

Smart Drive
Solutions



DESCH Habix® HWN / HWT

Flexible Couplings



HW 11 - GB

POWER TRANSMISSION

Flexible Habix®-couplings

Flexible Habix®-couplings Type HWN

The flexible DESCH Habix®-coupling, type HWN, is a distortion-free jaw coupling with a flexible element for the torsionally flexible connection of two shafts.

The advantage of the all-round-machined DESCH Habix®-couplings is the precision of the operating characteristic as well as the increased durability. DESCH Habix®-couplings are distortion-free up to the breaking load of the cast iron jaws and insure a maximum of operational safety. The flexible element is available in white color with a hardness of 92 Shore A and in red color with a hardness of 98 Shore A.

It is highly resistant against wear as well as against oil, ozone and aging.

The flexible of the couplings absorbs efficiently shockloads, torsional vibrations and noises.

The flexible element of the couplings has been designed to compensate radial, axial and angular movements between the coupling-halves.

By the fixed position of the flexible element its deformability in axial direction is free and no harmful axial forces may disturb the bearings even with changing torques. The flexible element of the DESCH Habix®-coupling allows a permanent thermal load up to 80°C. Even low temperatures up to -20°C are allowed.

The two halves of the DESCH Habix®-coupling can easily be connected and do not require a high accuracy of the shaft alignment.

The couplings are balanced according to DIN ISO 1940, quality G16.

Type HWT - with Taper-bush

The DESCH Habix®-couplings type HWT join the advantages of the HWN-types with the advantages of the taper-bush system, which is an easy and simple way of fitting on the shafts for a safe transmission of the torque and for the compensation of shaft misalignments.



Type

- > Standard coupling HWN
- > Taper-bush type HWT
- > combined type standard/Taper HWNT
- > Components can be combined as needed.

The HWT-types with the taper-bush system allow a safe and backlash-free fixation of the hubs on the shafts even at bigger shaft tolerances. The slide fit allows the axial alignment of the coupling. The exchange of the flexible element is possible by simply sliding the coupling halves in axial direction without removing the driving or driven machine.

The field of application of the DESCH Habix®-coupling is all the engineering industry wherever a safe connection between motor and driven machine is required.

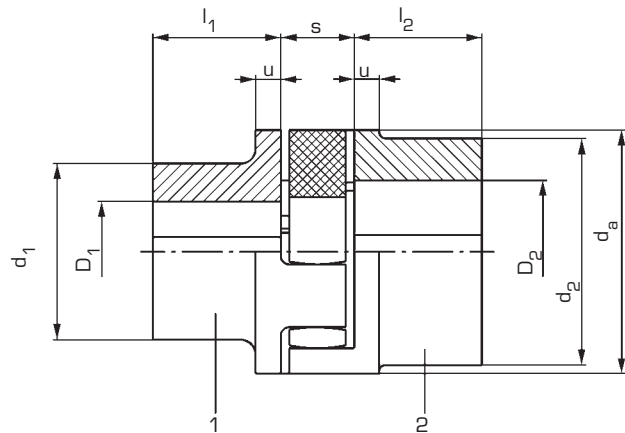
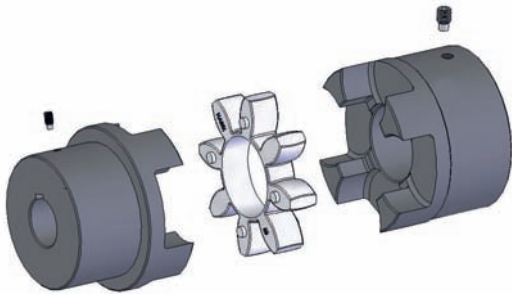
Technical data

Size	Max. rotational speed rpm	Torque Nm			Torque Nm		
		nominal T_{KN}	max T_{kmax}	changing T_{KW}	nominal T_{KN}	max T_{kmax}	changing T_{KW}
		92° Shore A white			98° Shore A red		
19	19000	10	20	2,6	17	34	4,4
24	14000	35	70	9	60	120	16
28	11800	95	190	25	160	320	42
38	9500	190	380	49	325	650	85
42	8000	265	530	69	450	900	117
48	7100	310	620	81	525	1050	137
55	6300	410	820	105	685	1370	178
65	5600	625	1250	163	940	1880	245
75	4750	1280	2560	333	1920	3840	499
90	3750	2400	4800	624	3600	7200	936

