



GRASSO

Refrigeration
compressors,
series RC6

Light-industrial open
reciprocating compressors for
universal application in
refrigerating, freezing, air
conditioning and heat pump
systems.

GRASSO

GRASSO PRODUCTS

**THE
SPECIALIST**

A big step forward in compressor technology

With the RC6, Grasso offers a new range of open reciprocating compressors featuring a number of special properties.

Properties that are due not only to innovative thinking in the field of compressor technology, but also to the most modern computer technology (CAE/CAM systems).

When developing this new compressor Grasso also applied its own extensive know-how in the field of energy saving techniques.

Result – the new series of Grasso RC6 compressors is a perfect example of the 'state of the art' in contemporary compressor technology.

The unique properties of the Grasso RC6

Compact design

The RC6 compressors are far smaller in size than other comparable compressors, thus offering substantial space saving.

Universal application

The Grasso RC6 compressor is eminently suitable for use in refrigerating and freezing installations, as well as for heat pumps and air conditioning systems.

Suitable for all halocarbon refrigerants

The Grasso RC6 compressor is compatible with all usual halocarbon refrigerants, among which R12, R22, R502 and R13B1.

Operating temperature range from -80°C to $+80^{\circ}\text{C}$

The Grasso RC6 compressor has a maximum discharge pressure of 26 bar and can thus operate not only from an evaporating temperature of -80°C (R13B1) but also up to a condensing temperature of $+80^{\circ}\text{C}$ (R12).

Extra high refrigerating capacity

The very fact that the Grasso RC6 compressor is designed to operate on

R13B1, makes it possible to achieve very high refrigerating capacities at low evaporating temperatures.

Wider choice of drive units

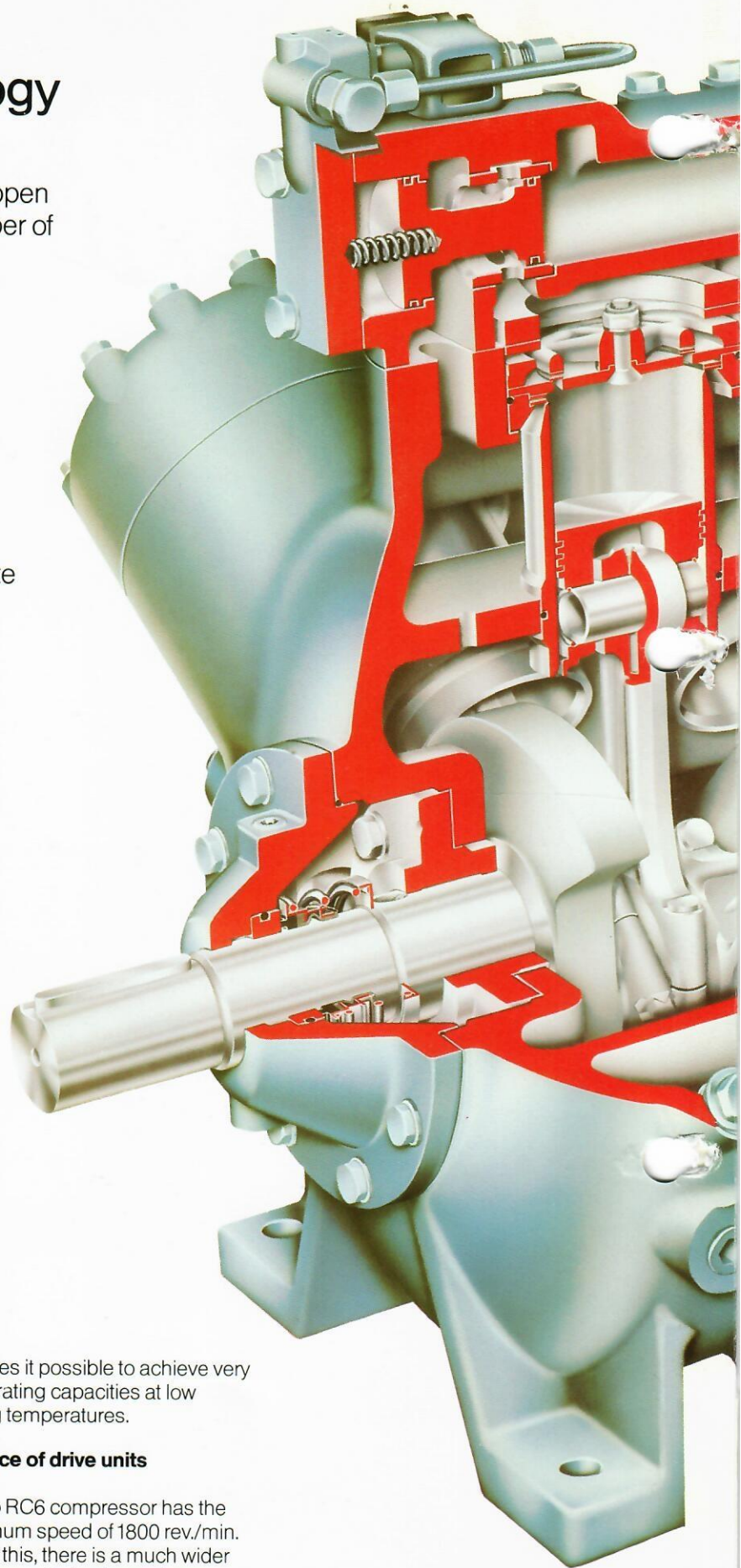
The Grasso RC6 compressor has the high maximum speed of 1800 rev./min. Because of this, there is a much wider range of drive units to choose from.

