



OFFICINE MARIO DORIN SINCE 1918

**DORIN**<sup>®</sup>  
INNOVATION

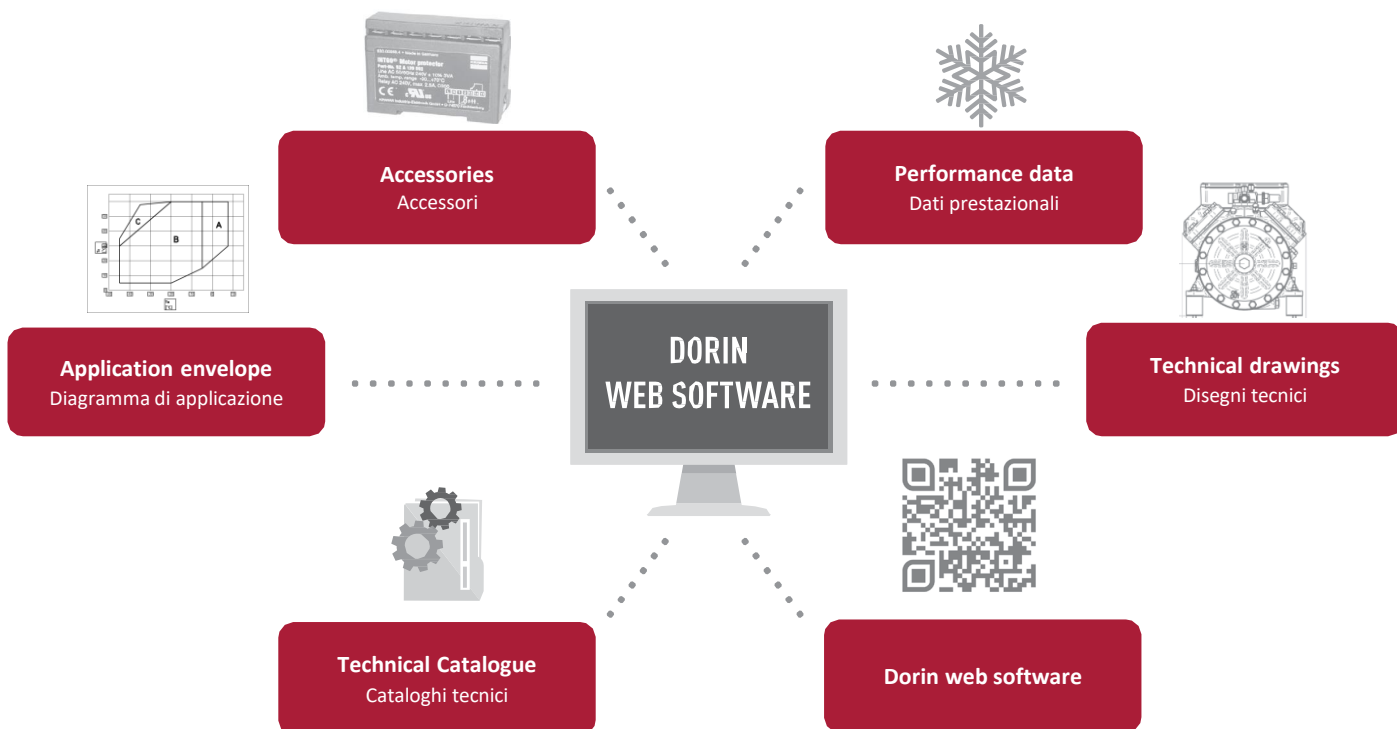


## CDS SERIES

SEMI-HERMETIC MOTOR COMPRESSORS  
SUBCRITICAL CO<sub>2</sub> APPLICATION - 50/60 Hz



**DORIN Web Software**



**Frequency Range**

Range di frequenza



\* Maximum operating frequency to be checked in the dedicated technical bulletin

\* Controllare la massima frequenza operativa nel bollettino tecnico dedicato

**Compressor certifications**

Certificazioni di prodotto



**Factory certifications**

Certificazioni aziendali

**ISO 45001:2018**

**ISO 9001:2015**

**Compressor design pressure**

Pressioni di progetto del compressore

**36 bar**

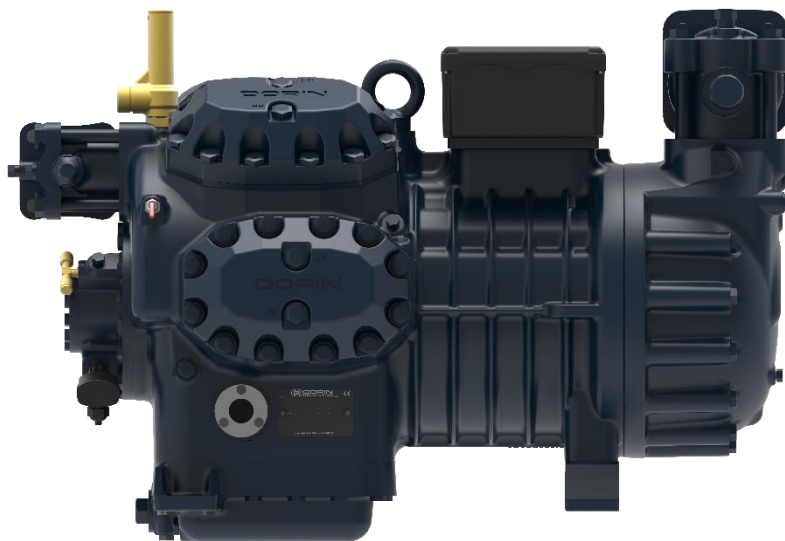
**Standstill pressure**  
Pressione di standstill