Size	Max. shaft misalignment ²⁾		
	radial ¹⁾	axiale	angular ¹⁾
	$\Delta K_r / \text{mm}$	$\Delta K_a / \text{mm}$	$\Delta K_w / \text{Grad}$
19	0,20	1,2	1,2
24	0,22	1,4	0,9
28	0,25	1,5	0,9
38	0,28	1,8	1,0
42	0,32	2,0	1,0
48	0,36	2,1	1,1
55	0,38	2,2	1,1
65	0,42	2,6	1,2
75	0,48	3,0	1,2
90	0,50	3,4	1,2

- > Torques for shaft fit with keyway
 - 1) The values mentioned are valid for 1.500 rpm and may occur only seperately. At multiple misalignments or higher speeds the values must be reduced (see page 7).
 - 2) The values mentioned are valid for an ambient temperature of 30°C. At higher temperatures the values must be reduced.

Type HWN

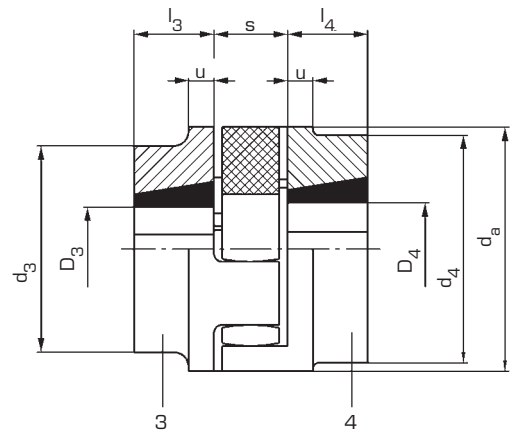
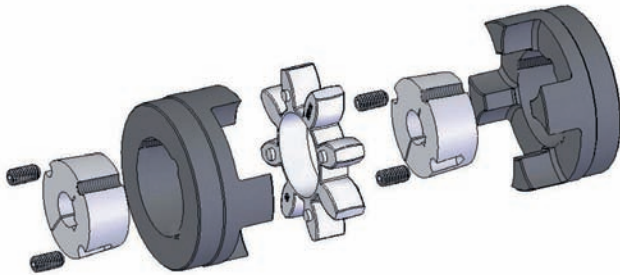


Size	Part 1				Part 2				da	u	s
	Pre. mm	max. mm	mm	mm	Pre. mm	max. mm	mm	mm			
19	-	19	32	25	17	24	39,5	25	40	5	16
24	-	24	40	30	22	28	48	30	55	6	18
28	-	28	48	35	26	38	64,5	35	65	7	20
38	10	38	66	45	36	45	78	45	80	8	24
42	12	42	75	50	40	55	94	50	95	10	26
48	13	48	85	56	46	60	104	56	105	11	28
55	18	55	98	65	53	70	118	65	120	13	30
65	20	65	115	75	63	75	134	75	135	14	35
75	28	75	135	85	73	90	158	85	160	16	40
90	38	90	160	100	88	100	180	100	200	19	45

Size	Weight / kg		Moments of inertia kgm ²	
	Part 1	Part 2	Part 1	Part 2
19	0,16	0,21	0,00003	0,00005
24	0,40	0,40	0,00011	0,00015
28	0,52	0,76	0,00024	0,00049
38	1,1	1,4	0,00087	0,0013
42	1,7	2,3	0,0018	0,0031
48	2,8	3,1	0,0031	0,0052
55	3,7	4,6	0,062	0,010
65	5,7	7,0	0,013	0,019
75	8,8	11	0,027	0,041
90	15	15	0,068	0,090

- > Drill holes H7 with keyway in accordance with DIN 6885/1; tolerance zone JS9 and set screws on the keyway; weight and moments of inertia valid for medium bore diametes; coupling half materials: EN-GJL-250 (GG-25) in accordance with DIN EN 1561

