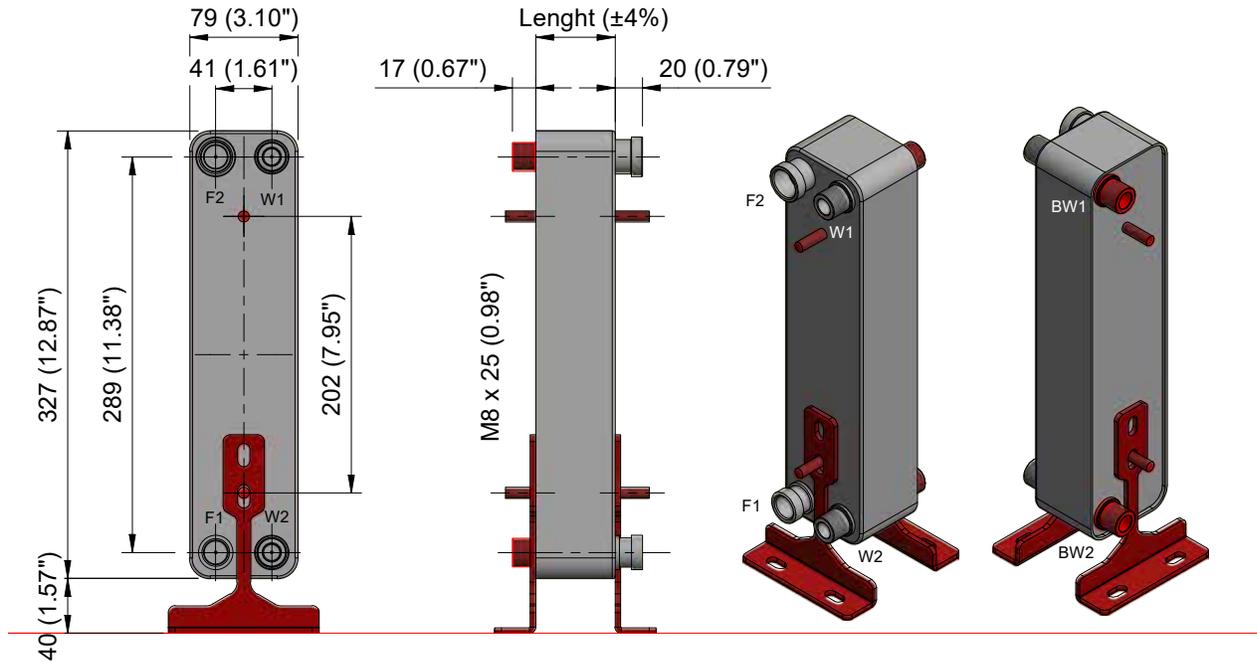




ADVANCED HEAT EXCHANGERS

BRAZED PLATE

S06	p. 6
S07	p. 7
S09	p. 8
S22	p. 9
S12 - S12M	p. 10
S16	p. 11
S62	p. 12
S82 - S82M	p. 13
S93	p. 14
S101	p. 15
S182 - S182M	p. 16
S202 - S202M	p. 17
S404 - S404M	p. 18
S606 - S606M	p. 19
S608	p. 20
S222	p. 21
S424	p. 22



Stud bolts and mounting brackets are shown as a value-added option

F1	INLET	Refrigerant	W1-BW1	INLET	Secondary Fluid
F2	OUTLET	Refrigerant	W2-BW2	OUTLET	Secondary Fluid

SPECIFICATIONS	S09	S09H	CONNECTIONS TYPE		
MAWP (psi)	653	653	Soldering	Threaded	Rotalock
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F	S8	IC22	R19
Maximum Connections Available (in.)	3/4"	3/4"	IS13	IC27	R25
Maximum Flow Rate (gpm)	23	23	S16	IF22	
Volume / Channel (US gal)	0,014	0,014	S19		
Dimensions (in.)	3,15" x 12,91"	3,15" x 12,91"	S20		
Length Calculation (in.)	$N \times 0,09 + 0,4$	$N \times 0,09 + 0,4$	Standard Connections:		
Weight Calculation (lbs)	$N \times 0,17 + 2,4$	$N \times 0,17 + 2,4$	F1 S16	F2 S20	W1-W2 IC22
SAME "H" DESIGN					

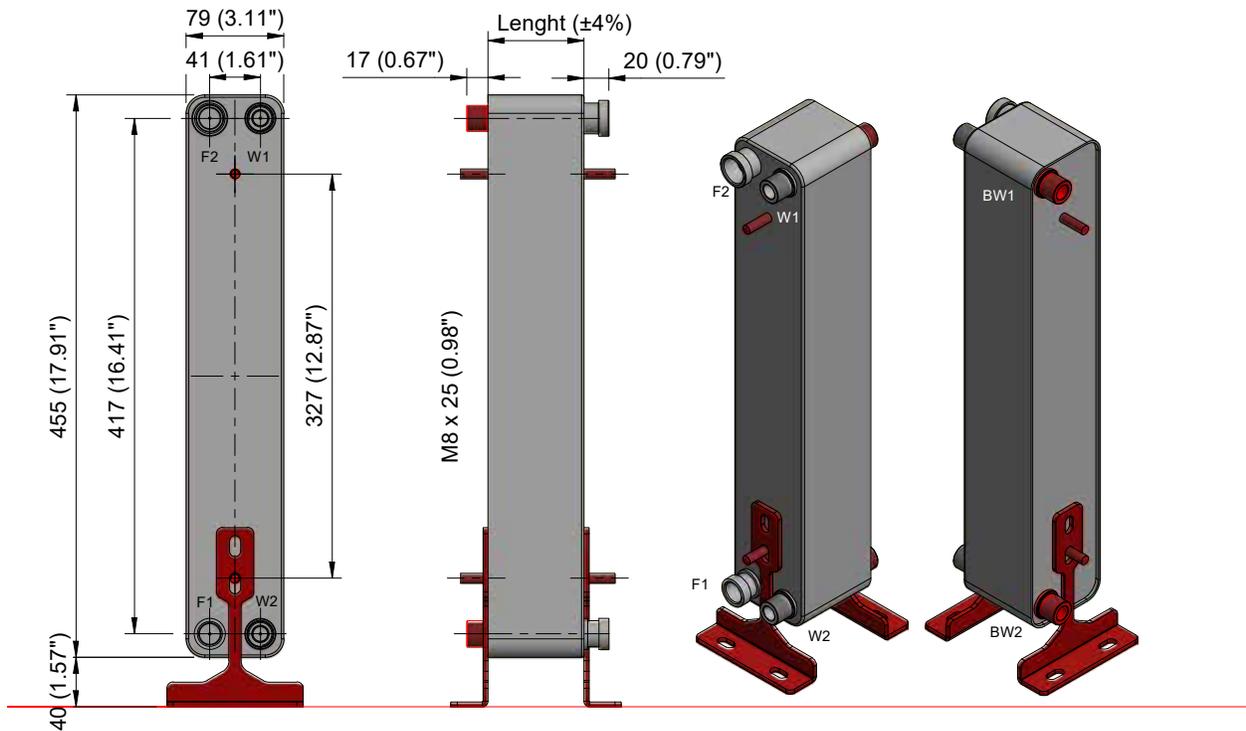
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1 INLET Refrigerant W1-BW1 INLET Secondary Fluid
 F2 OUTLET Refrigerant W2-BW2 OUTLET Secondary Fluid

