

Frascold[®]

ATS

Open-drive screw compressors
for refrigeration, air conditioning, heat pumps



v2

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Overview

Open-drive screw compressors in the ATS range have been designed to guarantee reliability, flexibility and efficiency.

The range consists of 16 models, which not only offer a wide selection of capacities, but also a broad range of applications.

These compressors have been designed to work with ammonia, hydrocarbons, traditional HFC, HCFC and new low-GWP refrigerants. Moreover, they guarantee a high cooling capacity with and without an economizer.

Main applications include marine/industrial cooling, process cooling, heat pumps and air conditioning.

All models are designed to work in parallel combinations by way of an external oil separator.

Depending on the operating conditions, two main configurations can be identified to guarantee maximum efficiency:

ATSH: suitable for low compression ratios (medium-high evaporation temperature).

ATSL: suitable for high compression ratios (low evaporation temperature).



ASERCOM Performance Certificates



Frascold is a member of ASERCOM, the Association which ensures the accuracy and reliability of its compressors and that has set out the procedure for measuring the performance of compressors and their certification process. The certification of compressors certifies and guarantees that the published performance matches the performance measured with reference to European standard EN12900. Additional information on www.asercom.org.

Product Selection Software FSS3

The FSS3 selection software, quick and easy to use, allows users to obtain the capacity in the various operating points and to access all technical information about Frascold compressors.

If you have any questions about how to use the software, we kindly ask that you contact customer service via email or phone. You can also send your comments and suggestions to improve the FSS3 software; your feedback is always welcome. Download the 'setup.exe' file on your computer, run it and follow the installation instructions. A link to the selection software will be created on your desktop to facilitate start-up.

Compressor capacity data

This brochure provides data relative to compressors with refrigerant R134a (GWP=1430), R404A (GWP=3922), R507A (GWP=3985), R22 (GWP=1810) and R717 (GWP=0). Data relative to other refrigerants is available on request.

The capacities are indicated with reference to European Standard EN12900 while operating at 50 Hz. To calculate capacities in different conditions and while operating at 60 Hz, use the Frascold Selection Software.

Operating limits

Compressors can be operated within the values indicated in the application envelope; pay attention to the different instructions for the different areas of the envelope.

The limits refer to compressor operation at maximum output and with a power frequency of 50 Hz.

The data sheets published in this catalogue must be considered as general for the entire range of compressors. Check the data sheet of each compressor model in the Frascold Selection Software.

Safety

Frascold compressors are produced in accordance with European safety standards. They can be used only if installed in systems that comply with operating instructions and current regulations. For relative standards, see the Manufacturer Declaration, which can be obtained by request or downloaded from the website www.frascold.it in the Download section.

They can only be run by skilled persons, suitably informed in regards to manufacturer declarations and able to understand and implement the contents of the installation manual supplied with the compressor or available on the website www.frascold.it.

Compressor protection

All compressors are supplied complete with an electronic module that manages the temperature sensor positioned on the delivery pipe, to control the discharge temperature.

Lubricating oil

The choice of oil depends on the properties, operating conditions, refrigerant used and the system's operating conditions.

Oils different to those indicated below can be used. Special applications may require different viscosity/oil types; for said applications contact Frascold

Type of oil Frascold	Alternative oil	Base	Viscosity at 40°C in cSt	Refrigerant	Application
170POE	Emarkate RL170H or equivalent	POE	170	R134a / R404a / R507A	LT/MT/HT
46MIN-A 68MIN-A	Fuchs Reniso KS46 / KC68 or equivalent	M	46/68	R717	LT/MT/HT
68PAO-A	Mobil Gargoyle Arctic SHC226E, or equivalent	PAO	68	R717	LT/MT/HT
150POE	CPI CP 4214-150 or equivalent	POE	150	R22	HT
100AB	Mobil Zerice S100 or equivalent	AB	100	R22	LT/MT

POE: Polyester

M: Mineral

PAO: Polyalphaolefin

AB: Alkylbenzene

LT: Low temperature

MT: Medium temperature

HT: High temperature

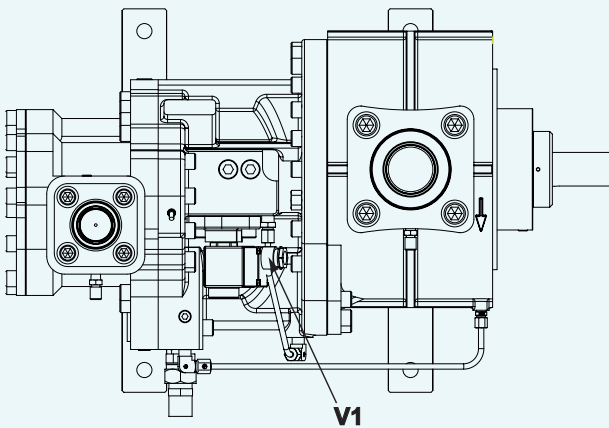
Capacity control

In reduced thermal load conditions, the compressor is able to bring the system being cooled to the design temperature in the shortest possible time; in this case, it is necessary to check if the increased number of compressor start-ups (resulting from a shorter cooling time) is compatible with the maximum number the compressor is able to withstand. The device used to control capacity, thus reducing the cooling capacity of the compressor, makes it possible to compensate this situation and prevent the efficiency of the entire cooling system from being compromised.

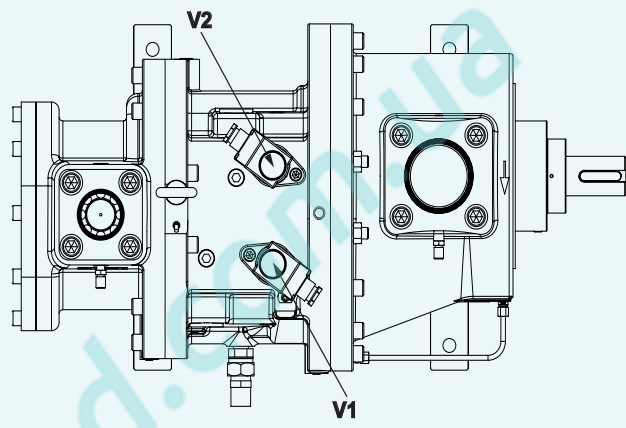
Capacity control can be executed using the following operating modes:

- Models 120-150: two-step (75-100%).
- Models 186-210-240-270-300-360: three-step (50-75-100%).

Capacity control is performed by way of a solenoid valve. The control sequence of the solenoid valve and the operating diagram are shown below.



ATSH1/L1 120 - 150



ATSH1/L1 186 - 210 - 240 - 270 - 300 - 360

Solenoid valve activation table

Type	Capacity control ^①		
	At full load 100%	1. Step (75%)	2. Step (50%)
ATSH1/L1 120 - 150	V1 = ●	V1 = ○	-
ATSH1/L1 186 - 210 240 - 270 - 300 - 360	V1 = ● V2 = ●	V1 = ● V2 = ○	V1 = ○ V2 = ○

① The capacity steps are to be considered approximately 50% - 75%, based on the operating conditions.

○ De-energized coil

● Energized coil

General information

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Frascold Selection Software FSS3

Frascold has released the selection software FSS3, the new software dedicated to processes in the field of refrigeration, air conditioning and heat pumps. The software has been developed by a Frascold technical research and development team based on many years of experience in the production of compressors and their application in a range of systems, from the most simple to the most complex. Using FSS3, calculations are made based on the requirements specified by the user, or on standard operating conditions (EN12900), in order to select the right compressor and condensing unit. FSS3 completely replaces the previous FSS2 software, featuring additional new and important functions and applications. The software has a new graphic interface and is easier to use, makes precise calculations and offers flexibility in a broad range of functions.



Main features of FSS3

Simple to use and highly accurate, it offers users all the elements needed to select the compressor and condenser unit that best meets the design capacity and conditions::

- It provides performance reports on all products
- It allows reports to be exported in different formats, useful for printing and filing
- It displays the operating limits of all compressors and condenser units with all approved refrigerants
- Indispensable for contractors and designing engineers when developing and engineering complex plants
- It can be configured according to user needs
- It offers full support for the recalculation of performance coefficients in conditions different to the EN12900 standard
- It describes the technical features of the selected products (dimensional drawings, mechanical and electrical data, etc.)
- It is able to receive notifications each time a software update is available

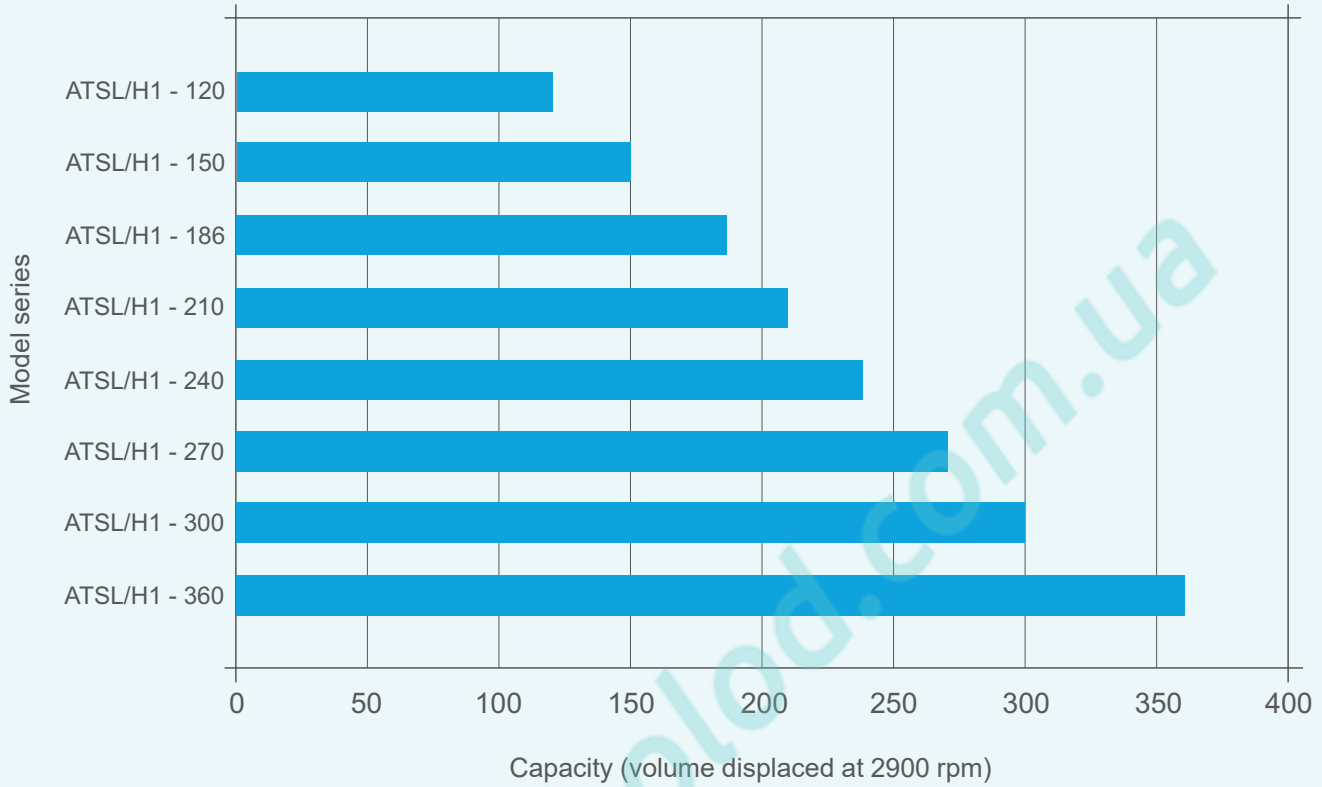
The selection software is available on our website www.frascold.it in the Software under the Download section. Download the executable FSS3 file on your computer, run it and follow the installation instructions. A link to the selection software will be created on your desktop to facilitate start-up.

If you have any questions regarding the software functions, please contact Frascold customer service via email or phone. You can also send your comments and suggestions to improve the FSS3 selection software; your feedback is always welcome.