**55 bar**

**Max discharge pressure**  
Massima pressione di scarico

## CDS SERIES Features

Caratteristiche della gamma CDS



### Silent operations and low vibrations

Basse vibrazioni ed estrema silenziosità

**Crankshafts balanced individually and excellent fluid dynamics studies are our strengths**

I nostri punti di forza sono il bilanciamento individuale di ogni albero e gli studi CFD



### All models VFD compatible

Tutti i modelli possono essere utilizzati a frequenza variabile con inverter

**Bore / Stroke values and generous motor sizings allow wide frequency ranges**

Rapporti ottimizzati di alesaggio/corsa e motori generosamente dimensionati garantiscono un esteso funzionamento a frequenze variabili



### Highest levels of efficiency

Livelli di efficienza ai vertici per compressori semiermetici

**Using latest coating technologies for reducing frictions and improving lubrication**

Trattamenti superficiali sui componenti in movimento per ridurre l'attrito e migliorare la lubrificazione



### Peculiar oil containment system for extra low oil carry-over for models with oil pump

Soluzione tecnica di contenimento dell'olio peculiare per ridotti trascinalenti dell'olio sui modelli con pompa

**Higher system efficiency, less oil injections from the oil-separator for higher oil viscosity in the compressor sump**

Maggiore efficienza del sistema, ridotte iniezioni di olio dal separatore olio per una viscosità più alta dell'olio nel compressore



### 2 years standard warranty

2 anni di garanzia standard



### All compressors suitable for subcritical CO<sub>2</sub>

Tutti i compressori possono lavorare con CO<sub>2</sub> subcritica



### Unique 8 cylinders compressor for subcritical CO<sub>2</sub>

Speciale compressore otto cilindri per CO<sub>2</sub> subcritica

**Outstanding cooling capacity thanks to the huge compressor displacement CD6001B 200 kW @-30°C / 0°C (60 Hz)**

Elevata capacità frigorifera grazie all'enorme spostamento volumetrico CD6001B 200 Kw @-30°C / 0°C (60 Hz)

**CDS SERIES Technical Features**

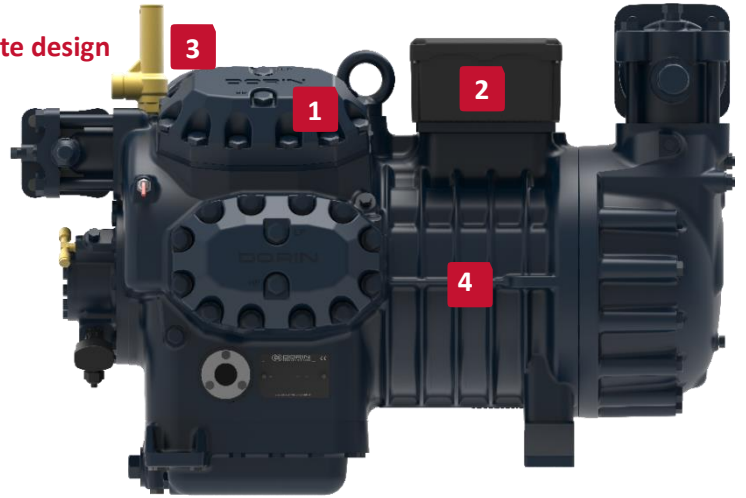
Caratteristiche tecniche della gamma CDS

**1 Extra reliability and efficiency of optimised valve plate design**  
 Estrema affidabilità ed efficienza del disegno delle piastre valvole