SPECIFICATIONS	S22	S22H	CONNECTIONS TYPE		
MAWP (psi)	435	653	Soldering	Threaded M/F	Rotalock
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F	S8	IC22	R19
Maximum Connections Available (in.)	3/4"	3/4"	IS13	IC27	R25
Maximum Flow Rate (gpm)	23	23	S16	IF22	
Volume / Channel (US gal)	0,017	0,017	S19		
Dimensions (in.)	3,15" x 17,95"	3,15" x 17,95"	S20		
Length Calculation (in.)	$N \times 0,09 + 0,47$	$N \times 0,09 + 0,63$	Standard Connections:		
Weight Calculation (lbs)	$N \times 0,22 + 4$	$N \times 0,22 + 9$	F1 S16	F2 S20	W1-W2 IC27

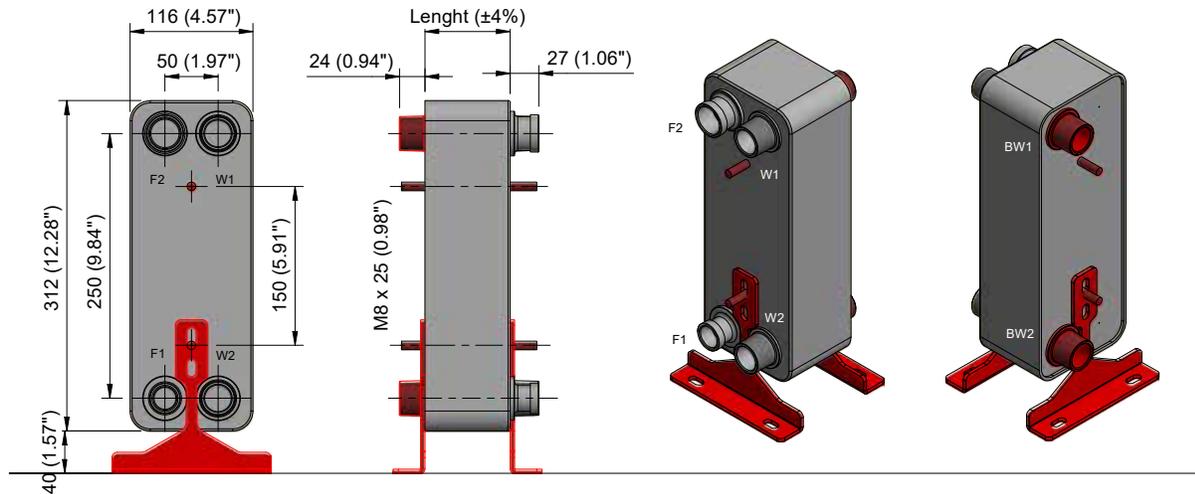
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1	INLET	Refrigerant	W1-BW1	INLET	Secondary Fluid
F2	OUTLET	Refrigerant	W2-BW2	OUTLET	Secondary Fluid

SPECIFICATIONS	S16	S16H	CONNECTIONS TYPE			
			Soldering	Threaded M/F	Grooved	Rotalock
MAWP (psi)	435	653				
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F	S16	IC22	V32	R19
Maximum Connections Available (in.)	1-1/4"	1-1/4"	S19	IC27	BV32	R25
Maximum Flow Rate (gpm)	62	62	S22	IC32	V40	R32
Volume / Channel (US gal)	0,021	0,021	IS29	IC42	BV40	R44
Dimensions (in.)	4,57" x 12,28"	4,57" x 12,28"	S35	IF22		
Length Calculation (in.)	$N \times 0,09 + 0,47$	$N \times 0,09 + 0,63$		IF27		
Weight Calculation (lbs)	$N \times 0,22 + 3,3$	$N \times 0,22 + 8,8$	Standard Connections:			
			F1 S22	F2 S28	W1-W2 IC32	

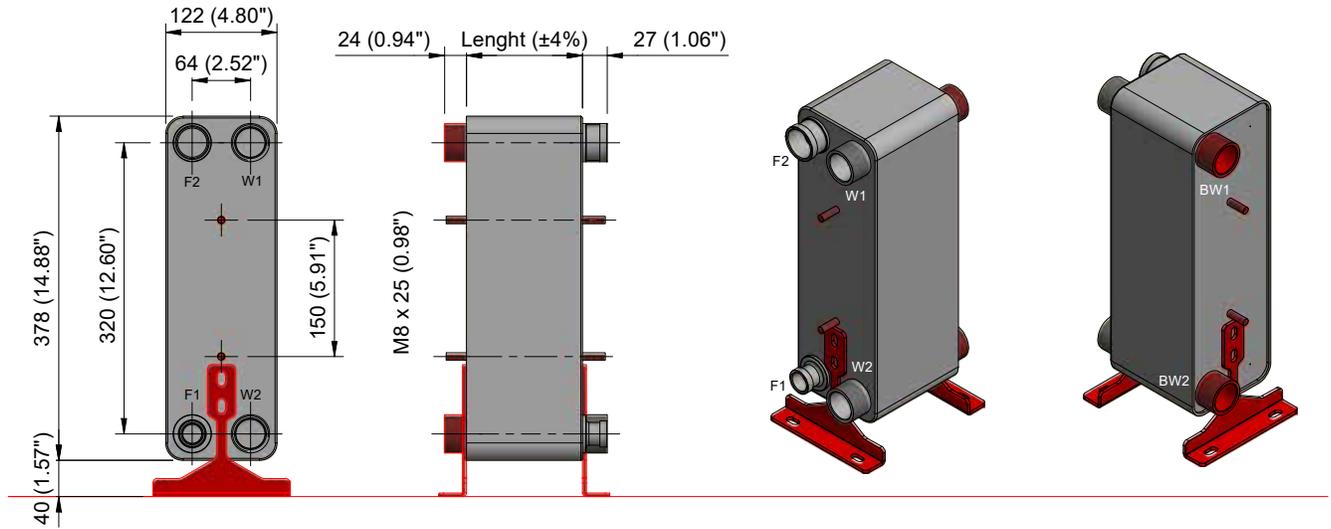
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1 INLET Refrigerant W1-BW1 INLET Secondary Fluid
 F2 OUTLET Refrigerant W2-BW2 OUTLET Secondary Fluid