15% more energy saving

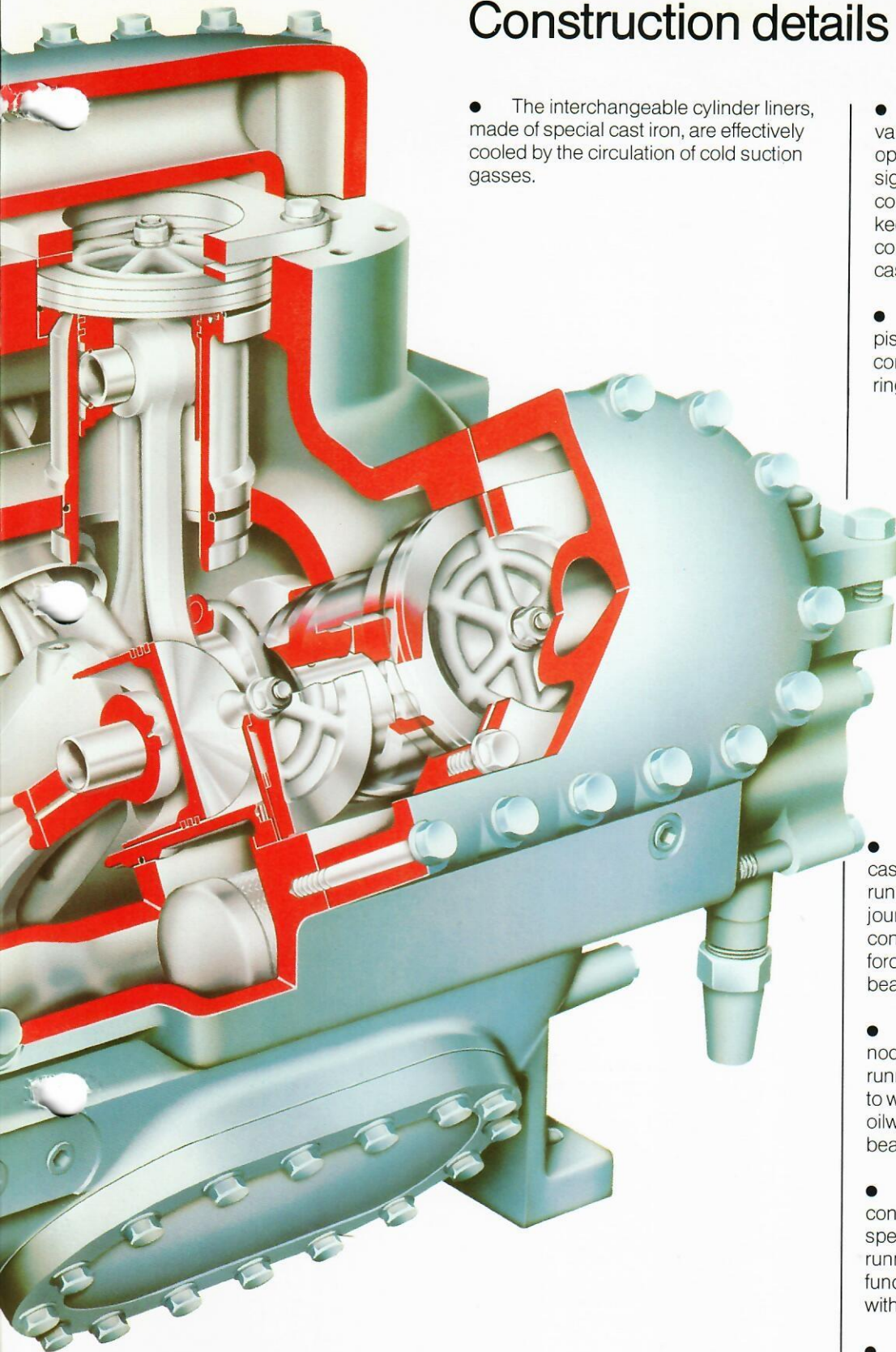
The RC6 is designed so that its relative power consumption is very low. Result – a 15% lower energy consumption and continuous saving in costs.

Very high dependability

The reliability of the Grasso RC6 compressor is extremely high, a result of quality construction. This is due to two factors: first its simple but ingenious design and



Construction details of the RC6



- The interchangeable cylinder liners, made of special cast iron, are effectively cooled by the circulation of cold suction gasses.

- The combined suction/discharge valve has been specially developed for optimal performance and adds significantly to the high output of the compressor. A sinusoidal buffer spring keeps the valve assembly on the cylinder collar and prevents damage occurring in case of liquid hammering.

- Specially designed light metal pistons are equipped with two compression rings and one oil scraper ring.

- The connecting rods are made of cast aluminium alloy, with excellent running properties on the crankshaft journal and on the gudgeon pin. The connecting rod is drilled through for forced lubrication of the small end bearing.

- The crankshaft is of high quality nodular cast iron with exceptionally good running properties and a high resistance to wear. The crankshaft is provided with oilways for forced lubrication of all bearings.

- The main bearings of the crankshaft consist of flanged bushes made of a special aluminium alloy with excellent running properties. The rear main bearing functions as a two-sided thrust bearing with limited axial play of the crankshaft.

- The very dependable shaft sealing provides a perfectly gastight passing of the crankshaft. Frictional heat is effectively removed by cool lubricating oil from the crankshaft.

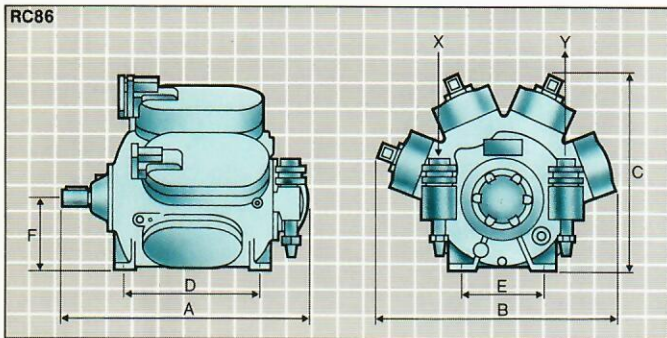
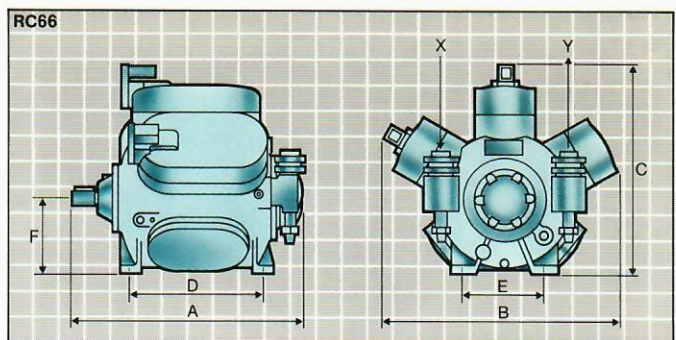
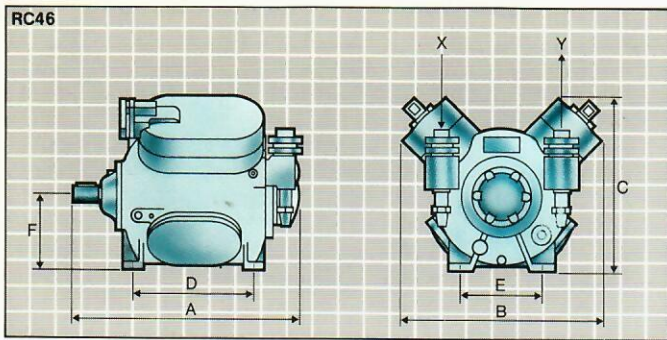
- A large size cylindrical suction gas strainer obviates contamination from the installation.

- The simple, yet dependable capacity control for each pair of cylinders is effected by a solenoid operated, hot gas operated control valve in the cylinder head.

second the high quality of the materials used, special attention having been given to parts that are liable to wear.

Minimum maintenance

The maintenance schedule of the Grasso RC6 compressor has been reduced to a minimum. Special tools are not required.