**2 IP65 junction box**  
 Scatola attacchi elettrici con isolamento IP65

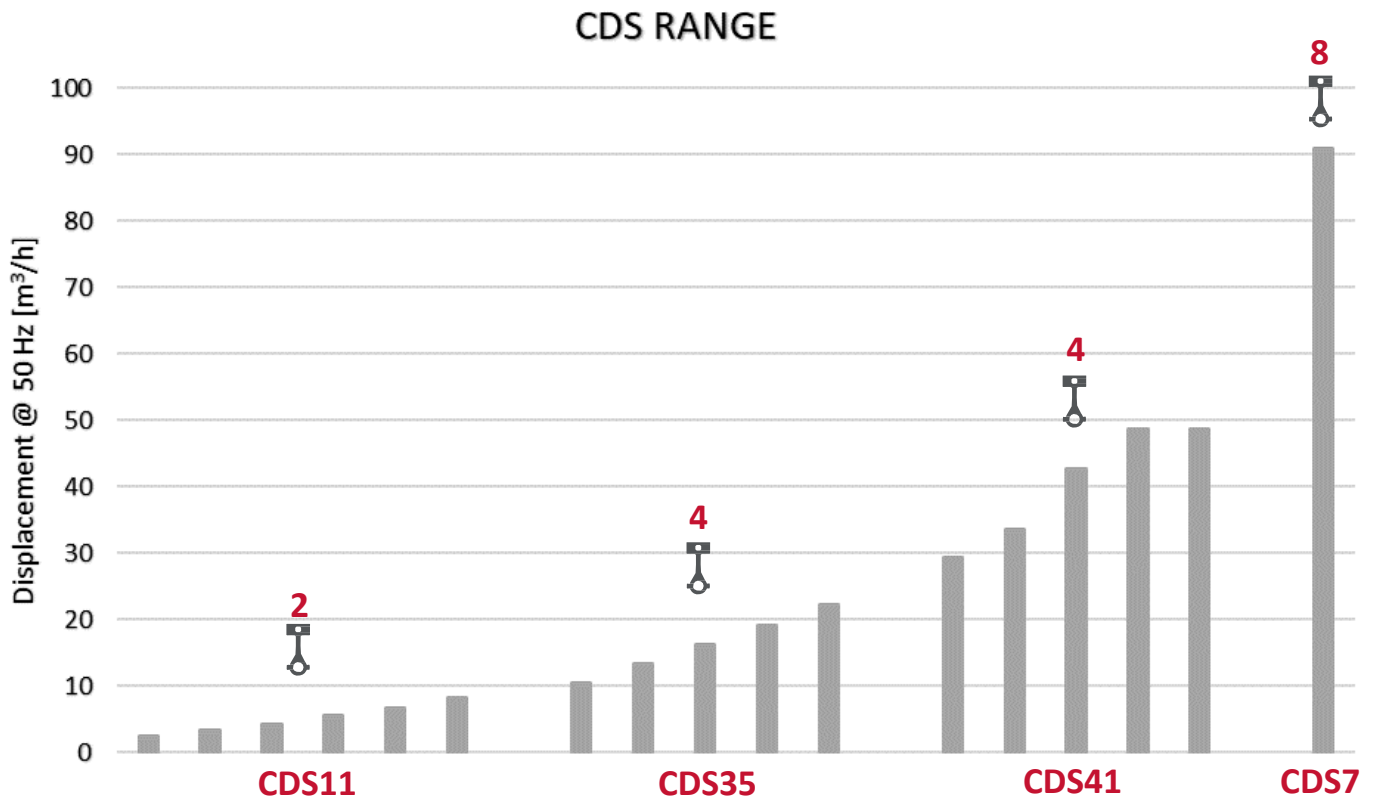
**3 HP and LP safety relief valve**  
 Valvole di sicurezza di alta e bassa pressione

**4 Proven reliability of the electric motor thanks to the unique resistance to high temperatures**  
 Dimostrata affidabilità del motore elettrico grazie alla straordinaria resistenza alle alte temperature



**CDS SERIES – Displacement 50 Hz**

Serie CDS – Spostamento volumetrico 50 Hz



**THE WIDEST SUBCRITICAL CO<sub>2</sub> COMPRESSOR RANGE IN THE MARKET  
 FROM 1,90 m<sup>3</sup>/h UP TO 91 m<sup>3</sup>/h @ 50 Hz**

## Model name

Nome modello per le gamme CD200-CD400

CDS	101	B
SERIES SERIE	HP * 100	B   LOW EVAPORATING TEMPERATURE B   TEMPERATURA DI EVAPORAZIONE BASSA

## Applications CDS SERIES

Applicazioni per la gamma CD



### Industrial Refrigeration

Refrigerazione Industriale



### Commercial Refrigeration

Refrigerazione Commerciale



### Logistic Warehouse

Distribuzione

## Oil Charge / Service Valves / Net Weight / Displacement

Carica olio/ Rubinetti/ Peso netto / Spostamento volumetrico

RANGE	MODEL MODELLO	DISPLACEMENT Spostamento volumetrico		CYLINDERS CILINDRI	OIL CHARGE CARICA OLIO	SUCTION ASPIRAZIONE	DISCHARGE SCARICO	NET WEIGHT PESO NETTO
		50 Hz [m³/h]	60 Hz [m³/h]	[-]	[LITERS]	[mm]	[mm]	[kg]
<b>CDS11</b>	CDS101B	1,90	2,28	2	1,0	16s	14s	42
	CDS151B	2,53	3,04	2	1,0	16s	14s	43
	CDS181B	3,48	4,18	2	1,0	16s	14s	44
	CDS301B	4,34	5,21	2	1,0	16s	14s	46
	CDS351B	5,53	6,64	2	1,0	16s	14s	48
	CDS381B	6,75	8,10	2	1,0	16s	16s	49
	CDS401B	8,20	9,84	2	1,0	16s	16s	49
<b>CDS35</b>	CDS501B	10,61	12,73	4	2,0	22s	18s	99
	CDS701B	13,50	16,20	4	2,0	22s	18s	99
	CDS751B	16,19	19,43	4	2,0	22s	18s	99
	CDS901B	19,13	22,96	4	2,0	28s	22s	109
	CDS1201B	22,32	26,78	4	2,0	28s	22s	110
<b>CDS41</b>	CDS1501B	29,49	35,39	4	2,5	35s	28s	138
	CDS2001B	33,63	40,36	4	2,5	42s	28s	144
	CDS2401B	42,81	51,37	4	2,5	42s	28s	141
	CDS2501B	48,82	58,58	4	2,5	42s	28s	146
	CDS3001B	48,82	58,58	4	2,5	42s	28s	160
<b>CDS7</b>	CDS6001B	91,00	109,20	8	8,5	66s	54s	346