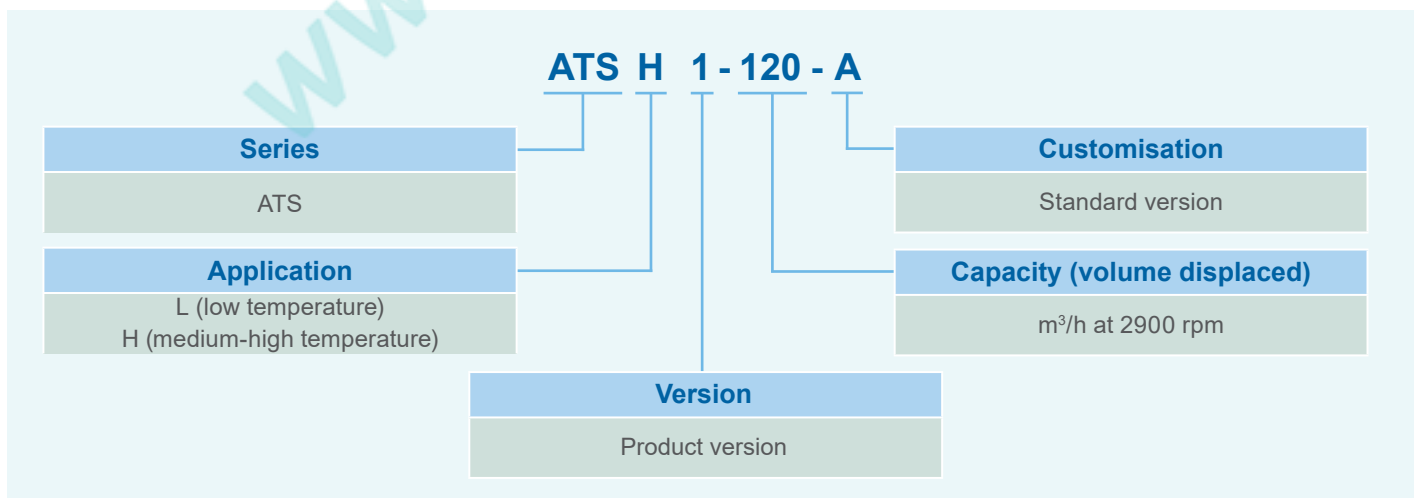
Model range

Current program:

8 main sizes, 16 models with 8 displacements from 120 to 360 m³/h (2900 rpm)



Model nomenclature



Special characteristics

Easy installation and accessibility: Compact design with reduced overall dimensions and easy installation.

High performance: Profile with asymmetrical screws and optimised dimensions to guarantee high performance.

Noise level: Low noise level and no vibrations.

High precision: Bearings with high degree of rigidity and operating precision, resistant against radial and axial load combination, compatible in operation with R717 (NH3). Their innovative configuration protects the screws against any counter-rotations that may occur during system shut down.

High flexibility: Universal application: R134a, R404A, R507A, R407C, R22 and R717 (NH3). Set up for operation with economizer.

Coupling: Direct coupling with motor

Maintenance: Mechanics designed for safe operation with long periods of minimal maintenance.



Long duration operational life: Special bearings have been designed with a cage that helps reduce noise levels and increase the load coefficient and their operating life.

Information plate

All important information for the compressor's identification is printed on the plate. The production date is included in the serial number. The installer is responsible for indicating the type of refrigerant.

Capacity (volume displaced) in m ³ /h	Displ. m ³ /h		RPM
	210 (105 - 290)		2900 (1450 - 4000)

Frascold [®]		Type ATSH1-210-A	Compressor model
		Nr. P001001	Serial number
		Max. Operating Disch. Pressure bar 30	Maximum operating pressures
		Max. Static Suct. Pressure bar 20,5	
		CE	Conformity markings
Frascold S.p.A.		HRA210A HP001001	Compressor code
		MADE IN ITALY	

Bar code (compressor identification number)

Technical data

Model	Volume displaced m ³ /h		Capacity control	Speed	Line connection						Weight
	50 Hz	60 Hz			%	Suction		Discharge		Oil return line	
			inch	mm		inch	mm	inch	mm	kg	
ATSH1-120	120	144	Step (100% - 75%)	1400÷4500	2 ¹ / ₈	54	1 ⁵ / ₈ *	42	7/8	22	155
ATSL1-120					2 ¹ / ₈	54	1 ⁵ / ₈ *	42	7/8	22	155
ATSH1-150	150	180			2 ¹ / ₈	54	1 ⁵ / ₈ *	42	7/8	22	160
ATSL1-150					2 ¹ / ₈	54	1 ⁵ / ₈ *	42	7/8	22	160
ATSH1-186	186	223	Step (100% - 75% - 50%)		3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	220
ATSL1-186					3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	220
ATSH1-210	210	252			3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	265
ATSL1-210					3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	265
ATSH1-240	240	288			3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	280
ATSL1-240					3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	280
ATSH1-270	270	324			3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	285
ATSL1-270					3 ¹ / ₈ *	80	2 ¹ / ₈	54	7/8	22	285
ATSH1-300	300	360			3 ¹ / ₈ *	80	2 ⁵ / ₈ *	67	7/8	22	295
ATSL1-300					3 ¹ / ₈ *	80	2 ⁵ / ₈ *	67	7/8	22	295
ATSH1-360	360	432			3 ¹ / ₈ *	80	2 ⁵ / ₈ *	67	7/8	22	310
ATSL1-360					3 ¹ / ₈ *	80	2 ⁵ / ₈ *	67	7/8	22	310

* On request

State of supply

Frascold supplies its compressors complete with components sufficient to satisfy the standard intended use, as indicated on the data sheets and technical instructions for use. For all other requirements, various accessories are available upon request.

Description	Model Series	
	HFC	NH3
Suction and discharge bushings	S	S
Discharge check valve	S	S
Internal safety valve	S	S
Capacity control	S	S
Holding charge (nitrogen)	S	S
Coupling Joint and coupling housing for standard IEC motors	▲	▲
Non-machined coupling joint and coupling housing for electric motor side	▲	▲
Discharge valve	▲	▲
Suction valve	▲	▲
Valve for ECO	▲	▲
Air cooled Oil cooler	▲	n.a.
Water cooled Oil cooler	▲	n.a.
Oil separator	▲	▲
Oil filter clogging pressure switch (optical or electronic)	▲	n.a.
Oil injection kit	▲	▲
Oil shut-off valve	▲	▲

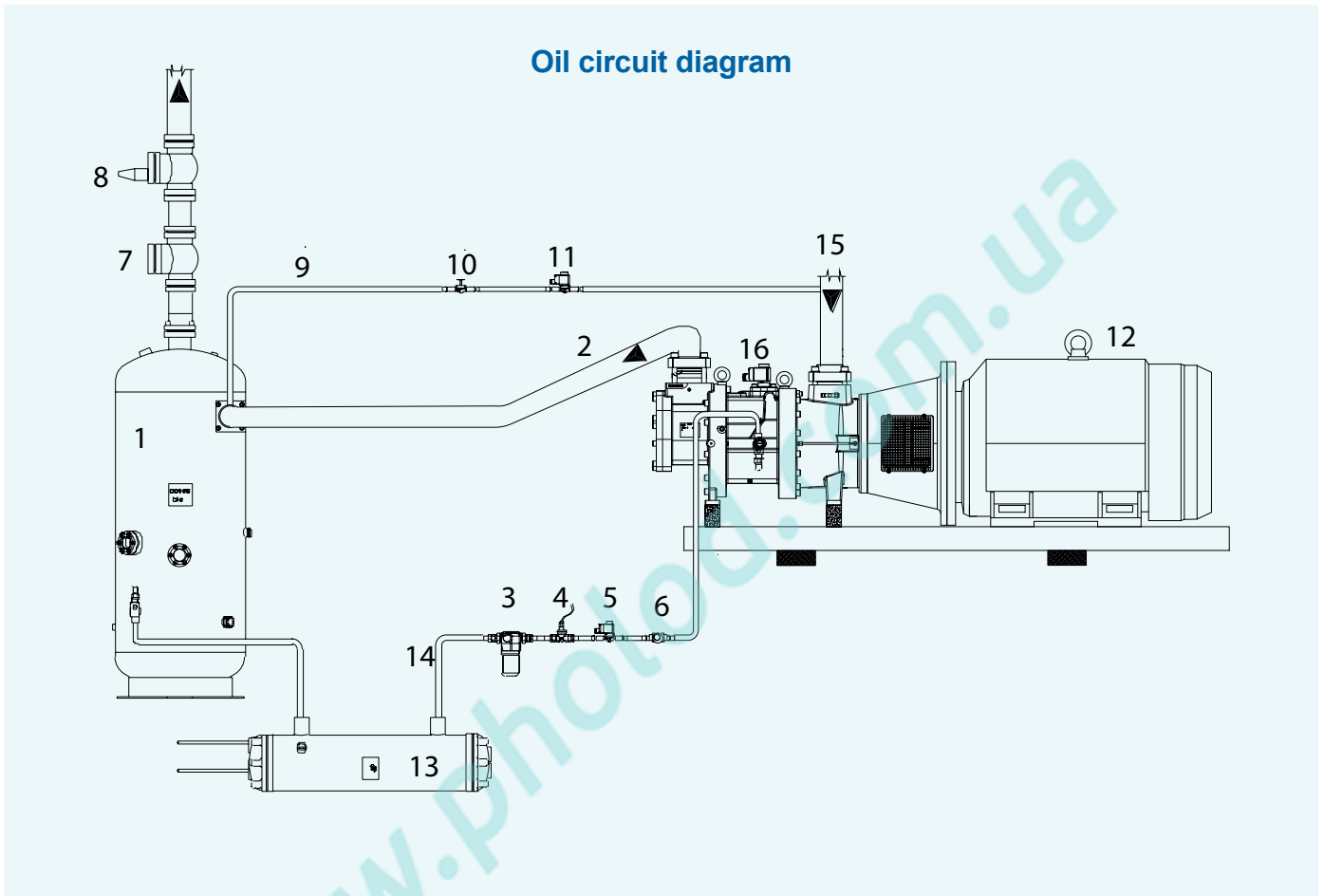
S Standard

▲ Optional accessory

Oil injection kit

The oil injection kit (optional) includes:

- Oil filter (3)
- Flow switch with electronic control module (4)
- Solenoid valve (5)
- Sight glass (6)



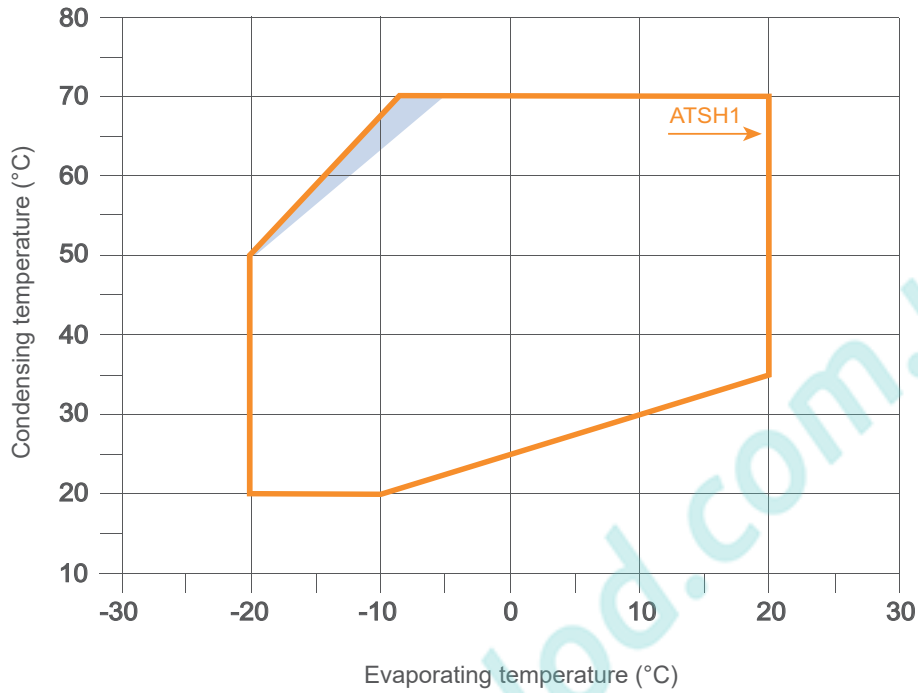
1	Remote oil separator
2	Discharge line
3	Oil filter
4	Oil flow switch
5	Oil line solenoid valve
6	Sight glass
7	Check valve
8	Discharge pressure regulation valve
9	External equalization line
10	Shut-off valve
11	Solenoid valve
12	Electric motor (standard motor not supplied by Frascold)
13	Oil cooler
14	Oil return line
15	Suction line
16	Compressor

Operating limits

The compressor can be operated within the values of the application chart; pay attention to the different zones.