RC6 series: 3 models with 4, 6 or 8 cylinders

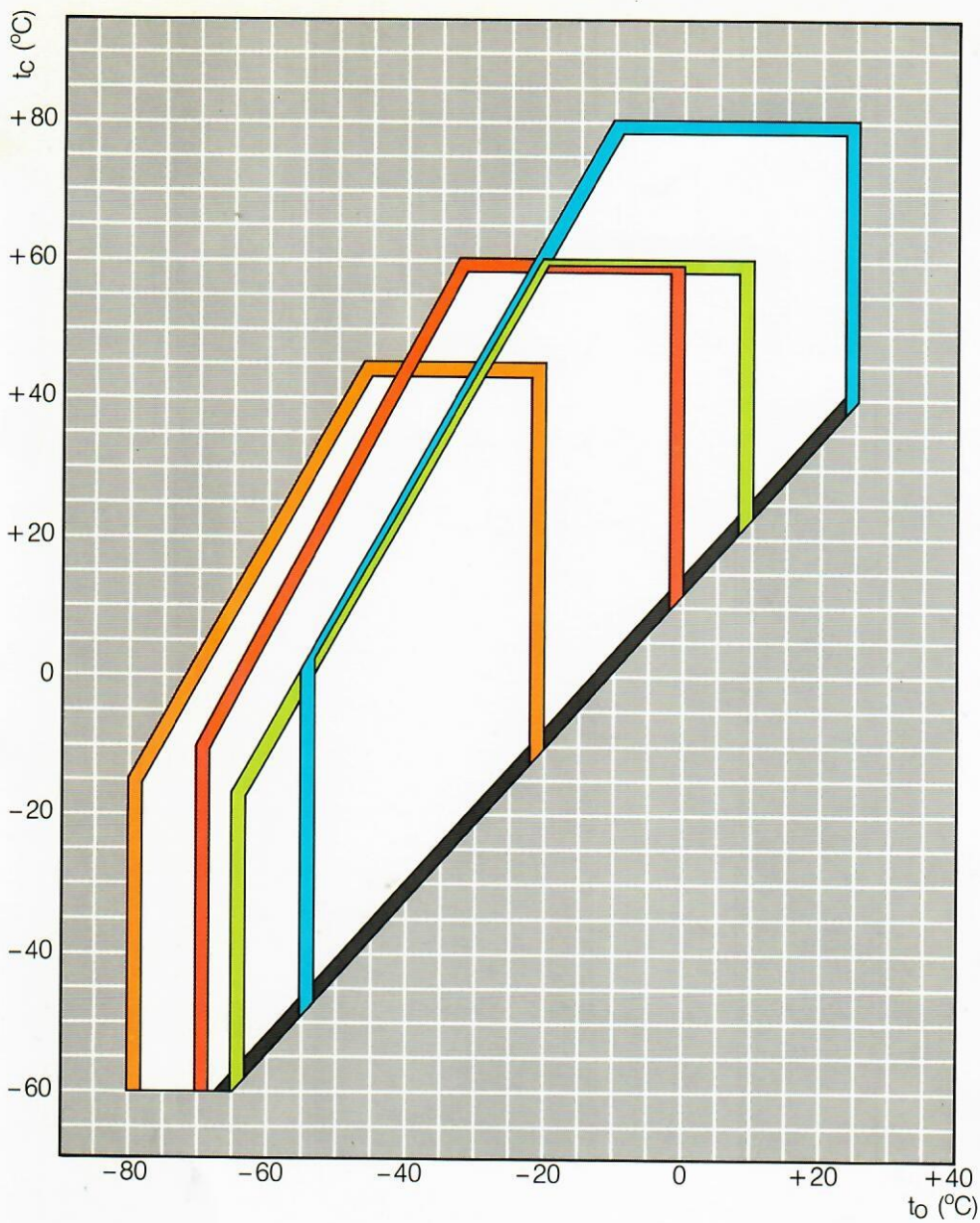
The RC6 series consists of 3 single-stage reciprocating compressors with 4, 6 or 8 cylinders. The type designations are RC46, RC66 and RC86 respectively.

All models can also be used as (low-pressure) booster compressors.

Apart from differences in size of compressor crankcases and crankshafts, as well as in number of cylinders, all three types are identical as far as spare parts and construction are concerned.

Technical Data

		Compressor type			
		RC46	RC66	RC86	
Compressor Specification					
Number of cylinders		4	6	8	
Stroke	mm		66		
Bore	mm		85		
Speed, min.	min ⁻¹		800		
max.	min ⁻¹		1800		
Direction of rotation			both directions permitted		
Swept volume at n = 1450 min ⁻¹	m ³ /h	130.3	195.5	260.7	
at n = 1750 min ⁻¹	m ³ /h	157.3	236.0	314.6	
Possible capacity control steps	%	25-50-75-100	33-67-100	25-50-75-100	
Weight (without accessories)	kg	280	345	400	
Oil charge	dm ³	9.5	15.5	17	
Limits of Operation					
Discharge pressure, max.	bar (a)		26		
Suction pressure, min.	bar (a)		0.3		
max.	bar (a)		7		
Pressure difference, max.	bar		24		
Main Dimensions					
Length A	mm	696	721	746	
Width B	mm	632	731	758	
Height C	mm	544	644	619	
Mounting holes					
C to C (4 x Ø 18 mm)	mm	394	432	444	
Drive shaft height	mm	280	280	280	
	mm	228	228	228	
Main Connections					
Suction X	soldering connection	inch - mm	1 ⁵ / ₈ - 41.28	2 ¹ / ₈ - 53.98	2 ⁵ / ₈ - 66.68
	welding connection*	mm	48.3 x 2.6	60.3 x 2.9	76.1 x 2.9
Discharge Y	soldering connection	inch - mm	1 ⁵ / ₈ - 41.28	1 ⁵ / ₈ - 41.28	2 ¹ / ₈ - 53.98
	welding connection*	mm	48.3 x 2.6	48.3 x 2.6	60.3 x 2.9
*Outer pipe diameter x wall thickness					



Extensive range of applications from -80°C to $+80^{\circ}\text{C}$

The Grasso RC6 compressor is compatible with all normally used halocarbon refrigerants, such as R12, R22, R502 and R13B1. The maximum discharge pressure is 26 bar, which makes it possible also to use RC6 compressors from an evaporating temperature of -80°C (with R13B1) up to a condensing temperature of $+80^{\circ}\text{C}$ (with R12).