## Standard And Optional Accessories

Accessori standard e opzionali



### Motor Protection (MT)

Protezione motore (Mt)

CDS11 range is equipped with the Thermik protection: a normally closed contact that trips in case the motor winding temperature is  $140\pm 5^{\circ}\text{C}$ . From CDS35 series and above compressors are equipped with a PTC probe on every motor winding set at  $120^{\circ}\text{C}$ . The sensor requires an external protection module to read the signal from the probe (BT008)

La gamma CDS11 ha la protezione Thermik: un contatto normalmente chiuso che interrompe l'alimentazione al compressore se la temperatura degli avvolgimenti è  $140\pm 5^{\circ}\text{C}$ . Dalla serie CDS35 in su i compressori sono equipaggiati con un sensore PTC su ogni avvolgimento del motore impostato a  $120^{\circ}\text{C}$ . Il sensore richiede un modulo di protezione esterno per leggere il segnale in uscita dalla PTC (BT008)

● STANDARD   ○ OPTIONAL	MODEL			
	CDS11	CDS35	CDS41	CDS7

●	●	●	●
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### Electronic Protection Module (REL)

Modulo elettronico protezione motore

Keeping under constant control winding temperature and discharge temperature) (BT007)

Modulo per controllare la temperatura degli avvolgimenti e quella di scarico (BT007)

○	●	●	●
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### Crankcase Heater (CH)

Resistenza Carter

The heater is 100 W up to CDS41 included and 200 W for CDS7 series (BT001) / Il riscaldatore ha una potenza di 100 W fino alla gamma CDS41 e 200 W per la gamma CDS7 (BT001)

○	○	○	○
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### Self-regulating crankcase heater (TCH)

Resistenza autoregolante (TCH)

Increasing the energy efficiency and reducing the warm-up time. The thermal regulated crankcase heater reduces the output power once the set temperature is reached. Depending on the working conditions there is up to 30% energy saving compared to the standard heater (BT001)

Rispetto alla resistenza standard CH riduce il tempo di riscaldamento e incrementa l'efficienza. La resistenza autoregolante aiuta a ridurre il consumo in potenza una volta che la temperatura di set è raggiunta. A seconda delle condizioni di funzionamento può garantire fino al 30% di risparmio energetico rispetto alla resistenza standard (BT001)

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### Maximum discharge temperature sensor (TMAX) /

Sonda di massima temperatura di scarico




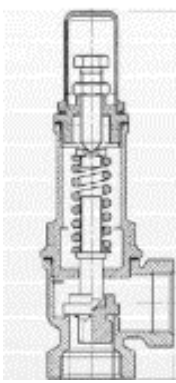
A thermistor probe is monitoring the discharge temperature to be kept below  $160^{\circ}\text{C}$  (BT007)

Un termistore controlla la temperatura allo scarico con un set point a  $160^{\circ}\text{C}$  (BT007)

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## Standard And Optional Accessories

Accessori standard e opzionali

	● STANDARD   ○ OPTIONAL	MODEL			
		CDS11	CDS35	CDS41	CDS7
 <p><b>Oil differential pressure switch (ODPS) /</b>  <b>Sensore differenziale di pressione olio (ODPS)</b>                      Compressors with oil pump are equipped with an oil differential pressure switch set at 0,85 bar differential. The oil pressure switch must be connected in series to both thermistors module and all other protections foreseen in the system chain alarm (BT007) /                      I compressori equipaggiati con pompa olio utilizzano hanno un differenziale di pressione settato a 0,85 bar. La protezione per la pressione dell'olio deve essere connessa in serie a tutte le altre protezioni del compressore, come i termistori (BT007)</p>		-	-	-	●
 <p><b>Optical oil level sensor (ALL) / Sensore ottico livello olio (ALL)</b>                      Compressors with 4 cylinders and without oil pump can be equipped with an optical oil level sensor, which can be installed in a dedicated hole placed in in correspondence to the internal oil pocket. The sensor is based on an infrared LED and a light receiver. Infrared reflection/refraction depends on the oil level in the pocket (BT007) /                      I compressori con 4 cilindri e senza pompa olio possono essere equipaggiati con un sensore ottico di livello dell'olio che è installato in corrispondenza della «sacca» interna del coperchio. Il sensore funziona grazie ad un emettitore LED e un ricevitore. La riflessione/rifrazione del fascio di infrarossi dipende dal livello di olio nella tasca (BT007)</p>		-	○	○	-
 <p><b>Oil charge /</b>  <b>Carica olio</b>                      All compressors are charged in the factory with POE or PAG oil before the mechanical and electrical running tests /                      Tutti i compressori sono caricati con olio POE o PAG prima dei test meccanici ed elettrici a fine linea di assemblaggio</p>		●	●	●	●
 <p><b>LP and HP valve (LPSV-HPSV) /</b>  <b>Valvola di sicurezza LP e HP</b></p>		●	●	●	●

