kit valvole CV 16.0 (599-03024)	16.0	100	15	1 1/4"	5	1 5/8	23/16	7	
SAKV000JU0	Kit valve CV 25.0 (599-03025)	Kit valvole CV 25.0 (599-03025)	25.0	100	15	1 1/2"	5 1/8	1 5/8	2 1/4	8	
SAKV000KU0	Kit valve CV 40.0 (599-03026)	Kit valvole CV 40.0 (599-03026)	40.0	100	15	2"	6 1/4	1 15/16	29/16	16	Tab. 9.p

Material					Rangeability / Rapporto di regolazione		Max. Temp		
Body	Spindle / Perno	Stem / Stelo	Packing / Guarniz. dello stelo	Seat / Sede			°C	°F	
Brass / Ottone (Cv<10)	SS	SS	EPDM	SS	"50:1 (Cv<1)		120	250	Tab. 9.q
Bronze / Bronzo (Cv>10)					100:1 (Cv>1)"				

Normally-closed, 2-way valve

Equal percentage flow characteristic

Spring-return to closed position during failure

Valve used for steam pressure p≤1 bar

Valve used for North American markets

Information obtained from Siemens

Valvola normalmente chiusa, valvola 2 vie

Portata equipercentuale alla caratteristica del flusso

Molla di ritorno per la chiusura in caso di mancata alimentazione

Valvole utilizzate per pressione vapore p≤1 bar

Valvole utilizzate per il mercato Americano

Informazioni ottenute da Siemens

9.12 Valves and valve fitting kits (flanged) / Kit valvole e connessioni (flangiato)

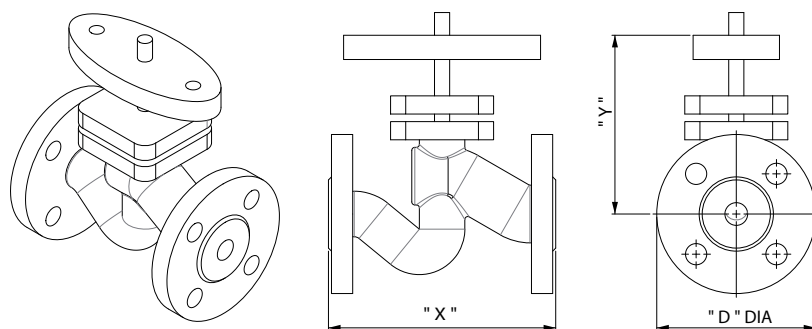


Fig. 9.j

Kit code / Codice Kit	Description	Descrizione	Kv	Max. Rated / Valore massimo Inlet Pressure / Pressione in ingresso		Flange PN 16 ISO 7005	"D"	"X"	"Y"	Wt.
				kPa	psig	DN mm	mm	mm	mm	kg
SAKVOFHC00	Kit valve HP KV 1.05	Kit valvole HP KV 1.05	1.05	400	58	15	95	130	49	10,5
SAKVOFHD00	Kit valve HP KV 1.94	Kit valvole HP KV 1.94	1.94	400	58	15	95	130	49	10,5
SAKVOFHE00	Kit valve HP KV 2.9	Kit valvole HP KV 2.9	2.9	400	58	15	95	130	49	10,5
SAKVOFHG00	Kit valve HP KV 5.7	Kit valvole HP KV 5.7	5.7	400	58	20	105	150	58	12,5
SAKVOFHH00	Kit valve HP KV 9.3	Kit valvole HP KV 9.3	9.3	400	58	25	115	160	68	13
SAKVOFHI00	Kit valve HP KV 14.7	Kit valvole HP KV 14.7	14.7	400	58	32	140	180	70	14,5
SAKVOFHJ00	Kit valve HP KV 20.5	Kit valvole HP KV 20.5	20.5	400	58	40	150	200	82	16,4
SAKVOFHK00	Kit valve HP KV 43.0	Kit valvole HP KV 43.0	43.0	400	58	50	165	230	86	18,6
SAKVOFHL00	Kit valve HP KV 60.5	Kit valvole HP KV 60.5	60.5	400	58	65	185	290	111	22

Tab. 9.r

Material / Materiale					Rangeability / Rapporto di regolazione	Max. Temp	
Body / Corpo	Spindle / Perno	Stem / Stelo	Packing / Guarniz. dello stelo	Seat / Sede		°C	°F
Cast iron	SS	SS	"PTFE-85 GRAPHITE-15"	SS	50:1 (DN15) 100:1 (DN20-65)	150	300

Tab. 9.s

Normally-closed, 2-way valve

Equal percentage flow characteristic

Spring-return to closed position during failure

Valve used for steam pressure $p > 0.67$ bar

The valves are supplied with the actuator; for the actuator only as a spare part see

par. 9.15 "electrical actuators"

Information obtained from Sauter S.p.a

Valvola normalmente chiusa, valvola 2 vie

Portata equipercentuale alla caratteristica del flusso

Molla di ritorno per la chiusura in caso di mancata alimentazione

Valvole utilizzate per pressione vapore $p > 0.67$ bar

Le valvole vengono alimentate con gli attuatori; solo per gli attuatori ved. par. 9.15

Informazioni ottenute da Sauter S.p.a

9.13 Valves and valve fitting kits (only for North American markets) / Kit valvole e connessioni (solo per il mercato Americano)