- █ R12
- █ R22
- █ R502
- █ R13B1

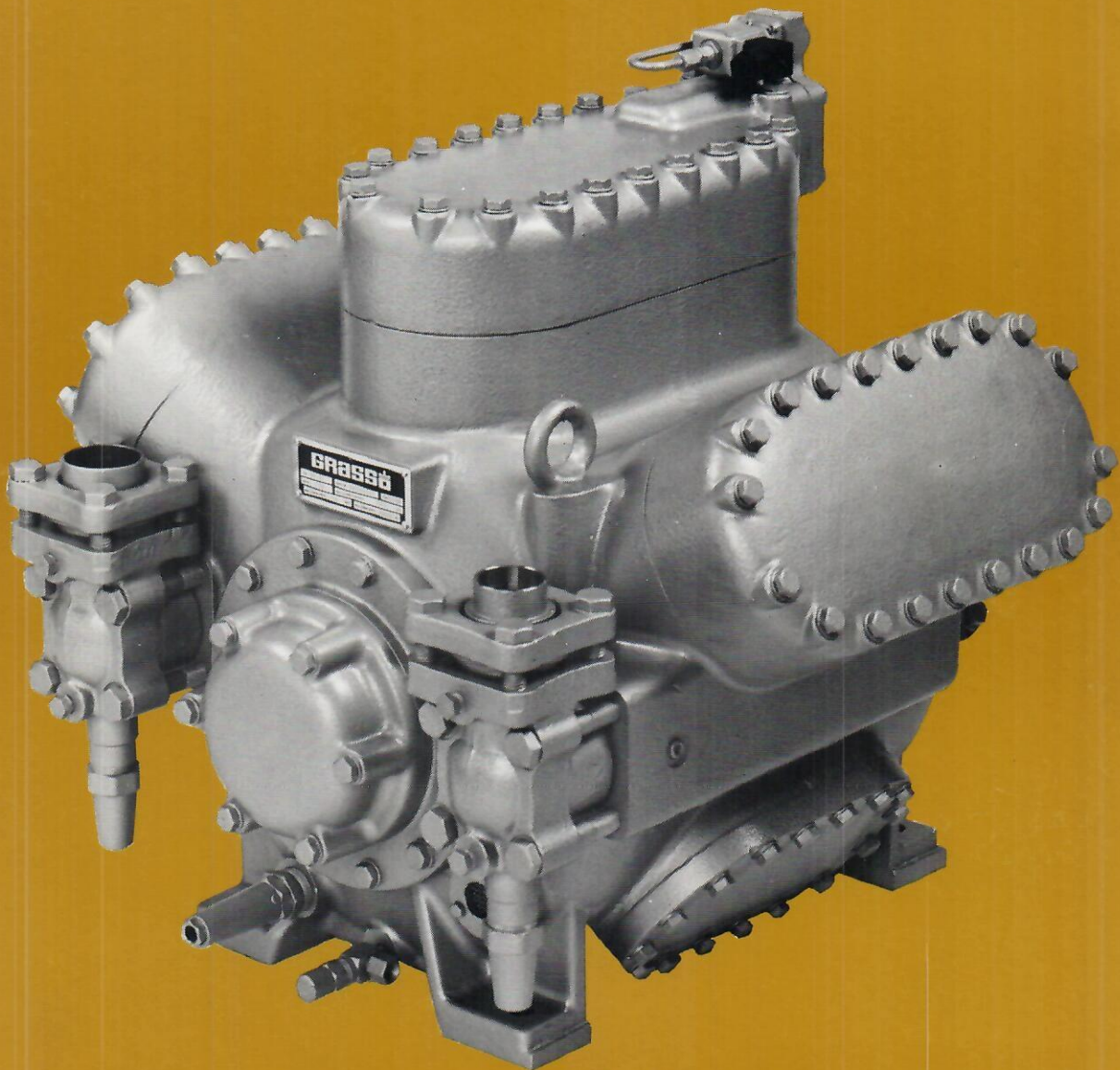
Performances of the RC6

Refrigerating capacity (Q_o) and power consumption (P_e) at a speed (n) of 1450 min^{-1}				(1 kW = 860 kcal/h)		
Conditions: Evaporating temperature t_o		} as indicated in the table		Compressor type		
Condensing temperature t_c				RC46	RC66	RC86
Suction superheat (useful) Δt_o : 10 K						
Liquid subcooling Δt_c : 5 K						
$t_o/t_c = 0/+60^{\circ}\text{C}$	R12	Q_o P_e	kW kW	48.3 18.8	72.5 28.1	96.6 37.7
$t_o/t_c = -20/+30^{\circ}\text{C}$	R22	Q_o P_e	kW kW	47.6 14.8	71.4 22.1	95.2 29.6
$t_o/t_c = -40/+30^{\circ}\text{C}$	R502	Q_o P_e	kW kW	14.5 8.7	21.7 12.9	28.9 17.4
	R13B1	Q_o P_e	kW kW	25.1 15.5	37.6 23.1	50.1 30.9

GRASSO

Refrigeration compressor
RC6

Engineering Data
Performance tables
Single-stage, booster
R12, R22, R502, R13B1



$\Delta t_c = 5K$ $\Delta t_o = 10K$		RC66										SINGLE-STAGE R12	
n (min ⁻¹)		800		1000		1200		1500		1800			
t_c (°C)	t_o (°C)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)		
40	20*	111.8	11.3	139.8	15.3	167.7	19.9	209.7	27.3	251.6	34.9		
	15*	94.4	11.7	118.0	15.6	141.6	19.9	177.0	27.0	212.4	34.6		
	10	79.0	11.7	98.8	15.4	118.5	19.4	148.1	26.1	177.8	33.4		
	5	65.5	11.5	81.9	14.9	98.3	18.7	122.9	24.8	147.5	31.7		
	0	53.8	11.1	67.2	14.3	80.6	17.8	100.8	23.4	121.0	29.7		
	-5	43.5	10.6	54.4	13.6	65.3	16.8	81.6	21.9	97.9	27.6		
	-10	34.7	9.9	43.3	12.7	52.0	15.6	65.0	20.3	78.0	25.3		
	-15	27.0	8.9	33.8	11.4	40.5	14.1	50.7	18.3	60.8	22.7		
	-20	20.5	7.7	25.6	9.9	30.7	12.2	38.4	15.8	46.1	19.5		
	-25	15.0	6.5	18.7	8.4	22.4	10.3	28.0	13.3	33.6	16.2		
-30	10.3	5.5	12.9	7.1	15.4	8.7	19.3	11.1	23.1	13.3			
45	25*	125.4	12.5	156.7	17.1	188.1	22.2	235.1	30.6	282.1	39.0		
	20*	106.3	13.1	132.9	17.5	159.5	22.4	199.4	30.4	239.2	39.0		
	15*	89.5	13.1	111.9	17.3	134.2	21.9	167.8	29.5	201.4	37.8		
	10	74.7	12.9	93.4	16.9	112.0	21.1	140.0	28.1	168.0	36.0		
	5	61.7	12.6	77.1	16.2	92.6	20.1	115.7	26.6	138.8	33.9		
	0	50.4	12.0	63.0	15.4	75.6	19.1	94.4	25.0	113.3	31.6		
	-5	40.5	11.3	50.7	14.5	60.8	17.9	76.0	23.3	91.2	29.2		
	-10	32.0	10.3	40.0	13.3	48.0	16.3	60.0	21.2	72.0	26.4		
	-15	24.7	9.1	30.9	11.7	37.0	14.4	46.3	18.7	55.5	23.1		
	-20	18.4	7.7	23.0	9.9	27.6	12.3	34.6	15.9	41.5	19.4		
-25	13.1	6.5	16.4	8.4	19.7	10.4	24.6	13.3	29.5	16.0			
50	25*	119.1	14.5	148.9	19.5	178.7	25.0	223.4	34.1	268.0	43.7		
	20*	100.8	14.7	126.0	19.4	151.1	24.6	188.9	33.2	226.7	42.6		
	15*	84.6	14.5	105.7	19.0	126.8	23.8	158.5	31.8	190.3	40.7		
	10	70.3	14.1	87.9	18.3	105.5	22.8	131.8	30.1	158.2	38.4		
	5	57.8	13.6	72.3	17.5	86.7	21.6	108.4	28.4	130.1	36.0		
	0	46.9	12.9	58.7	16.5	70.4	20.3	88.0	26.6	105.6	33.4		
	-5	37.5	11.9	46.9	15.3	56.2	18.8	70.3	24.5	84.4	30.5		
	-10	29.3	10.6	36.7	13.7	44.0	16.9	55.0	21.9	66.0	27.1		
	-15	22.3	9.1	27.9	11.8	33.5	14.6	41.9	18.9	50.2	23.2		
	-20	16.4	7.7	20.4	10.0	24.5	12.3	30.7	15.8	36.8	19.2		
-25	11.3	6.5	14.1	8.4	16.9	10.3	21.2	13.2	25.4	16.0			
55	25*	112.8	16.3	141.0	21.7	169.1	27.5	211.4	37.2	253.7	47.8		
	20*	95.1	16.2	118.9	21.2	142.7	26.7	178.3	35.8	214.0	45.8		
	15*	79.5	15.8	99.4	20.6	119.3	25.6	149.2	34.0	179.0	43.4		
	10	65.9	15.3	82.3	19.7	98.8	24.4	123.5	32.1	148.2	40.8		
	5	53.9	14.6	67.4	18.7	80.9	23.1	101.1	30.2	121.3	38.1		
	0	43.5	13.6	54.4	17.5	65.2	21.5	81.5	28.0	97.8	35.0		
	-5	34.4	12.3	43.1	15.9	51.7	19.6	64.6	25.4	77.5	31.5		
	-10	26.7	10.8	33.3	13.9	40.0	17.2	50.0	22.3	60.0	27.4		
	-15	20.0	9.1	25.0	11.8	30.0	14.6	37.4	18.8	44.9	23.0		
	-20	14.3	7.8	17.9	10.1	21.4	12.4	26.8	15.9	32.1	19.1		