## Electric Motor FLA (Full Load Ampere) and LRA (Locked Rotor Ampere)

Massima corrente di funzionamento FLA (Full Load Ampere) e LRA (Locked Rotor Ampere)

RANGE	MODEL MODELLO	MAX OPERATING CURRENT MASSIMA CORRENTE DI FUNZIONAMENTO V / ph / Hz [A]								LOCKED ROTOR CURRENT CORRENTE A ROTORE BLOCCATO V / ph / Hz [A]								MAX ABSORBED POWER MASSIMA POTENZA ASSORBITA	
		D		Y		PWS		PWS		D		Y		PWS *		PWS *		50 Hz [kW]	60 Hz [kW]
		220-240 / 3 / 50 265-290 / 3 / 60	380-420 / 3 / 50 440-480 / 3 / 60	380-420 / 3 / 50 440-480 / 3 / 60	220-240 / 3 / 50 PWS	208-230 / 3 / 60 PWS	360-400 / 3 / 60 PWS	475-525 / 3 / 50 570-630 / 3 / 60	220-240 / 3 / 50 265-290 / 3 / 60	380-420 / 3 / 50 440-480 / 3 / 60	380-420 / 3 / 50 440-480 / 3 / 60	220-240 / 3 / 50 PWS *	208-230 / 3 / 60 PWS *	360-400 / 3 / 60 PWS *	475-525 / 3 / 50 570-630 / 3 / 60				
CDS11	CDS101B	5,0	2,9	-	-	-	-	2,3	24,0	13,8	-	-	-	-	11,0	1,6	1,9		
	CDS151B	5,9	3,4	-	-	-	-	2,7	27,0	15,5	-	-	-	-	12,4	2,0	2,4		
	CDS181B	7,6	4,4	-	-	-	-	3,5	35,0	20,0	-	-	-	-	16,0	2,6	3,2		
	CDS301B	10,4	6,0	-	-	-	-	4,8	42,0	24,5	-	-	-	-	19,6	3,6	4,4		
	CDS351B	12,6	7,3	-	-	-	-	5,8	55,0	32,0	-	-	-	-	25,5	4,2	5,1		
	CDS381B	16,2	9,4	-	-	-	-	7,5	76,0	43,5	-	-	-	-	35,0	5,5	6,6		
	CDS401B	16,2	9,4	-	-	-	-	7,5	76,0	43,5	-	-	-	-	35,0	5,5	6,6		
CDS35	CDS501B	22,5	12,9	-	-	-	-	10,3	109,0	63,0	-	-	-	-	50,0	7,8	9,3		
	CDS701B	29,0	16,7	-	-	-	-	13,4	149,0	86,0	-	-	-	-	69,0	10,0	12,0		
	CDS751B	34,0	19,5	-	-	-	-	15,6	149,0	86,0	-	-	-	-	69,0	11,8	14,1		
	CDS901B	40,0	23,0	-	-	-	-	18,4	159,0	92,0	-	-	-	-	74,0	13,8	16,6		
	CDS1201B	41,5	24,0	-	-	-	-	19,2	188,0	109,0	-	-	-	-	87,0	14,4	17,3		
CDS41	CDS1501B	-	-	34,0	59,0	71,0	41,0	27,0	-	-	171,0	295,0	354,0	205,0	136,0	19,5	23,4		
	CDS2001B	-	-	38,0	66,0	79,0	45,5	30,5	-	-	177,0	306,0	367,0	212,0	142,0	22,7	27,2		
	CDS2401B	-	-	45,0	78,0	93,0	54,0	36,0	-	-	203,0	351,0	421,0	244,0	162,0	26,6	31,9		
	CDS2501B	-	-	45,0	78,0	93,0	54,0	36,0	-	-	203,0	351,0	421,0	244,0	162,0	26,6	31,9		
	CDS3001B	-	-	60,0	103,9	127,4	72,0	48,0	-	-	245,0	424,4	509,0	294,0	196,0	35,9	43,1		
CDS7	CDS6001B	-	-	105,0	182,0	218,0	126,0	84,0	-	-	455,0	788,0	946,0	546,0	364,0	62,0	74,4		

\* The current value refers to the direct connection.

