



## Dedicated Oil Coolers – DOC™

### Brazed Plate Heat Exchangers



#### Working principles

The heating surface consists of thin corrugated metal plates stacked on top of each other. Channels are formed between the plates and corner ports are arranged so that the two media flow through alternate channels, normally in full counter-current flow. The media are kept in the unit by a brazed seal around the edge of the plates. The contact points of the plates are also brazed to withstand the pressure of the media handled.

#### Standard design

The plate pack is covered by the cover plates. The connections are located in the front cover plate. The channel plates are corrugated to improve heat transfer efficiency and to increase the mechanical strength.

#### Standard materials

Cover plates: Stainless steel 304  
Connections: Stainless steel 304  
Plates: Stainless steel 316  
Brazing material: Copper

#### Particulars required for quotation

To enable Alfa Laval's representative to make a specific quotation, enquiries should be accompanied by the following particulars:

- Flow rates required
- Temperature program
- Physical properties of liquids in question
- Desired working pressure
- Maximum permitted pressure drops

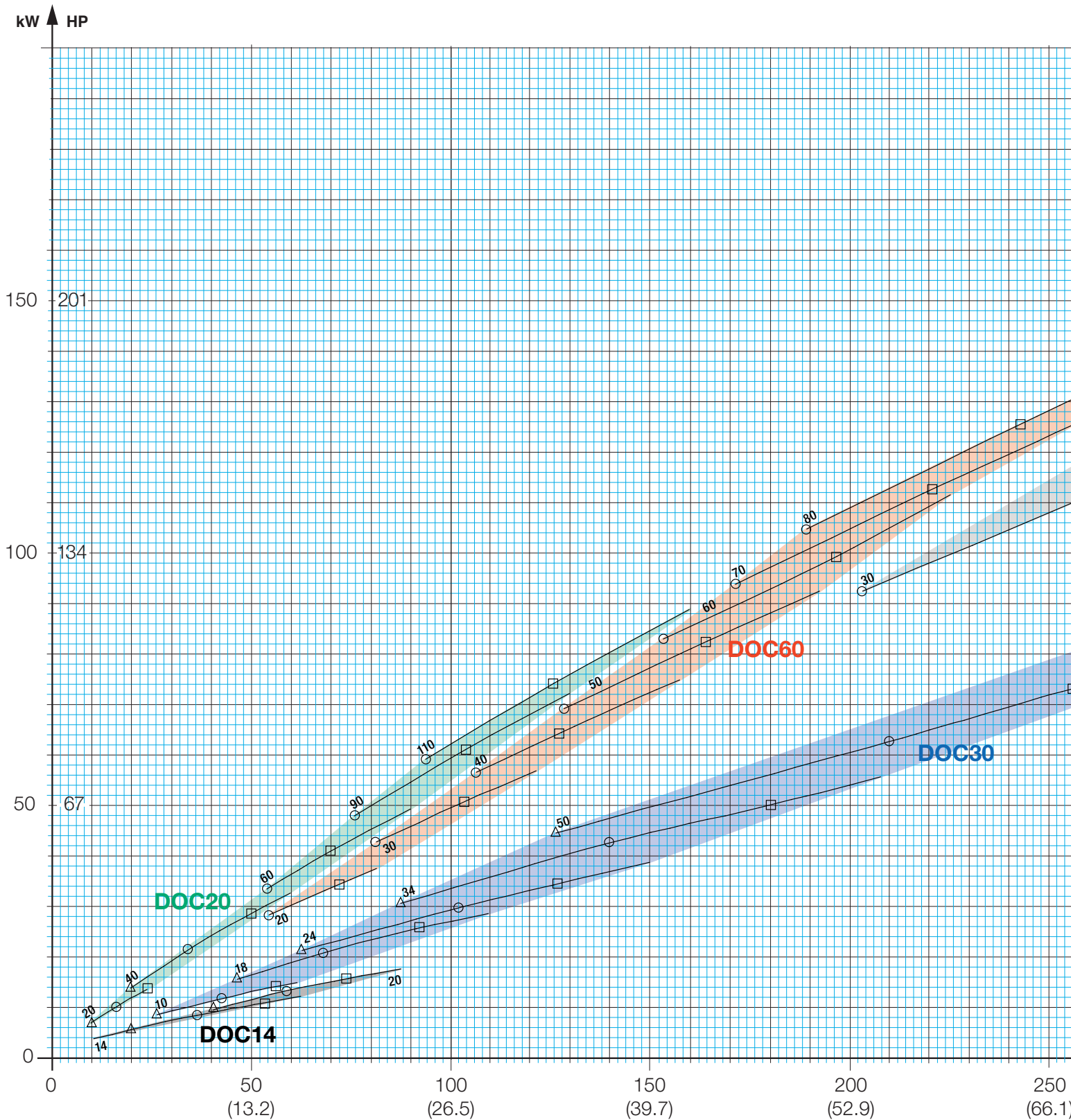
## Selection graph

### The diagram is:

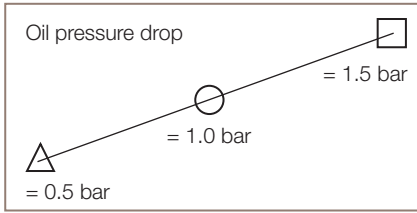
– based on an oil temperature of 60°C and a water temperature of 20°C. For oil temperature of 50°C, multiply with the correction factor of 0,7 on the load. For other water temp. see the correction factor on the right side.