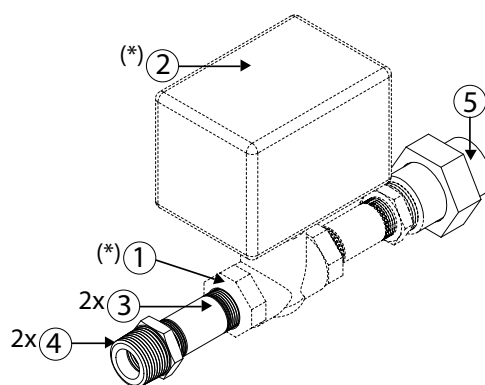


Fig. 9.k

Kit part number / Codice kit	Pipe size / Tubo	ITEM 4	ITEM 3	ITEM 5
		Bushing F-M (qty - size) / Connettore F-M (q.tà - dimensione)	3 inch. Nipple M-M (qty - size) 3 Raccordo M-M (q.tà - dimensione)	Union F-F (qty - size) Connettore F-F (q.tà - dimensione)
SAKR0*24U0	½ inch.	2 - ½ X 1	2 - 1 INCH	1 - 1 INCH
SAKR0*34U0	¾ inch.	2 - ¾ X 1	2 - 1 INCH	1 - 1 INCH
SAKR0*44U0	1 inch.	N/A	2 - 1 INCH	1 - 1 INCH
SAKR0*54U0	1 ¼ inch.	2 - 1 ¼ X 2	2 - 2 INCH	1 - 2 INCH
SAKR0*64U0	1 ½ inch.	2 - 1 ½ X 2	2 - 2 INCH	1 - 2 INCH
SAKR0*84U0	2 inch.	N/A	2 - 2 INCH	1 - 2 INCH

Tab. 9.t

(*) F (black iron) or S (stainless steel) for material type / (*) tipo di material: F (ghisa), S (acciaio inox)

Connection-kit used for North American markets / Kit di connessione utilizzato per il mercato Americano

9.14 Electrical actuators / Attuatori elettrici

Cod. Kit: SAKA0E0100

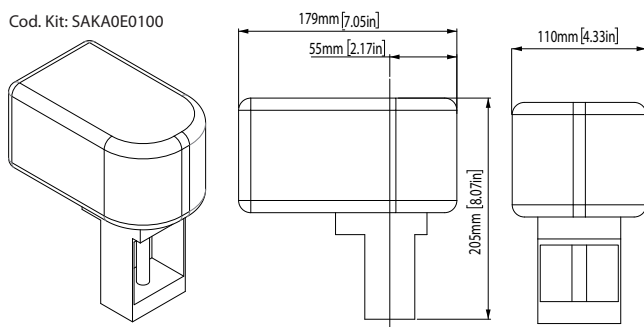


Fig. 9.l

- Supply voltage: 24V AC – 24V DC
- Control signal: 4-20mA or 0-10V
- Nominal stroke: 20mm (0.79in)
- Degree of protection: IP54
- Ambient temperature: 0 to +50°C (32°F to 122°F)
- Spring-return to closed position during failure.
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Information above was used from Belimo Document Number T6-NVF24-MFT(-E)
- Weight: 1,8 Kg
- Electronic actuator for Belimo valve; see par. 9.9 "valves and valve fitting kits"

- Tensione di alimentazione: 24V AC - 24V DC
- Segnale di controllo: 4-20mA o 0-10V
- Corsa nominale: 20mm (0.79in)
- Grado di protezione: IP54
- Temperatura ambiente: da 0 a +50°C (da 32°F a 122°F)
- Molla di ritorno per la chiusura in caso di mancata alimentazione
- L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.
- Informazioni ottenute da Belimo documento numero T6-NVF24-MFT(-E)
- Peso: 1,8 Kg
- Attuatore elettrico per valvola Belimo; vedere paragr. 9.9 "kit valvole e connessioni"

9.15 Electrical actuators / Attuatori elettrici

Cod. Kit: SAKA0E0100

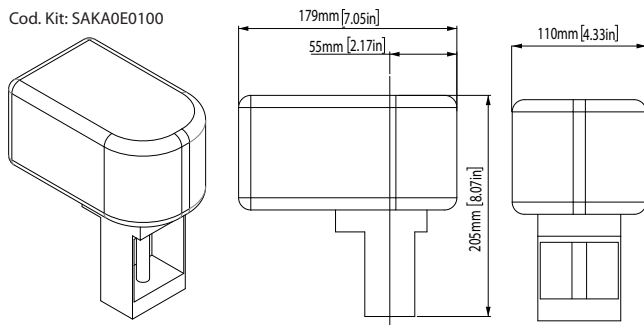


Fig. 9.m

- Supply voltage: 24V AC – 24V DC
- Control signal: 4-20mA or 0-10V
- Nominal stroke: 20mm (0.79in)
- Degree of protection: IP66
- Ambient temperature: 0 to +55°C (32°F to 122°F)
- Spring-return to closed position during failure.
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Information above was used from Sauter S.p.a
- Weight: 5,6 Kg
- Electronic actuator for Sauter valve, spare part only; see par. 9.12 "valves and valve fitting kits"