\* Valore per collegamento diretto

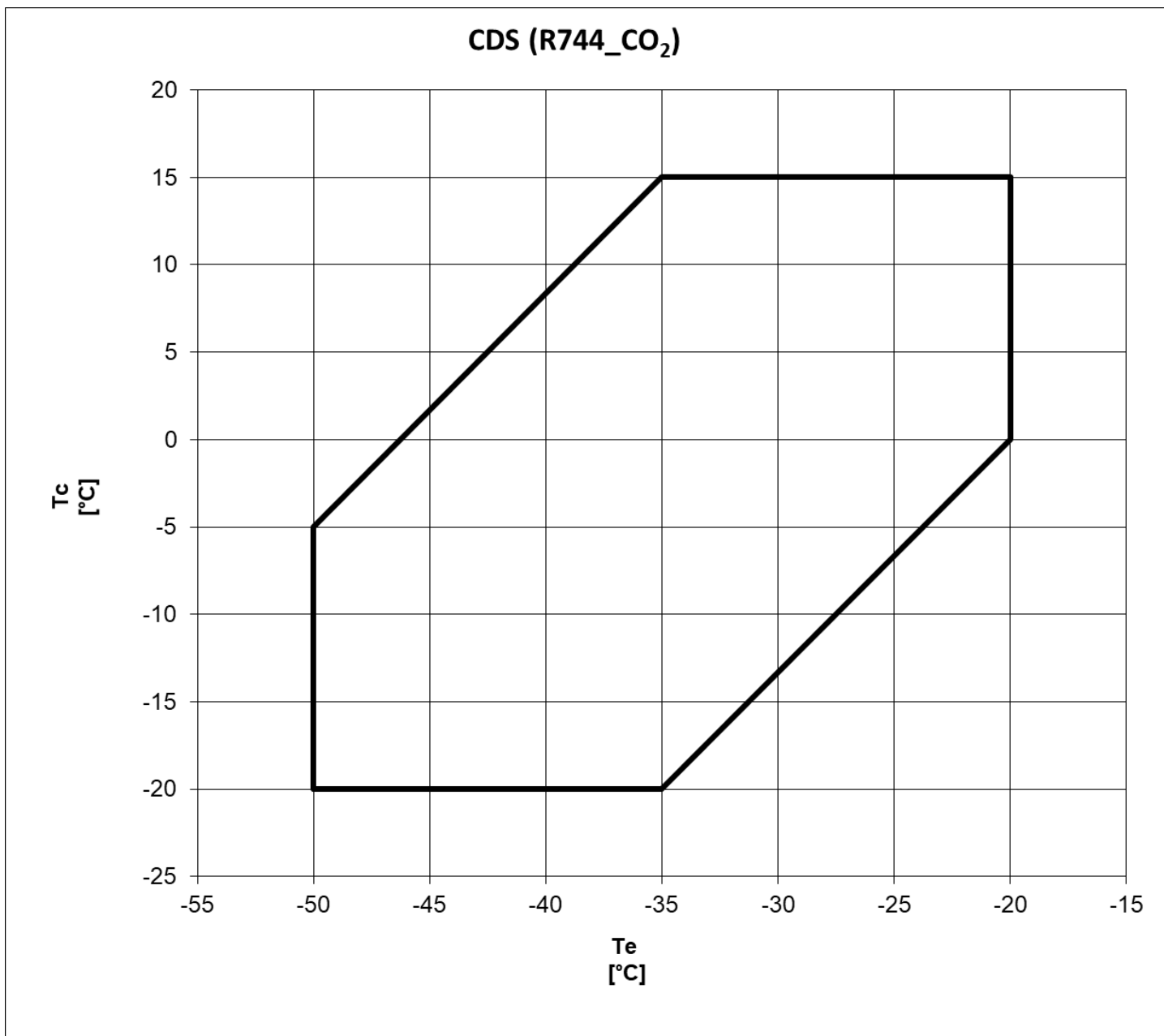
Standard version of the motor / contact our technical service for operating conditions not present in the catalog

Versione standard del motore/contattare il nostro ufficio tecnico commerciale per le condizioni non presenti sul catalogo



**Application Envelope**

Diagrammi di applicazione



**The application envelope changes with the compressor model and is available for every model in the DORIN web software**

Il diagramma di applicazione cambia con il modello di compressore ed è disponibile per ogni modello e refrigerante nel web software di DORIN

**Compressors application envelopes valid for superheat values lower than 10K**

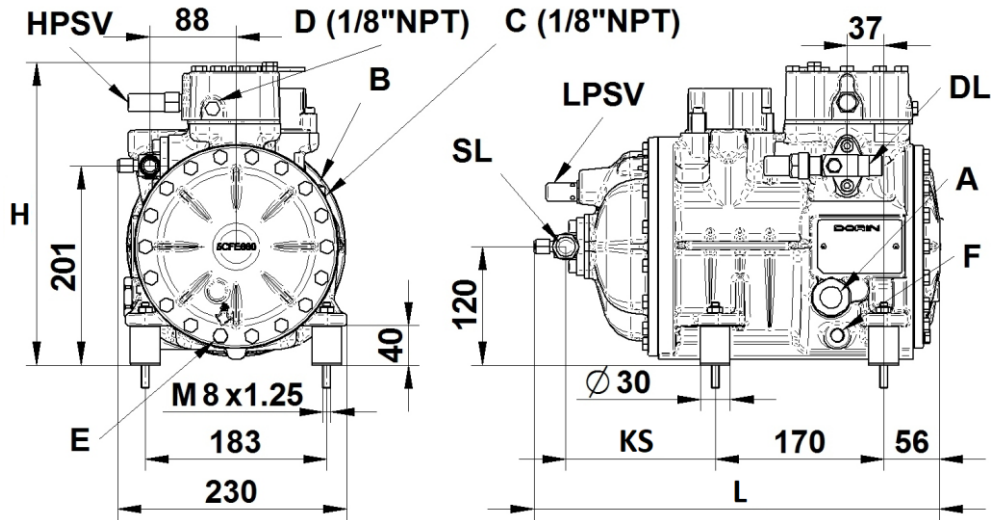
Diagramma di applicazione validi per surriscaldamenti in aspirazione non superiori a 10K