* For applications at t_o above +10 °C, consult manufacturer first.

(to be continued overleaf)

6. PERFORMANCE TABLES

SINGLE-STAGE R 12		RC66										$\Delta t_c = 5K$	$\Delta t_o = 10K$
n (min ⁻¹)		800		1000		1200		1500		1800			
t_c (°C)	t_o (°C)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)		
60	25*	106.3	18.1	132.9	23.7	159.5	29.9	199.3	40.1	239.2	51.4		
	20*	89.4	17.7	111.7	23.0	134.1	28.8	167.6	38.3	201.1	48.9		
	15*	74.5	17.2	93.1	22.1	111.7	27.5	139.6	36.2	167.6	46.1		
	10	61.4	16.4	76.7	21.1	92.1	26.1	115.1	34.2	138.1	43.2		
	5	50.0	15.5	62.4	19.9	74.9	24.5	93.7	31.9	112.4	40.0		
	0	40.0	14.2	50.0	18.3	60.0	22.5	75.0	29.2	90.0	36.4		
	-5	31.4	12.6	39.2	16.2	47.1	20.0	58.8	26.0	70.6	32.2		
	-10	24.0	10.8	30.0	13.9	35.9	17.2	44.9	22.3	53.9	27.4		
-15	17.6	9.2	22.0	11.9	26.4	14.7	33.0	18.8	39.6	22.8			
65	25*	99.8	19.7	124.7	25.7	149.7	32.2	187.1	42.9	224.5	54.9		
	20*	83.6	19.2	104.5	24.8	125.4	30.8	156.7	40.7	188.1	51.9		
	15*	69.4	18.4	86.7	23.7	104.0	29.3	130.0	38.5	156.0	48.8		
	10	56.9	17.5	71.1	22.4	85.3	27.7	106.6	36.1	128.0	45.4		
	5	46.0	16.2	57.5	20.8	69.0	25.7	86.2	33.4	103.4	41.7		
	0	36.5	14.6	45.6	18.8	54.8	23.2	68.5	30.1	82.1	37.3		
	-5	28.3	12.7	35.4	16.4	42.5	20.3	53.1	26.3	63.7	32.3		
	-10	21.3	10.8	26.6	14.0	31.9	17.3	39.9	22.3	47.9	27.2		
-15	15.3	9.3	19.1	12.0	22.9	14.7	28.7	18.8	34.4	22.7			
70	25*	93.2	21.4	116.5	27.7	139.7	34.5	174.7	45.6	209.6	58.3		
	20*	77.7	20.6	97.2	26.5	116.6	32.9	145.8	43.2	174.9	54.9		
	15*	64.2	19.7	80.2	25.2	96.3	31.1	120.4	40.7	144.4	51.3		
	10	52.3	18.4	65.4	23.6	78.5	29.1	98.1	37.9	117.7	47.5		
	5	42.0	16.8	52.5	21.6	63.0	26.6	78.7	34.6	94.5	43.0		
	0	33.0	14.8	41.3	19.1	49.5	23.6	61.9	30.6	74.3	37.8		
	-5	25.3	12.7	31.6	16.4	37.9	20.3	47.4	26.3	56.9	32.2		
	-10	18.6	10.9	23.3	14.1	28.0	17.4	35.0	22.3	41.9	27.0		
75	25*	86.5	23.0	108.1	29.6	129.7	36.7	162.2	48.4	194.6	61.6		
	20*	71.9	22.0	89.8	28.3	107.8	34.9	134.7	45.7	161.7	57.8		
	15*	59.0	20.8	73.8	26.7	88.5	32.9	110.6	42.8	132.8	53.7		
	10	47.8	19.2	59.7	24.6	71.7	30.4	89.6	39.5	107.5	49.2		
	5	38.0	17.1	47.5	22.1	57.0	27.3	71.3	35.4	85.5	43.9		
	0	29.5	14.8	36.9	19.2	44.3	23.8	55.4	30.8	66.5	37.9		
	-5	22.3	12.7	27.8	16.5	33.4	20.4	41.8	26.2	50.1	31.9		
	-10	16.0	11.0	20.1	14.2	24.1	17.4	30.1	22.3	36.1	26.9		
80	25*	79.8	24.5	99.7	31.5	119.7	39.0	149.6	51.2	179.5	64.8		
	20*	65.9	23.3	82.4	29.9	98.9	36.9	123.6	48.2	148.4	60.6		
	15*	53.8	21.7	67.3	27.9	80.7	34.4	100.9	44.7	121.1	55.8		
	10	43.2	19.7	54.0	25.3	64.9	31.3	81.1	40.6	97.3	50.4		
	5	34.1	17.3	42.6	22.3	51.1	27.6	63.9	35.8	76.6	44.2		
	0	26.1	14.9	32.7	19.2	39.2	23.8	49.0	30.8	58.8	37.6		
-5	19.3	12.9	24.2	16.6	29.0	20.5	36.2	26.3	43.5	31.7			

* For applications at t_o above +10 °C, consult manufacturer first.