- Tensione di alimentazione: 24V AC - 24V DC
- Segnale di controllo: 4-20mA o 0-10V
- Corsa nominale: 20mm (0.79in)
- Grado di protezione: IP66
- Temperatura ambiente: da 0 a +55°C (32°F a 122°F)
- Molla di ritorno per la chiusura in caso di mancata alimentazione
- L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.
- Informazioni ottenute da Sauter S.p.a
- Peso: 5,6 Kg
- Attuatore elettrico per valvola Belimo; vedere paragr. 9.12 "kit valvole e connessioni"

9.16 Electrical actuators (only for North American markets) / Attuatori elettrici (solo per il mercato Americano)

Cod. Kit: SAKAE001U0

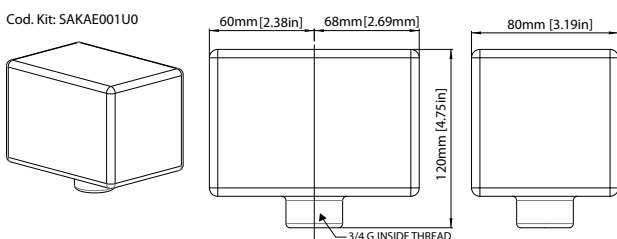


Fig. 9.n

- Supply voltage: 24V AC 60Hz
- Power Consumption: 7VA
- Control signal: 0-10V DC
- Operating temperature: -5°C to 50°C (23°F to 122°F)
- Media temperature: 5°C to 120°C (41°F to 248°F)
- Spring-return to closed position during failure (fail-safe)
- Minimum service space recommended: 100mm (4in) sides, and 200mm (8in) above.
- Weight: 0.6 kg (1.3 lbs)
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Mounting location: NEMA 1 (Interior only)
- Information above was used from Siemens Document Number 155-190P25.
- Actuator used for North American markets
- Electronic actuator for valves with steam pressure $p \leq 1$ bar; see par. 9.11 "valves and valve fittings"

- Tensione di alimentaz. : 24V AC 60Hz
- Consumo: 7VA
- Segnale di controllo: 0-10V DC
- Temperatura operativa: -5°C to 50°C (23°F a 122°F)
- Temperatura media: 5°C to 120°C (41°F a 248°F)
- Molla di ritorno per la chiusura in caso di mancata alimentazione
- Minimo spazio libero consigliato: 100mm (4in) sides, and 200mm (8in) above.
- Peso: 0.6 kg (1.3 lbs)
- L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.
- Posizione di installaz.: NEMA 1 (interni)
- Informazioni ottenute da Siemens Document Number 155-190P25.
- Actuator used for North American markets
- Attuatore elettrico per valvole con pressione di vapore $p \leq 1$ bar; vedere paragr. 9.11 "kit valvole e connessioni"

9.17 Electrical actuators (only for North American markets) / Attuatori elettrici (solo per il mercato Americano)

Cod. Kit: SAKAE002U0

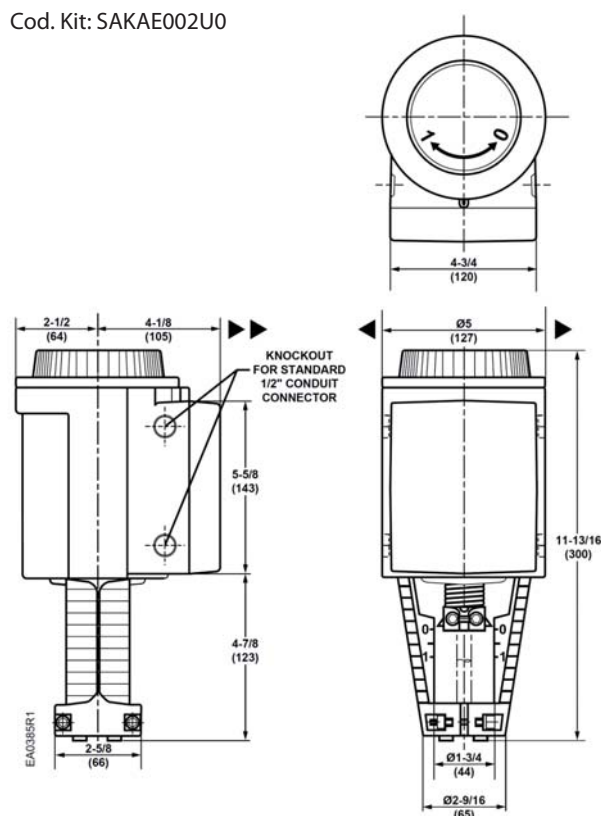


Fig. 9.o

- Operating voltage: 24V AC
- Power Consumption: 17VA
- Control signal: 0-10V DC or 4-20mA
- Operating temperature: -15°C to 50°C (23°F to 131°F)
- Media temperature: -10°C to 140°C (14°F to 284°F)
- Spring-return to closed position during failure (fail-safe)
- Weight: 3.4 kg (7.5 lbs)
- Minimum service space recommended: 100mm (4in) sides, and 200mm (8in) above.
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Mounting location: NEMA 1 (Interior only)
- Information above was used from Siemens Document Number 155-180P25.
- Actuator used for North American markets
- Electronic actuator for valves with steam pressure $p > 1$ bar; see par. 9.10 "valves and valve fittings"