Technical Drawings

Disegno tecnico

CDS11

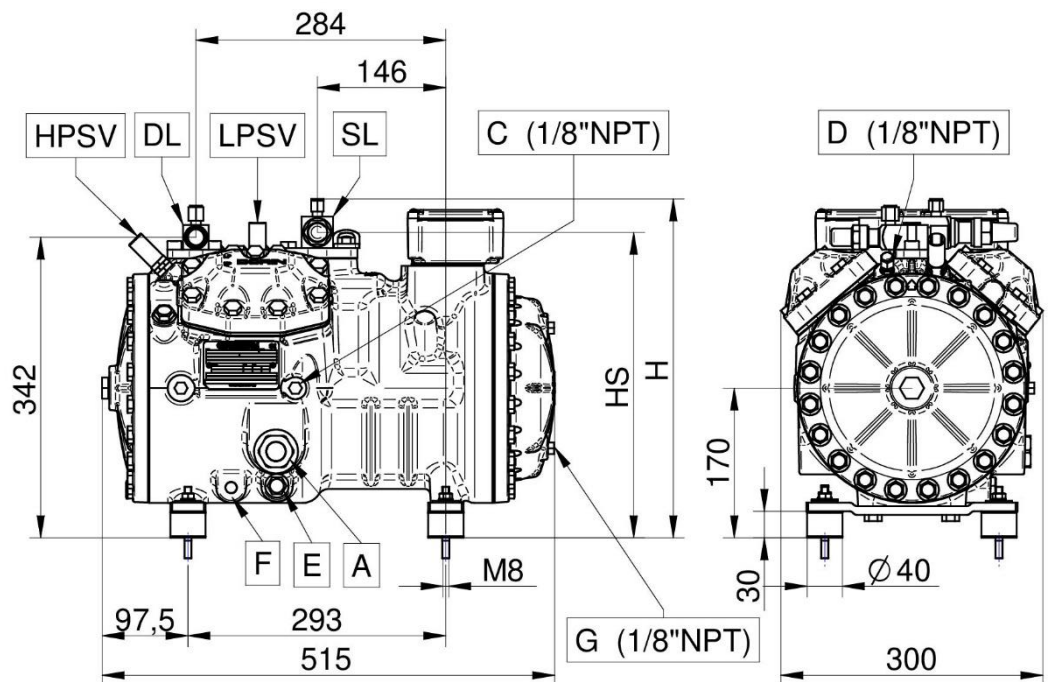
MODEL MODELLO	L	H	KS
	[mm]	[mm]	[mm]
CDS101B	410	305	151
CDS151B	410	305	151
CDS181B	410	305	151
CDS301B	410	308	151
CDS351B	410	308	151
CDS381B	430	311	175
CDS401B	430	311	175



CDS\_H111 8-7-14

CDS35

MODEL MODELLO	HS	H
	[mm]	[mm]
CDS501B	343	379
CDS701B	343	379
CDS751B	343	379
CDS901B	347	385
CDS1201B	347	385



**A** - Oil sight - Spia Olio

**B** - Oil charge plug - Tappo carica Olio

**C** - Low pressure tap - Presa Bassa Pres.

**D** - High pressure tap - Presa Alta Pres.

**E** - Oil drain plug - Tappo scarica olio

**F** - Crankcase heater - Resistenza carter

**DL** - Discharge service valve - Rubinetto Compressione

**SL** - Suction service valve - Rubinetto Aspirazione

**LPSV** - Low pressure safety valve - Valvola sicurezza LP

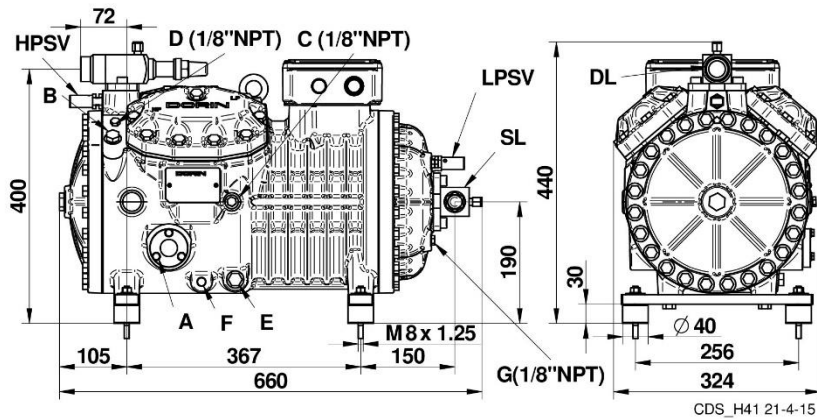
**HPSV** - High pressure safety valve - Valvola sicurezza HP