$\Delta t_c = 5K$ $\Delta t_o = 10K$		RC66										SINGLE-STAGE R22	
$n \text{ (min}^{-1}\text{)}$		800		1000		1200		1500		1800			
t_c (°C)	t_o (°C)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)		
25	10	144.9	10.8	181.1	14.0	217.4	17.6	271.7	24.7	326.0	35.1		
	5	121.6	12.0	152.0	15.5	182.4	19.5	227.9	26.8	273.5	36.8		
	0	101.1	12.6	126.4	16.2	151.6	20.2	189.5	27.3	227.4	36.5		
	-5	83.1	12.8	103.9	16.2	124.7	20.0	155.9	26.7	187.0	35.0		
	-10	67.5	12.5	84.4	15.8	101.3	19.3	126.6	25.4	152.0	32.9		
	-15	54.1	12.0	67.6	15.0	81.2	18.2	101.4	23.7	121.7	30.6		
	-20	42.5	11.3	53.2	14.0	63.8	16.8	79.7	21.7	95.7	28.1		
	-25	32.7	10.3	40.9	12.7	49.1	15.2	61.4	19.7	73.6	25.3		
	-30	24.5	8.9	30.6	11.1	36.7	13.4	45.9	17.3	55.1	22.1		
	-35	17.7	7.4	22.1	9.4	26.5	11.4	33.1	14.7	39.8	18.4		
-40	12.2	6.2	15.2	7.7	18.3	9.2	22.8	11.7	27.4	14.8			
30	10	138.3	13.5	172.9	17.4	207.4	21.9	259.3	30.1	311.1	41.7		
	5	115.7	14.2	144.6	18.3	173.5	22.8	216.9	30.9	260.3	41.6		
	0	95.9	14.5	119.8	18.4	143.8	22.8	179.8	30.4	215.7	40.1		
	-5	78.5	14.3	98.2	18.0	117.8	22.1	147.2	29.1	176.7	37.9		
	-10	63.5	13.8	79.4	17.3	95.2	21.0	119.0	27.3	142.8	35.4		
	-15	50.5	13.1	63.2	16.2	75.8	19.5	94.7	25.3	113.7	32.6		
	-20	39.4	12.0	49.3	14.8	59.1	17.8	73.9	23.0	88.7	29.7		
	-25	30.0	10.6	37.5	13.2	45.0	15.9	56.3	20.5	67.5	26.4		
	-30	22.1	9.0	27.7	11.3	33.2	13.7	41.5	17.7	49.8	22.4		
	-35	15.7	7.5	19.6	9.4	23.6	11.4	29.5	14.6	35.4	18.2		
35	10	131.5	16.0	164.3	20.6	197.2	25.7	246.5	34.9	295.8	47.2		
	5	109.7	16.3	137.1	20.8	164.5	25.8	205.6	34.6	246.7	45.8		
	0	90.5	16.2	113.2	20.5	135.8	25.2	169.8	33.3	203.7	43.4		
	-5	73.8	15.7	92.3	19.7	110.7	24.0	138.4	31.4	166.1	40.7		
	-10	59.3	15.0	74.2	18.6	89.0	22.5	111.3	29.2	133.5	37.7		
	-15	46.9	14.0	58.6	17.2	70.4	20.7	87.9	26.8	105.5	34.6		
	-20	36.2	12.6	45.3	15.5	54.4	18.7	68.0	24.1	81.6	31.1		
	-25	27.3	10.8	34.1	13.5	40.9	16.4	51.2	21.2	61.4	26.9		
	-30	19.8	9.0	24.8	11.4	29.8	13.8	37.2	17.8	44.6	22.3		
	-35	14.2	7.5	18.1	9.4	22.1	11.4	28.1	14.6	33.1	18.2		
40	10	124.6	18.3	155.8	23.5	187.0	29.1	233.7	39.1	280.4	51.9		
	5	103.6	18.3	129.5	23.2	155.4	28.6	194.3	37.9	233.1	49.6		
	0	85.2	17.9	106.5	22.5	127.8	27.4	159.7	35.9	191.7	46.6		
	-5	69.1	17.1	86.4	21.3	103.7	25.8	129.6	33.6	155.5	43.4		
	-10	55.2	16.1	69.0	19.9	82.8	23.9	103.5	31.0	124.2	40.1		
	-15	43.3	14.7	54.1	18.1	64.9	21.8	81.2	28.2	97.4	36.4		
	-20	33.1	12.9	41.4	16.0	49.7	19.4	62.1	25.0	74.5	32.1		
	-25	24.6	10.9	30.8	13.7	36.9	16.7	46.2	21.5	55.4	27.1		
	-30	17.6	9.1	22.0	11.4	26.4	13.7	33.0	17.6	39.6	22.1		
	-35	12.2	7.5	15.2	9.4	18.3	11.4	22.8	14.6	27.4	17.2		

(to be continued overleaf)

6. PERFORMANCE TABLES

SINGLE-STAGE R22		RC66										$\Delta t_c = 5K$	$\Delta t_o = 10K$	
n (min ⁻¹)		800		1000		1200		1500		1800				
t_c (°C)	t_o (°C)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)			
45	10	117.7	20.5	147.1	26.1	176.5	32.2	220.6	42.9	264.7	56.3			
	5	97.4	20.2	121.8	25.4	146.2	31.1	182.7	40.9	219.2	53.2			
	0	79.8	19.5	99.7	24.3	119.6	29.5	149.5	38.4	179.4	49.7			
	-5	64.3	18.4	80.4	22.8	96.5	27.5	120.6	35.6	144.8	46.1			
	-10	51.0	17.0	63.8	21.0	76.6	25.2	95.7	32.6	114.8	42.2			
	-15	39.7	15.2	49.6	18.8	59.5	22.7	74.4	29.3	89.3	37.8			
	-20	30.0	13.1	37.5	16.4	45.0	19.8	56.3	25.6	67.6	32.5			
	-25	22.0	10.9	27.5	13.8	33.0	16.7	41.3	21.5	49.5	26.9			
	50	10	110.6	22.7	138.3	28.7	165.9	35.2	207.4	46.3	248.9	60.4		
5		91.2	22.0	114.0	27.5	136.9	33.5	171.1	43.8	205.3	56.7			
0		74.3	21.0	92.9	26.0	111.5	31.4	139.3	40.8	167.2	52.8			
-5		59.6	19.6	74.5	24.2	89.4	29.1	111.7	37.6	134.0	48.7			
-10		46.9	17.8	58.6	21.9	70.3	26.4	87.9	34.1	105.5	44.0			
-15		36.1	15.5	45.1	19.3	54.2	23.4	67.7	30.2	81.3	38.6			
-20		27.0	13.1	33.7	16.5	40.5	20.1	50.6	25.9	60.7	32.5			
-25		19.5	11.0	24.4	13.7	29.2	16.5	36.5	21.2	43.8	26.7			
55		10	103.5	24.8	129.4	31.1	155.2	37.9	194.0	49.6	232.8	64.4		
	5	85.0	23.8	106.2	29.9	127.4	35.7	159.3	46.5	191.2	60.2			
	0	68.8	22.4	86.0	27.6	103.2	33.3	129.0	43.1	154.8	55.8			
	-5	54.8	20.6	68.5	25.3	82.2	30.5	102.7	39.4	123.3	50.9			
	-10	42.8	18.2	53.5	22.6	64.2	27.3	80.2	35.3	96.2	45.4			
	-15	32.6	15.6	40.7	19.6	48.9	23.8	61.1	30.8	73.3	38.9			
	-20	24.0	13.1	30.0	16.5	36.0	20.1	45.1	25.8	54.1	32.3			
	60	10	96.3	26.8	120.4	33.4	144.5	40.5	180.6	52.7	216.8	68.3		
		5	78.7	25.4	98.4	31.4	118.1	37.9	147.6	49.1	177.1	63.6		
0		63.3	23.6	79.2	29.1	95.0	34.9	118.8	45.2	142.5	58.5			
-5		50.1	21.3	62.6	26.3	75.1	31.7	93.9	40.9	112.6	52.8			
-10		38.7	18.5	48.4	23.1	58.1	28.0	72.6	36.2	87.1	46.1			
-15		29.2	15.6	36.4	19.7	43.7	24.0	54.7	30.9	65.6	38.8			
-20		21.2	13.3	26.5	16.5	31.8	19.8	39.7	25.3	47.7	32.0			

