

# Intelligent heat management

## Back-channel cooling

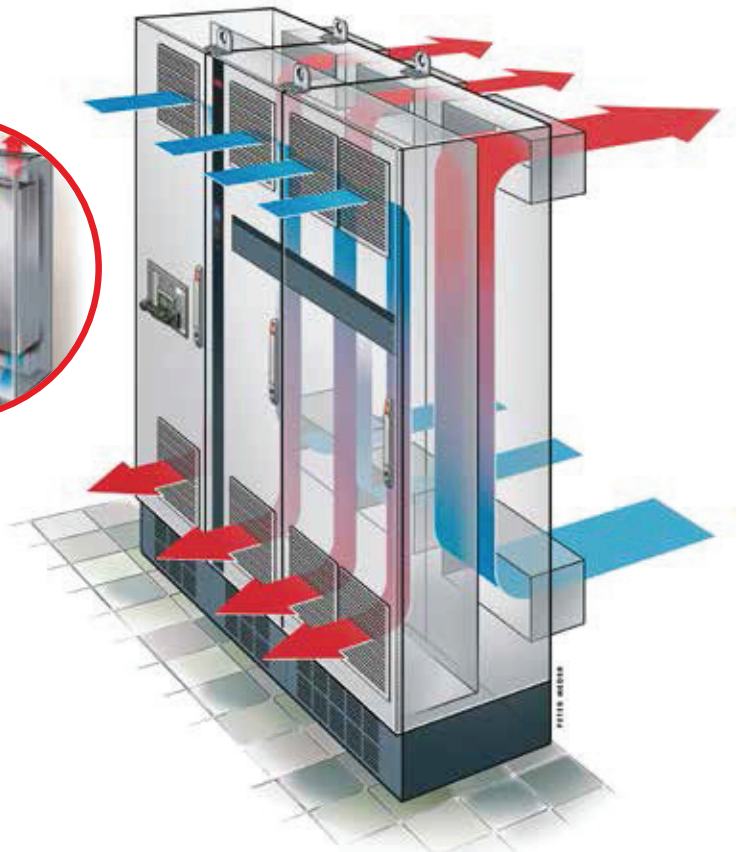
The intelligent heat management of VLT® drives removes up to 90% of the heat losses via finned heat sinks, which transfer the heat to the back channel cooling air. This back-channel is separated from the electronics area by an IP 54 seal. This method of cooling greatly reduces contamination of the control electronics area, resulting in longer life and higher reliability.

The remaining heat losses are removed from the control electronics area using door fans.

The heat from the back-channel can be dispersed into the control room or entirely removed from the area.

An optional back-channel cooling duct kit is available to aid in the installation of IP 00/IP 20/Chassis drives into Rittal TS8 enclosures.

- Separate cooling path for power and control components
- Up to 90% of heat losses are removed through the back channel
- Back-channel can be ducted outside to reduce heat gain in control room and lower operational costs



- IP 54 seal between power and control areas
- Reduced airflow through the controls side of the enclosure results in the control electronics being exposed to fewer contaminants
- Two back-channel airflow possibilities: back inlet/back exhaust or bottom inlet/top exhaust

**up to 10  
drives side-by-side**

**Technical Support.**  
The Danfoss service organisation is present in more than 100 countries – ready to respond whenever and wherever you need, around the clock, 7 days a week.

## Zero clearance, side-by-side mounting

Up to 10 drives can be placed on a 20-foot (6-meter) wall, providing 6.3 MW (at 690 V) or 4.5 MW (at 400 V).

The process heat from these drives is less than 95 kW. If the drives are mounted on an outside wall and the back channel cooling air is vented directly outside, approximately 10 kW of heat loss is dispersed inside the room.



# VLT® High Power Drive Kits

Kits to fit your application

Available on frames

## Back-channel duct kit

Back-channel duct kits are offered for conversion of the D and E frames. They are offered in two configurations – top and bottom

venting and top only venting. Available for the D3h, D4h and E2 frames.