Type HWT



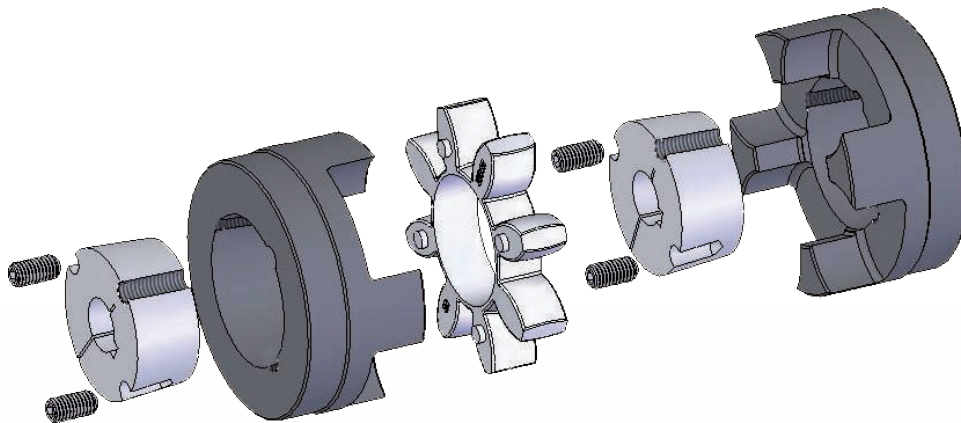
Size	Part 3					Part 4					da	u	s
	min. mm	max. mm	Taper bush no.	d ₃ mm	l ₃ mm	min. mm	max. mm	Taper bush no.	d ₄ mm	l ₄ mm			
19	-	-	-	-	-	-	-	-	-	-	40	5	16
24	10	25	1008	54,5	22	10	25	1008	54,5	22	55	6	18
28	10	28	1108	64,5	22	10	28	1108	64,5	22	65	7	20
38	10	28	1108	78	22	10	28	1108	78	22	80	8	24
42	14	42	1610	94	25	14	42	1610	94	25	95	10	26
48	14	42	1615	104	38	14	42	1615	104	38	105	11	28
55	14	50	2012	118	32	14	50	2012	118	32	120	13	30
65	14	50	2012	126	32	16	60	2517	134	45	135	14	35
75	16	60	2517	158	45	25	75	3020	158	51	160	16	40
90	25	75	3020	160	51	35	90	3535	180	89	200	19	45

Size	Weight kg		Moments of inertia kgm ²	
	Part 3	Part 4	Part 3	Part 4
19	-	-	-	-
24	0,39	0,39	0,00017	0,00017
28	0,55	0,55	0,00032	0,00032
38	0,86	0,86	0,00074	0,00074
42	1,4	1,4	0,0017	0,0017
48	2,5	2,5	0,0037	0,0037
55	2,7	2,7	0,0054	0,0054
65	3,4	4,8	0,0082	0,0012
75	6,8	7,3	0,023	0,026
90	9,5	16	0,044	0,081

> Weight and moments of inertia valid for medium bore diameters inc. Taper-bushes.
Material of coupling halves:
EN-GJL-250 (GG-25) DIN EN 1561

Taper-bushes with keyway acc. to DIN 6885/1

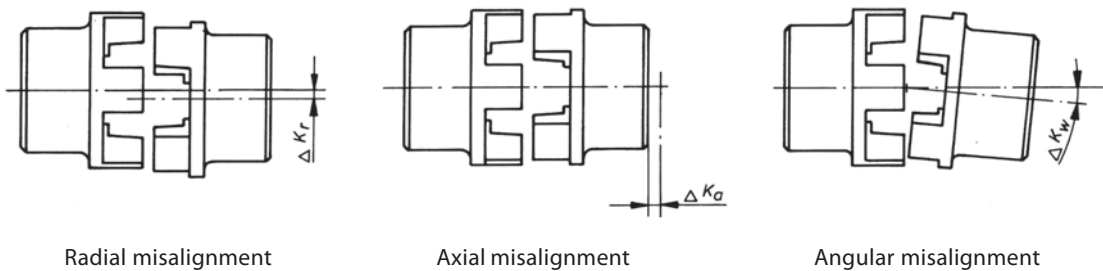
Tolerance JS9



Taper-bush no.	Bore \varnothing of available Taper-bushes mm											
	10	11	12	14	16	18	19	20	22	24*	25*	
1008	10	11	12	14	16	18	19	20	22	24*	25*	
1108	10	11	12	14	16	18	19	20	22	24	25	28*
1610/ 1615	14	16	18	19	20	22	24	25	28	30	32	35
	38	40	42*									
2012	14	16	18	19	20	22	24	25	28	30	32	35
	38	40	42	45	48	50						
2517	16	18	19	20	22	24	25	28	30	32	35	38
	40	42	45	48	50	55	60					
3020	25	28	30	32	35	38	40	42	45	48	50	55
	60	65	70	75								
3535	35	38	40	42	45	48	50	55	60	65	70	75
	80	85	90									