SPECIFICATIONS	S62	S62H	CONNECTIONS TYPE			
MAWP (psi)	435	653	Soldering	Threaded M/F	Grooved	Rotalock
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F	S16	IC22	V32	R19
Maximum Connections Available (in.)	1-1/2"	1-1/2"	S19	IC27	BV32	R25
Maximum Flow Rate (gpm)	104	104	S22	IC32	V40	R32
Volume / Channel (US gal)	0,02	0,02	IS29	IC42	BV40	R44
Dimensions (in.)	4,80" x 14,88"	4,80" x 14,88"	S35	IF22		
Length Calculation (in.)	$N \times 0,084 + 0,47$	$N \times 0,084 + 0,63$		IF27		
Weight Calculation (lbs)	$N \times 0,26 + 4$	$N \times 0,26 + 8$	Standard Connections:			
			F1 S22	F2 S35	W1-W2 IC42	

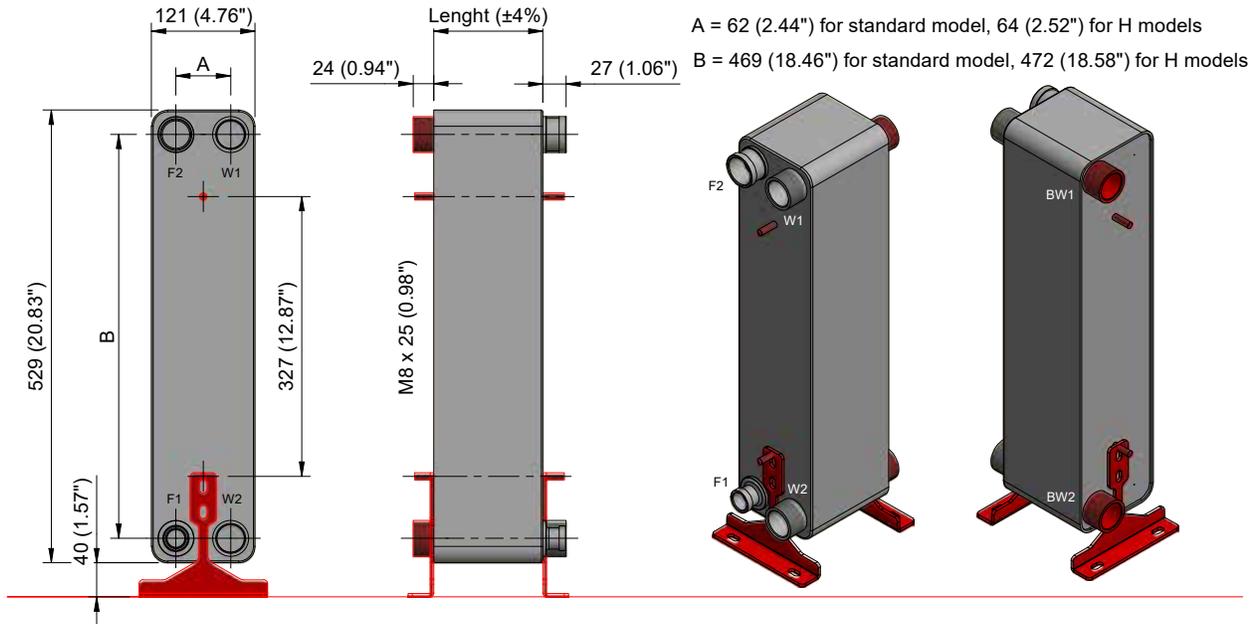
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1 INLET Refrigerant W1-BW1 INLET Secondary Fluid
 F2 OUTLET Refrigerant W2-BW2 OUTLET Secondary Fluid

SPECIFICATIONS		S93H	CONNECTIONS TYPE			
MAWP (psi)		653	Soldering	Threaded M/F	Grooved	Rotalock
Temperature Range (°F)		-320°F to 435°F	S16	IC22	V32	R19
Maximum Connections Available (in.)		1-1/2"	S19	IC27	BV32	R25
Maximum Flow Rate (gpm)		104	S22	IC32	V40	R32
Volume / Channel (US gal)		0,032	IS29	IC42	BV40	R44
Dimensions (in.)		4,80" x 20,87"	S35	IF22		
Length Calculation (in.)		$N \times 0,084 + 0,6$		IF27		
Weight Calculation (lbs)		$N \times 0,37 + 13$		IF32		
			Standard Connections:			
			F1 S22	F2 S35	W1-W2 IC42	

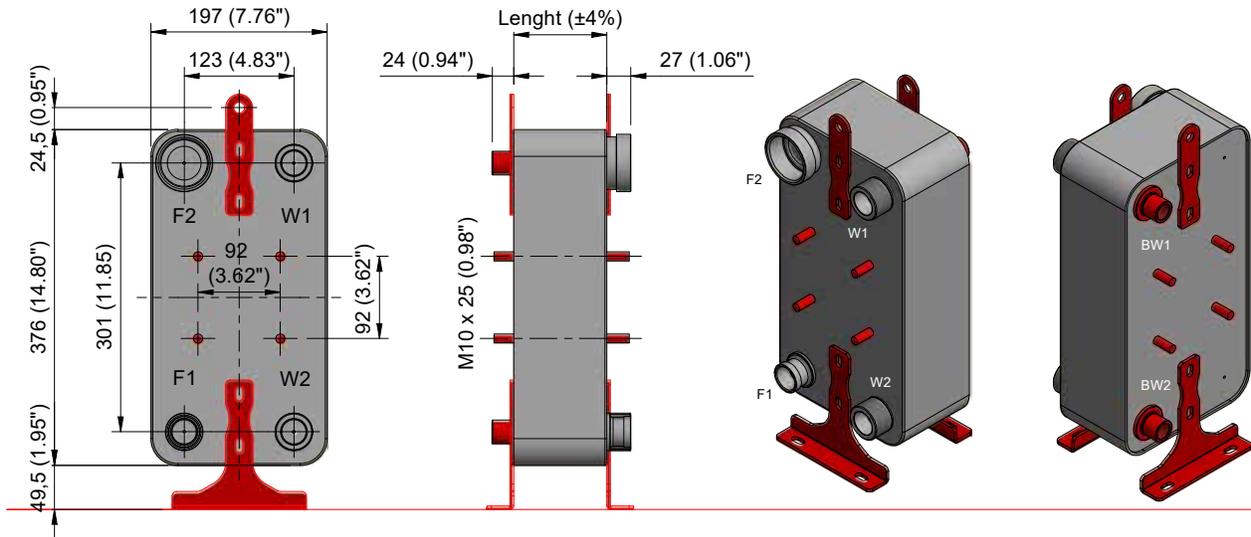
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1 INLET Refrigerant W1-BW1 INLET Secondary Fluid
 F2 OUTLET Refrigerant W2-BW2 OUTLET Secondary Fluid

SPECIFICATIONS	S101	S101H
MAWP (Psi)	435	653
Temperature Range (°F)	-320°F + 435°F	-320°F + 435°F
Maximum Connections Available (Mm)	1-1/2"	1-1/2"
Maximum Flow Rate (Gpm)	100	100
Volume/Channel (Us Gal)	0,034	0,034
Dimensions (In.)	7,76" x 14,80"	7,76" x 14,80"
Lenght Calculation (In.)	$N \times 0,086 + 0,5$	$N \times 0,086 + 0,5$
Weight Calculation (Lbs)	$N \times 0,57 + 19$	$N \times 0,57 + 19$
SAME "H" DESIGN		