$\Delta t_c = 5K$ $\Delta t_o = 10K$		RC66										SINGLE-STAGE R502	
$n \text{ (min}^{-1}\text{)}$		800		1000		1200		1500		1800			
$t_c \text{ (}^\circ\text{C)}$	$t_o \text{ (}^\circ\text{C)}$	$Q_o \text{ (kW)}$	$P_e \text{ (kW)}$	$Q_o \text{ (kW)}$	$P_e \text{ (kW)}$	$Q_o \text{ (kW)}$	$P_e \text{ (kW)}$	$Q_o \text{ (kW)}$	$P_e \text{ (kW)}$	$Q_o \text{ (kW)}$	$P_e \text{ (kW)}$		
25	0	103.7	12.9	128.8	17.0	153.5	21.5	189.9	29.4	225.5	38.9		
	-5	85.8	13.1	106.5	17.1	127.0	21.5	157.1	28.9	186.6	37.7		
	-10	70.2	12.9	87.2	16.7	103.9	20.8	128.7	27.6	152.9	35.4		
	-15	56.7	12.4	70.5	15.9	84.0	19.7	104.1	25.8	123.7	32.7		
	-20	45.1	11.6	56.1	14.9	66.9	18.3	83.0	23.7	98.7	29.7		
	-25	35.3	10.6	43.8	13.6	52.3	16.6	64.9	21.5	77.3	26.7		
	-30	26.9	9.5	33.4	12.1	39.9	14.8	49.6	19.2	59.1	23.8		
	-35	19.8	8.1	24.7	10.4	29.5	12.8	36.7	16.6	43.8	20.8		
	-40	13.9	6.6	17.4	8.5	20.8	10.5	26.0	13.7	31.1	17.3		
	-45	9.0	5.0	11.3	6.5	13.6	8.0	17.0	10.5	20.5	13.3		
	-50	5.0	3.8	6.4	4.8	7.7	5.9	9.7	7.7	11.9	9.6		
	30	0	97.5	14.8	121.1	19.3	144.4	24.3	178.6	32.8	212.2	42.9	
-5		80.4	14.6	99.8	19.0	119.0	23.7	147.3	31.6	175.0	40.6		
-10		65.5	14.1	81.3	18.2	97.0	22.6	120.1	29.7	142.8	37.7		
-15		52.6	13.3	65.4	17.1	78.0	21.1	96.6	27.5	114.9	34.4		
-20		41.6	12.3	51.7	15.8	61.7	19.3	76.5	25.0	91.0	31.2		
-25		32.2	11.1	40.0	14.2	47.8	17.4	59.3	22.5	70.7	28.0		
-30		24.2	9.7	30.1	12.4	36.0	15.3	44.8	19.8	53.4	24.7		
-35		17.5	8.1	21.8	10.4	26.1	12.8	32.5	16.7	38.9	21.1		
-40		11.9	6.3	14.9	8.2	17.9	10.1	22.3	13.3	26.8	16.9		
-45		7.3	4.8	9.2	6.2	11.1	7.6	13.9	9.9	16.8	12.5		
35		0	91.3	16.5	113.4	21.5	135.2	26.8	167.3	35.9	198.7	46.3	
		-5	74.9	16.0	93.1	20.7	111.0	25.7	137.4	33.9	163.3	43.2	
	-10	60.7	15.3	75.5	19.6	90.0	24.2	111.5	31.6	132.6	39.7		
	-15	48.5	14.2	60.3	18.2	71.9	22.3	89.2	29.0	106.1	36.1		
	-20	38.0	13.0	47.3	16.6	56.5	20.3	70.0	26.2	83.4	32.6		
	-25	29.1	11.5	36.2	14.7	43.3	18.0	53.7	23.3	64.1	29.1		
	-30	21.5	9.8	26.8	12.5	32.1	15.5	40.0	20.2	47.7	25.3		
	-35	15.2	7.9	19.0	10.2	22.8	12.6	28.4	16.6	34.0	21.0		
	-40	9.9	6.1	12.5	7.8	15.0	9.7	18.8	12.7	22.6	16.1		
	-45	5.6	4.5	7.1	5.8	8.6	7.2	10.9	9.3	13.2	11.6		
	40	0	85.0	18.1	105.6	23.4	125.9	29.2	155.8	38.6	185.2	49.3	
		-5	69.4	17.3	86.3	22.3	102.9	27.6	127.4	36.1	151.5	45.6	
-10		56.0	16.3	69.6	20.9	83.0	25.6	102.9	33.3	122.3	41.7		
-15		44.4	15.0	55.2	19.2	65.9	23.5	81.7	30.4	97.2	37.8		
-20		34.4	13.5	42.9	17.2	51.2	21.1	63.6	27.3	75.8	33.9		
-25		26.0	11.7	32.4	15.0	38.7	18.4	48.2	24.0	57.5	30.0		
-30		18.9	9.7	23.6	12.5	28.2	15.4	35.2	20.2	42.1	25.5		
-35		12.9	7.6	16.2	9.8	19.4	12.2	24.3	16.0	29.2	20.3		
-40		8.0	5.8	10.1	7.4	12.1	9.2	15.3	12.0	18.5	15.0		

(to be continued overleaf)

6. PERFORMANCE TABLES

SINGLE-STAGE R502		RC66										$\Delta t_c = 5K$	$\Delta t_o = 10K$
n (min ⁻¹)		800		1000		1200		1500		1800			
t_c (°C)	t_o (°C)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)	Q _o (kW)	P _e (kW)		
45	0	78.7	19.6	97.7	25.3	116.6	31.3	144.3	41.1	171.6	52.1		
	-5	63.9	18.6	79.5	23.8	94.8	29.3	117.4	38.2	139.7	47.9		
	-10	51.2	17.2	63.7	22.0	76.0	27.0	94.2	35.0	112.1	43.6		
	-15	40.3	15.7	50.1	20.0	59.8	24.5	74.2	31.7	88.4	39.4		
	-20	30.9	13.8	38.5	17.7	46.0	21.7	57.1	28.2	68.2	35.1		
	-25	23.0	11.7	28.6	15.1	34.3	18.6	42.7	24.3	51.0	30.5		
	-30	16.3	9.4	20.4	12.2	24.4	15.1	30.5	19.9	36.5	25.2		
	-35	10.7	7.3	13.5	9.4	16.2	11.6	20.3	15.3	24.5	19.3		
	-40	6.1	5.5	7.8	7.0	9.4	8.6	11.9	11.2	14.5	14.0		
50	0	72.3	21.0	89.9	27.0	107.2	33.3	132.8	43.5	157.9	54.7		
	-5	58.4	19.7	72.6	25.1	86.7	30.9	107.4	40.1	127.8	50.0		
	-10	46.4	18.1	57.8	23.0	69.0	28.3	85.6	36.5	101.9	45.5		
	-15	36.2	16.2	45.0	20.7	53.8	25.3	66.8	32.8	79.6	40.9		
	-20	27.4	14.0	34.1	17.9	40.8	22.1	50.8	28.8	60.6	36.0		
	-25	20.0	11.6	24.9	14.9	29.9	18.4	37.3	24.2	44.6	30.6		
	-30	13.8	9.1	17.2	11.7	20.7	14.6	25.9	19.2	31.1	24.4		
	-35	8.6	6.9	10.8	8.9	13.1	11.0	16.5	14.4	19.9	18.1		
	-40												
55	0	66.0	22.3	82.0	28.6	97.8	35.2	121.2	45.7	144.2	57.2		
	-5	52.9	20.7	65.8	26.4	78.6	32.4	97.4	41.9	116.0	52.2		
	-10	41.7	18.7	51.9	23.9	62.0	29.3	77.0	37.9	91.7	47.2		
	-15	32.1	16.5	40.0	21.1	47.8	26.0	59.4	33.7	70.9	42.1		
	-20	24.0	13.9	29.9	17.9	35.8	22.2	44.5	29.0	53.2	36.6		
	-25	17.1	11.2	21.3	14.5	25.6	18.0	32.0	23.7	38.3	30.1		
	-30	11.3	8.7	14.2	11.2	17.1	13.9	21.5	18.3	25.9	23.2		
	-35	6.6	6.6	8.3	8.4	10.1	10.4	12.8	13.5	15.5	16.9		
	-40												
60	0	59.6	23.5	74.1	30.0	88.4	36.9	109.6	47.8	130.4	59.6		
	-5	47.4	21.5	59.0	27.5	70.5	33.7	87.4	43.6	104.1	54.2		
	-10	37.0	19.2	46.1	24.6	55.1	30.2	68.4	39.1	81.6	48.8		
	-15	28.1	16.6	35.0	21.3	41.9	26.3	52.1	34.3	62.3	43.0		
	-20	20.6	13.7	25.7	17.7	30.8	21.9	38.4	28.8	45.9	36.5		
	-25	14.3	10.8	17.8	14.0	21.4	17.4	26.8	22.9	32.2	29.1		
-30	9.0	8.3	11.3	10.7	13.6	13.2	17.2	17.2	20.8	21.7			