* These bohrholes are with flat - keyway DIN 6885/3

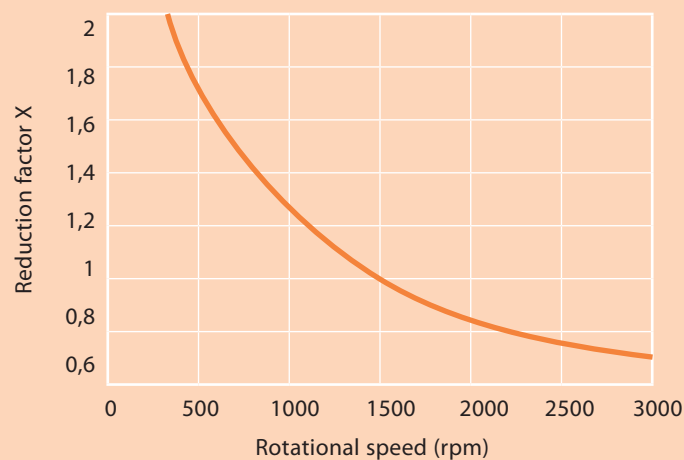
Allowable misalignments



- > Reduction of the allowable values of misalignment when the combination of misalignments occur or at other rotational speeds: $\frac{\Delta W_r}{\Delta K_r} + \frac{\Delta W_a}{\Delta K_a} + \frac{\Delta W_w}{\Delta K_w} \leq X$

$\Delta K_{r/a/w}$ = allowable radial, axial or angular misalignment of the shafts resp. of the coupling-halves

$\Delta W_{r/a/w}$ = measured radial, axial or angular misalignment of the shafts resp. of the coupling-halves.



Allocation to IEC motor

Power P of the IEC motor and allocated Habix® couplings									Shaft ends	
Size of the three phase motor	3000 rpm		1500 rpm		1000 rpm		750 rpm		Form E DIN 748 part 3 d x l at speed approx.	
	P kw	Habix® Size	P kw	Habix® Size	P kw	Habix® Size	P kw	Habix® Size	3000 rpm	1500 rpm and less
56	0,09	19	0,06	19	0,037	19	--		9 x 20	
	0,12	19	0,09	19	0,045	19	--			
63	0,18	19	0,12	19	0,06	19	--		11 x 23	
	0,25	19	0,18	19	0,09	19	--			
71	0,37	19	0,25	19	0,18	19	0,09	19	14 x 30	
	0,55	19	0,37	19	0,25	19	0,12	19		
80	0,75	19	0,55	19	0,37	19	0,18	19	19 x 40	
	1,1	19	0,75	19	0,55	19	0,25	19		
90 S	1,5	24	1,1	24	0,75	24	0,37	24	24 x 50	
90 L	2,2	24	1,5	24	1,1	24	0,55	24	24 x 50	
100 L	3	28	2,2	28	1,5	28	0,75	28	28 x 60	
	--	--	3	28	--	--	1,1	28		
112 M	4	28	4	28	2,2	28	1,5	28	28 x 60	
132 S	5,5	38	5,5	38	3	38	2,2	38	38 x 80	
	7,5	38	--	--	--	--	--	--		
132 M	--	--	7,5	38	4	38	3	38	38 x 80	
	--	--	--	--	5,5	38	--	--		
160 M	11	42	11	42	7,5	42	4	42	42 x 110	
	15	42	--	--	--	--	5,5	42		
160 L	18,5	42	15	42	11	42	7,5	42	42 x 110	
180 M	22	48	18,5	48	--	--	--	--	48 x 110	
180 L	--	--	22	48	15	48	11	48	48 x 110	
200 L	30	55	30	55	18,5	55	15	55	55 x 110	
	37	55	--	--	22	55	--	--		
225 S	--	--	37	65	--	--	18,5	65	55 x 110	60 x 140
225 M	45	55	45	65	30	65	22	65	55 x 110	60 x 140
250 M	55	65	55	65	37	65	30	65	60 x 140	65 x 140
280 S	75	65	75	75	45	75	37	75	65 x 140	75 x 140
280 M	90	65	90	75	55	75	45	75	65 x 140	75 x 140
315 S	110	65	110	90	75	90	55	90	65 x 140	80x 170
315 M	132	65	132	90	90	90	75	90	65 x 140	80x 170
315 L	160	65	160	90	110	90	90	90	65 x 140	80x 170
	200	75	200	90	132	90	110	90		
355 L	250	75	250	90	160	90	132	90		
	315	90	315	90	200	90	160	-	75 x 140	95 x 170
400 L	--	--	--	--	250	-	200	-		
	355	90	355	-	315	-	250	-	80 x 170	100 x 210
	400	90	400	-	--	--	--	--		

- > As proposed in the table (page 8) for surface cooled three-phase motors with cage rotor acc. to DIN 42673, page 1 (data for motor 56, 63, 71, 80, 315 L, 355 L, 400 L, see catalogue Siemens). This allocation is a preliminary selection for normal conditions of operation. For conditions of operation under shock and changing loads the selection must be made according to the following.