CONNECTIONS TYPE			
Soldering	Threaded M/F	Grooved	Rotalock
S35	IC27	V32	R32
IS41	IC32	V40	R19
S19	IC42		R25
S22	IF22		R58
S50	IF27		
Standard Connections:			
F1 S19	F2 S35	W1-W2 IC32	

N Number of plates

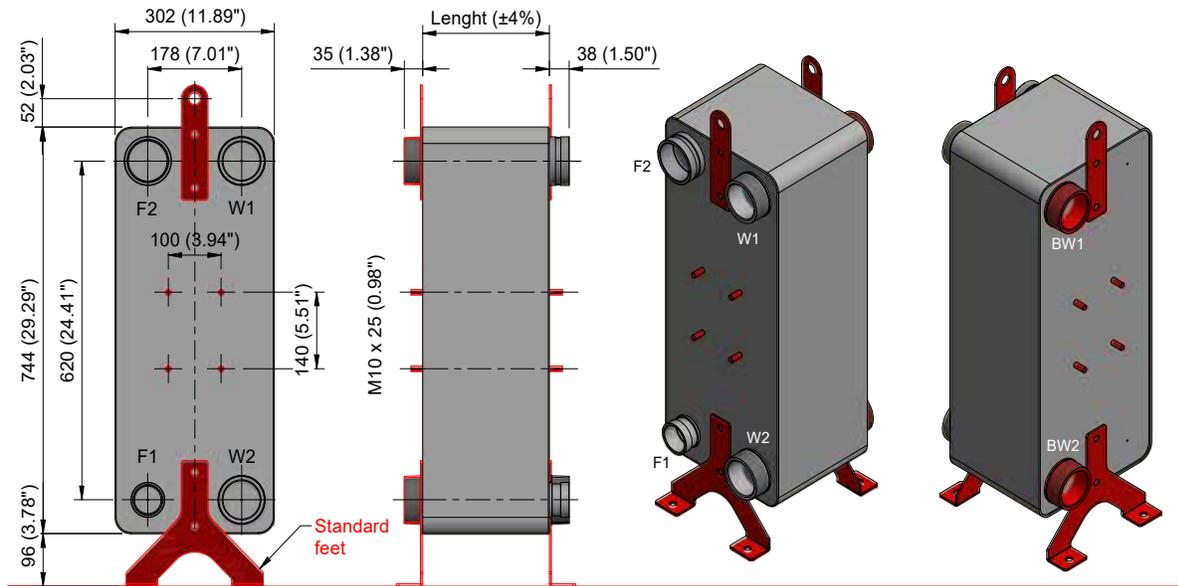
LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)

S404-S404M SINGLE CIRCUIT



Stud bolts and mounting brackets are shown as a value-added option (brackets S424 available)

F1	INLET	Refrigerant	W1-BW1	INLET	Secondary Fluid
F2	OUTLET	Refrigerant	W2-BW2	OUTLET	Secondary Fluid

SPECIFICATIONS		S404	CONNECTIONS TYPE				
MAWP (psi)		435	Soldering	Threaded M/F	Grooved	Rotalock	Flanges
Temperature Range (°F)		-320°F to 435°F	S54	IC73	V73	R58	IN80
Maximum Connections Available (in.)		3"	IS65	IC90	V80		IN100
Maximum Flow Rate (gpm)		492	IS80	IF22	V90		
Volume / Channel (US gal)		0,148	IS92	IF27			
Dimensions (in.)		12,01" x 29,33"	Standard Connections:				
Length Calculation (in.)		$N \times 0,11 + 0,78$	F1 S54	F2 IS80	W1-W2 IC90		
Weight Calculation (lbs)		$N \times 1,47 + 77$					

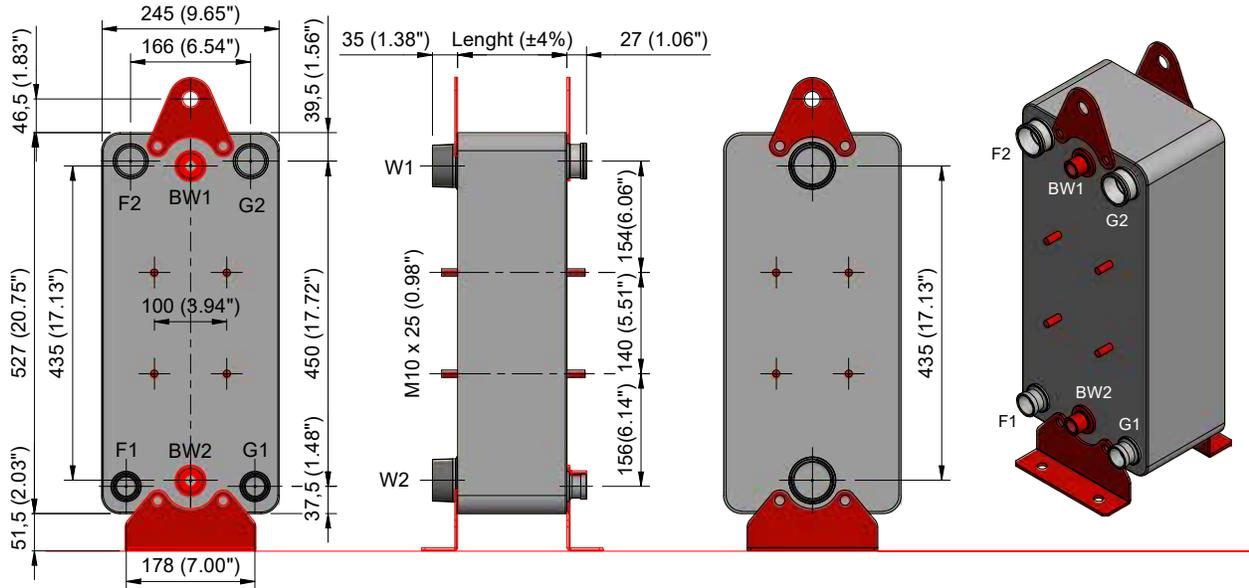
N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male
- IN** ANSI lap joint flanges 300 lb/sq. In.
- NF** DIN Free Flanges PN10/16

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)



Stud bolts and mounting brackets are shown as a value-added option

F1 INLET Refrigerant Circuit 1
 G1 INLET Refrigerant Circuit 2
 W1 INLET Secondary Fluid

F2 OUTLET Refrigerant Circuit 1
 G2 OUTLET Refrigerant Circuit 2
 W2 OUTLET Secondary Fluid