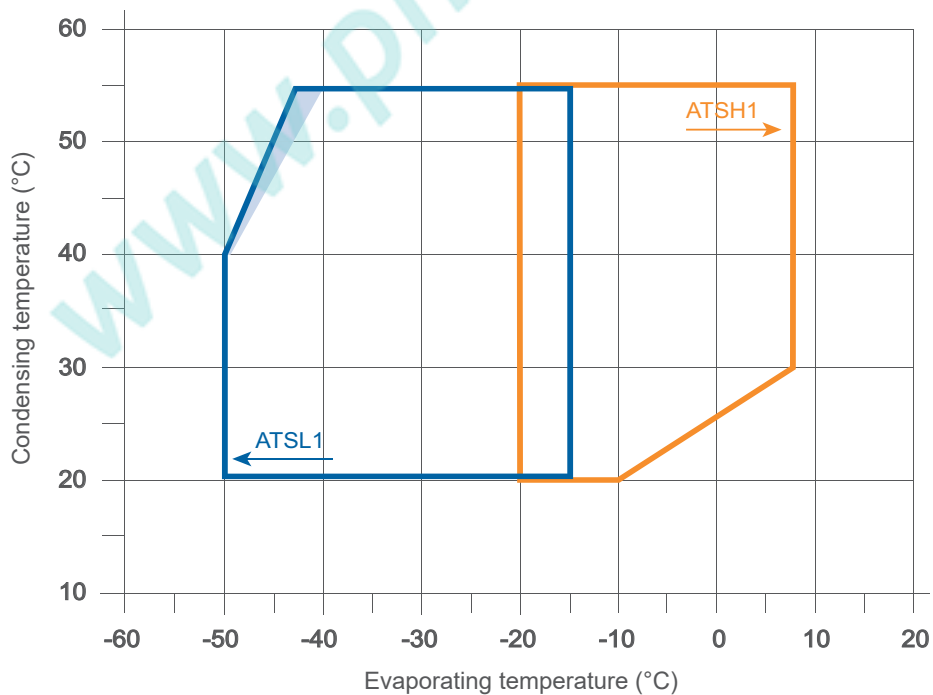
R134a

Standard application envelope
Check the envelope of each compressor model in the Frascold Selection Software program



R404A - R507A

Standard application envelope
Check the envelope of each compressor model in the Frascold Selection Software program



Compressor at 100% of capacity

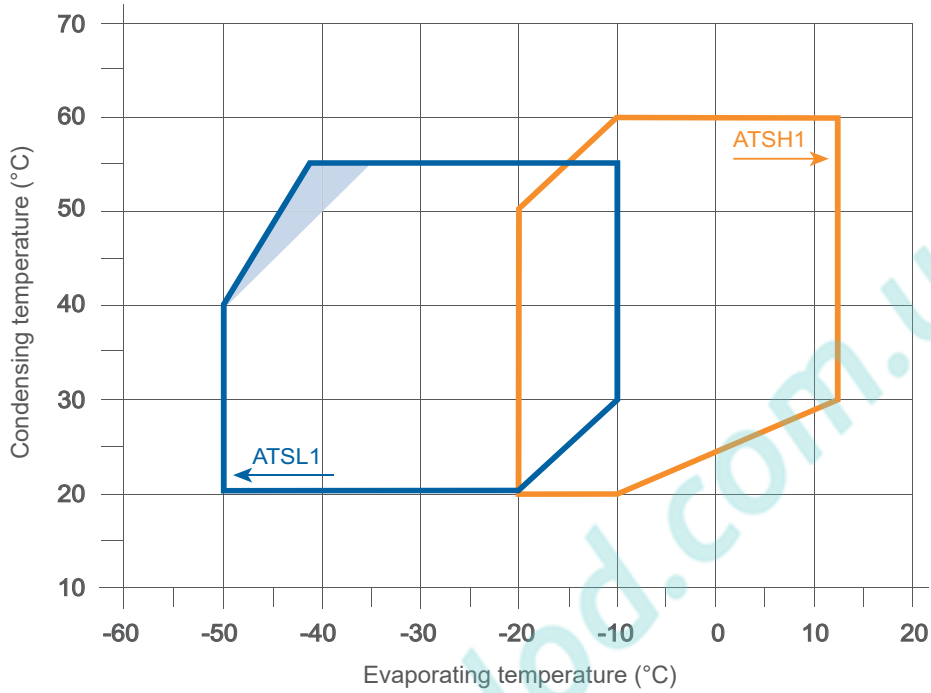
 For operation in this zone, ask Frascold

Operating limits

The compressor can be operated within the values of the application chart; pay attention to the different zones.

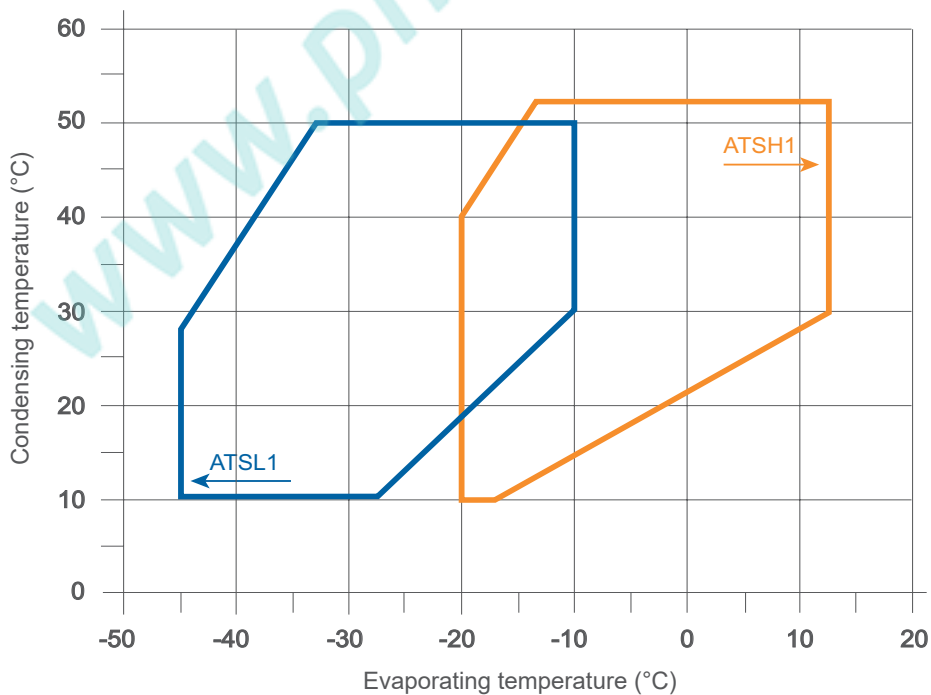
R22

Standard application envelope
Check the envelope of each compressor model in the Frascold Selection Software program



R717

Standard application envelope
Check the envelope of each compressor model in the Frascold Selection Software program



Compressor at 100% of capacity

■ For operation in this zone, ask Frascold

Performance R134a [50 Hz]

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]								
			20	15	10	5	0	-5	-10	-15	-20
ATSH1-120	30	Qo			104975	87307	72015	58852	47569	37920	29655
		Pe			14,64	14,04	13,46	12,93	12,44	12,02	11,67
	40	Qo	134863	113509	94859	78664	64677	52651	42336	33486	25852
		Pe	18,64	17,96	17,33	16,74	16,21	15,76	15,40	15,13	14,98
	50	Qo	119801	100396	83525	68942	56399	45647	36438	28526	21661
		Pe	22,09	21,38	20,75	20,20	19,75	19,41	19,19	19,11	19,17
60	Qo	103392	86073	71120	58287	47324	37985	30020			
	Pe	26,05	25,34	24,73	24,24	23,89	23,69	23,64			
ATSH1-150	30	Qo			132132	109338	89571	72543	57964	45544	34995
		Pe			16,89	16,19	15,63	15,21	14,91	14,74	14,69
	40	Qo	170008	142958	119177	98376	80265	64555	50957	39182	28940
		Pe	21,61	20,90	20,30	19,81	19,41	19,11	18,89	18,75	18,70
	50	Qo	151586	127229	105803	87019	70588	56221	43629	32521	22610
		Pe	26,05	25,60	25,22	24,89	24,62	24,40	24,22	24,08	23,98
60	Qo	132032	110391	91344	74602	59875	46875	35313			
	Pe	31,68	31,45	31,23	31,04	30,85	30,68	30,50			
ATSH1-186	30	Qo			166348	137481	112578	91239	73063	57649	44597
		Pe			21,23	20,38	19,68	19,13	18,72	18,43	18,25
	40	Qo	213823	179294	149194	123122	100677	81459	65068	51102	39162
		Pe	27,09	26,21	25,47	24,84	24,33	23,91	23,57	23,30	23,09
	50	Qo	190082	159023	132055	108780	88795	71700	57096	44581	33755
		Pe	32,60	32,04	31,56	31,14	30,79	30,47	30,19	29,92	29,65
60	Qo	165645	138057	114225	93748	76225	61256	48441			
	Pe	39,88	39,61	39,37	39,15	38,93	38,69	38,44			
ATSH1-210	30	Qo			187491	154847	126720	102661	82221	64950	50400
		Pe			22,82	21,88	21,11	20,51	20,08	19,82	19,74
	40	Qo	241832	202707	168588	139025	113570	91772	73184	57355	43838
		Pe	29,10	28,22	27,42	26,72	26,10	25,56	25,12	24,77	24,51
	50	Qo	215399	180161	149518	123023	100225	80676	63926	49527	37029
		Pe	35,04	34,51	33,97	33,45	32,93	32,41	31,90	31,40	30,91
60	Qo	188550	157184	130006	106564	86410	69095	54171			
	Pe	43,26	43,02	42,70	42,30	41,83	41,28	40,65			
ATSH1-240	30	Qo			213733	176965	145263	118146	95135	75749	59507
		Pe			27,56	26,32	25,16	24,12	23,30	22,75	22,55
	40	Qo	276259	231730	192867	159189	130215	105466	84461	66720	51761
		Pe	35,25	34,26	33,17	32,04	30,94	29,95	29,13	28,57	28,32
	50	Qo	247518	206887	171560	141056	114896	92599	73684	57671	44080
		Pe	42,34	41,46	40,45	39,37	38,30	37,30	36,46	35,83	35,49
60	Qo	218265	181616	149909	122665	99402	79641	62900			
	Pe	51,11	50,30	49,33	48,26	47,16	46,12	45,19			
ATSH1-270	30	Qo			240049	198651	162933	132362	106407	84533	66210
		Pe			30,88	29,44	28,14	27,01	26,09	25,41	25,02
	40	Qo	310894	260650	216782	178757	146042	118104	94412	74432	57631
		Pe	40,12	38,68	37,27	35,92	34,67	33,56	32,63	31,90	31,42
	50	Qo	277327	231511	191701	157364	127967	102979	81865	64093	49131
		Pe	47,85	46,53	45,20	43,89	42,66	41,52	40,53	39,70	39,10
60	Qo	241742	200670	165234	134900	109138	87413	69193			
	Pe	56,91	55,66	54,37	53,06	51,79	50,59	49,48			
ATSH1-300	30	Qo			271348	224309	183371	148285	118803	94679	75664
		Pe			34,93	33,70	32,81	32,22	31,91	31,86	32,04
	40	Qo	348704	293661	244725	201648	164181	132078	105091	82972	65473
		Pe	43,32	42,14	41,23	40,58	40,15	39,93	39,88	39,97	40,19
	50	Qo	310448	260507	216182	177227	143395	114436	90105	70153	54333
		Pe	52,14	51,45	50,92	50,55	50,29	50,12	50,02	49,97	49,92
60	Qo	269375	224696	185145	150475	120438	94786	73273			
	Pe	64,96	64,45	64,01	63,60	63,21	62,81	62,36			
ATSH1-360	30	Qo			315677	260586	213715	174168	141045	113450	90484
		Pe			39,14	39,42	39,15	38,47	37,50	36,38	35,24
	40	Qo	407831	340019	281607	231696	189388	153786	123992	99106	78232
		Pe	49,66	49,64	49,16	48,33	47,30	46,20	45,14	44,26	43,70
	50	Qo	361714	300102	247272	202325	164365	132492	105809	83417	64419
		Pe	62,63	61,17	59,58	57,99	56,53	55,33	54,51	54,21	54,56
60	Qo	315759	260131	212667	172469	138639	110279	86491			
	Pe	77,03	74,47	72,11	70,08	68,52	67,55	67,30			

① Superheat of suction gas 10 K without liquid sub-cooling.
 Performance values refer to European Standard EN12900 with operation at 2900 rpm
 To calculate performance in different operating points, see Frascold Selection Software.
 All published data is preliminary and susceptible to change.