- *Tensione operativa: 24V AC*
- *Consumo: 17VA*
- *Segnale di controllo: 0-10V DC or 4-20mA*
- *Temperatura operativa: -15°C to 50°C (23°F to 131°F)*
- *Temperatura media -10°C to 140°C (14°F to 284°F)*
- *Molla di ritorno per la chiusura in caso di mancata alimentazione*
- *Peso: 3.4 kg (7.5 lbs)*
- *Minimo spazio libero consigliato: 100mm (4in) sides, and 200mm (8in) above.*
- *L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.*
- *Posizione di installazione: NEMA 1 (interni)*
- *Informazioni ottenute da Siemens Document Number 155-180P25.*
- *Attuatori utilizzati per il mercato Americano*
- *Attuatore elettrico per valvole a pressione di vapore $p > 1$ bar; vedere paragr. 9.10 "valvole e connessioni"*

9.18 Electrical actuators (only for North American markets) / Attuatori elettrici (solo per il mercato Americano)

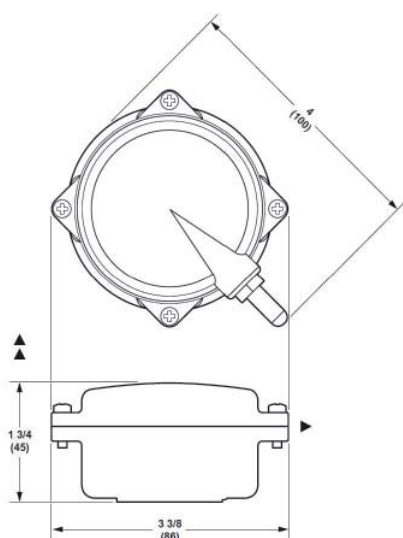


Fig. 9.p

- Air connection: 1/8" NPT fitting for 1/4in OD plastic tubing
- Operating temperature: 2°C to 49°C (35°F to 120°F)
- Nominal stroke: 5.5 mm (7/32-inch)
- Modulating pressure: 0.55-0.9 bar (8-13 psi)
- Maximum diaphragm pressure: 2.41 bar (35 psi)
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Minimum service space recommended: 150mm (6in) sides, and 200mm (8in) above.
- Mounting location: NEMA 1 (Interior only)
- Weight: 0.2kg (0.43lbs)
- Information above was used from Siemens Document Number 155-189P25.

- *Connessione aria: 1/8" NPT connesso con tubo plastic di diametro 1/4in*
- *Tensione operativa: 2°C to 49°C (35°F to 120°F)*
- *Corsa nominale: 5.5 mm (7/32-inch)*
- *Modulazione di pressione: 0.55-0.9 bar (8-13 psi)*
- *Massima pressione di rottura del diaframma 2.41 bar (35 psi)*
- *L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.*
- *Minimo spazio libero consigliato: 100mm (4in) sides, and 200mm (8in) above.*
- *Posizione di installazione: NEMA 1 (interni)*
- *Peso: 0.2kg (0.43lbs)*
- *Informazioni ottenute da Siemens Document Number 155-189P25.*

9.19 Electrical actuators (only for North American markets) / Attuatori elettrici (solo per il mercato Americano)

Cod. Kit: SAKAP002U0

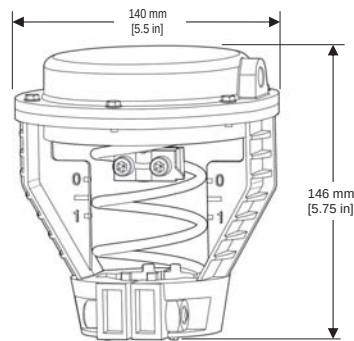


Fig. 9.q

- Air connection: 1/8" NPT fitting for 1/4in OD plastic tubing
- Operating temperature: -18°C to 107°C (0°F to 225°F)
- Nominal stroke: 20 mm (3/4-inch)
- Modulating pressure: 0.69-1.03 bar (10-15 psi)
- Maximum diaphragm pressure: 2.41 bar (35 psi)
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Minimum service space recommended: 150mm (6in) sides, and 200mm (8in) above.
- Mounting location: NEMA 1 (Interior only)
- Weight: 1.1kg (2.5lbs)
- Information above was used from Siemens Document Number 155-183P25

- *Connessione aria: 1/8" NPT connesso con tubo plastic di diametro 1/4in*
- *Temperatura operativa: -18°C to 107°C (0°F to 225°F)*
- *Corsa nominale: 20 mm (3/4-inch)*
- *Modulazione di pressione: 0.69-1.03 bar (10-15 psi)*
- *Massima pressione di rottura del diaframma: 2.41 bar (35 psi)*
- *L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.*
- *Minimo spazio libero consigliato: 150mm (6in) a lato, and 200mm (8in) sopra.*
- *Posizione di installazione: NEMA 1 (interni)*
- *Peso: 1.1kg (2.5lbs)*
- *Informazioni ottenute da Siemens Document Number 155-183P25*