BW1 - BW2 Connections for Sensor

SPECIFICATIONS	S222	S222H	CONNECTIONS TYPE			
MAWP (psi)	435	653	Soldering	Threaded M/F	Grooved	Rotalock
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F	S22	IC48	V50	R32
Maximum Connections Available (in.)	2"	2"	IS29	IC60	V65	R44
Maximum Flow Rate (gpm)	223	223	S35	IF22	V72	R58
Volume / Channel (US gal)	0,071	0,071	IS41	IF27		
Dimensions (in.)	9,65" x 20,75"	9,65" x 20,75"	S50			
Length Calculation (in.)	$N \times 0,092 + 0,6$	$N \times 0,092 + 0,74$	Standard Connections			
Weight Calculation (lbs)	$N \times 0,88 + 22$	$N \times 0,88 + 39$	F1-G1 S28 F2-G2 S42 W1-W2 IC60 BW1-BW2 IF22			

N Number of plates

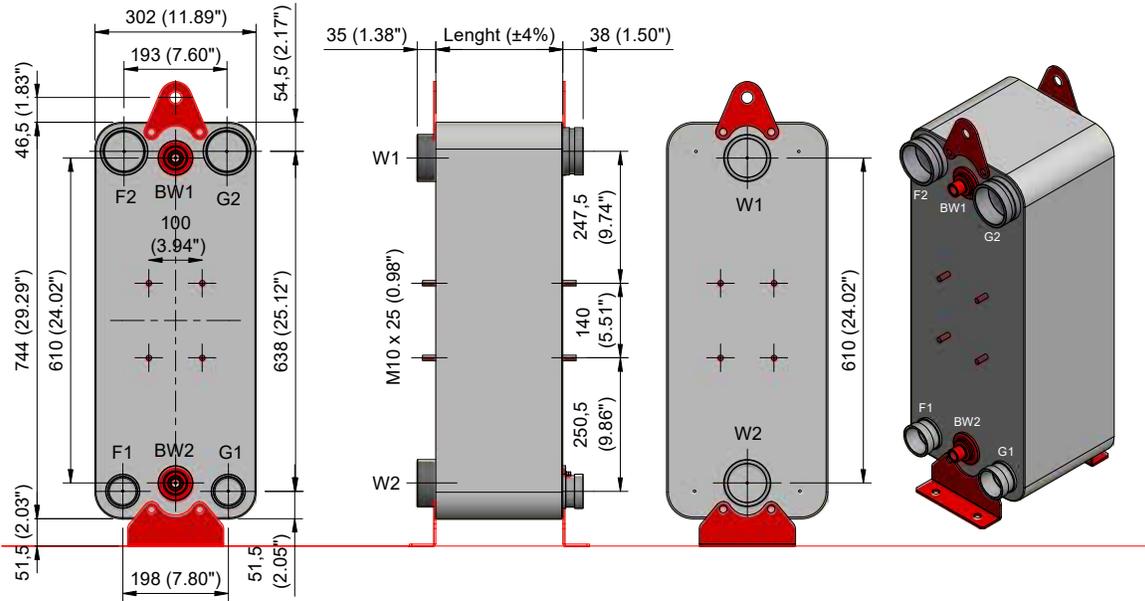
LETTER TO IDENTIFY CONNECTIONS TYPE

- S - IS** Soldering Connections
- IC** NPT Threaded Connections Male
- IF** NPT Threaded Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male

EXCHANGE PLATE MATERIAL Stainless Steel 316L

BRAZING MATERIAL Copper (Cu)

Criss-cross flow pattern available on request



Stud bolts and mounting brackets are shown as a value-added option

- F1 INLET Refrigerant Circuit 1 F2 OUTLET Refrigerant Circuit 1
- G1 INLET Refrigerant Circuit 2 G2 OUTLET Refrigerant Circuit 2
- W1 INLET Secondary Fluid W2 OUTLET Secondary Fluid

BW1 - BW2 Connections for Sensor

SPECIFICATIONS	S424	S424H
MAWP (PSIG)	435	653
Temperature Range (°F)	-320°F to 435°F	-320°F to 435°F
Maximum Connections Available (in.)	3"	3"
Maximum Flow Rate (gpm)	492	492
Volume / Channel (US gal)	0,128	0,128
Dimensions (in.)	12,0" x 29,33"	12,0" x 29,33"
Length Calculation (in.)	$N \times 0,11 + 0,78$	$N \times 0,11 + 0,95$
Weight Calculation (lbs)	$N \times 1,47 + 72$	$N \times 1,47 + 83$

CONNECTIONS TYPE				
Soldering	Threaded M/F	Grooved	Rotalock	Flanges
S35	IC73	V73	R44	IN80
IS41	IC90	V80	R58	NF80
S54	IF22	V90		
IS65	IF27			
IS80				
IS92				
Standard Connections: F1-G1 S54 F2-G2 IS80 W1-W2 IC90 BW1-BW2 IF22				

N Number of plates

LETTER TO IDENTIFY CONNECTIONS TYPE

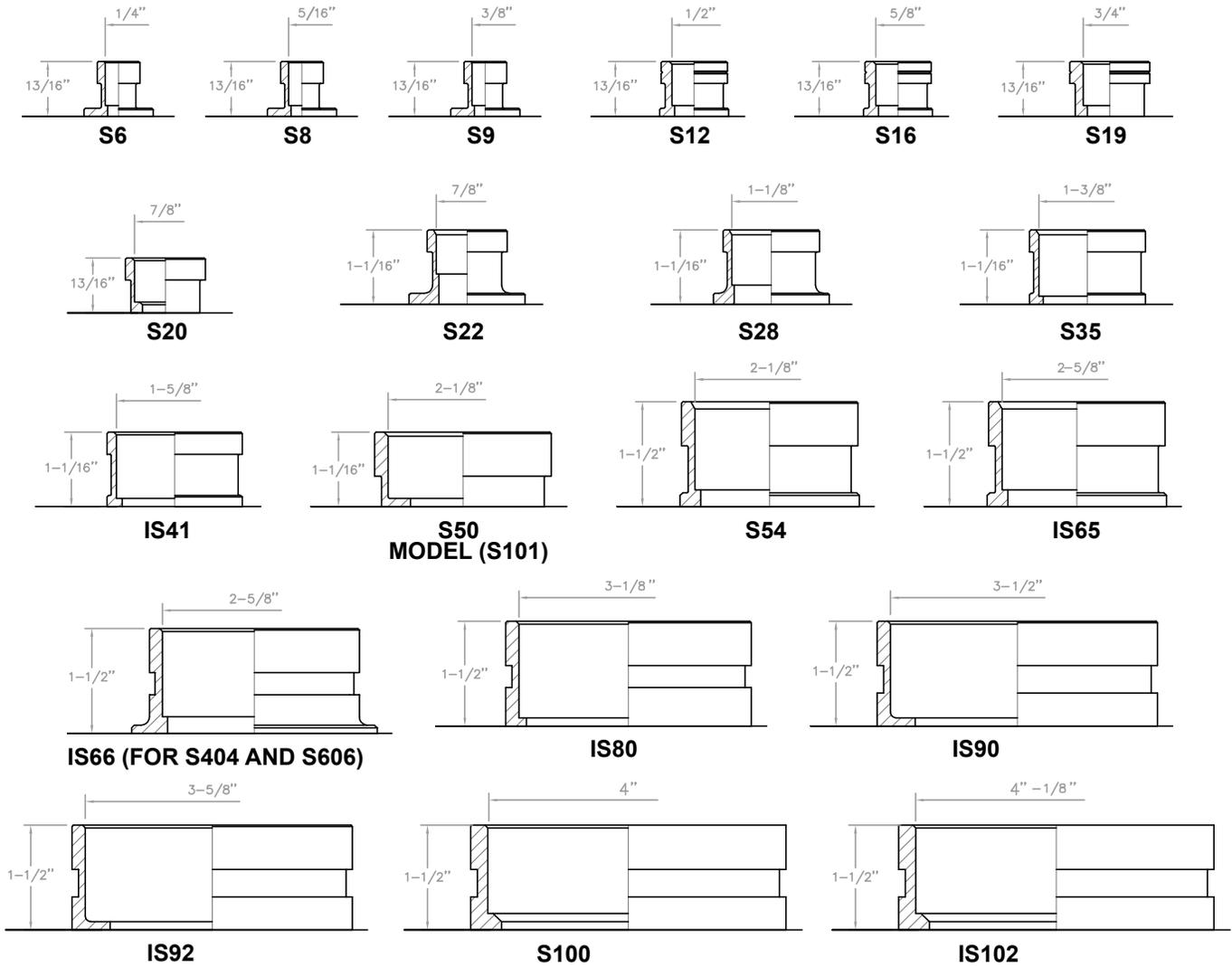
- S - IS** Soldering Connections
- IC** NPT Thread Connections Male
- IF** NPT Thread Connections Female
- V - BV** Grooved System for Standard Flexible Coupling
- R** Rotalock Connections Male
- IN** ANSI Flanges 150 or 300 lb/sq. In.
- NF** DIN Free Flanges PN10/16