Technical Drawings

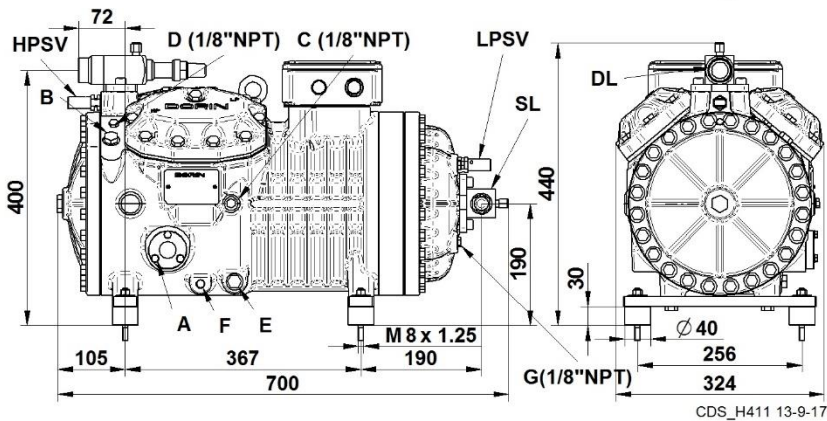
Disegno tecnico

CDS41

MODEL MODELLO
CDS1501B
CDS2001B
CDS2401B
CDS2501B

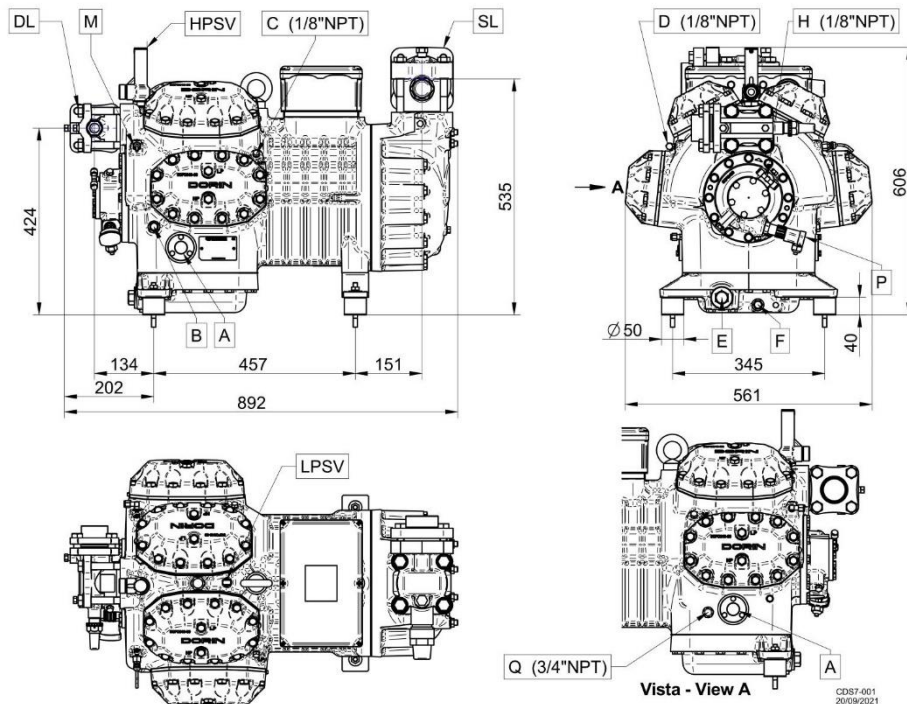


MODEL MODELLO
CDS3001B



CDS7

MODEL MODELLO
CDS6001B



- A** - Oil sight - Spia Olio
- B** - Oil charge plug - Tappo carica Olio
- C** - Low pressure tap - Presa Bassa Pres.
- D** - High pressure tap - Presa Alta Pres.
- E** - Oil drain plug - Tappo scarica olio
- F** - Crankcase heater - Resistenza carter
- H** - High pressure tap oil pump - Presa alta pressione pompa
- M** - Maximum discharge temperature sensor - Sensore massima temperatura

- P** - Oil differential pressure switch - Pressostato differenziale olio elettronico
- Q** - Gas equalization - Equalizzazione gas
- DL** - Discharge service valve - Rubinetto Compressione
- SL** - Suction service valve - Rubinetto Aspirazione
- LPSV** - Low pressure safety valve - Valvola sicurezza LP
- HPSV** - High pressure safety valve - Valvola sicurezza HP



### **DORIN WEB SOFTWARE**

**Open the camera app on your device and point it at the QR code to scan it. Make sure that all the four corners of the QR code are in view. A pop-up notification will appear on your screen, tap the notifications to launch the code.**

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/ Open the camera app on your device and point it at the QR code to scan it. Make sure that all the four corners of the QR code are in view. A pop-up notification will appear on your screen, tap the notifications to launch the code. / Open the camera app on your device and point it at the QR code to scan it. Make sure that all the four corners of the QR code are in view. A pop-up notification will appear on your screen, tap the notifications to launch the code.



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