9.20 Electrical actuators (only for North American markets) / Attuatori elettrici (solo per il mercato Americano)

Cod. Kit: SAKAP003U0

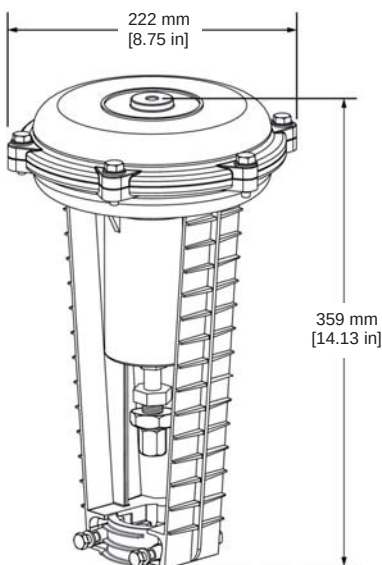


Fig. 9.r

- Air connection: 1/8" NPT fitting for 1/4in OD plastic tubing
- Operating temperature: -4°C to 149°C (25°F to 300°F)
- Nominal stroke: 20 mm (3/4-inch)
- Modulating pressure: 0.7-1.03 bar (10-15 psig)
- Maximum diaphragm pressure: 2.41 bar (35 psi)
- The actuator can be installed in any position between vertical (Best) and horizontal.
- Minimum service space recommended: 150mm (6in) sides, and 300mm (12in) above.
- Mounting location: NEMA 1 (Interior only)
- Weight: 4kg (8.7lbs)
- Information above was used from Siemens Document Number 155-161P25.

- *Connessione aria: 1/8" NPT connesso con tubo plastic di diametro 1/4in*
- *Temperatura operativa: -4°C to 149°C (25°F to 300°F)*
- *Corsa nominale: 20 mm (3/4-inch)*
- *Modulazione di pressione: 0.7-1.03 bar (10-15 psig)*
- *Massima pressione di rottura del diaframma: 2.41 bar (35 psi)*
- *L'attuatore può essere installato in qualsiasi posizione tra verticale (la migliore) e orizzontale.*
- *Minimo spazio libero consigliato: 150mm (6in) a lato, 300mm (12in) sopra.*
- *Posizione di installazione: NEMA 1 (interni)*
- *Peso: 4kg (8.7lbs)*
- *Informazioni ottenute da Siemens Document Number 155-161P25.*

9.23 Trap and strainer kits F&T (only for North American markets) / Kit filtro e scaricatore di condensa F&T (solo per il mercato Americano)

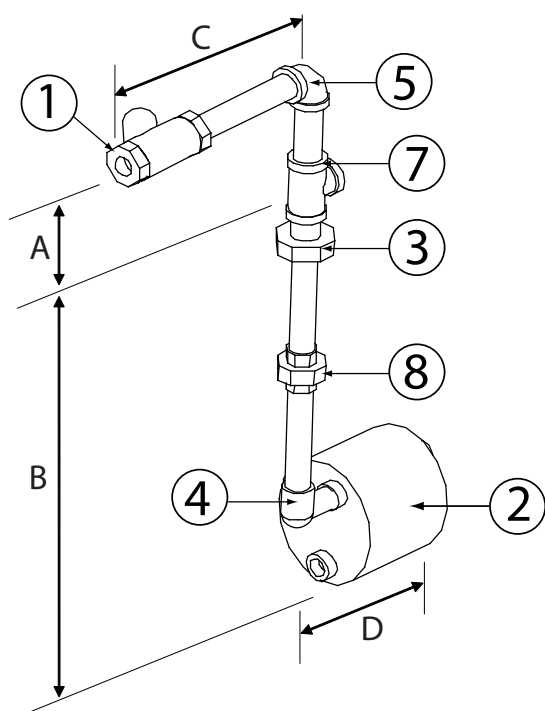


Fig. 9.u

Material List	Lista mater.	SAKTFT44U0	SAKTST44U0	SAKTFT84U0	SAKTST84U0
F&T trap body	Corpo scaricatore F&T	Cast iron / Ghisa	316L SS	Cast iron / Ghisa	316L SS
F&T internal parts	Parte interna F&T	Stainless steel / Acciaio	316L SS & 304 SS	Stainless steel / Acciaio	316L SS & 304 SS
Strainer body	Corpo del filtro	Cast iron / Ghisa	304 SS	Cast iron / Ghisa	304 SS
Strainer screen	Protezione filtro	20 mesh 304 SS	304 SS	20 mesh 304 SS	304 SS
Fittings	Accessori	Cast iron / Ghisa	304 SS	Cast iron / Ghisa	304 SS

Tab. 9.ac

All fittings are Schedule 40
Operating pressure: 2-60 psi
Pipe threads: NPT (size as shown below)
Parts shipped unassembled
Kit used for North American markets

Tutte le parti hanno spessore "Schedule 40"
Pressione operativa: 2 - 60 psi
Filettatura tubi: NPT (le dimensioni sono indicate sotto)
Le parti sono spedite disassemblate
Kit per il mercato Nord Americano

ID	Item	SAKT*T44*0	SAKT*T84*0
1	Y-type strainer	1 (1")	1 (2")
2	F&T trap	1 (3/4")	1 (3/4")
3	Bushing F-M (size)	1 (3/4"x1")	1 (3/4"x2")
4	Elbow F-M (size)	1 (3/4")	
5	Elbow F-F (size)	1 (1")	1 (2")
6	Nipple M-M (size)	2 (3/4"x6") 1 (1"x3") 1 (1"x6")	2 (3/4"x6") 1 (2"x3") 1 (2"x6")
7	Tee F-F-F (size)	1 (1")	1 (2")
8	Union F-F (size)	1 (3/4"x3/4")	1 (3/4"x3/4")