EXCHANGE PLATE MATERIAL Stainless Steel 316L

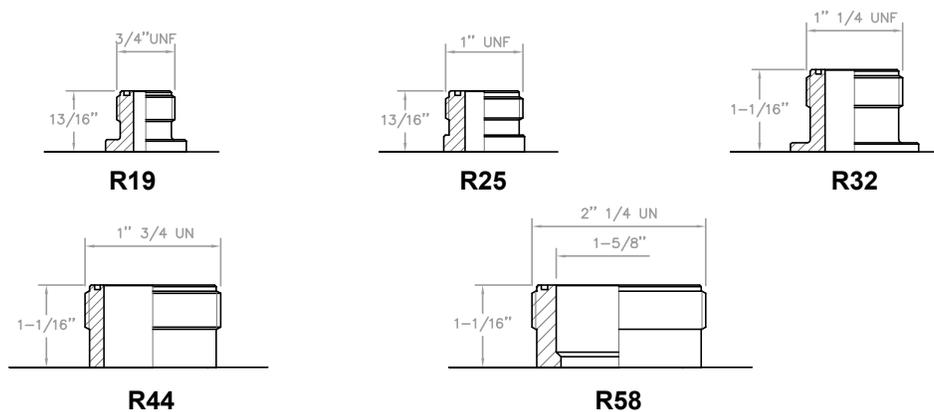
BRAZING MATERIAL Copper (Cu)