In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R404A - R507A [50 Hz] medium-high temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]						
			7,5	5	0	-5	-10	-15	-20
ATSH1-120	30	Qo	147576	135183	112576	92802	75775	61406	49607
		Pe	23,63	23,04	22,16	21,56	21,12	20,69	20,14
	40	Qo	125238	114796	95704	78927	64378	51969	41613
		Pe	27,09	26,82	26,46	26,18	25,87	25,38	24,58
	50	Qo	102598	94050	78359	64464	52280	41717	32689
		Pe	32,60	32,56	32,49	32,32	31,93	31,16	29,90
ATSH1-150	30	Qo	197860	179971	148601	122368	100383	81754	65590
		Pe	29,51	29,15	28,43	27,81	27,39	27,28	27,60
	40	Qo	170528	154746	127242	104409	85356	69193	55029
		Pe	36,03	35,73	35,11	34,55	34,14	34,00	34,24
	50	Qo	141896	128236	104627	85222	69130	55462	43327
		Pe	44,55	44,27	43,66	43,06	42,57	42,31	42,38
ATSH1-186	30	Qo	250790	227995	188044	154753	127087	104011	84493
		Pe	34,18	33,34	32,36	32,05	32,07	32,09	31,79
	40	Qo	212565	193223	159437	131320	107838	87958	70645
		Pe	42,43	41,72	40,93	40,72	40,76	40,72	40,28
	50	Qo	174709	158595	130523	107130	87383	70247	54689
		Pe	53,60	52,92	52,14	51,86	51,76	51,49	50,75
ATSH1-210	30	Qo	280539	255117	210579	173479	142649	116926	95143
		Pe	39,04	38,26	37,31	36,94	36,87	36,83	36,54
	40	Qo	238653	217036	179282	147865	121619	99378	79977
		Pe	47,74	47,05	46,24	45,96	45,93	45,88	45,54
	50	Qo	197021	178994	147594	121430	99336	80148	62698
		Pe	59,56	58,89	58,08	57,76	57,64	57,44	56,90
ATSH1-240	30	Qo	312788	284440	234800	193477	159159	130539	106304
		Pe	50,10	48,10	45,10	43,14	41,90	41,06	40,30
	40	Qo	266911	242699	200416	165231	135834	110914	89161
		Pe	56,43	54,70	52,14	50,52	49,52	48,82	48,11
	50	Qo	220308	200074	164833	135472	110678	89144	69557
		Pe	65,49	63,95	61,69	60,28	59,39	58,70	57,89
ATSH1-270	30	Qo	352972	320428	263994	217613	179494	147851	120895
		Pe	56,89	54,32	50,64	48,48	47,36	46,82	46,37
	40	Qo	301349	273474	225331	185840	153214	125665	101404
		Pe	63,82	61,59	58,49	56,79	56,02	55,69	55,34
	50	Qo	249073	225670	185422	152427	124898	101047	79086
		Pe	74,04	72,05	69,33	67,89	67,26	66,95	66,50
ATSH1-300	30	Qo	393275	356933	293858	241952	199244	163764	133541
		Pe	62,22	60,96	58,61	56,50	54,67	53,16	52,03
	40	Qo	335290	303986	249906	205557	168967	138166	111183
		Pe	71,61	70,51	68,45	66,58	64,96	63,62	62,62
	50	Qo	278955	252258	206313	168659	137325	110341	85737
		Pe	84,68	83,86	82,32	80,94	79,77	78,83	78,19
ATSH1-360	30	Qo	470714	427358	352200	290447	239701	197561	161627
		Pe	76,02	74,34	71,20	68,38	65,96	63,98	62,52
	40	Qo	402345	364908	300318	247439	203872	167216	135071
		Pe	86,93	85,46	82,70	80,22	78,06	76,31	75,00
	50	Qo	334302	302469	247816	203180	166161	134358	105373
		Pe	102,36	101,23	99,11	97,20	95,57	94,28	93,39

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R404A - R507A [50 Hz] low temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]							
			-15	-20	-25	-30	-35	-40	-45	-50
ATSL1-120	30	Qo	63342	51268	41119	32644	25591	19710	14752	10464
		Pe	22,86	21,26	19,94	18,82	17,85	16,96	16,08	15,14
	40	Qo	53980	43376	34539	27219	21165	16126	11852	8092
		Pe	25,60	24,14	22,91	21,84	20,86	19,90	18,90	17,79
	50	Qo	44115	34992	27478	21325	16281	12095		
		Pe	29,22	27,87	26,68	25,60	24,56	23,49		
ATSL1-150	30	Qo	81600	66076	53003	42070	32962	25370	18979	13478
		Pe	28,08	26,11	24,48	23,10	21,89	20,79	19,70	18,55
	40	Qo	69457	55865	44512	35087	27276	20769	15252	10413
		Pe	31,40	29,63	28,13	26,81	25,60	24,41	23,18	21,81
	50	Qo	56576	44947	35345	27458	20975	15583		
		Pe	35,69	34,09	32,68	31,38	30,13	28,83		
ATSL1-186	30	Qo	105268	85296	68451	54327	42519	32619	24222	16921
		Pe	34,29	31,58	29,71	28,47	27,64	27,00	26,34	25,44
	40	Qo	89664	72153	57519	45354	35253	26810	19618	13272
		Pe	39,00	36,54	34,88	33,80	33,09	32,52	31,89	30,97
	50	Qo	72214	57370	45152	35153	26967	20187		
		Pe	45,62	43,32	41,78	40,77	40,08	39,49		
ATSL1-210	30	Qo	118096	95714	76902	61186	48090	37138	27855	19766
		Pe	39,38	36,20	33,68	31,72	30,20	29,02	28,08	27,25
	40	Qo	101539	81776	65309	51662	40360	30926	22886	15765
		Pe	44,89	41,70	39,20	37,27	35,79	34,68	33,80	33,07
	50	Qo	83296	66230	52183	40682	31249	23410		
		Pe	52,49	49,24	46,69	44,72	43,23	42,11		
ATSL1-240	30	Qo	132590	107516	86325	68549	53724	41384	31065	22300
		Pe	45,94	42,55	39,28	36,24	33,56	31,34	29,72	28,81
	40	Qo	113356	91487	73147	57870	45189	34641	25759	18078
		Pe	52,13	48,25	44,65	41,45	38,75	36,69	35,37	34,92
	50	Qo	92499	73884	58443	45712	35224	26515		
		Pe	60,05	55,79	51,96	48,69	46,08	44,26		
ATSL1-270	30	Qo	147917	120110	96763	77271	61025	47419	35846	25699
		Pe	51,59	47,19	43,35	40,07	37,33	35,15	33,52	32,44
	40	Qo	125148	101315	81467	64998	51300	39767	29791	20765
		Pe	57,87	53,11	49,06	45,71	43,07	41,13	39,90	39,37
	50	Qo	102208	82082	65466	51754	40337	30610		
		Pe	66,29	61,29	57,15	53,87	51,44	49,87		
ATSL1-300	30	Qo	162304	132259	106953	85722	67903	52829	39838	28265
		Pe	57,02	52,28	48,22	44,77	41,89	39,52	37,59	36,06
	40	Qo	136381	110953	89699	71955	57058	44341	33142	22796
		Pe	63,80	58,84	54,66	51,22	48,45	46,30	44,71	43,64
	50	Qo	111683	90289	72504	57665	45106	34163		
		Pe	73,25	68,15	63,95	60,60	58,03	56,20		
ATSL1-360	30	Qo	196733	159891	129041	103296	81768	63572	47820	33626
		Pe	68,29	62,75	57,97	53,87	50,35	47,35	44,77	42,53
	40	Qo	165756	134405	108379	86790	68753	53380	39784	27079
		Pe	76,70	70,89	65,95	61,80	58,35	55,51	53,21	51,37
	50	Qo	136125	109604	87740	69647	54438	41227		
		Pe	88,04	82,18	77,29	73,30	70,12	67,66		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R404A - R507A [50 Hz] low temperature with economiser