Selection

- > The torque of the machine T_{AN} is determined by:

$$T_{AN} [\text{Nm}] = 9550 \times \frac{P_{\text{Motor}} [\text{kW}]}{n [\text{rpm}]}$$

This torque T_{AN} multiplied by a safety factor „S“ depending on the application and the temperature factor S_T (see table page 10) gives the required nominal coupling torque T_{KN}

$$\text{Result: } T_{KN} \geq S \times S_T \times T_{AN}$$

Design example for IEC standard motors

Dates of the plant

Driving machine: Three-phase motor	225 M
Power of the motor	$P = 45 \text{ kW}$
Rotation at speed	$n = 1485 \text{ rpm}$
Driven machine: Mixer	
Ambient temperature:	$+ 50 \text{ }^\circ\text{C}$

Layout of the coupling

$$T_{AN} [\text{Nm}] = 9550 \times \frac{45 \text{ kW}}{1485 \text{ rpm}} = 290 \text{ Nm}$$

$$T_{AN} = 1,25 \times 1,5 \times 290 \text{ Nm} = 544 \text{ Nm}$$

Selection: Habix® size 65 flexible element 92° Shore A $T_{KN} = 625 \text{ Nm}$

- > In case that bigger shock or changing load occur we recommend a revision according to DIN 740. An adequate calculation program is available. For such a revision the following information is required:

1. Kind of the driving machine
2. Kind of the driven machine
3. Power of driving and driven machines
4. Rotational speed of operation
5. Shock loads
6. Exciting loads
7. Moments of inertia of load- and driving sides
8. Starts per hour
9. Ambient temperature

Safety factors "S"

Assignment of load characteristics according to type of working machine			
S	DREDGERS	S	RUBBER MACHINERY
S	Bucket conveyor	M	Extruders
M	Landing gear (caterpillar)	S	Calenders
M	Landing gear (rail)	S	Kneading mill
M	Manoeuvring winches	M	Mixers
M	Pumps	S	Rolling mills
S	Impellers		
S	Cutter heads		WOOD WORKING MACHINES
M	Slewing gear	S	Barkers
		M	Planing machines
		G	Wood working machines
		S	Saw frames
M	GENERATORS, TRANSFORMERS		
M	Frequency transformers		CRANES
M	Generators	G	Luffing gear block
M	Welding generators	S	Travelling gear
		G	Hoist gear
M	CHEMICAL INDUSTRY	M	Slewing gear
M	Cooling drums	M	Derricking jib gear
M	Mixers		
G	Agitators (liquid material)		PLASIC INDUSTRY MACHINES
M	Agitators (semi-liquid material)	M	Extruders
M	Drying drums	M	Calenders
G	Centrifuges (light)	M	Mixers
M	Centrifuges (heavy)	M	Crushers
M	OIL INDUSTRY		METAL WORKING MACHINES
S	Pipeline pumps	M	Plate bending machines
		S	Plate straightening machines
		S	Hammers
		S	Metal planning machines
M	CONVEYORS	S	Presses
S	Pit-head winches	M	Shears
M	Winding engines	S	Forging presses
M	jointed-band conveyors	S	Punch presses
G	Belt conveyors (bulk material)	G	Countershafts, line shafts
M	Belt conveyors (piece goods)	M	Machine tools (main drives)
M	Band pocket conveyors	G	Machine tools (auxiliary drives)
M	Chain conveyors		
M	Circular conveyors		FOOD INDUSTRY MACHINERY
M	Load elevators	G	Bottling and container filling machines
G	Bucket conveyors for flour	M	Kneading machines
M	Passenger lifts	M	Mash tubs
M	Plate conveyors	G	Packaging machines
M	Screw conveyors	M	Cane crushers
M	Ballast elevators	M	Cane cutters
S	Inclined hoists	S	Cane mills
M	Steel belt conveyors	M	Sugar beet cutters
M	Drag chain conveyors	M	Sugar beet washing machines
M	BLOWERS, VENTILATORS		PAPER MACHINES
G	Rotary piston blowers	S	Couches
M	Blowers (axial/radial)	S	Glazing cylinders
M	Cooling tower fans	M	Pulper
M	Induced draught fans	S	Pulp grinders
G	Turbo blowers	M	Calenders
		S	Wet presses
		S	Willows
		S	Suction presses
S	BUILDING MACHINERY	S	Suction rolls
G	Hoists	S	Drying cylinders
G	Concrete mixers		
S	Road construction machinery		
			PUMPS
		S	Piston pumps
		G	Centrifugal pumps (light liquids)
		M	Centrifugal pumps (viscous liquids)
		S	Plunger pumps
		S	Press pumps
			STONE AND CLAY WORKING MACHINES
		S	Crusher
		S	Rotary ovens
		S	Hammer mills
		S	Ball mills
		S	Tube mills
		S	Beater mills
		S	Brick presses
			TEXTILE MACHINES
		M	Batchers
		M	Printing and dyeing machines
		M	Tanning vats
		M	Willows
		M	Looms
			COMPRESSORS
		S	Piston compressors
		M	Turbo compressors
			METAL ROLLING MILLS
		S	Plate shears
		M	Manipulator for turning sheets
		S	Ingot pushers
		S	Ingot and slabbing-mill train
		S	Ingot handling machinery
		M	Wire drawing benches
		S	Descaling machines
		S	Thin plate mills
		S	Heavy and medium plate mills
		M	Winding machines (strip and wire)
		S	Cold rolling mills
		M	Chain tractor
		S	Billet shears
		M	Cooling beds
		M	Cross tractor
		M	Roller tables (light)
		S	Roller tables (heavy)
		M	Roller straighteners
		S	Tube welding machines
		M	Trimming shears
		S	Cropping shears
		S	Continuous casting plant
		M	Rollers adjustment drive
		S	Manipulators
			LAUNDRIES
		M	Tumblers
		M	Washing machines
			WATER TREATMENT
		M	Aerators
		M	Screw pumps