Top and bottom			
Kit number	Description	Instruction number	Additional documents/drawings
176F3627	D3h Kit 1800 mm	177R0456	
176F3628	D4h Kit 1800 mm	177R0457	
176F3629	D3h Kit 2000 mm	177R0456	
176F3630	D4h Kit 2000 mm	177R0457	
176F1850	E2 2000 mm		
176F0299	E2 2200 mm		
Top only			
176F1776	E2 Frame		175R1037

D3h  
D4h  
E2

## NEMA-3R Rittal and welded enclosures

The kits are designed to be used with the IP 00/IP 20/Chassis drives to achieve an enclosure rating of NEMA-3R or NEMA-4. These enclo-

sures are intended for outdoor use to provide a degree of protection against inclement weather.

NEMA-3R (welded enclosures)			
Kit number	Description	Instruction number	Additional documents/drawings
176F3521	D3h back-channel cooling kit (in back out back)	177R0460	
176F3526	D4h back-channel cooling kit (in back out back)	177R0461	
176F0298	E2 Kit	175R1068	175R1069
NEMA-3R (Rittal enclosures)			
176F3633	D3h back-channel cooling kit (in back out back)	177R0460	
176F3634	D4h Back-channel cooling kit (in back out back)	177R0461	
176F1852	E2 Kit	175R5922	175R5921

D3h  
D4h  
E2

## Back-channel cooling kits for non-Rittal enclosures

The kits are designed to be used with the IP 20/Chassis drives in non-Rittal enclosures for in and out the back cooling. Kits do not include plates for mounting in the enclosures.

### Stainless Steel

Kit number	Applicable to frame	Drawing/ Instruction	Kit number	Applicable to frame	Drawing/ Instruction
176F3519	D3h	177R0454	176F3520	D3h	177R0454
176F3524	D4h	177R0455	176F3525	D4h	177R0455

D3h  
D4h

## Back-channel cooling kit – in the bottom and out the back of the drive

Kit for directing the back-channel air flow in the bottom of the drive and out the back.

### Stainless Steel

Kit number	Applicable to frame	Drawing/ Instruction	Kit number	Applicable to frame	Drawing/ Instruction
176F3522	D1h/D3h	177R0506	176F3523	D1h/D3h	177R0506
176F3527	D2h/D4h	177R0507	176F3528	D2h/D4h	177R0507

D1h/  
D3h  
and  
D2h/  
D4h

## Back-channel cooling kit – in and out the back of the drive

These kits are designed to be used for redirecting the back-channel air flow. Factory back-channel cooling directs air in the bottom of the

drive and out the top. The kit allows the air to be directed in and out the back of the drive.

### Back-channel cooling kit – in and out the back of the drive

Kit number	Applicable to frame	Drawing/ Instruction
176F3648	Kit, cooling, in back out back, D1h	177R0458
176F3649	Kit, cooling, in back out back, D2h	177R0459
176F3625	Kit, cooling, in back out back, D3h	177R0454
176F3626	Kit, cooling, in back out back, D4h	177R0455
176F3530	D5h/D6h	177R0505
176F3531	D7h/D8h	177R0504

### Stainless Steel

Kit number	Applicable to frame	Drawing/ Instruction
176F3656	D1h SS (wall mounted)	177R0458
176F3657	D2h SS (wall mounted)	177R0459
176F3654	D3h SS (enclosure mounted)	117R0454
176F3655	D4h SS (enclosure mounted)	117R0455

### Top and bottom covers

Top and bottom covers	Kit number	Applicable to frame	Drawing/ Instruction
IP 00 (welded enclosures)	176F1861	E2	175R1106
IP 21/54	176F1946	E1	175R1106
IP 00 (Rittal Enclosures)	176F1783	E1	177R0076

## Pedestal kit with in and out the back back-channel cooling

Kit number	Description	Additional documents/drawings
176F3532	D1h 400 mm kit	177R0508
176F3533	D2h 400 mm kit	177R0509

## Pedestal kit

The pedestal kit is a 400 mm high pedestal for the D1h and D2h and 200 mm high for the D5h and D6h frames that allow the drives to be floor mounted. The front of the pedestal has openings for input air to the power components.

Kit number	Description	Additional documents/drawings
176F3631	D1h 400 mm kit	177R0452
176F3632	D2h 400 mm kit	177R0453
176F3452	D5h/D6h 200 mm kit	177R0500
176F3539	D7h/D8h 200 mm kit	
176F6739	E-frame pedestal kit	