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]							
			-15	-20	-25	-30	-35	-40	-45	-50
ATSL1-120	30	Qo	78312	65513	54360	44691	36322	29036	22583	16668
		Pe	26,69	25,16	23,82	22,61	21,46	20,33	19,11	17,72
	40	Qo	73761	61598	51034	41898	33986	27053	20804	14888
		Pe	31,71	30,16	28,73	27,38	26,04	24,63	23,06	21,18
	50	Qo	69046	57346	47227	38503	30938	24239		
		Pe	38,69	36,92	35,23	33,55	31,82	29,94		
ATSL1-150	30	Qo	100885	84435	70071	57596	46784	37373	29054	21469
		Pe	33,01	31,13	29,48	27,97	26,54	25,12	23,60	21,87
	40	Qo	94909	79333	65770	54009	43800	34842	26772	19157
		Pe	39,26	37,38	35,63	33,95	32,27	30,50	28,53	26,17
	50	Qo	88550	73661	60747	49576	39858	31228		
		Pe	47,83	45,72	43,67	41,62	39,48	37,14		
ATSL1-186	30	Qo	130147	108995	90492	74377	60348	48052	37080	26954
		Pe	40,65	38,07	36,17	34,77	33,64	32,57	31,32	29,61
	40	Qo	122522	102465	84988	69814	56609	44976	34437	24418
		Pe	49,15	46,54	44,57	43,03	41,71	40,38	38,76	36,52
	50	Qo	113024	94021	77603	63470	51244	40455		
		Pe	61,10	58,17	55,82	53,87	52,10	50,25		
ATSL1-210	30	Qo	146008	122308	101665	83767	68254	54708	42641	31484
		Pe	46,52	43,48	40,94	38,81	36,99	35,36	33,80	32,12
	40	Qo	138747	116130	96499	79524	64809	51882	40173	29003
		Pe	56,38	53,04	50,20	47,78	45,67	43,74	41,83	39,66
	50	Qo	130369	108540	89688	73452	59382	46915		
		Pe	70,35	66,38	62,91	59,88	57,16	54,59		
ATSL1-240	30	Qo	163927	137390	114121	93847	76251	60964	47555	35520
		Pe	53,95	50,73	47,42	44,18	41,13	38,41	36,11	34,31
	40	Qo	154895	129921	108080	89079	72565	58113	45216	33260
		Pe	64,96	60,94	56,98	53,22	49,81	46,84	44,40	42,49
	50	Qo	144772	121084	100446	82534	66936	53138		
		Pe	79,89	74,91	70,14	65,72	61,79	58,39		
ATSL1-270	30	Qo	182877	153483	127921	105788	86614	69854	54874	40934
		Pe	60,52	56,33	52,49	49,02	45,94	43,24	40,88	38,77
	40	Qo	171008	143878	120374	100052	82378	66713	52293	38203
		Pe	72,04	67,16	62,78	58,94	55,62	52,79	50,34	48,06
	50	Qo	159969	134520	112517	93443	76652	61343		
		Pe	88,22	82,53	77,51	73,15	69,43	66,19		
ATSL1-300	30	Qo	200664	169008	141392	117359	96375	77824	60985	45022
		Pe	66,82	62,34	58,31	54,71	51,47	48,53	45,78	43,02
	40	Qo	186357	157564	132537	110762	91623	74387	58176	41939
		Pe	79,25	74,22	69,77	65,86	62,41	59,30	56,33	53,18
	50	Qo	174799	147970	124613	104115	85713	68465		
		Pe	97,21	91,51	86,49	82,09	78,15	74,42		
ATSL1-360	30	Qo	243230	204318	170592	141417	116055	93649	73204	53561
		Pe	80,18	74,91	70,15	65,84	61,89	58,20	54,60	50,82
	40	Qo	226496	190869	160138	133598	110404	89550	69835	49820
		Pe	95,47	89,53	84,21	79,46	75,17	71,16	67,16	62,70
	50	Qo	213053	179623	150799	125750	103448	82621		
		Pe	117,24	110,54	104,57	99,25	94,39	89,65		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R22 [50 Hz] medium-high temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]							
			12,5	10	5	0	-5	-10	-15	-20
ATSH1-120	30	Qo	162570	150654	128754	109288	92091	76996	63837	52447
		Pe	31,28	29,91	27,34	25,00	22,90	21,07	19,52	18,27
	40	Qo	149023	137908	117522	99456	83542	69615	57509	47057
		Pe	33,45	32,06	29,46	27,15	25,13	23,42	22,04	21,01
	50	Qo	134344	124056	105236	88621	74043	61336	50335	40873
		Pe	36,15	34,75	32,18	29,94	28,05	26,51	25,35	24,57
ATSH1-150	30	Qo	211127	195018	165203	138616	115286	95243	78519	65141
		Pe	25,71	25,39	24,73	24,10	23,55	23,12	22,86	22,81
	40	Qo	192749	177761	150045	125364	103749	85230	69837	57599
		Pe	31,01	30,72	30,11	29,53	29,02	28,62	28,38	28,36
	50	Qo	172811	158842	133018	110039	89934	72734	58468	47166
		Pe	37,24	37,04	36,63	36,23	35,90	35,67	35,60	35,73
ATSH1-186	30	Qo	263144	242310	204686	172065	143979	119964	99554	82282
		Pe	32,37	31,65	30,54	29,81	29,37	29,13	29,00	28,91
	40	Qo	243619	224198	189116	158659	132361	109757	90380	73764
		Pe	39,37	38,80	37,93	37,38	37,05	36,85	36,71	36,53
	50	Qo	223088	204833	171801	143017	118014	96328	77493	61042
		Pe	48,61	48,19	47,58	47,21	47,00	46,87	46,71	46,46
ATSH1-210	30	Qo	299045	274854	231821	195101	163711	136667	112984	91679
		Pe	39,18	37,62	35,43	34,20	33,62	33,35	33,07	32,46
	40	Qo	272129	250179	211146	177785	149111	124140	101889	81374
		Pe	45,50	44,23	42,54	41,71	41,40	41,28	41,05	40,35
	50	Qo	244641	224690	189175	158688	132247	108867	87564	67355
		Pe	53,84	52,84	51,59	51,08	50,97	50,95	50,69	49,86
ATSH1-240	30	Qo	342649	316622	268310	225104	187148	154583	127550	106192
		Pe	45,41	44,67	43,19	41,73	40,31	38,97	37,73	36,63
	40	Qo	314878	290589	245507	205202	169816	139492	114371	94595
		Pe	52,86	52,04	50,44	48,93	47,55	46,32	45,27	44,43
	50	Qo	282024	259692	218274	181305	148926	121278	98503	80744
		Pe	61,57	60,74	59,19	57,80	56,62	55,66	54,97	54,56
ATSH1-270	30	Qo	383770	355006	300884	251879	208686	171997	142504	120901
		Pe	50,26	49,48	47,98	46,52	45,10	43,70	42,32	40,95
	40	Qo	350718	324340	274584	229404	189493	155545	128252	108307
		Pe	58,42	57,55	55,91	54,43	53,10	51,89	50,81	49,84
	50	Qo	312645	288814	243746	202712	166406	135521	110749	92784
		Pe	68,33	67,41	65,79	64,42	63,30	62,43	61,78	61,35
ATSH1-300	30	Qo	430168	397205	336994	283937	237469	197027	162049	131970
		Pe	49,11	48,78	48,33	48,09	47,98	47,90	47,78	47,52
	40	Qo	394814	364003	307785	258304	214995	177297	144644	116475
		Pe	61,71	61,29	60,67	60,29	60,06	59,89	59,70	59,39
	50	Qo	354681	326019	273786	227873	187717	152754	122420	96154
		Pe	74,62	74,21	73,64	73,33	73,20	73,16	73,12	73,00
ATSH1-360	30	Qo	514585	474626	401637	337490	281710	233819	193341	159797
		Pe	60,20	59,58	58,47	57,58	56,90	56,46	56,27	56,35
	40	Qo	469160	432665	365923	307110	255751	211367	173484	141623
		Pe	74,81	74,21	73,13	72,21	71,48	70,95	70,62	70,53
	50	Qo	420662	387307	326159	272027	224436	182908	146967	116136
		Pe	90,54	90,01	89,04	88,19	87,49	86,95	86,58	86,39

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R22 [50 Hz] low temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]								
			-10	-15	-20	-25	-30	-35	-40	-45	-50
ATSL1-120	30	Qo	78382	64322	52360	42259	33786	26704	20778	15774	11455
		Pe	21,64	20,01	18,64	17,49	16,53	15,73	15,05	14,46	13,93
	40	Qo	70985	57948	46909	37634	29886	23431	18034	13458	9470
		Pe	24,51	22,88	21,53	20,41	19,48	18,73	18,10	17,58	17,13
	50	Qo	62638	50709	40680	32315	25379	19637	14853		
		Pe	28,11	26,46	25,10	23,98	23,07	22,33	21,75		
ATSL1-150	30	Qo	101437	83525	68214	55213	44235	34988	27185	20534	14748
		Pe	27,48	26,26	25,22	24,31	23,49	22,73	21,97	21,17	20,29
	40	Qo	91805	75096	60857	48799	38632	30067	22814	16583	11086
		Pe	31,78	30,90	30,13	29,41	28,69	27,95	27,13	26,18	25,08
	50	Qo	81286	65818	52690	41612	32295	24449	17785		
		Pe	37,38	36,81	36,26	35,69	35,04	34,27	33,35		
ATSL1-186	30	Qo	125718	103098	83817	67504	53788	42299	32665	24517	17484
		Pe	33,27	31,16	29,28	27,61	26,13	24,84	23,73	22,78	21,97
	40	Qo	113809	92707	74779	59657	46969	36344	27412	19802	13143
		Pe	38,13	36,28	34,60	33,06	31,65	30,36	29,18	28,10	27,11
	50	Qo	100795	81263	64744	50866	39259	29552	21375		
		Pe	44,49	42,87	41,35	39,90	38,52	37,20	35,92		
ATSL1-210	30	Qo	139186	115888	95258	77157	61449	47997	36662	27309	19799
		Pe	38,30	35,41	32,90	30,75	28,98	27,58	26,56	25,92	25,66
	40	Qo	126555	104860	85704	68951	54463	42102	31733	23216	16416
		Pe	42,81	40,62	38,67	36,97	35,50	34,29	33,32	32,60	32,13
	50	Qo	112843	92782	75132	59758	46521	35284	25910		
		Pe	49,29	47,61	46,04	44,59	43,25	42,03	40,93		
ATSL1-240	30	Qo	157585	129067	104847	84469	67479	53419	41836	32273	24274
		Pe	43,05	39,42	36,39	33,91	31,91	30,33	29,10	28,16	27,45
	40	Qo	144503	117600	94870	75859	60110	47168	36577	27882	20627
		Pe	48,71	45,22	42,32	39,95	38,05	36,54	35,37	34,47	33,79
	50	Qo	130185	104950	83764	66173	51719	39947	30402		
		Pe	56,13	52,70	49,84	47,49	45,59	44,07	42,87		
ATSL1-270	30	Qo	177806	145865	118604	95563	76285	60309	47177	36429	27606
		Pe	49,75	45,03	41,20	38,16	35,77	33,92	32,48	31,33	30,35
	40	Qo	162002	132217	106914	85635	67921	53313	41351	31576	23529
		Pe	56,50	51,82	48,03	45,02	42,66	40,84	39,42	38,29	37,33
	50	Qo	146143	118295	94734	74999	58632	45173	34164		
		Pe	65,62	60,77	56,82	53,64	51,10	49,10	47,50		
ATSL1-300	30	Qo	200483	162600	130989	104900	83583	66287	52261	40756	31020
		Pe	55,38	49,86	45,47	42,06	39,50	37,64	36,33	35,45	34,84
	40	Qo	182823	147446	118095	94019	74466	58686	45929	35444	26481
		Pe	61,92	56,83	52,79	49,65	47,29	45,54	44,28	43,36	42,65
	50	Qo	164992	131904	104592	82307	64299	49815	38107		
		Pe	71,38	66,44	62,47	59,32	56,87	54,97	53,48		
ATSL1-360	30	Qo	243710	199054	161055	129064	102432	80508	62643	48187	36491
		Pe	66,09	60,41	55,61	51,60	48,32	45,69	43,63	42,07	40,93
	40	Qo	222038	180388	145120	115585	91134	71116	54882	41782	31167
		Pe	74,03	68,90	64,53	60,83	57,74	55,18	53,07	51,34	49,91
	50	Qo	199718	160914	128218	100980	78551	60280	45518		
		Pe	85,85	80,87	76,52	72,73	69,43	66,53	63,97		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R22 [50 Hz] low temperature with economiser