Tab. 9.aa

Dim.	SAKTFT44U0	SAKTST44U0	SAKTFT84U0	SAKTST84U0
A	140 mm (5 1/2")	140 mm (5 1/2")	200 mm (8")	200 mm (8")
B	530 mm (21")	470 mm (18 1/2")	555 mm (22")	495 mm (19 1/2")
C	290 mm (11 1/2")	290 mm (11 1/2")	380 mm (15")	380 mm (15")
D	175 mm (7")	190 mm (7 1/2")	175 mm (7")	190 mm (7 1/2")

Tab. 9.ab

9.24 Trap, strainer and separator kits F&T / Kit filtro separatore e scaricatore di condensa F&T

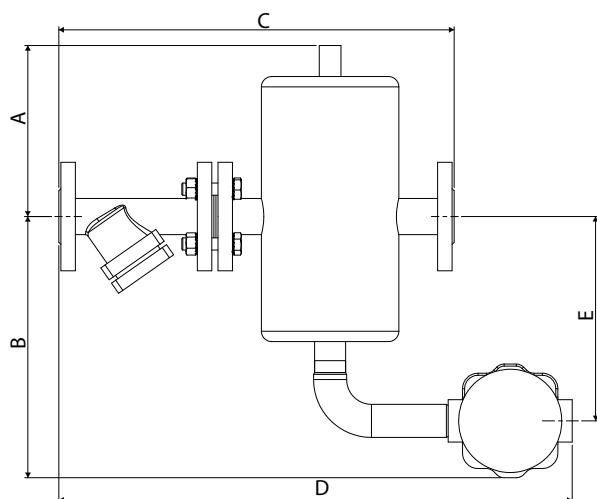


Fig. 9.v

Condensate separator for steam service
Material: Carbon steel
Operating pressure: 0.15-4 bar
Operating temperature: 150°C
Information taken from Greenfield S.r.l.
document SCVA/I 04-2007

Separatore di condensa per linee vapore
Materiale: acciaio
Pressione operativa: 0.15-4 bar
Temperatura operativa: 150°C
Informazioni ottenute da Greenfield S.r.l.
documento SCVA/I 04-2007

Kit code / Cod. kit	Description	Descrizione	Flange PN 16 ISO 7005 Flangia PN 16 ISO 7005	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Wt (kg)
SAKTFS1500	Kit condensate separator DN 15 (SCV015)	Kit separatore di condensa DN 15 (SCV015)	DN 15	193	243	360	507	179	12
SAKTFS2000	Kit condensate separator DN 20 (SCV020)	Kit separatore di condensa DN 20 (SCV020)	DN 20	193	253	390	417	186	14,5
SAKTFS2500	Kit condensate separator DN 25 (SCV025)	Kit separatore di condensa DN 25 (SCV025)	DN 25	203	260	400	542	196	17,5
SAKTFS3200	Kit condensate separator DN 32 (SCV032)	Kit separatore di condensa DN 32 (SCV032)	DN 32	253	310	480	592	246	25
SAKTFS4000	Kit condensate separator DN 40 (SCV040)	Kit separatore di condensa DN 40 (SCV040)	DN 40	278	310	500	612	246	32
SAKTFS5000	Kit condensate separator DN 50 (SCV050)	Kit separatore di condensa DN 50 (SCV050)	DN 50	349	310	570	662	282	38
SAKTFS6500	Kit condensate separator DN 65 (SCV065)	Kit separatore di condensa DN 65 (SCV065)	DN 65	340	392	650	752	318	75

Tab. 9.ad

9.25 Trap, strainer and separator kits F&T / Kit filtro, separatore e scaricatore di condensa F&T

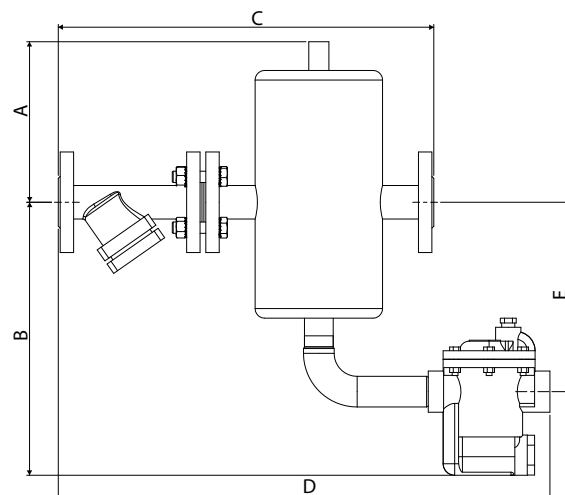


Fig. 9.w

Kit code / Cod. kit	Description /	Descrizione	Flange PN 16 ISO 7005 Flangia PN 16 ISO 7005	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Wt (kg)
SAKTFW1500	Kit condensate separator DN 15 (SCV015)	Kit separatore di condensa DN 15 (SCV015)	DN 15	193	276	360	507	179	11,5
SAKTFW2000	Kit condensate separator DN 20 (SCV020)	Kit separatore di condensa DN 20 (SCV020)	DN 20	193	283	390	527	186	14
SAKTFW2500	Kit condensate separator DN 25 (SCV025)	Kit separatore di condensa DN 25 (SCV025)	DN 25	203	293	400	537	196	17
SAKTFW3200	Kit condensate separator DN 32 (SCV032)	Kit separatore di condensa DN 32 (SCV032)	DN 32	253	343	480	587	246	24,5
SAKTFW4000	Kit condensate separator DN 40 (SCV040)	Kit separatore di condensa DN 40 (SCV040)	DN 40	278	344	500	607	246	32,5
SAKTFW5000	Kit condensate separator DN 50 (SCV050)	Kit separatore di condensa DN 50 (SCV050)	DN 50	349	343	570	657	282	37,5
SAKTFW6500	Kit condensate separator DN 65 (SCV065)	Kit separatore di condensa DN 65 (SCV065)	DN 65	340	425	650	687	318	74