– calculated for two different oil/water flow ratios, 2:1 and 4:1. This means that for every litre of oil circulated through the oil cooler, a minimum of 0.5 litre (2:1) or 0.25 litre (4:1) of water must be circulated to agree with the curve data.

– based on ISO VG 32 oil. For other oils, correction factors must be used. Multiply the required cooling load by the cooling load correction factor. After selecting the oil cooler, multiply the pressure drop by the pressure drop correction factor.



### Correction factors



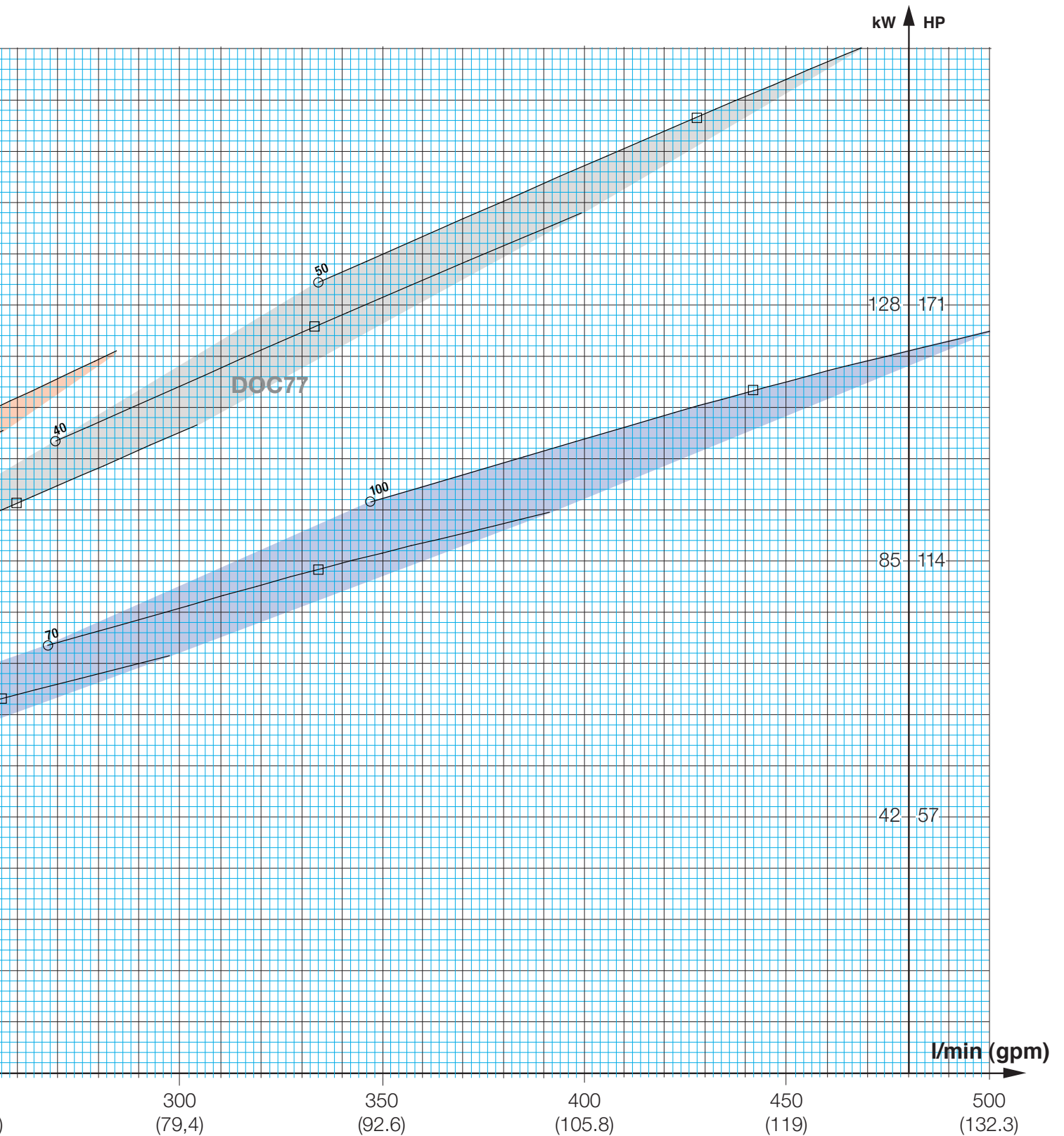
Water temperature corrections factors

Water temp °C	Correction factors
15	0.91
20	1.00
25	1.12
30	1.20
35	1.50

Corrections factors

Viscosity class	Cooling load	Oil pressure drop
ISO VG 22	0.95	0.9
ISO VG 32	1.00	1.0
ISO VG 46	1.05	1.2
ISO VG 68	1.20	1.5
ISO VG 100	1.35	2.1