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]								
			-10	-15	-20	-25	-30	-35	-40	-45	-50
ATSL1-120	30	Qo	87741	73442	61003	50259	41035	33137	26356	20461	15203
		Pe	23,58	22,05	20,71	19,54	18,52	17,62	16,80	16,03	15,27
	40	Qo	83660	69806	57782	47423	38544	30943	24398	18664	13469
		Pe	27,60	25,97	24,55	23,31	22,22	21,27	20,40	19,59	18,77
	50	Qo	78527	65133	53558	43631	35159	27928	21699		
		Pe	32,64	30,84	29,26	27,87	26,65	25,57	24,59		
ATSL1-150	30	Qo	113549	95368	79474	65666	53726	43418	34482	26636	19573
		Pe	30,00	28,90	27,91	26,98	26,09	25,20	24,26	23,22	22,02
	40	Qo	108198	90463	74963	61492	49823	39706	30865	22998	15768
		Pe	35,78	34,91	34,05	33,17	32,24	31,21	30,03	28,66	27,01
	50	Qo	101904	84539	69370	56183	44740	34772	25982		
		Pe	43,26	42,50	41,65	40,70	39,59	38,30	36,75		
ATSL1-186	30	Qo	140729	117716	97652	80283	65329	52489	41434	31803	23204
		Pe	36,39	34,42	32,58	30,88	29,29	27,83	26,48	25,22	24,03
	40	Qo	134131	111676	92112	75174	60575	47996	37087	27462	18693
		Pe	43,09	41,23	39,42	37,66	35,96	34,30	32,67	31,05	29,39
	50	Qo	126363	104377	85239	68678	54387	42030	31227		
		Pe	51,78	49,89	47,97	46,02	44,06	42,06	40,01		
ATSL1-210	30	Qo	155805	132320	110982	91764	74635	59560	46503	35424	26277
		Pe	41,76	39,08	36,65	34,49	32,59	30,97	29,65	28,65	27,99
	40	Qo	149152	126317	105569	86886	70240	55600	42932	32196	23348
		Pe	48,33	46,21	44,20	42,29	40,50	38,85	37,36	36,06	34,98
	50	Qo	141466	119172	98917	80683	64447	50181	37852		
		Pe	57,45	55,62	53,73	51,79	49,82	47,84	45,89		
ATSL1-240	30	Qo	176401	147367	122154	100460	81957	66289	53066	41863	32216
		Pe	46,96	43,50	40,53	38,00	35,88	34,10	32,62	31,38	30,30
	40	Qo	170305	141663	116859	95590	77523	62290	49487	38667	29337
		Pe	55,01	51,49	48,44	45,81	43,56	41,65	40,03	38,63	37,38
	50	Qo	163207	134801	110282	89344	71648	56813	44414		
		Pe	65,55	61,76	58,41	55,46	52,88	50,65	48,69		
ATSL1-270	30	Qo	199037	166547	138182	113654	92653	74838	59840	47254	36638
		Pe	54,17	49,64	45,88	42,79	40,26	38,18	36,45	34,97	33,60
	40	Qo	190929	159271	131695	107910	87597	70405	55945	43789	33465
		Pe	63,56	58,87	54,92	51,63	48,89	46,62	44,69	43,00	41,42
	50	Qo	183213	151942	124724	101262	81226	64246	49910		
		Pe	76,19	70,98	66,50	62,67	59,38	56,54	54,05		
ATSL1-300	30	Qo	224422	185655	152611	124758	101517	82256	66289	52866	41169
		Pe	60,36	55,00	50,64	47,15	44,41	42,32	40,74	39,52	38,49
	40	Qo	215467	177617	145467	118473	96037	77501	62139	49154	37663
		Pe	69,89	64,69	60,40	56,91	54,12	51,90	50,13	48,65	47,25
	50	Qo	206844	169421	137703	111129	89076	70849	55671		
		Pe	83,32	77,83	73,16	69,24	65,95	63,18	60,78		
ATSL1-360	30	Qo	272811	227278	187641	153497	124411	99904	79458	62506	48430
		Pe	72,15	66,71	61,96	57,85	54,34	51,37	48,90	46,88	45,22
	40	Qo	261685	217299	178755	145649	117533	93915	74252	57944	44328
		Pe	83,71	78,52	73,88	69,75	66,10	62,88	60,06	57,57	55,33
	50	Qo	250378	206683	168808	136340	108820	85732	66498		
		Pe	100,30	94,76	89,63	84,89	80,51	76,46	72,69		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R717 [50 Hz] medium-high temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]							
			12,5	10	5	0	-5	-10	-15	-20
ATSH1-120	30	Qo	180400	165590	138629	114993	94417	76633	61377	48383
		Pe	26,89	26,00	24,22	22,48	20,84	19,35	18,09	17,11
	40	Qo	171249	156983	131023	108273	88467	71338	56622	44052
		Pe	31,67	30,69	28,72	26,81	25,00	23,35	21,94	20,82
	50	Qo	159876	146276	121563	99944	81153	64924		
		Pe	36,42	35,44	33,47	31,56	29,77	28,15		
ATSH1-150	30	Qo	243491	224010	187487	154345	124736	98816	76737	58656
		Pe	30,18	29,57	28,50	27,62	26,90	26,31	25,83	25,44
	40	Qo	230390	210955	174701	142064	113197	88255	67392	50761
		Pe	37,02	36,30	35,02	33,92	32,98	32,17	31,47	30,85
	50	Qo	211115	192067	156764	125314	97871	74590		
		Pe	45,97	45,11	43,54	42,15	40,92	39,82		
ATSH1-186	30	Qo	291573	267792	224509	186579	153583	125098	100702	79975
		Pe	40,79	38,91	35,88	33,62	31,83	30,25	28,60	26,61
	40	Qo	274338	251526	210070	173821	142357	115257	92099	72462
		Pe	47,59	45,77	42,78	40,44	38,46	36,59	34,53	32,01
	50	Qo	255724	233934	194410	159946	130119	104508		
		Pe	55,96	54,12	51,01	48,44	46,12	43,78		
ATSH1-210	30	Qo	333251	305139	254533	210793	173174	140928	113310	89573
		Pe	45,99	44,15	41,06	38,56	36,46	34,56	32,65	30,53
	40	Qo	311467	284781	236765	195270	159548	128854	102441	79563
		Pe	54,22	52,36	49,14	46,44	44,04	41,74	39,35	36,65
	50	Qo	288288	263066	217720	178547	144802	115738		
		Pe	64,38	62,35	58,74	55,54	52,56	49,59		
ATSH1-240	30	Qo	381723	348514	289296	238764	195820	159369	128314	101558
		Pe	53,09	50,76	46,84	43,70	41,12	38,86	36,68	34,37
	40	Qo	356241	324920	269080	221393	180763	146093	116287	90248
		Pe	62,18	59,81	55,76	52,39	49,49	46,83	44,16	41,26
	50	Qo	330422	300869	248166	203084	164527	131398		
		Pe	73,43	70,89	66,40	62,52	59,01	55,64		
ATSH1-270	30	Qo	433228	395585	328446	271136	222417	181051	145799	115423
		Pe	59,425	57,248	53,3	49,826	46,745	43,974	41,432	39,038
	40	Qo	402687	367554	304849	251190	205341	166062	132116	102263
		Pe	70,802	68,301	63,754	59,747	56,197	53,023	50,143	47,475
	50	Qo	372563	339714	280988	230527	187094	149448		
		Pe	84,064	81,176	75,903	71,235	67,09	63,385		
ATSH1-300	30	Qo	466716	426692	354248	291250	236872	190289	150673	117198
		Pe	59,49	58,396	56,297	54,3	52,382	50,521	48,694	46,879
	40	Qo	431317	393403	324893	265451	214251	170466	133269	101835
		Pe	72,967	71,629	69,106	66,764	64,583	62,539	60,61	58,774
	50	Qo	391309	355671	291430	235877	188188	147534		
		Pe	88,758	87,14	84,116	81,355	78,834	76,532		
ATSH1-360	30	Qo	550259	504105	421027	349139	287102	233575	187217	146689
		Pe	69,2	68,373	66,285	63,824	61,239	58,776	56,683	55,207
	40	Qo	522595	477177	395565	325134	264544	212455	167527	128420
		Pe	87,643	85,834	82,108	78,445	75,093	72,299	70,311	69,376
	50	Qo	489247	444763	365011	296431	237683	187428		
		Pe	108,104	105,452	100,368	95,782	91,942	89,095		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R717 [50 Hz] low temperature

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]						
			-10	-15	-20	-25	-30	-35	-40
ATSL1-120	30	Qo	82385	66545	53134	41875	32491	24705	18239
		Pe	23,30	21,05	18,99	17,10	15,38	13,80	12,36
	40	Qo	75882	60941	48304	37694	28834	21446	
		Pe	26,82	24,30	21,99	19,84	17,87	16,04	
	50	Qo	68597	54592	42767	32844	24546		
		Pe	30,27	27,48	24,89	22,48	20,24		
ATSL1-150	30	Qo	106569	87019	69669	54483	41425	30460	21549
		Pe	30,59	27,79	25,30	23,12	21,21	19,54	18,09
	40	Qo	100799	80862	63384	48331	35666	25352	
		Pe	35,08	32,08	29,39	26,98	24,83	22,91	
	50	Qo	91677	71979	55001	40706	29059		
		Pe	40,46	37,19	34,21	31,51	29,05		
ATSL1-186	30	Qo	130080	104953	83711	65954	51282	39295	29594
		Pe	38,93	34,32	30,51	27,35	24,69	22,39	20,31
	40	Qo	120572	96824	76802	60104	46333	35088	
		Pe	43,17	38,52	34,61	31,29	28,41	25,84	
	50	Qo	109417	87180	68509	53004	40266		
		Pe	48,47	43,68	39,57	36,00	32,81		
ATSL1-210	30	Qo	142447	115530	92620	73337	57304	44140	33467
		Pe	42,59	37,98	33,96	30,46	27,44	24,85	22,63
	40	Qo	133723	107911	85973	67531	52205	39618	
		Pe	47,53	42,84	38,67	34,96	31,66	28,73	
	50	Qo	123650	98858	77808	60121	45420		
		Pe	53,68	48,78	44,32	40,26	36,56		
ATSL1-240	30	Qo	164826	132677	105780	83508	65231	50322	38152
		Pe	49,11	43,47	38,76	34,82	31,50	28,61	26,01
	40	Qo	153752	123233	97735	76629	59288	45084	
		Pe	54,58	48,88	44,05	39,92	36,35	33,16	
	50	Qo	141039	112105	87960	67977	51527		
		Pe	61,38	55,53	50,50	46,11	42,21		
ATSL1-270	30	Qo	187683	150718	119896	94467	73683	56792	43046
		Pe	55,02	48,60	43,30	38,90	35,20	32,00	29,09
	40	Qo	175100	139990	110765	86673	66967	50895	
		Pe	61,24	54,74	49,27	44,65	40,67	37,11	
	50	Qo	160738	127442	99770	76973	58301		
		Pe	69,16	62,43	56,68	51,70	47,30		
ATSL1-300	30	Qo	206312	165736	131980	104177	81464	62975	47846
		Pe	61,32	54,13	48,21	43,32	39,23	35,71	32,51
	40	Qo	192216	154026	122236	95981	74397	56619	
		Pe	68,07	60,95	54,96	49,88	45,47	41,48	
	50	Qo	176333	140203	110054	85023	64244		
		Pe	76,53	69,25	62,98	57,48	52,53		
ATSL1-360	30	Qo	249391	199543	158483	124984	97818	75757	57574
		Pe	74,43	65,27	57,93	52,04	47,22	43,08	39,24
	40	Qo	230878	184600	146421	115114	89449	68201	
		Pe	82,13	73,20	65,91	59,87	54,71	50,04	
	50	Qo	211391	168021	132062	102284	77460		
		Pe	92,29	83,30	75,75	69,27	63,47		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Performance R717 [50 Hz] low temperature with economiser

Compressor	Condensing Temperature [°C]	Qo [Watt] = Cooling capacity Pe [kW] = Power consumption ①	Evaporating temperature [°C]						
			-10	-15	-20	-25	-30	-35	-40
ATSL1-120	30	Qo	88092	71996	58180	46417	36468	28085	21006
		Pe	24,18	21,96	19,91	18,01	16,25	14,60	13,07
	40	Qo	83372	67801	54432	43033	33359	25151	
		Pe	28,18	25,66	23,30	21,08	19,00	17,04	
	50	Qo	77690	62660	49760	38748	29370		
		Pe	32,20	29,33	26,62	24,05	21,62		
ATSL1-150	30	Qo	113952	94147	76285	60392	46495	34626	24819
		Pe	31,73	28,99	26,52	24,31	22,31	20,53	18,92
	40	Qo	110748	89964	71426	55177	41262	29731	
		Pe	36,89	33,88	31,11	28,57	26,23	24,09	
	50	Qo	103829	82616	63993	48023	34771		
		Pe	43,03	39,62	36,43	33,46	30,68		
ATSL1-186	30	Qo	139091	113551	91661	73107	57558	44671	34085
		Pe	40,31	35,77	31,97	28,78	26,06	23,67	21,46
	40	Qo	132472	107723	86545	68618	53604	41149	
		Pe	45,34	40,68	36,70	33,26	30,24	27,48	
	50	Qo	123921	100064	79711	62532	48181		
		Pe	51,55	46,63	42,34	38,53	35,07		
ATSL1-210	30	Qo	152315	124995	101416	81291	64317	50178	38545
		Pe	44,11	39,58	35,58	32,06	28,97	26,28	23,93
	40	Qo	146922	120057	96880	77096	60398	46462	
		Pe	49,93	45,24	41,01	37,18	33,72	30,59	
	50	Qo	140041	113468	90530	70928	54347		
		Pe	57,16	52,12	47,46	43,14	39,12		
ATSL1-240	30	Qo	176244	143546	115827	92565	73215	57206	43940
		Pe	50,87	45,30	40,61	36,64	33,23	30,24	27,49
	40	Qo	168928	137104	110134	87483	68592	52871	
		Pe	57,35	51,62	46,70	42,44	38,68	35,27	
	50	Qo	159736	128672	102342	80196	61655		
		Pe	65,34	59,32	54,04	49,36	45,11		
ATSL1-270	30	Qo	200684	163065	131282	104712	82700	64561	49577
		Pe	57,02	50,68	45,39	40,95	37,16	33,84	30,77
	40	Qo	192382	155748	124817	98950	77475	59686	
		Pe	64,39	57,85	52,29	47,50	43,30	39,50	
	50	Qo	182046	146276	116083	90809	69761		
		Pe	73,68	66,74	60,70	55,38	50,58		
ATSL1-300	30	Qo	220603	179314	144514	115475	91434	71590	55105
		Pe	63,52	56,41	50,51	45,58	41,40	37,74	34,37
	40	Qo	211188	171363	137743	109576	86072	66399	
		Pe	71,53	64,37	58,28	53,03	48,39	44,13	
	50	Qo	199708	160923	128049	100306	76872		
		Pe	81,49	73,99	67,42	61,55	56,14		
ATSL1-360	30	Qo	266667	215890	173535	138539	109790	86121	66309
		Pe	77,10	68,02	60,70	54,76	49,83	45,53	41,48
	40	Qo	253666	205379	164997	131419	103486	79982	
		Pe	86,28	77,31	69,89	63,66	58,23	53,23	
	50	Qo	239413	192853	153654	120669	92685		
		Pe	98,23	88,98	81,08	74,16	67,83		

① Superheat of suction gas 10 K without liquid sub-cooling.