Criss-cross flow pattern available on request

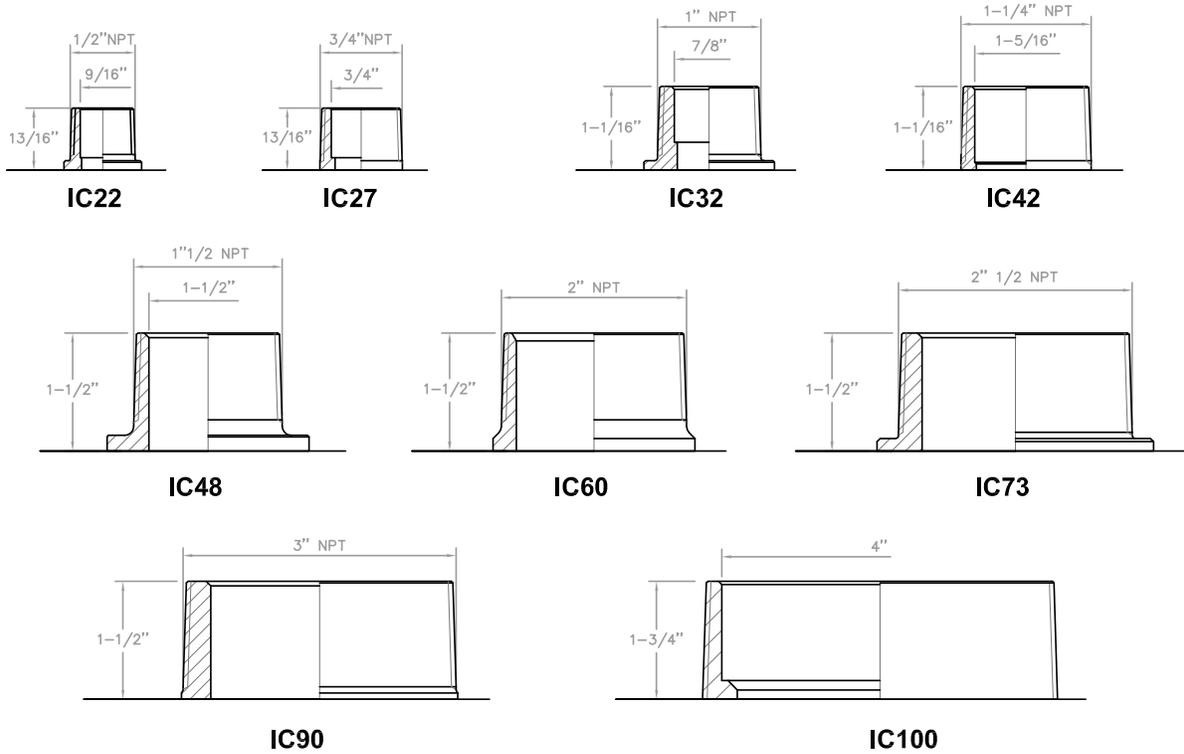
S-IS Soldering connections



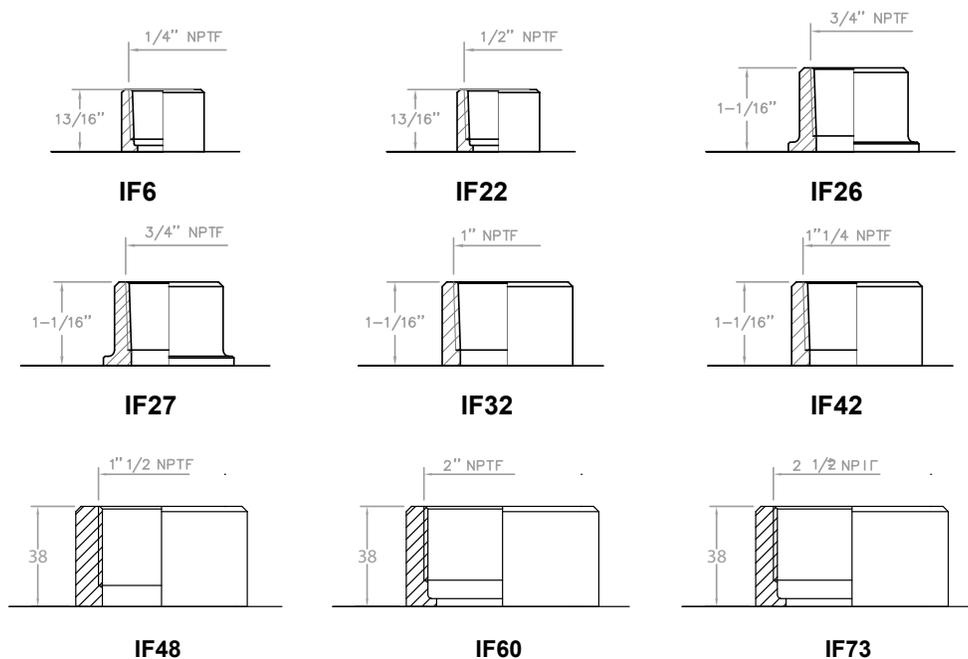
R Rotalock connections Male



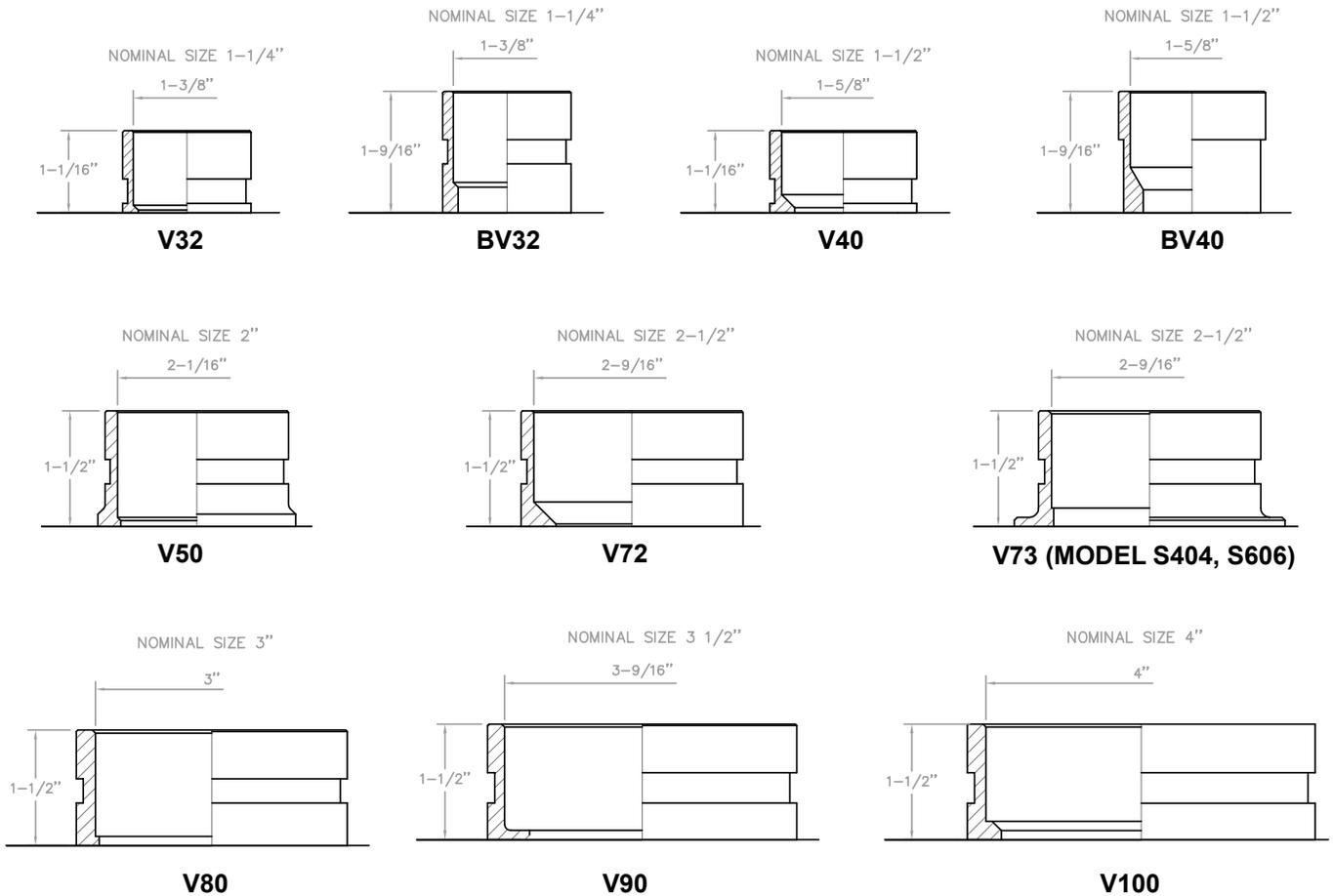
IC NPT Threaded connections Male



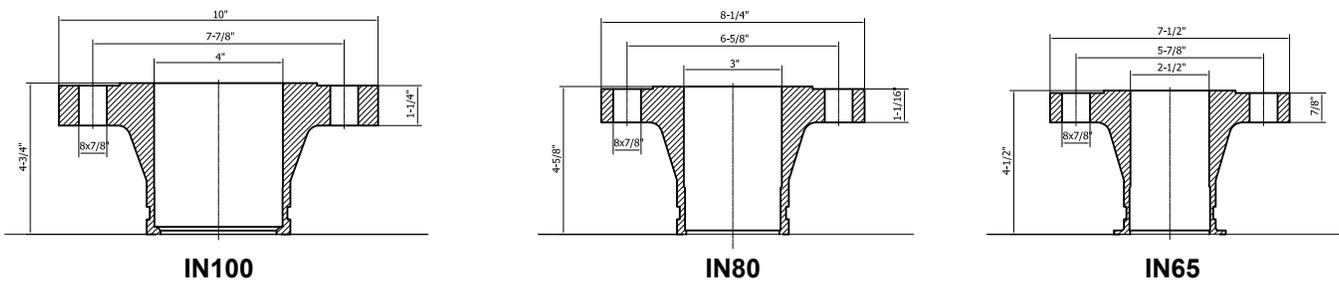
IF NPT Threaded connections Female



V-BV Grooved fittings



IN ANSI Lap Joint flanges 300 lb/sq.in.



GARANZIA

A - Onda S.p.A. garantisce l'assenza di vizi e difetti nella lavorazione e nei materiali nei Prodotti per 18 mesi dalla data della consegna.