For accurate calculations, and cooling capacities or other conditions outside of this diagram, contact your Alfa Laval representative



# Technical data for Dedicated Oil Coolers

## Standard data

	DOC14	DOC20	DOC30	DOC60	DOC77	DOC77HF
Max. working temperature	225°C	225°C	225°C	225°C	225°C	225°C
Min. working temperature	-196°C	-196°C	-196°C	-196°C	-196°C	-196°C
Max. working pressure						
S1-S2/S3-S4, bar	33/33	16/16	33/33	40/40	16/30	16/30
Min. working pressure	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Volume per channel, litres	0.02	0.028	0.05	0.103	0.25	0.25
Cooling capacity, kW	< 16	6-75	10-100	20-140	40-170	120-360
Standard number of plates	14, 20	20, 40, 60, 90, 110	10, 18, 24, 34, 50, 70, 100	20, 30, 40, 50, 60, 70, 80	20, 30, 40, 50	60, 70, 80, 90, 100

## Dimensions

Type	a	b	c	d	e	A	Dry weight, kg
DOC14	172	42	208	78	22	$8 + n \times 2.25$	$0.8 + n \times 0.06$
DOC20	270	46	324	94	26	$8 + n \times 1.50$	$1.5 + n \times 0.08$
DOC30	250	50	313	113	26	$9 + n \times 2.35$	$2.4 + n \times 0.10$
DOC60	466	50	527	113	26	$13 + n \times 2.35$	$2.1 + n \times 0.18$
DOC77	519	92	618	191	26	$10 + n \times 2.85$	$11.0 + n \times 0.44$
DOC77HF	519	92	633	191	26	$10 + n \times 2.85$	$13.0 + n \times 0.44$

n = number of plates

## Connections

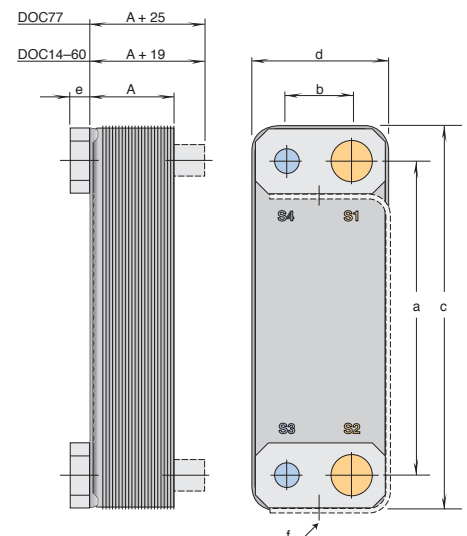
Type	S1-S2, oil	S3-S4, water	Spanner grip	f
DOC14	ISO-G 3/4"	ISO-G 3/4"	32	M8
DOC20	ISO-G 1"	ISO-G 3/4"	41	M8
DOC30	ISO-G 1 1/4"	ISO-G 3/4"	50	M8
DOC60	ISO-G 1 1/4"	ISO-G 3/4"	50	M8
DOC77	ISO-G 1 1/2"	ISO-G 1"	80	M8
DOC77HF	SAE 2 1/2"	ISO-G 1 1/4"	114	M10

## Support bracket dimensions

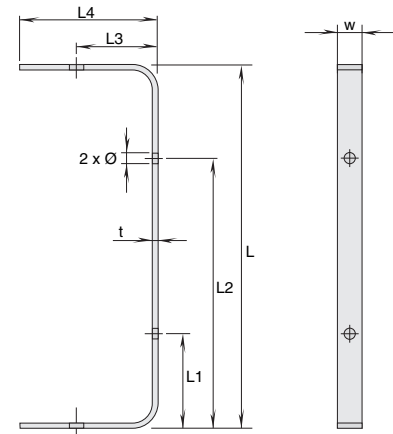
Type	L	L1	L2	L3	L4	w	t	Ø
DOC14	177	57	119	44	78	20	5	9
DOC20	275	85	189	51	94	25	6	9
DOC30	255	75	179	58	100	25	6	9
DOC60	471	75	395	58	100	25	6	9
DOC77	524	149	372	106	180	25	8	11
DOC77HF	524	149	372	106	180	25	8	11

## Nipple connections (optional)

DOC14, 20, 30, 60	ISO-G 1/2" int. thread
DOC77, 77HF	ISO-G 1" int. thread



DOC dimensioning



Support bracket

EFU00039EN 1006

Alfa Laval reserves the right to change specifications without prior notification.

## How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)