Performance values refer to European Standard EN12900 with operation at 2900 rpm

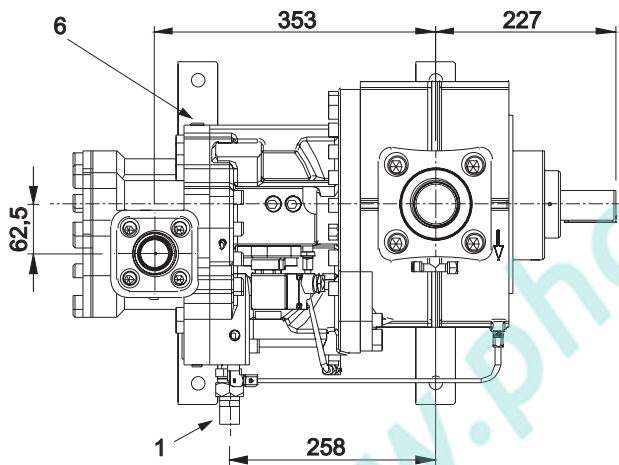
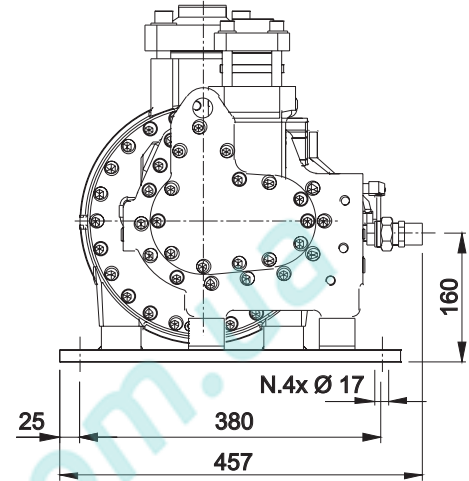
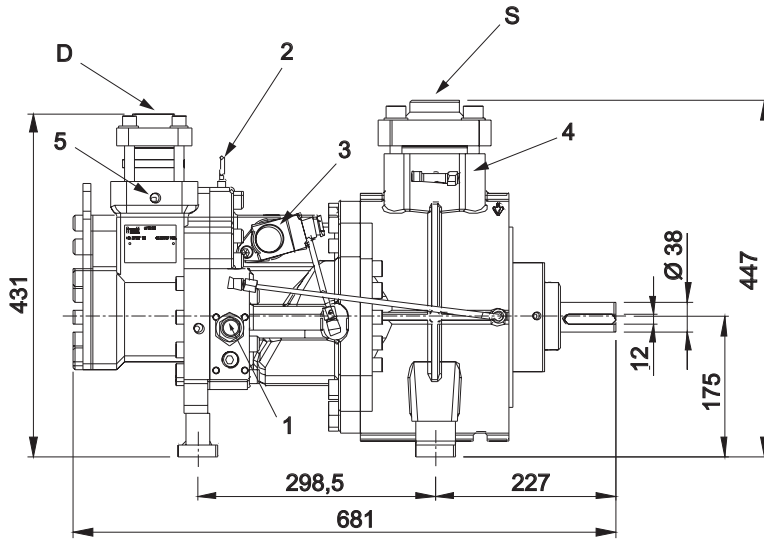
To calculate performance in different operating points, see Frascold Selection Software.

All published data is preliminary and susceptible to change.

■ In this range, supplementary cooling is necessary, or alternatively the suction temperature must be limited.

Dimensional drawings and connections

Models **ATSH1/L1 - 120**
ATSH1/L1 - 150

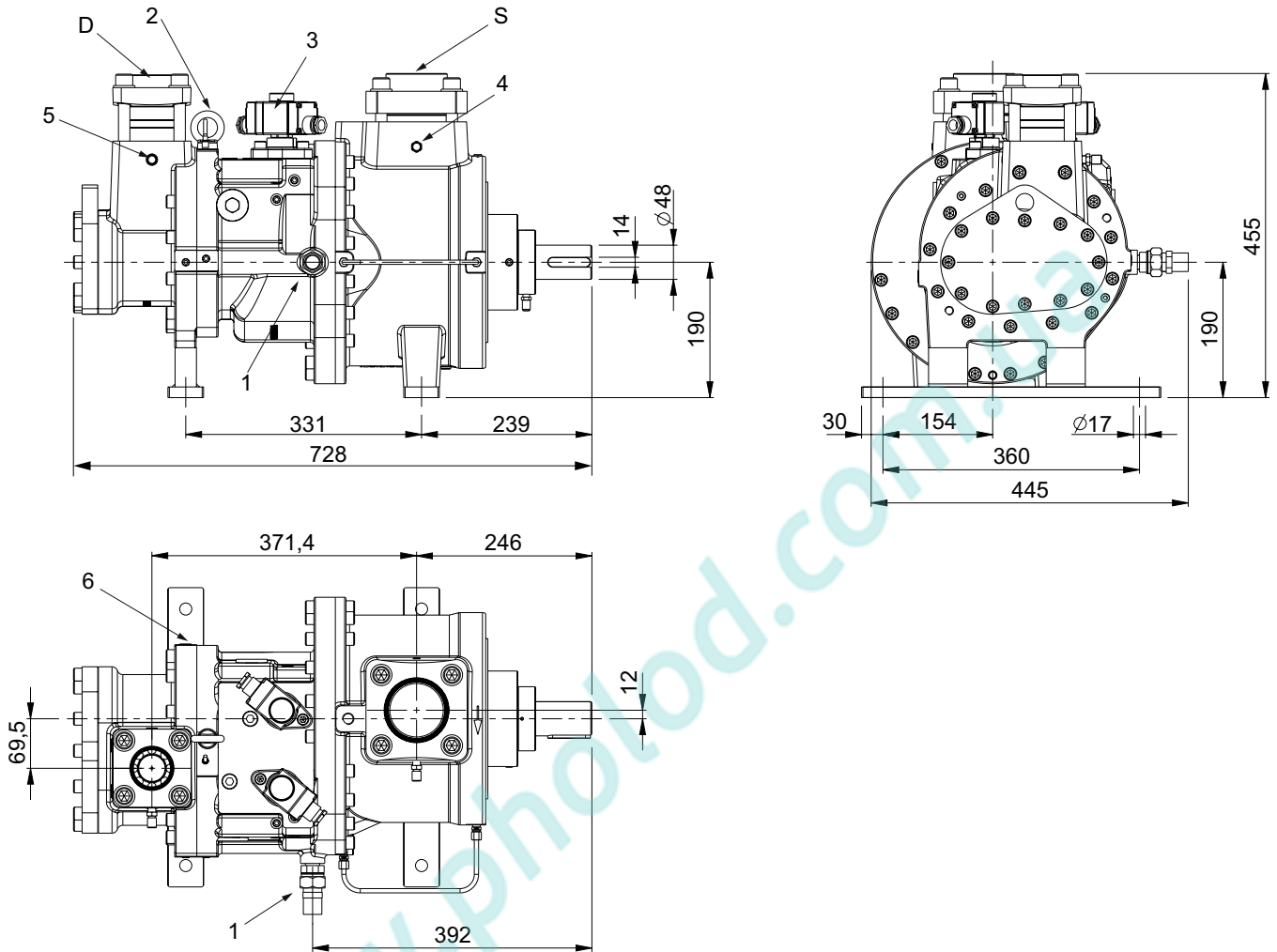


1	Oil return connection line	ø 7/8"	22,0 mm
2	Discharge temperature sensor		
3	Capacity control valve		
4	Low pressure connection		
5	High pressure connection		
6	Liquid injection / economiser connection		
S	Suction	ø 2" 5/8	54,0 mm
D	Discharge	ø 1" 5/8 (1)	42,0 mm

(1) Inch connection on request

Dimensional drawings and connections

Models **ATSH1/L1 - 186**
ATSH1/L1 - 210

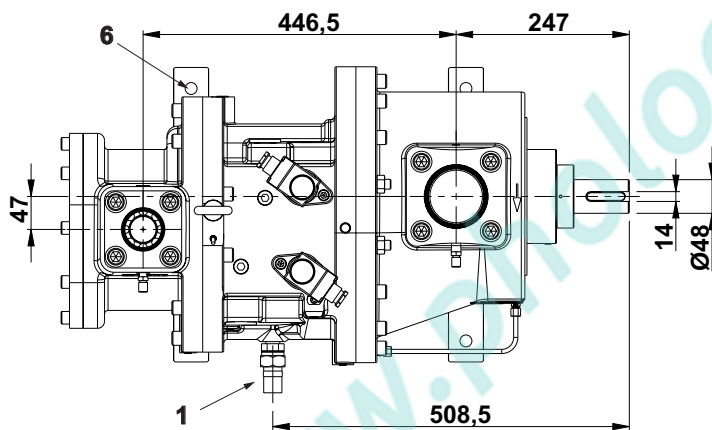
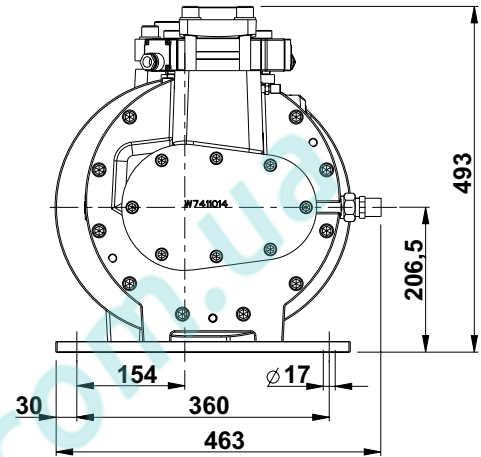
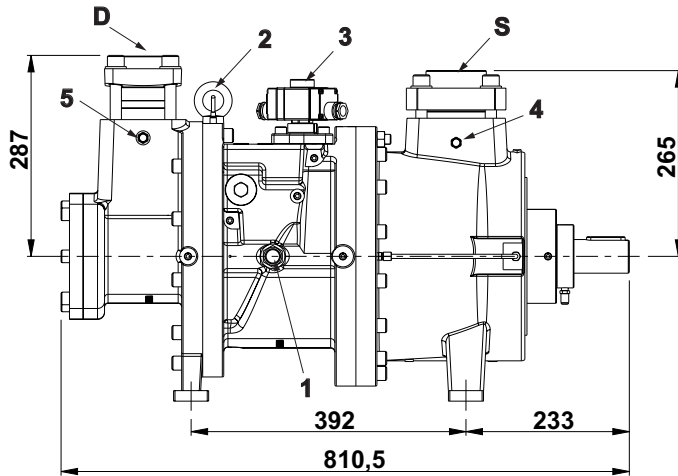