$\Delta t_c = 5K$ $\Delta t_o = 10K$		RC66										SINGLE-STAGE	
		800		1000		1200		1500		1800		R13B1	
n (min ⁻¹)		Q_o	P_e	Q_o	P_e	Q_o	P_e	Q_o	P_e	Q_o	P_e	Q_o	P_e
t_c (°C)	t_o (°C)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)
20	-20	67.6	16.2	84.6	21.0	100.8	26.2	123.1	34.6	141.7	43.7		
	-25	54.7	15.2	68.5	19.9	81.8	24.8	99.8	32.5	114.7	40.2		
	-30	43.6	14.0	54.7	18.4	65.3	22.9	79.7	29.8	91.4	36.5		
	-35	34.1	12.8	42.9	16.6	51.3	20.6	62.6	26.6	71.6	32.6		
	-40	26.1	11.4	32.9	14.7	39.3	18.1	48.0	23.3	54.7	28.6		
	-45	19.3	9.9	24.4	12.6	29.3	15.4	35.7	19.8	40.4	24.5		
	-50	13.5	8.2	17.3	10.4	20.8	12.7	25.4	16.3	28.5	20.1		
	-55	8.8	6.2	11.4	8.1	13.8	10.0	16.8	12.7	18.5	15.2		
25	-20	63.0	17.4	78.8	22.7	94.0	28.4	114.8	37.2	132.0	46.4		
	-25	50.7	16.2	63.6	21.2	75.9	26.4	92.6	34.4	106.3	42.3		
	-30	40.1	14.8	50.4	19.3	60.2	24.0	73.5	31.1	84.2	38.1		
	-35	31.1	13.4	39.2	17.3	46.9	21.3	57.2	27.5	65.3	33.8		
	-40	23.5	11.8	29.7	15.1	35.6	18.4	43.4	23.7	49.2	29.4		
	-45	17.0	10.0	21.6	12.7	26.0	15.5	31.7	19.9	35.8	24.7		
	-50	11.6	8.0	14.9	10.2	18.0	12.5	21.9	16.0	24.4	19.5		
	-55	7.1	5.9	9.3	7.6	11.4	9.4	13.8	11.9	15.1	14.1		
30	-20	58.2	18.5	73.0	24.3	87.1	30.3	106.3	39.6	122.0	48.8		
	-25	46.6	17.1	58.5	22.3	69.9	27.8	85.2	36.1	97.7	44.2		
	-30	36.6	15.5	46.0	20.2	55.0	24.9	67.1	32.3	76.7	39.5		
	-35	28.0	13.9	35.4	17.8	42.4	21.9	51.7	28.2	58.9	34.8		
	-40	20.8	12.0	26.4	15.3	31.7	18.7	38.7	24.0	43.7	29.8		
	-45	14.8	9.9	18.9	12.6	22.7	15.4	27.7	19.8	31.0	24.4		
	-50	9.7	7.6	12.5	9.8	15.2	12.1	18.5	15.4	20.4	18.5		
	-55												
35	-20	53.3	19.6	66.9	25.6	79.9	31.9	97.5	41.6	111.8	51.0		
	-25	42.4	17.9	53.3	23.4	63.7	29.0	77.7	37.5	88.9	45.9		
	-30	33.0	16.2	41.6	20.9	49.7	25.7	60.7	33.2	69.2	40.8		
	-35	25.0	14.3	31.6	18.2	37.9	22.2	46.2	28.6	52.4	35.5		
	-40	18.2	12.1	23.2	15.4	27.9	18.7	34.0	24.0	38.2	29.8		
	-45	12.5	9.6	16.1	12.4	19.5	15.2	23.7	19.4	26.4	23.6		
	-50	7.8	7.1	10.2	9.2	12.5	11.4	15.2	14.4	16.5	17.1		
	-55												
40	-20	48.5	20.6	60.9	26.9	72.7	33.4	88.8	43.4	101.6	53.0		
	-25	38.2	18.7	48.1	24.2	57.5	30.0	70.2	38.7	80.1	47.5		
	-30	29.4	16.7	37.1	21.4	44.5	26.3	54.2	33.8	61.7	41.8		
	-35	21.9	14.5	27.8	18.4	33.4	22.5	40.7	28.9	46.0	35.8		
	-40	15.6	11.9	20.0	15.2	24.1	18.6	29.3	23.8	32.8	29.3		
	-45	10.4	9.1	13.4	11.9	16.3	14.6	19.8	18.7	21.8	22.3		
	-50												
	-55												

(to be continued overleaf)

6. PERFORMANCE TABLES

SINGLE-STAGE R13B1		RC66										$\Delta t_c = 5K$	$\Delta t_o = 10K$
n (min ⁻¹)		800		1000		1200		1500		1800			
t_c (°C)	t_o (°C)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)	Q_o (kW)	P_e (kW)		
45	-20	43.6	21.5	54.8	28.0	65.6	34.7	80.0	44.9	91.4	54.9		
	-25	34.0	19.4	42.9	25.0	51.4	30.7	62.7	39.6	71.4	48.8		
	-30	25.8	17.1	32.7	21.8	39.3	26.6	47.9	34.3	54.2	42.5		
	-35	18.9	14.5	24.1	18.4	29.0	22.5	35.3	28.8	39.8	35.7		
	-40	13.1	11.5	16.9	14.9	20.4	18.2	24.8	23.3	27.6	28.3		
	-45	8.3	8.6	10.8	11.1	13.2	13.7	16.1	17.4	17.5	20.7		