Pertanto ove, durante il periodo di garanzia, i contestati difetti dei Prodotti risultino oggettivamente fondati e siano riconosciuti per iscritto da Onda S.p.A., quest'ultima provvederà gratuitamente alla riparazione o, a sua discrezione, alla sostituzione dei Prodotti difettosi, con consegna effettuata franco fabbrica (Ex Works – Incoterms 2000) Stabilimento di Onda S.p.A. in Via Lord Baden Powell, 11 – 36045 Lonigo (VI).

B - Pena di decadenza dalla garanzia, il Cliente dovrà denunciare per iscritto, a mezzo raccomandata con ricevuta di ritorno, i vizi o i difetti riscontrati entro e non oltre 10 (dieci) giorni dal ricevimento dei Prodotti o evidenziati dalla messa in funzione dell'impianto, oppure, trattandosi di vizi e/o difetti occulti, entro e non oltre 10 (dieci) giorni dalla scoperta degli stessi. In questo caso, l'onere della prova della data della scoperta graverà sul Cliente.

C - Onda S.p.A. garantisce inoltre che i Prodotti sono fabbricati in conformità alle leggi italiane e alle normative comunitarie vigenti alla data di conferma da parte di Onda S.p.A. del relativo ordine del Cliente.

Salvo diverso accordo scritto tra le parti, tutte le altre spese accessorie agli interventi di sostituzione e/o di riparazione, saranno a carico e a rischio del Cliente.

D - La garanzia è esclusa qualora i vizi o difetti dei Prodotti siano stati determinati dalle seguenti cause:

- Naturale usura e deterioramento.
- Riparazioni, manomissioni o modifiche non autorizzate.
- Uso e applicazione impropri.
- Eccessiva sollecitazione termica, anche occasionale.
- Eccessiva sollecitazione elettrica o meccanica.
- Mancato rispetto dei parametri funzionali e ambientali indicati da Onda S.p.A. per il corretto impiego e funzionamento dei Prodotti.
- Installazione dei Prodotti difforme da quella indicate nelle specifiche tecniche fornite da Onda S.p.A.
- Mancata messa a terra dello scambiatore.
- Qualsiasi altra causa imputabile a negligenza del Cliente.

E - La garanzia è inoltre esclusa in caso di:

- Eventuale non conformità dei Prodotti a normative italiane e/o comunitarie entrate in vigore dopo la data della trasmissione della conferma d'ordine di Onda S.p.A.;
- Eventuale non conformità dei Prodotti a leggi e/o normative in vigore nel luogo in cui i Prodotti sono installati e/o assemblati dal Cliente e/o nel luogo di finale utilizzazione dei Prodotti, qualora il Cliente non abbia espressamente richiesto la conformità dei Prodotti a tali leggi e/o normative e non abbia regolarmente informato ONDA S.p.A. del loro contenuto prima della data di trasmissione della conferma d'ordine di quest'ultima. Resta inteso che la presente limitazione si intende efficace anche con riferimento a specifiche normative vigenti in Stati dell'Unione Europea ed applicabili in via autonoma rispetto alle normative comunitarie.

F - Il Cliente non dovrà vendere o commercializzare Prodotti non conformi alle leggi e/o normative indicate nella precedente lettera E. In caso contrario, il Cliente manleverà ONDA S.p.A. da ogni danno e/o perdita dalla stessa sofferto in seguito a contestazioni, sollevate in via giudiziale o stragiudiziale, da qualsiasi soggetto terzo o da pubblica autorità in conseguenza della fabbricazione da parte di ONDA S.p.A. di prodotti non conformi alle summenzionate leggi e/o normative.

G - Ferma restando l'applicazione del DPR 224/1988, in materia di responsabilità per danno da prodotti difettosi, e la responsabilità di Onda S.p.A. in caso di dolo o colpa grave, quest'ultima non sarà in alcun caso responsabile per i danni diretti, indiretti o incidentali che dovessero in qualsiasi modo derivare dalla difettosità dei Prodotti.

WARRANTY

A - Onda S.p.A. warrants that the Products shall be free from defects in material and workmanship for a period of 18 months from the date of the delivery.

Therefore, should Onda S.p.A., within the warranty period, acknowledge and recognise in writing the existence of the defects in the products and said defects be materially grounded, Onda S.p.A. shall, at its discretion, repair the defective Products at no costs for the Client or replace them by delivering the substitutive products Ex works (Incoterms 2000) at Onda S.p.A.'s premises (Via Lord Baden Powell, 11 – 36045 Lonigo (VI) – Italy).

B - Subject to loss of the warranty, notice of any defect shall be given by the Client in writing with return receipt registered letter within, and not later than, 10 (ten) days from the date of receipt of the products or from the start up of the plant. Subject to loss of the warranty, notice of any latent defect of the Products by the Client shall be given in writing, by return receipt registered letter, within and not later than 10 (ten) days from the date of the relevant discovery. It is hereby understood that the burden of the proof of the date of the discovery shall be borne by the Client.

C - Onda S.p.A. also warrants that the Products are manufactured in compliance with the Italian and European Laws and Regulations in force on the date of the confirmation by Onda S.p.A. of the relevant Client's order. Unless otherwise expressly agreed in writings by the parties, Client shall bear any other additional expenses related to the operations of repairing or replacing of the defective products.

D - This warranty shall not apply should the defects of the Products be caused by:

- Natural wear and tear.
- Unauthorised repairs, interventions or modifications.
- Unsuitable use or application.
- Thermal overexposure, also when occasional.
- Electrical or mechanical over-stress.
- Failure of respecting the functional and environmental parameters suggested by Onda S.p.A. for the correct use and exploitation of the products.
- Installation of the products not in compliance with the technical specifications provided by Onda S.p.A.
- Missing earth grounding.
- Any other cause due to the Client's negligence.

E - This warranty shall also not apply in case of:

- Non compliance of the Products with Italian and European Laws and/or Regulations entered in force after the date of transmission of the order confirmation by Onda S.p.A..
- Non compliance of the Products with Laws and/or Regulations in force in the place where the Products are installed and/or assembled by the Client and/or in the place of their final use, should the Client not expressly require the conformity of the Products to said Laws and Regulations and not duly inform Onda S.p.A. of their content before the date of transmission of the latter's order confirmation. This limitation of the warranty is also applicable with reference to peculiar Laws and Regulations valid and binding in States of the European Union independently of the European Laws and Regulations.

F - The Client shall not sell or market Products not in compliance with the Laws and Regulations mentioned under letter E above. In the negative, the Client shall keep ONDA S.p.A. harmless of any damage or loss suffered by the latter, due to any third party's and/or authority's claim raised as a consequence of the manufacture by ONDA S.p.A. of Products not in compliance with the above mentioned Laws and Regulations.

G - Without prejudice to the application of DPR 224/1988 on product liability and liability for gross negligence or wilful misconduct, Onda S.p.A. shall never be liable for direct, indirect or occasional damages which in any manner derived from defective products.



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