Tab. 9.ak

9.1 Distributor details, SA0 versions / Dettagli distributore, versioni SA0

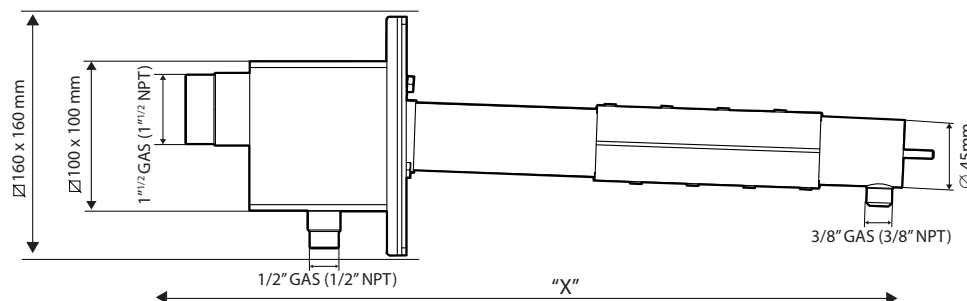


Fig. 9.x

Code / Codice	A	B	C	D	E	F	G	H	I	J	K	L
Quota "X"	503mm	655 mm	807 mm	959 mm	1111 mm	1263 mm	1415 mm	1567 mm	1719 mm	1871 mm	2023 mm	2175 mm
[mm (in)]	(19.7in)	(25.7in)	(31.7in)	(37.7in)	(43.7in)	(49.7in)	(55.7in)	(61.7in)	(67.7in)	(73.7in)	(79.7in)	(85.7in)

Tab. 9.ae

The weights of the various distributor's configurations are shown in Tab.1.a. / I pesi delle varie configurazioni del distributore sono indicati in tabella 1.a.

Weight in kg (lb) / Peso in kg (lb)

Code / Codice	Single upright "4th digit = A" Lancia singola "4° digit = A"
SA0AALI0*0	4 (8.7)
SA0BALI0*0	4.46 (9.7)
SA0CALI0*0	4.89 (10.7)
SA0DALI0*0	5.33 (11.7)
SA0EALI0*0	5.76 (12.7)
SA0FALI0*0	6.2 (13.7)
SA0GALI0*0	6.63 (14.7)
SA0HALI0*0	7 (15.4)
SA0IALI0*0	7.5 (16.5)
SA0JALI0*0	7.94 (17.5)
SA0KALI0*0	8.37 (18.5)
SA0LALI0*0	8.81 (19.4)

Tab. 9.af

9.26 Mooth steam inlet kit for SA0 (single pipe) versions / Kit ingresso vapore liscio per versioni SA0 (single pipe)

Input smooth adapter in stainless steel to match the input (such as GAS or NPT) SA0 manifold to a steam hose; to use for ultimateSAM single pipe powered by a steam humidifier. Steam diameter pipe connection 40mm. / Adattatore liscio di ingresso in acciaio inox per adattare l'ingresso (tipo GAS o NPT) del collettore dell'SA0 ad un tubo vapore. Da utilizzare nel caso di ultimateSAM single pipe alimentato da un umidificatore a vapore. Diametro connessione tubo vapore 40mm.

SAKI **0** **64** **1** **x** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning / Significato	Option / Opzione	Description / Descrizione
⑤	Type / Tipo	0	For / Per SA0*
⑥-⑦	Dimension / Dimensione	64	1 1/2"
⑧	Number of inputs / Numero di ingressi	1	Single / Singolo
⑨	Region / Mercato:	U	North America (NPT)
		0	Other / Altri (GAS)
⑩	Free / Libero:	0	

Tab. 9.ag

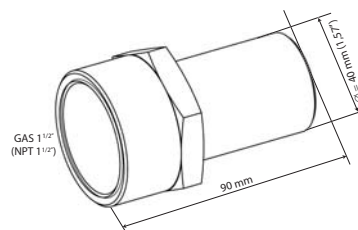


Fig. 9.y

9.2 Kit di scarico condensa per versioni SA0 (single pipe)

SAKC **x** **S** **10** **x** **0**
 Family prefix ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Pos.	Meaning / Significato	Option / Opzione	Description / Descrizione	Condensate drain for SA0 single pipe / Scarico condensa da applicare all'SA0 single pipe
⑤	Upright size / Lunghezza lancia mm (in)	A	A= 358 (14)*	SA0AALIO*0
		B	B= 510 (20)*	SA0BALIO*0
		C	C= 662 (26)*	SA0CALIO*0
		D	D= 814 (32)*	SA0DALIO*0
		E	E= 966 (38)*	SA0EALIO*0
		F	F= 1118 (44)*	SA0FALIO*0
		G	G= 1270 (50)*	SA0GALIO*0
		H	H= 1422 (56)*	SA0HALIO*0
		I	I= 1574 (62)*	SA0IALIO*0
		J	J= 1726 (68)*	SA0JALIO*0
⑥	Material / Materiale	S	S = stainless steel	
			S = Acciaio inox	
⑦-⑧	O.D. mm (in)	10	10= 10 mm (0.40) O.D.	
⑨	Region / Mercato:	0	Other / Altri (GAS)	
		U	North America (NPT)	
⑩	Free / Libero:	0		