Driving machines	Operating factor "S"		
	Load characteristics of the working machine		
	G	M	S
Electric motors, turbines, hydraulic motors	1	1,25	1,75
Piston machines 4-6 cylinders, degree of nonuniformity 1:100 - 1:200	1,25	1,5	2
Piston machines 1-3 cylinders, degree of nonuniformity up to 1:100	1,5	2	2,5

Temperature factor S_T	
ϑ [°C]	S_T
- 20 < ϑ < +30	1,0
+ 30 < ϑ < +40	1,2
+ 40 < ϑ < +60	1,5
+ 60 < ϑ < +80	1,8

DESCH DPC Couplings

	<p>Hadeflex® Couplings Type X and TX</p>		<p>Clamp Couplings DIN 115 Flange Couplings DIN 116</p>
	<p>DESCH HRC Couplings</p>		<p>Clamp Couplings Steel / Stainless steel 1-piece / 2-piece design</p>
	<p>Hadeflex® Couplings Type F</p>		<p>Mini Couplings</p>
	<p>DESCH Flex Couplings</p>		<p>Conax® Friction Clutches</p>
	<p>Orpex® Couplings</p>		<p>Planox® Friction Couplings</p>

Catalogues available on request!



DESCH Antriebstechnik GmbH & Co. KG

Postbox 14 40 | 59753 Arnsberg/Germany
Kleinbahnstraße 21 | 59759 Arnsberg/Germany
T +49 2932 300-0 | F +49 2932 300-899
I www.desch.de | E info@desch.de

DESCH DPC GmbH & Co. KG
Postbox 14 40
59753 Arnsberg/Germany
Kleinbahnstraße 21
59759 Arnsberg/Germany
T +49 2932 300-0
F +49 2932 300-830
I www.desch.de
E info@desch.de

DESCH Canada Ltd.
240 Shearson Crescent
Cambridge, Ontario
Canada N 1T 1J6
T +1800 2631866
+1519 6214560
F +1519 6231169
I www.desch.de
E desch@desch.on.ca

DESCH Italia
Drive Technology
Ufficio di rappresentanza in Italia
Via Cavriana, 3
20134 Milano/Italy
T +3902 7391280
F +3902 7391281
I www.desch.de
E desch.italia@desch.de

DESCH China
Machinery Sales (Shanghai) Ltd.
Building Nr. 3
No. 388 Minshen Road,
Songjiang Industrial Zone
201612 Shanghai/China
T +86 21 6126-8061
F +86 21 57655155
I www.desch.de
E desch.china@desch.de