1	Oil return connection line	$\varnothing \frac{7}{8}''$	22,0 mm
2	Discharge temperature sensor		
3	Capacity control valve		
4	Low pressure connection		
5	High pressure connection		
6	Liquid injection / economiser connection		
S	Suction	$\varnothing 3'' \frac{1}{8}''$ (1)	80,0 mm
D	Discharge	$\varnothing 2'' \frac{1}{8}''$	54,0 mm

(1) Inch connection on request

Dimensional drawings and connections

Models **ATSH1/L1 - 240**
ATSH1/L1 - 270

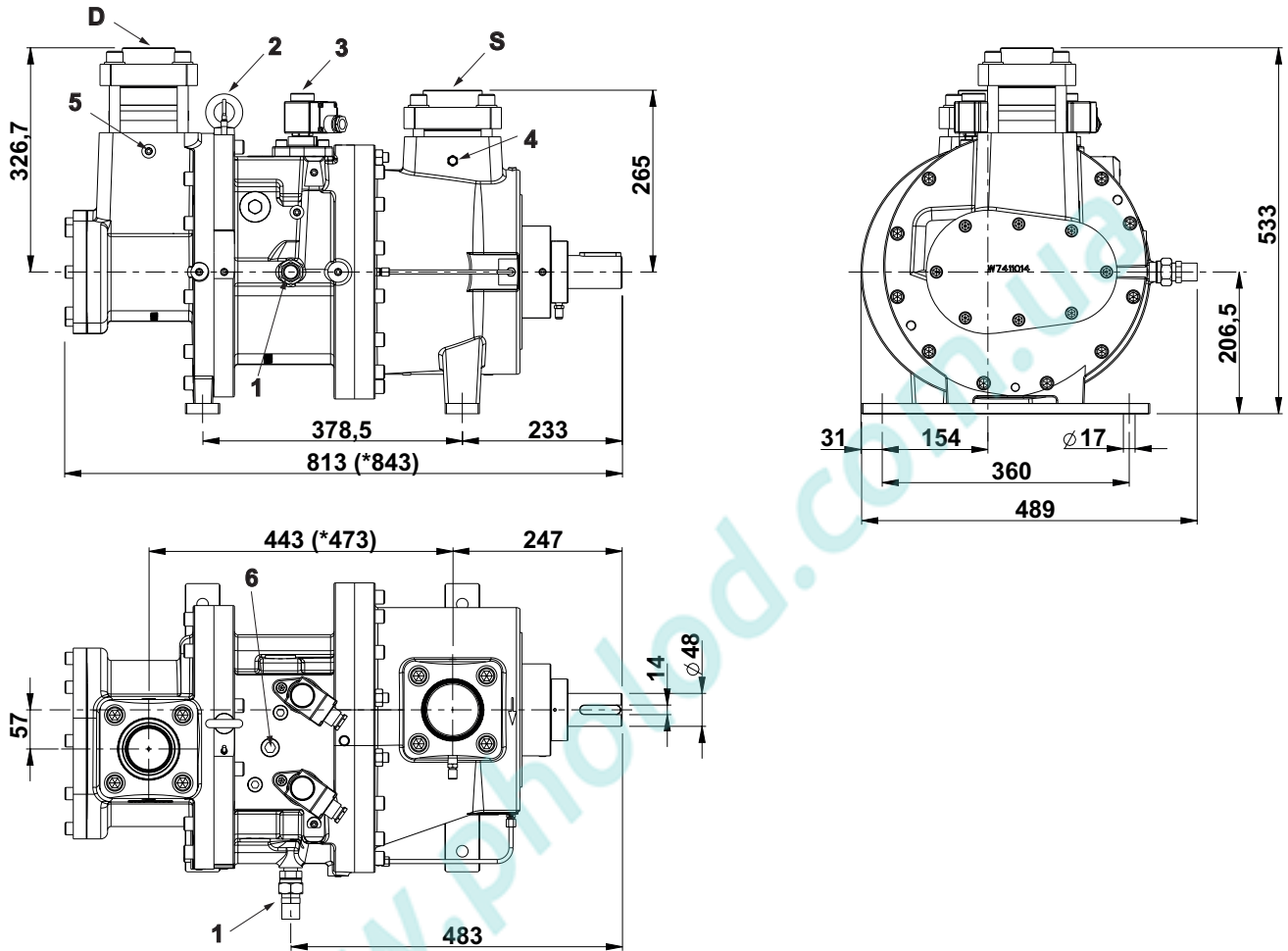


1	Oil return connection line	$\varnothing \frac{7}{8}$ "	22,0 mm
2	Discharge temperature sensor		
3	Capacity control valve		
4	Low pressure connection		
5	High pressure connection		
6	Liquid injection / economiser connection		
S	Suction	$\varnothing 3" \frac{1}{8}$ (1)	80,0 mm
D	Discharge	$\varnothing 2" \frac{1}{8}$	54,0 mm

(1) Inch connection on request

Dimensional drawings and connections

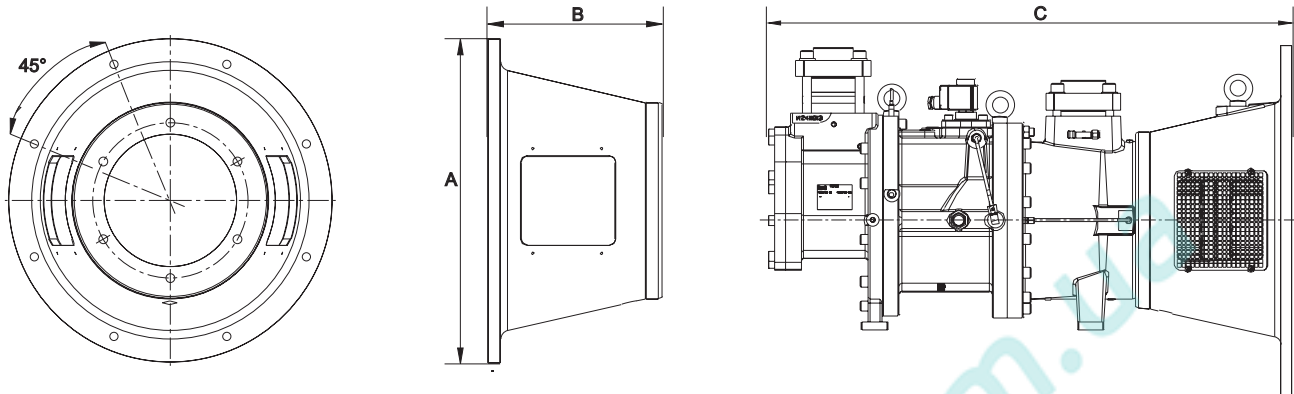
Models **ATSH1/L1 - 300**
ATSH1/L1 - 360*



1	Oil return connection line	$\varnothing \frac{7}{8}''$ 22,0 mm
2	Discharge temperature sensor	
3	Capacity control valve	
4	Low pressure connection	
5	High pressure connection	
6	Liquid injection / economiser connection	
S	Suction	$\varnothing 3'' \frac{1}{8} (1)$ 80,0 mm
D	Discharge	$\varnothing 2'' \frac{5}{8} (1)$ 67,0 mm

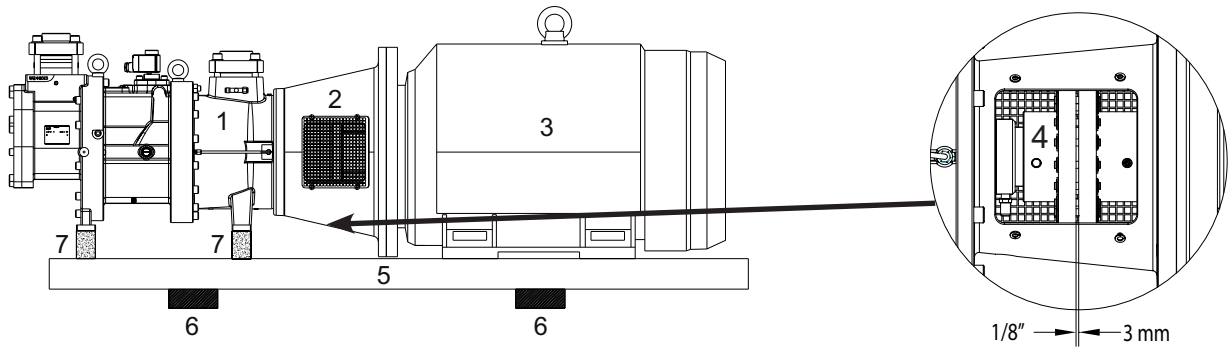
(1) Inch connection on request

Dimensional drawings and connections



Compressor	Motor (Std IEC B3/B5)	Coupling weight	Coupling housing weight	Coupling housing dimensions	Coupling housing dimensions	Compressor and coupling housing total length
	kW	kg	kg	B (mm)	A (mm)	C (mm)
ATSH1-120 ATSL1-120	18	10	22	250	350	796
	22	10	22	250	350	796
	30	11	26	250	400	796
	37	11	26	250	400	796
ATSH1-150 ATSL1-150	30	11	26	250	400	796
	37	11	26	250	400	796
	45	11	29	250	450	796
	55	11	47	296	550	842
ATSH1/L1-240 ATSH1/L1-270	55	15	47	296	550	958
	75	15	47	296	550	958
	90	15	47	296	550	958
ATSH1/L1-300	55	15	47	296	550	960
	75	15	47	296	550	960
	90	15	47	296	550	960
	110	15	60	296	660	960
	132	15	60	296	660	960
ATSH1/L1-360	55	15	47	296	550	990
	75	15	47	296	550	990
	90	15	47	296	550	990
	110	15	60	296	660	990
	132	15	60	296	660	990

Dimensional drawings and connections



1	Compressor
2	Coupling housing
3	Electrical motor
4	Flexible Coupling
5	Base
6	Anti-vibration mountings, (if requested)
7	Spacers

Coupling ② ③		Compressor model							
		ATSH1-120 ATSL1-120	ATSH1-150 ATSL1-150	ATSH1-186 ATSL1-186	ATSH1-210 ATSL1-210	ATSH1-240 ATSL1-240	ATSH1-270 ATSL1-270	ATSH1-300 ATSL1-300	ATSH1-360 ATSL1-360
Electric motor power kW ①								④ ⑤	④ ⑤
18	Code	T00WK5041156							
22		T00WK5051156							
30		T00WK5101156	T00WK5101156						
37		T00WK5101156	T00WK5101156	T00WK5201156	T00WK5201156				
45		T00WK5101156	T00WK5101156	T00WK5201156	T00WK5201156				
55			T00WK5151156	T00WK5211156	T00WK5211156	T00WK5211156	T00WK5211156	T00WK5311156	T00WK5311156
75				T00WK5221156	T00WK5221156	T00WK5221156	T00WK5221156	T00WK5411156	T00WK5411156
90				T00WK5221156	T00WK5221156	T00WK5221156	T00WK5221156	T00WK5411156	T00WK5411156
110								T00WK5411156	T00WK5411156
132								T00WK5411156	T00WK5411156

Coupling housing ② ③		Compressor model							
		ATSH1-120 ATSL1-120	ATSH1-150 ATSL1-150	ATSH1-186 ATSL1-186	ATSH1-210 ATSL1-210	ATSH1-240 ATSL1-240	ATSH1-270 ATSL1-270	ATSH1-300 ATSL1-300	ATSH1-360 ATSL1-360
Electric motor power kW ①									
18	Code	T00WK5051166							
22		T00WK5051166							
30		T00WK5101166	T00WK5101166						
37		T00WK5101166	T00WK5101166	T00WK5191166	T00WK5191166				
45		T00WK5151166	T00WK5151166	T00WK5201166	T00WK5201166				
55			T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166
75				T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166
90				T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166	T00WK5311166
110								T00WK5411166	T00WK5411166
132								T00WK5411166	T00WK5411166

① Standard IEC electric motor not supplied by Frascold

② For standard IEC B3/B5 IP44/IP54/IP55 electric motors

③ Please contact Frascold for NEMA type C and type D couplings

④ Code T00WK5311156 to be replaced by code T00WK5211156. Contact Frascold for further information.

⑤ Code T00WK5411156 to be replaced by code T00WK5221156. Contact Frascold for further information



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