Tab. 9.ah

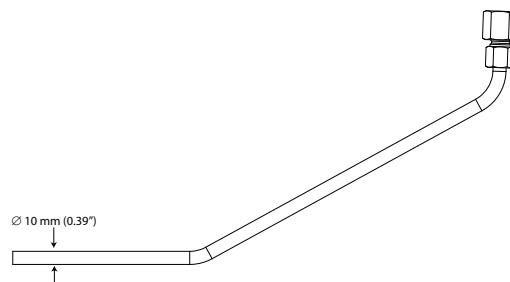


Fig. 9.z

9.27 Thermostatic float steam trap / Scaricatore termostatico

SAKT x H 00 x 0
 Family prefix 5 6 7 8 9 10

Pos.	Meaning / Significato	Option / Opzione	Description / Descrizione
⑤	Material / Materiale	S	SS
		B	Brass
⑥	Type / Tipo	H	Condensate drain only, tHermostatic type / Condensate drain only, tHermostatic type
⑦-⑧	Dimension / Dimensione	00	For SA0* only / solo per SA0*
⑨	Region / Mercato:	U	North America (NPT)
		0	Other / Altri
⑩	Free / Libero:	0	Other / Altri (GAS)

Tab. 9.ai

9.28 AHU wall cover kit for SA0 (single pipe) / Kit copertura parete UTA per SA0 (single pipe)

UTA Internal wall covering kit to use when installing single-pipe manifold with external manifold to UTA

Kit di copertura parete interna UTA da utilizzare nel caso di installazione single pipe con collettore esterno all'UTA.

Kit code / Codice del kit: SAKL000000

SA0 installation procedure - manifold outside of AHU - with AHU wall cover kit

Description of the installation procedure for ultimateSAM version SA0* (single-pipe), with manifold outside of the air handling unit and installation of the wall cover kit inside the AHU.

Procedura di installazione SA0 - collettore esterno UTA - con kit copertura parete UTA

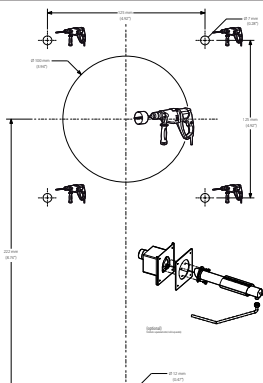
Descrizione della procedura di installazione dell'ultimateSAM in versione SA0* (single-pipe), con collettore esterno all'unità di trattamento aria e installazione del kit di copertura parete interna UTA.

1



Assemble the SA0 steam distributor
Assemblare il distributore di vapore SA0

2



Apply drilling template to the duct where the steam distributor will be installed
Applicare la dima di foratura alla condotta dove si installerà il distributore di vapore

3



4



Drill the necessary holes
Realizzare i fori richiesti

5



6



Insert the gasket and rest it against the support flange; insert the fastening bolts to secure the support flange
Inserire la guarnizione e appoggiarla alla flangia di appoggio; inserire le viti di fissaggio per bloccare la flangia di appoggio

7



View of the bolts inserted in the support flange
Vista delle viti inserite nella piastra di appoggio

8



Place the upright in the 100 mm opening made in the duct
Inserire la lancia nel foro da 100mm realizzato nella condotta

9



Tighten the support flange bolts to 7-8Nm (5-6ft), using the fastening elements supplied. If necessary, cut the bolts
Fissare le viti della flangia di appoggio serrandole a 7-8Nm (5-6ft), utilizzando gli elementi di fissaggio forniti. Se necessario provvedere a tagliare le viti

10



View of the installation, part inside the duct: upright
Vista dell'installazione, parte interna alla condotta: lancia

11



View of the installation, part outside of the duct: manifold
Vista dell'installazione, parte esterna alla condotta: collettore

12



Apply the AHU wall cover kit for SA0 (not supplied, available separately): SAKIL00000
Applicare il kit di copertura parete UTA per SA0 (non in dotazione, vendibile separatamente): SAKIL00000

Installation of the condensate drain kit for SA0 (single-pipe)
(optional, sold separately) SACK*S10*0

*Installazione del Kit di scarico condensa per SA0 (single-pipe)
(opzionale, venduto separatamente) SACK*S10*0*



Installation of the thermostatic drain kit for SA0 (single-pipe)
(optional, sold separately) SAKT*H00*0

*Installazione del Kit scaricatore termostatico per SA0 (single-pipe)
(opzionale, venduto separatamente) SAKT*H00*0*



CAREL

CAREL INDUSTRIES HeadQuarters

Via dell'Industria, 11 - 35020 Brugine - Padova (Italy)

Tel. (+39) 049.9716611 - Fax (+39) 049.9716600

e-mail: carel@carel.com - www.carel.com

Agenzia / Agency: