



High Performance Replaceable Heads Drills



FEATURES & BENEFITS

- **MATERIAL**

Replaceable heads in tough micrograin carbide and hardened steel body with high gloss nickel plating for high resistance to wear and corrosion. One body accommodates multiple head sizes with no compromise on tool rigidity and structural integrity.

- **SURFACE TREATMENT**

Ti-phon coating on the drilling heads for high toughness and oxidation stability - enables high speeds and feeds and resists "built-up edge" which is common when machining softer materials.

- **POINT GEOMETRY**

The self-centering 140° 4-facet split point geometry ensures that required thrust force is low.

Pre-drilling / centre drilling is neither necessary nor recommended.

- **SHANK**

Cylindrical shank with flat for multi-purpose tool holding. Allows accurate clamping for reliable use of internal coolant. Best results are obtained using hydraulic holders; can also be held in ER type and Weldon type toolholders.

- **GEOMETRY**

Heads are held securely in place by two screws; the perfect fit of body and head serrations transmits the torque evenly and allows for precise and easy assembly. The slow spiral offers optimised flute volume for efficient chip evacuation.

- **INTERNAL COOLANT**

Coolant holes in the drill bodies are aligned perfectly with the replaceable heads for efficient delivery of coolant directly to the cutting edge. This not only disperses the heat generated during the hole making process when using high speeds and feeds, but also ensures smooth chip evacuation and long tool life.

- **HOLE DEPTH**

Drilling depths of 3×Diameter and 5×Diameter:

- metric shank available for the entire range of heads
- fractional shank available up to head diameter 30.50 mm

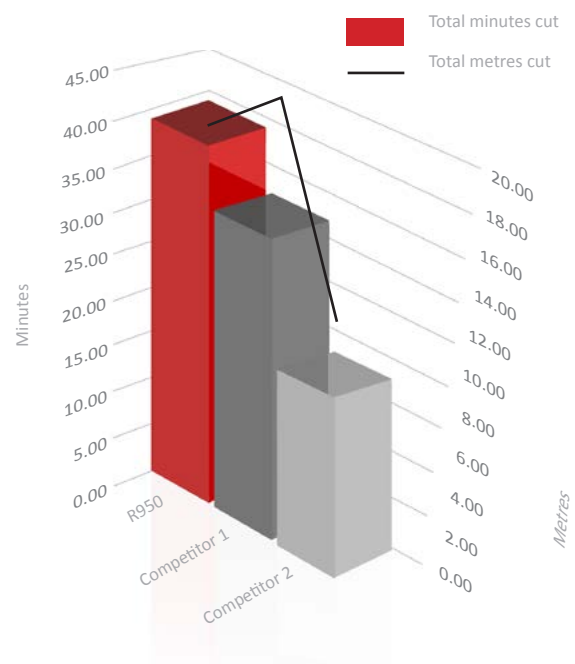
Drilling depth of 8×Diameter available on head diameters 13.50 mm and larger.

- **DIAMETER RANGE**

R950 metric sizes available 12.0 mm - 42.0 mm diameter and fractional sizes 5/32" - 1.5/8" diameter

R960 metric sizes available 12.0 mm - 30.5 mm diameter and fractional sizes 15/32" - 1.3/16" diameter

Test Results

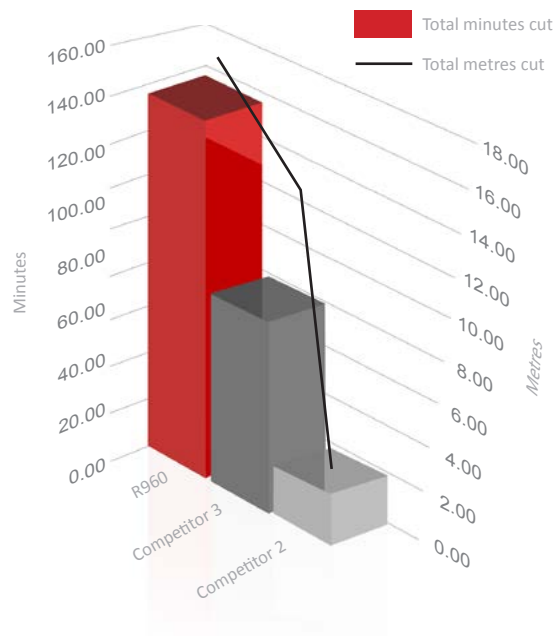


The Hydra for steel head was tested against 2 competitors at manufacturers' recommended cutting conditions in AMG 1.3. All drills were 12 mm in diameter, and drilled to a hole depth of 5×D. For all 3 tool types, the average number of minutes cut and the average number of metres cut until end of tool life were measured. The R950 drilled for almost 40 minutes, more than twice as long as Competitor 2.

CUSTOMER BENEFITS

- High productivity across a wide range of materials, including carbon and alloy steels, stainless steel, titanium, nickel and cast iron.
- Two head types available - the R960 head has been developed specifically to give optimum performance in stainless steel and cast iron. The R950 head is recommended for steels.
- Consistently high performance, even after numerous head changes.
- Reduction in inventory costs – one drill body fits multiple head sizes.
- Easy and quick head changes with minimal interruptions to the production process. Heads can be changed without removing the body from the machine.
- Exact fit of head to body maximises tool rigidity for superior hole accuracy and precise tolerances.
- Shank design allows for versatile tool holding.
- A choice of drilling depths, up to 8×Diameter.
- Internal coolant channels provide optimised coolant direction and pressure to give efficient chip evacuation and longer tool life.

Test Results



The Hydra for stainless steel head was also tested against 2 competitors at manufacturers' recommended cutting conditions in AMG 2.2. Again, 12 mm diameter drills were used to a drilling depth of 5×D. The R960 performance exceeded the nearest competitor, in terms of tool life.



APPLICATION MATERIAL GROUPS

■ Excellent for Application

● Good for Application

Example

110 = Peripheral speed in metres/minute +/- 10%

W = Feed range - see drill feed chart below

 F_n	$\varnothing$						
	12 mm	15 mm	16 mm	20 mm	25 mm	30 mm	40 mm
S	0.100	0.123	0.130	0.150	0.170	0.190	0.220
T	0.130	0.160	0.170	0.190	0.210	0.230	0.260
U	0.200	0.223	0.230	0.240	0.270	0.300	0.360
V	0.280	0.310	0.320	0.340	0.400	0.440	0.510
W	0.380	0.418	0.430	0.450	0.470	0.490	0.520
mm/rev +/- 25%							

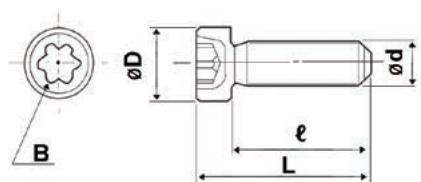
R950			R960		
					
					
15/32" - 42.00	15/32" - 42.00	13.50 - 30.50	15/32" - 30.50	15/32" - 30.50	13.50 - 30.50
H853	H855	H858	H853	H855	H858
					
HSS	HSS	HSS	HSS	HSS	HSS
					
3XD	5XD	8XD	3XD	5XD	8XD
					
DIN 6535HB DIN 6535HE	DIN 6535HB DIN 6535HE	DIN 6535HE	DIN 6535HB DIN 6535HE	DIN 6535HB DIN 6535HE	DIN 6535HE
					
					
12.00 - 42.50	12.00 - 42.50	14.00 - 42.50	12.00 - 42.50	12.00 - 42.50	14.00 - 42.50

Application Material Groups (AMG)			Hardness HB	Tensile Strength N/mm²	13, 16	13, 19	13, 22	13, 16	13, 19	13, 22	ISO
1. Steel	1.1 Magnetic soft steel	<120	<400	●110W	●110W	●100U	■110W	■110V	■100U		P 1
	1.2 Structural Steel / case carburising steel	<200	<700	●100W	●100V	●90U	■100W	■100V	■90U		P 1
	1.3 Plain Carbon steel	<250	<850	■100W	■100V	■90U					P 2
	1.4 Alloy steel	<250	<850	■85W	■85V	■75U					P 3
	1.5 Alloy steel/ Hardened and tempered steel	>250 <350	>850 <1200	■85W	■85V	■75U					P 4
	1.6 Alloy steel/ Hardened and tempered steel	>350	>1200 <1620	●60T	●60T	●60S					H 1
	1.7 Alloy steel, Heat treated	49-55HRC	>1620								H 3
	1.8 Alloy steel, Hardened & Wear resistant steel	55-63HRC	<1960								H 4
2. Stainless Steel	2.1 Free machining Stainless Steel	<250	<850				■60V	■50V	■45U		M 1
	2.2 Austenitic	<320	<1100				■50T	■50S	■40S		M 3
	2.3 Ferritic + Austenitic, Ferritic, Martensitic	<300	<1000				■40T	■40S	■35S		M 2
	2.4 Precipitation Hardened	>320 <410	>1100 <1400	●35T	●35T	●30S	●35T	●35T	●30S		S 2
3. Cast Iron	3.1 Lamellar graphite	<150	<500				■120V	■114V	■106U		K 1
	3.2 Lamellar graphite	>150 <300	>500 <1000				■116V	■108V	■100U		K 2
	3.3 Nodular graphite/ Malleable Cast Iron	<200	<700	■88V	■85V	■80U	●88V	●85V	●80U		K 3
	3.4 Nodular graphite/ Malleable Cast Iron	>200 <300	>700 <1000	■88V	■85V	■80U	●88V	●85V	●80U		K 4
4. Titanium	4.1 Titanium, unalloyed	<200	<700				●45T	●45T	●35S		S 1
	4.2 Titanium, alloyed	<270	<900				●35T	●35T	●30S		S 2
	4.3 Titanium, alloyed	>270 <350	>900 <1250				●30S	●30S	●25S		S 3
5. Nickel	5.1 Nickel, unalloyed	<150	<500				●35T	●35T	●30S		S 1
	5.2 Nickel, alloyed	<270	<900				●30S	●30S	●25S		S 2
	5.3 Nickel, alloyed	>270 <350	>900 <1200				●25S	●25S	●20S		S 3
6. Copper	6.1 Copper	<100	<350								N 3
	6.2 β-Brass, Bronze	<200	<700								N 4
	6.3 α-Brass	<200	<700								N 3
	6.4 High Strength Bronze	<470	<1500								N 4
7. Aluminium Magnesium	7.1 Al, Mg, unalloyed	<100	<350								N 1
	7.2 Al alloyed, Si<0.5%	<150	<500								N 1
	7.3 Al alloyed, Si>0.5%<10%	<120	<400								N 1
	7.4 Al alloyed, Si>10% Whisker reinforced Al-alloys, Mg alloys	<120	<400								N 2
8. Synthetic Materials	8.1 Thermoplastics	---	---								O
	8.2 Thermosetting plastics	---	---								O
	8.3 Reinforced plastic materials	---	---								O
9. Hard Materials	9.1 Cermets (Metal-ceramics)	<550	<1700								H
10. Graphite	10.1 Standard graphite	---	<100								O

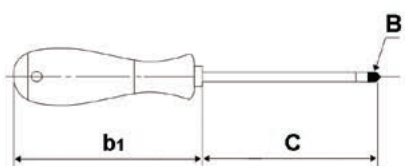
TORQUE TABLE

 					TORQUE N/cm (metric system)	TORQUE in/lbs. (inch system)
H860	H861	H853 3xD	H855 5xD	H858 8xD		
H860N1	H861N1	12.0 mm - 15.0 mm 31/64" - 39/64"	12.0 mm - 15.0 mm 31/64" - 39/64"	14.0 mm - 15.0 mm	0.75 - 0.99	6.6 - 8.8
H860N2	H861N2	16.0 mm - 18.0 mm 41/64" - 23/32"	16.0 - 18.0 mm 41/64" - 23/32"	16.0 mm - 18.0 mm	0.93 - 1.24	8.2 - 11.0
H860N3	H861N3	19.0 mm - 21.0 mm 49/64" - 27/32"	19.0 mm - 21.0 mm 49/64" - 27/32"	19.0 mm - 21.0 mm	1.84 - 2.44	16.3 - 21.6
H860N4	H861N3	22.0 mm - 24.0 mm 57/64" - 31/32"	22.0 mm - 24.0 mm 57/64" - 31/32"	22.0 mm - 24.0 mm	2.73 - 3.72	24.2 - 32.9
H860N5	H861N4	25.0 mm - 27.0 mm 1.1/64" - 1.3/32"	25.0 mm - 27.0 mm 1.1/64" - 1.3/32"	25.0 mm - 27.0 mm	4.14 - 5.52	36.6 - 48.8
H860N6	H861N5	28.0 mm - 33.5 mm 1.1/8" - 1.3/16"	28.0 mm - 33.5 mm 1.1/8" - 1.3/16"	28.0 mm - 33.5 mm	4.97 - 6.63	44.0 - 58.7
H860N7	H861N6	35.0 mm - 42.5 mm	35.0 mm - 42.5 mm	35.0 mm - 42.5 mm	7.20	63.7

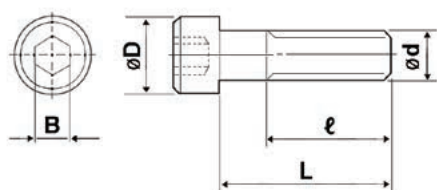
SCREWS AND SCREW-DRIVERS DATA



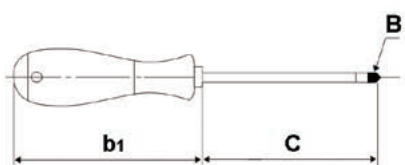
e-code	d	Pitch	L (mm)	l (mm)	D (mm)	B
H860N1	M2.2	0.45	7.5	5.7	3.5	8IP
H860N2	M2.5	0.45	9.0	7.0	4.1	10IP
H860N3	M3.0	0.50	10.5	8.0	4.9	15IP
H860N4	M3.5	0.60	11.5	8.8	5.5	15IP
H860N5	M4.0	0.70	12.5	9.5	6.0	20IP
H860N6	M4.5	0.75	14.3	10.8	6.8	25IP



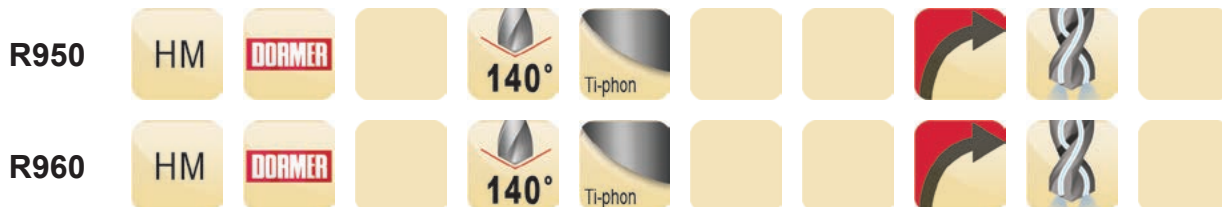
e-code	B	C	b1
H861N1	8IP	60	104
H861N2	10IP	80	111
H861N3	15IP	80	111
H861N4	20IP	100	118
H861N5	25IP	100	118



e-code	d	Pitch	L (mm)	l (mm)	D (mm)	B
H860N7	M5.0	0.8	15	FULL	8.5	4



e-code	B	C	b1
H861N6	4	75	111



R950

- Hydra Drill Head for Steel
- Punta Hydra para Acero
- Cabeça Hydra para Aço
- Tête Hydra pour les aciers

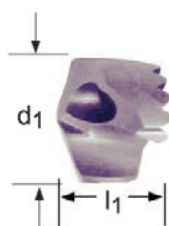
Four (4) screws H860 and one (1) screwdriver H861 are included with a drill body
Cuatro (4) tornillos H860 y un (1) destornillador H861 incluidos con cada cuerpo
Quatro (4) parafusos H860 e uma (1) chave H861 estão incluídos com cada corpo
Quatre (4) vis H860 et un (1) tournevis H861 sont inclus avec le corps

R960

- Hydra Drill Head for Stainless Steel
- Punta Hydra para Acero Inoxidable
- Cabeça Hydra para Aço Inoxidável
- Tête Hydra pour les aciers inoxydables

Four (4) screws H860 and one (1) screwdriver H861 are included with a drill body
Cuatro (4) tornillos H860 y un (1) destornillador H861 incluidos con cada cuerpo
Quatro (4) parafusos H860 e uma (1) chave H861 estão incluídos com cada corpo
Quatre (4) vis H860 et un (1) tournevis H861 sont inclus avec le corps

R950	■	1.2	1.3	1.4	3.3	3.4					
	●	1.2	1.3	1.6	2.4						
R960	■	1.1	1.2	2.1	2.2	2.3	3.1	3.2			
	●	2.4	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	



R950	R960
	
	
15/32 - 42.00	15/32 - 30.50

d ₁ Ø Zoll	d ₁ Ø mm	d ₁ dezimal Zoll	l ₁ mm	R950	R960
15/32	11.91	0.4689	9.1	R95015/32	R96015/32
	12.00	0.4724	9.1	R95012.0	R96012.0
	12.10	0.4764	9.1	R95012.1	R96012.1
	12.20	0.4803	9.1	R95012.2	R96012.2
31/64	12.30	0.4843	9.1	R95031/64	R96031/64
	12.50	0.4921	9.4	R95012.5	R96012.5
	12.60	0.4961	9.4	R95012.6	R96012.6
1/2	12.70	0.5000	9.4	R9501/2	R9601/2
	12.80	0.5039	9.4	R95012.8	R96012.8
	12.90	0.5079	9.4	R95012.9	R96012.9
	13.00	0.5118	9.7	R95013.0	R96013.0
33/64	13.10	0.5157	9.7	R95033/64	R96033/64
	13.20	0.5197	9.7	R95013.2	R96013.2
17/32	13.49	0.5311	9.7	R95017/32	R96017/32
	13.50	0.5315	10.3	R95013.5	R96013.5
	13.60	0.5354	10.3	R95013.6	R96013.6
	13.70	0.5394	10.3	R95013.7	R96013.7
	13.80	0.5433	10.3	R95013.8	R96013.8

d₁ Øh7 Inch	d₁ Øh7 mm	d₁ decimal Inch	l₁ mm	R950	R960
	15.00	0.5906	11.0	R95015.0	R96015.0
19/32	15.08	0.5938	11.0	R95019/32	R96019/32
	15.10	0.5945	11.0	R95015.1	R96015.1
	15.20	0.5984	11.0	R95015.2	R96015.2
39/64	15.48	0.6094	11.0	R95039/64	R96039/64
	15.50	0.6102	11.0	R95015.5	R96015.5
	15.60	0.6142	11.6	R95015.6	R96015.6
	15.70	0.6181	11.6	R95015.7	R96015.7
5/8	15.88	0.6250	11.6	R9505/8	R9605/8
	16.00	0.6299	11.6	R95016.0	R96016.0
	16.10	0.6339	11.6	R95016.1	R96016.1
	16.20	0.6378	11.6	R95016.2	R96016.2
41/64	16.27	0.6406	11.6	R95041/64	R96041/64
	16.50	0.6496	11.6	R95016.5	R96016.5
	16.60	0.6535	12.2	R95016.6	R96016.6
21/32	16.67	0.6563	12.2	R95021/32	R96021/32
	16.70	0.6575	12.2	R95016.7	R96016.7
	17.00	0.6693	12.2	R95017.0	R96017.0
43/64	17.07	0.6719	12.2	R95043/64	R96043/64
	17.10	0.6732	12.2	R95017.1	R96017.1
	17.20	0.6772	12.2	R95017.2	R96017.2
11/16	17.46	0.6875	12.2	R95011/16	R96011/16
	17.50	0.6890	12.2	R95017.5	R96017.5
	17.60	0.6929	12.9	R95017.6	R96017.6
	17.70	0.6969	12.9	R95017.7	R96017.7
45/64	17.86	0.7031	12.9	R95045/64	R96045/64
	18.00	0.7087	12.9	R95018.0	R96018.0
	18.10	0.7126	12.9	R95018.1	R96018.1
	18.20	0.7165	12.9	R95018.2	R96018.2
23/32	18.26	0.7188	12.9	R95023/32	R96023/32
	18.50	0.7283	12.9	R95018.5	R96018.5
	18.60	0.7323	13.5	R95018.6	R96018.6
47/64	18.65	0.7344	13.5	R95047/64	R96047/64
	18.70	0.7362	13.5	R95018.7	R96018.7
	18.90	0.7441	13.5	R95018.9	R96018.9
	19.00	0.7480	13.5	R95019.0	R96019.0
3/4	19.05	0.7500	13.5	R9503/4	R9603/4
	19.10	0.7520	13.5	R95019.1	R96019.1
	19.20	0.7559	13.5	R95019.2	R96019.2
	19.25	0.7579	13.5	R95019.25	R96019.25
49/64	19.45	0.7656	13.5	R95049/64	R96049/64
	19.50	0.7677	13.5	R95019.5	R96019.5
	19.60	0.7717	14.1	R95019.6	R96019.6
	19.70	0.7756	14.1	R95019.7	R96019.7
25/32	19.84	0.7813	14.1	R95025/32	R96025/32
	20.00	0.7874	14.1	R95020.0	R96020.0
51/64	20.24	0.7969	14.1	R95051/64	R96051/64
	20.50	0.8071	14.1	R95020.5	R96020.5
13/16	20.64	0.8125	14.8	R95013/16	R96013/16
	21.00	0.8268	14.8	R95021.0	R96021.0
53/64	21.03	0.8281	14.8	R95053/64	R96053/64
27/32	21.43	0.8438	14.8	R95027/32	R96027/32
	21.50	0.8465	14.8	R95021.5	R96021.5
55/64	21.83	0.8594	15.0	R95055/64	R96055/64
	22.00	0.8661	15.0	R95022.0	R96022.0
7/8	22.22	0.8750	15.0	R9507/8	R9607/8
	22.50	0.8858	15.0	R95022.5	R96022.5
57/64	22.62	0.8906	15.0	R95057/64	R96057/64
	22.70	0.8937	15.0	R95022.7	R96022.7
	23.00	0.9055	15.1	R95023.0	R96023.0
29/32	23.02	0.9063	15.1	R95029/32	R96029/32
59/64	23.42	0.9219	15.1	R95059/64	R96059/64
	23.50	0.9252	15.1	R95023.5	R96023.5
15/16	23.81	0.9375	15.4	R95015/16	R96015/16
	24.00	0.9449	15.4	R95024.0	R96024.0
61/64	24.21	0.9531	15.4	R95061/64	R96061/64
	24.50	0.9646	15.4	R95024.5	R96024.5
31/32	24.61	0.9688	15.4	R95031/32	R96031/32
	25.00	0.9844	15.8	R95025.0	R96025.0
63/64	25.00	0.9844	15.8	R95063/64	R96063/64

d₁ Øh7 Inch	d₁ Øh7 mm	d₁ decimal Inch	l₁ mm	R950	R960
1"	25.40	1.0000	15.8	R9501	R9601
	25.50	1.0039	15.8	R95025.5	R96025.5
	25.65	1.0098	15.8	R95025.65	R96025.65
1.1/64	25.80	1.0156	15.8	R9501.1/64	R9601.1/64
	26.00	1.0236	16.4	R95026.0	R96026.0
1.1/32	26.19	1.0313	16.4	R9501.1/32	R9601.1/32
	26.50	1.0433	16.4	R95026.5	R96026.5
1.3/64	26.59	1.0469	16.4	R9501.3/64	R9601.3/64
1.1/16	26.99	1.0625	17.1	R9501.1/16	R9601.1/16
	27.00	1.0630	17.1	R95027.0	R96027.0
1.5/64	27.38	1.0781	17.1	R9501.5/64	R9601.5/64
	27.50	1.0827	17.1	R95027.5	R96027.5
1.3/32	27.78	1.0938	17.1	R9501.3/32	R9601.3/32
	28.00	1.1024	17.7	R95028.0	R96028.0
1.7/64	28.18	1.1094	17.7	R9501.7/64	R9601.7/64
	28.50	1.1220	17.7	R95028.5	R96028.5
1.1/8	28.58	1.1250	17.7	R9501.1/8	R9601.1/8
1.9/64	28.97	1.1406	18.3	R9501.9/64	R9601.9/64
	29.00	1.1417	18.3	R95029.0	R96029.0
1.5/32	29.37	1.1563	18.3	R9501.5/32	R9601.5/32
	29.50	1.1614	18.3	R95029.5	R96029.5
1.11/64	29.77	1.1719	18.3	R9501.11/64	R9601.11/64
	30.00	1.1811	19.0	R95030.0	R96030.0
1.3/16	30.16	1.1875	19.0	R9501.3/16	R9601.3/16
	30.50	1.2008	19.0	R95030.5	R96030.5
1.7/32	30.96	1.2188	21.0	R9501.7/32	
	31.00	1.2205	21.0	R95031.0	
1.1/4	31.75	1.2500	21.0	R9501.1/4	
	32.00	1.2598	21.0	R95032.0	
	32.50	1.2795	21.0	R95032.5	
1.19/64	32.94	1.2969	21.0	R9501.19/64	
	33.00	1.2992	21.0	R95033.0	
	33.50	1.3189	21.0	R95033.5	
	34.00	1.3386	23.0	R95034.0	
1.11/32	34.13	1.3438	23.0	R9501.11/32	
	34.50	1.3583	23.0	R95034.5	
1.3/8	34.93	1.3750	23.0	R9501.3/8	
	35.00	1.3780	23.0	R95035.0	
	36.00	1.4173	23.0	R95036.0	
1.27/64	36.12	1.4219	23.0	R9501.27/64	
	36.50	1.4370	23.0	R95036.5	
	37.00	1.4567	25.0	R95037.0	
1.15/32	37.31	1.4688	25.0	R9501.15/32	
	37.50	1.4764	25.0	R95037.5	
	38.00	1.4961	25.0	R95038.0	
1.1/2	38.10	1.5000	25.0	R9501.1/2	
	38.50	1.5157	25.0	R95038.5	
1.17/32	38.89	1.5313	25.0	R9501.17/32	
	39.00	1.5354	25.0	R95039.0	
	39.50	1.5551	25.0	R95039.5	
1.9/16	39.69	1.5625	27.0	R9501.9/16	
	40.00	1.5748	27.0	R95040.0	
	41.00	1.6142	27.0	R95041.0	
1.5/8	41.28	1.6250	27.0	R9501.5/8	
	42.00	1.6535	27.0	R95042.0	

H853**HSS****DORNER****3XD**DIN
6535HB
DIN
6535HE**H853**

- Hydra Body 3 x D
- Cuerpo Hydra 3 x D
- Corps Hydra 3 x D
- Corps Hydra 3 x D



Four (4) screws H860 and one (1) screwdriver H861 are included with a drill body

Cuatro (4) tornillos H860 y un (1) destornillador H861 incluidos con cada cuerpo

Quatro (4) parafusos H860 e uma (1) chave H861 estão inclusos com o corpo da broca

Quatre (4) vis H860 et un (1) tournevis H861 sont inclus avec le corps



							
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	H853		
Øh7	mm	mm	mm	mm			
15/32						H860N1	H861N1
12.00							
12.10	44.0	105.0	48.0	16.00	H85312.0		
12.20							
31/64							
12.50							
12.60							
1/2	44.0	105.0	48.0	16.00	H85312.5		
12.80							
12.90							
13.00							
33/64	47.0	110.0	48.0	16.00	H85313.0		
13.20							
17/32							
13.50							
13.60							
13.70							
13.80							
35/64	52.5	116.5	48.0	16.00	H85314.0		
14.00							
14.10							
14.20							
9/16							
14.50							
14.60							
37/64							
14.70							
14.80							
15.00	55.5	126.5	50.0	20.00	H85315.0		
19/32							
15.10							
15.20							
39/64							
15.50							

								
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	d ₂ Øh6	H853		
Øh7	mm	mm	mm	mm	inch			
15/32							H860N1	H861N1
12.00								
12.10	44.0	105.0	48.0	15.88	5/8	H85331/64		
12.20								
31/64								
12.50								
12.60								
1/2	44.0	105.0	48.0	15.88	5/8	H8531/2		
12.80								
12.90								
13.00								
33/64	47.0	110.0	48.0	15.88	5/8	H85317/32		
13.20								
17/32								
13.50								
13.60								
13.70								
13.80								
35/64	52.5	116.5	48.0	19.05	3/4	H8539/16		
14.00								
14.10								
14.20								
9/16								
14.50								
14.60								
37/64								
14.70								
14.80								
15.00	55.5	126.5	50.0	19.05	3/4	H85339/64		
19/32								
15.10								
15.20								
39/64								
15.50								

 d ₁ l ₂ l ₁ l ₃ d ₂ Øh7 mm mm mm mm Øh6 mm H853							
15.60						H860N2	H861N2
15.70							
5/8							
16.00	59.5	131.5	50.0	20.00	H85316.0		
16.10							
16.20							
41/64							
16.50							
16.60							
21/32							
16.70							
17.00							
43/64	62.5	136.5	50.0	20.00	H85317.0		
17.10							
17.20							
11/16							
17.50							
17.60						H860N3	H861N3
17.70							
45/64							
18.00	66.5	141.5	50.0	20.00	H85318.0		
18.10							
18.20							
23/32							
18.50							
18.60							
47/64							
18.70							
18.90							
19.00	69.5	156.5	56.0	25.00	H85319.0		
3/4							
19.10							
19.20							
19.25							
49/64							
19.50							
19.60						H860N4	H861N4
19.70							
25/32	73.5	156.5	56.0	25.00	H85320.0		
20.00							
51/64							
20.50							
13/16							
21.00	76.5	156.5	56.0	25.00	H85321.0		
53/64							
27/32							
21.50							
55/64							
22.00							
7/8	80.1	161.5	56.0	25.00	H85322.0		
22.50							
57/64							
22.70							
23.00							
29/32	82.5	160.5	56.0	25.00	H85323.0		
59/64							
23.50							
15/16							
24.00							
61/64	86.2	170.2	60.0	32.00	H85324.0		
24.50							
31/32							

							
d ₁ Øh7	l ₂ mm	l ₁ mm	l ₃ mm	d ₂ Øh6 mm	H853		
25.00 63/64 1"	88.0	170.0	60.0	32.00	H85325.0	H860N5	H861N4
25.50							
25.65							
1.1/64							
26.00 1.1/32	92.0	175.0	60.0	32.00	H85326.0		
26.50							
26.60							
1.3/64							
1.1/16 27.00	94.0	175.0	60.0	32.00	H85327.0		
1.5/64							
27.50							
1.3/32							
28.00 1.7/64	97.0	180.0	60.0	32.00	H85328.0	H860N6	H861N5
28.50							
1.1/8							
1.9/64 29.00							
1.5/32 29.50	100.0	185.0	60.0	32.00	H85329.0		
1.11/64							
30.00							
1.3/16 30.50							
1.7/32 31.00	104.0	185.0	60.0	32.00	H85330.0		
1.1/4 32.00							
32.50							
1.19/64 33.00							
33.50	116.5	201.5	60.0	32.00	H85333.5		
34.00 1.11/32							
34.50							
1.3/8 35.00							
36.00 1.27/64	125.5	221.5	70.0	40.00	H85336.5		
36.50							
37.00 1.15/32							
37.50 38.00							
1.1/2 38.50	131.5	226.5	70.0	40.00	H85338.0		
1/17/32 39.00							
39.50							
1.9/16 40.00							
41.00	146.5	246.5	70.0	40.00	H85341.0		
1.5/8 42.00							
151.6							
251.6							
70.0	40.00	H85342.5					

							 	
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6 mm	d ₂ Øh6 inch	H853		
Øh7	mm	mm	mm					
25.00 63/64 1"	88.0	170.0	60.0	31.75	1.1/4	H8531.1/64	H860N5	H861N4
25.50								
25.65								
1.1/64								
26.00 1.1/32	92.0	175.0	60.0	31.75	1.1/4	H8531.3/64		
26.50								
1.3/64								
1.1/16 27.00	94.0	175.0	60.0	31.75	1.1/4	H8531.3/32		
1.5/64								
27.50								
1.3/32								
28.00 1.7/64	97.0	180.0	60.0	31.75	1.1/4	H8531.1/8	H860N6	H861N5
28.50								
1.1/8								
1.9/64 29.00	100.0	185.0	60.0	31.75	1.1/4	H8531.11/64		
1.5/32								
29.50								
1.11/64								
30.00 1.3/16	104.0	185.0	60.0	31.75	1.1/4	H8531.3/16		
30.50								

H855**HSS****DORMER****5XD**DIN
6535HB
DIN
6535HE**H855**

- Hydra Body 5 x D
- Cuerpo Hydra 5 x D
- Corps Hydra 5 x D
- Corps Hydra 5 x D



Four (4) screws H860 and one (1) screwdriver H861 are included with a drill body

Cuatro (4) tornillos H860 y un (1) destornillador H861 incluidos con cada cuerpo

Quatro (4) parafusos H860 e uma (1) chave H861 estão inclusos com o corpo da broca

Quatre (4) vis H860 et un (1) tournevis H861 sont inclus avec le corps



										
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	H855					
Øh7	mm	mm	mm	mm						
15/32						H85512.0	H860N1	H861N1		
12.00										
12.10	69.0	130.0	48.0	16.00						
12.20										
31/64										
12.50										
12.60										
1/2	69.0	130.0	48.0	16.00	H85512.5					
12.80										
12.90										
13.00										
33/64	74.0	140.0	48.0	16.00	H85513.0					
13.20										
17/32										
13.50										
13.60										
13.70										
13.80										
35/64	81.5	146.5	48.0	16.00	H85514.0					
14.00										
14.10										
14.20										
9/16										
14.50										
14.60										
37/64										
14.70										
14.80										
15.00	86.5	156.5	50.0	20.00	H85515.0					
19/32										
15.10										
15.20										
39/64										
15.50										

							 	
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6 mm	d ₂ Øh6 inch	H855	H860N1	H861N1
Øh7	mm	mm	mm	mm	inch			
15/32								
12.00								
12.10	69.0	130.0	48.0	15.88	5/8	H85531/64		
12.20								
31/64								
12.50								
12.60								
1/2	69.0	130.0	48.0	15.88	5/8	H8551/2		
12.80								
12.90								
13.00								
33/64	74.0	140.0	48.0	15.88	5/8	H85517/32		
13.20								
17/32								
13.50								
13.60								
13.70								
13.80								
35/64	81.5	146.5	48.0	19.05	3/4	H8559/16		
14.00								
14.10								
14.20								
9/16								
14.50								
14.60								
37/64								
14.70								
14.80								
15.00	86.5	156.5	50.0	19.05	3/4	H85539/64		
19/32								
15.10								
15.20								
39/64								
15.50								

							
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	H855		
Øh7	mm	mm	mm	mm			
15.60 15.70 5/8 16.00 16.10 16.20 41/64 16.50	92.5	166.5	50.0	20.00	H85516.0	H860N2	H861N2
16.60 21/32 16.70 17.00 43/64 17.10 17.20 11/16 17.50	97.5	171.5	50.0	20.00	H85517.0		
17.60 17.70 45/64 18.00 18.10 18.20 23/32 18.50	103.5	176.5	50.0	20.00	H85518.0		
18.60 47/64 18.70 18.90 19.00 3/4 19.10 19.20 19.25 49/64 19.50	108.5	191.5	56.0	25.00	H85519.0	H860N3	H861N3
19.60 19.70 25/32 20.00 51/64 20.50	114.5	196.5	56.0	25.00	H85520.0		
13/16 21.00 53/64 27/32 21.50	119.5	196.5	56.0	25.00	H85521.0		
55/64 22.00 7/8 22.50 57/64 22.70	125.1	201.1	56.0	25.00	H85522.0	H860N4	
23.00 29/32 59/64 23.50	129.5	210.5	56.0	25.00	H85523.0		
15/16 24.00 61/64 24.50 31/32	135.2	220.2	60.0	32.00	H85524.0		

							
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	d ₂ Øh6 inch	H855	
Øh7	mm	mm	mm	mm			
15.60 15.70 5/8 16.00 16.10 16.20 41/64 16.50	92.5	166.5	50.0	19.05	3/4	H85541/64	H861N2
16.60 21/32 16.70 17.00 43/64 17.10 17.20 11/16 17.50	97.5	171.5	50.0	19.05	3/4	H85511/16	
17.60 17.70 45/64 18.00 18.10 18.20 23/32 18.50	103.5	176.5	50.0	19.05	3/4	H85523/32	
18.60 47/64 18.70 18.90 19.00 3/4 19.10 19.20 19.25 49/64 19.50	108.5	191.5	56.0	25.40	1"	H85549/64	H861N3
19.60 19.70 25/32 20.00 51/64 20.50	114.5	196.5	56.0	25.40	1"	H85551/64	
13/16 21.00 53/64 27/32 21.50	119.5	196.5	56.0	25.40	1"	H85527/32	
55/64 22.00 7/8 22.50 57/64 22.70	125.1	201.1	56.0	25.40	1"	H85557/64	
23.00 29/32 59/64 23.50	129.5	210.5	56.0	25.40	1"	H85559/64	H860N4
15/16 24.00 61/64 24.50 31/32	135.2	220.2	60.0	25.40	1"	H85531/32	

								
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	H855			
Øh7	mm	mm	mm	mm				
25.00 63/64 1"	140.0	225.0	60.0	32.00	H85525.0	H860N5	H861N4	
25.50								
25.65								
1.1/64								
26.00 1.1/32 26.50 1.3/64	146.0	230.0	60.0	32.00	H85526.0	H860N5	H861N4	
1.1/16								
27.00								
1.5/64								
27.50 1.3/32	151.0	235.0	60.0	32.00	H85527.0	H860N5	H861N4	
28.00								
1.7/64								
28.50								
1.1/8	157.0	240.0	60.0	32.00	H85528.0	H860N6	H861N5	
1.9/64								
29.00								
1.5/32								
29.50	162.0	245.0	60.0	32.00	H85529.0	H860N6	H861N5	
1.11/64								
30.00								
1.3/16								
30.50	167.0	255.0	60.0	32.00	H85530.0	H860N6	H861N5	
1.7/32								
31.00								
1.1/4								
32.00	176.5	261.5	60.0	32.00	H85532.0	H860N6	H861N5	
32.50								
1.19/64								
33.00								
33.50	186.5	271.5	60.0	32.00	H85533.5	H860N6	H861N5	
34.00								
1.11/32								
34.50								
1.3/8	196.5	291.5	70.0	40.00	H85535.0	H860N7	H861N6	
35.00								
36.00								
1.27/64								
36.50	201.5	296.5	70.0	40.00	H85536.5	H860N7	H861N6	
37.00								
1.15/32								
37.50								
38.00	211.5	306.5	70.0	40.00	H85538.0	H860N7	H861N6	
1.1/2								
38.50								
1/17/32								
39.00	221.5	316.5	70.0	40.00	H85539.5	H860N7	H861N6	
39.50								
1.9/16								
40.00								
41.00	226.5	325.6	70.0	40.00	H85541.0	H860N7	H861N6	
1.5/8								
42.00								
42.00								

								
d ₁	l ₂	l ₁	l ₃	d ₂ Øh6	d ₂ Øh6 inch	H855		
Øh7	mm	mm	mm	mm	inch			
25.00 63/64 1"	140.0	225.0	60.0	31.75	1.1/4	H8551.1/64	H860N5	H861N4
25.50								
25.65								
1.1/64								
26.00 1.1/32 26.50 1.3/64	146.0	230.0	60.0	31.75	1.1/4	H8551.3/64	H860N5	H861N4
1.1/16								
27.00								
1.5/64								
27.50 1.3/32	151.0	235.0	60.0	31.75	1.1/4	H8551.3/32	H860N5	H861N4
28.00								
1.7/64								
28.50								
1.1/8	157.0	240.0	60.0	31.75	1.1/4	H8551.1/8	H860N6	H861N5
1.9/64								
29.00								
1.5/32								
29.50	162.0	245.0	60.0	31.75	1.1/4	H8551.11/64	H860N6	H861N5
1.11/64								
30.00								
1.3/16								
30.50	167.0	255.0	60.0	31.75	1.1/4	H8551.3/16	H860N6	H861N5
1.7/32								
31.00								
1.1/4								

H858**H858**

- Hydra Body 8 x D
- Cuerpo Hydra 8 x D
- Corpos Hydra 8 x D
- Corps Hydra 8 x D



Four (4) screws H860 and one (1) screwdriver H861 are included with a drill body
 Cuatro (4) tornillos H860 y un (1) destornillador H861 incluidos con cada cuerpo
 Quatro (4) parafusos H860 e uma (1) chave H861 estão inclusos com o corpo da broca
 Quatre (4) vis H860 et un (1) tournevis H861 sont inclus avec le corps



					 H858		
d_1	l_2	l_1	l_3	d_2 Øh6 mm			
Øh7	mm	mm	mm				
13.50	124.5	191.5	48.0	16.00	H85814.0	H860N1	H861N1
13.60							
13.70							
13.80							
35/64							
14.00							
14.10							
14.20							
9/16	133.5	201.5	50.0	20.00	H85815.0	H860N1	H861N1
14.50							
14.60							
37/64							
14.70							
14.80							
15.00							
19/32							
15.10	141.5	211.5	50.0	20.00	H85816.0	H860N2	H861N2
15.20							
39/64							
15.50							
15.60							
15.70							
5/8							
16.00							
16.10	150.5	221.5	50.0	20.00	H85817.0	H860N2	H861N2
16.20							
41/64							
16.50							
16.60							
21/32							
16.70							
17.00							
43/64	158.5	226.5	50.0	20.00	H85818.0		
17.10							
17.20							
11/16							
17.50							
17.60							
17.70							
45/64							
18.00							
18.10							
18.20							
23/32							
18.50							

							 	
d ₁ Øh7	l ₂ mm	l ₁ mm	l ₃ mm	d ₂ Øh6 mm		H858		
18.60 47/64 18.70 18.90 19.00 3/4 19.10 19.20 19.25 49/64 19.50	167.5	251.5	56.0	25.00		H85819.0	H860N3	H861N3
19.60 19.70 25/32 20.00 51/64 20.50	175.5	264.5	56.0	25.00		H85820.0		
13/16 21.00 53/64 27/32 21.50	184.5	266.5	56.0	25.00		H85821.0		
55/64 22.00 7/8 22.50 57/64 22.70	192.1	271.1	56.0	25.00		H85822.0	H860N4	H861N4
23.00 29/32 59/64 23.50	200.5	280.5	56.0	25.00		H85823.0		
15/16 24.00 61/64 24.50 31/32	208.2	295.2	60.0	32.00		H85824.0		
25.00 63/64 1" 25.50 25.65 1.1/64	217.0	300.0	60.0	32.00		H85825.0	H860N5	H861N4
26.00 1.1/32 26.50 1.3/64	225.0	310.0	60.0	32.00		H85826.0		
1.1/16 27.00 1.5/64 27.50 1.3/32	234.0	320.0	60.0	32.00		H85827.0		

DRILLING HINTS & TIPS WITH THE HYDRA DRILL

• COOLANTS

For maximum chip evacuation and tool performance, coolant use is recommended.

Emulsion coolant concentration of 6 – 8% is recommended for most applications, at a coolant pressure of 20 bar or higher. For high strength steel, stainless steels and tougher drilling applications, use a higher concentration of 10 – 12%. In these applications, particularly in stainless steels, it is recommended to use the maximum coolant pressure on the machine.

The Hydra-drill coolant holes provide improved web strength and reduce heat at the cutting edges for increased productivity and longer tool life.

• HOLDERS

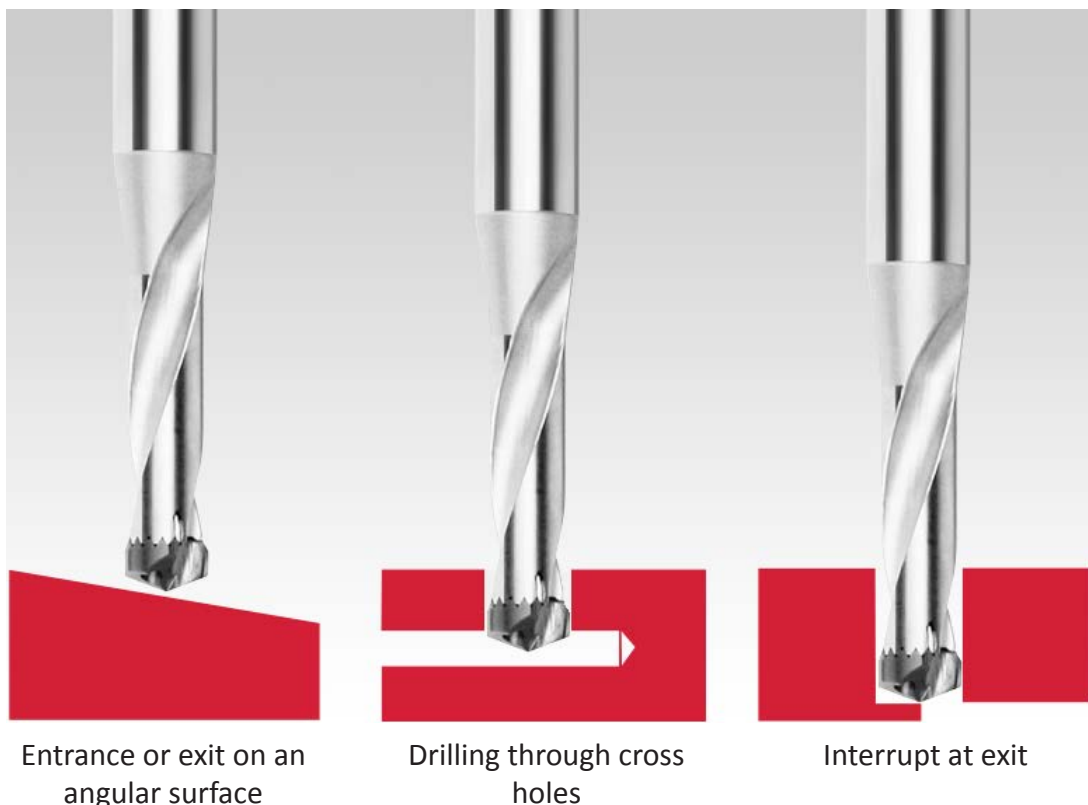
Always use tool holders and collets that provide good concentricity between the drill and the machine spindle. Use a positive stop to prevent the tool from backing up into the holder. Radial runout in the tool assembly must be accurately checked and maintained.

• WORKPIECE

A secure and rigid workpiece will minimise deflection, and allow for better accuracy and true position of the hole.

• FEEDS

It is important not to underfeed the drill which will cause it to dwell and dull. This is particularly true in work hardening materials. Feed rates should be high enough for proper chip formation.



In these drilling scenarios, reducing feed rate to 1/3 (33%) is generally recommended. Drilling into an entry angle of more than 10° is NOT recommended – surface should be milled flat first.

SIMPLY RELIABLE

As a professional you can judge the quality of work by just looking at the chip. Our chip is a clean and uncomplicated shape that in itself tells a story. It is a clear and consistent signal and that's why we use it as a symbol for being **Simply reliable.**

Argentina

T: 54 (11) 6777-6777
F: 54 (11) 4441-4467
info.ar@dormerpramet.com

Australia

T: 1300 131 274
F: +61 3 9238 7105
info.int@dormerpramet.com

Brazil

responsible for **Bolivia, Panama, Chile, Paraguay, Colombia, Peru, Costa Rica, Uruguay, Ecuador, Venezuela, Guatemala**
T: +55 11 5660 3000
F: +55 11 5667 5883
info.br@dormerpramet.com

Canada

T: (888) 336 7637
En Français: (888) 368 8457
F: (905) 542 7000
cs.canada@dormerpramet.com

Czech Republic

responsible for **Export CEE, Romania, Macedonia, Slovenia, Serbia, Ukraine, Bosnia-Herzegovina, Croatia, Belarus, Montenegro, Bulgaria**
info.row@dormerpramet.com
T: +420 583 381 111
F: +420 583 215 401
info.cz@dormerpramet.com

Denmark

T: +45 43 46 52 80
F: +45 43 46 52 81
info.se@dormerpramet.com
Kundetjeneste
T: direkt 808 82106
F: direkt +46 35 16 52 90

Finland

T: +358 205 44 121
F: +358 205 44 5199
Asiakaspalvelu
T: suora 0205 44 7003
F: suora 0205 44 7004
info.fi@dormerpramet.com

France

T: +33 (0)2 47 62 57 01
F: +33 (0)2 47 62 52 00
info.fr@dormerpramet.com

Germany

T: +49 9131 933 08 70
F: +49 9131 933 08 742
info.de@dormerpramet.com

Hungary

T: +36-96 / 522-846
F: +36-96 / 522-847
info.hu@dormerpramet.com

China

T: +86 21 24160508
F: +86 54426315
info.cn@dormerpramet.com

India

T: +91 124 470 3825
info.in@dormerpramet.com

Italy

solid tools:
T: +39 02 38 04 51
F: +39 02 38 04 52 43
info.it@dormerpramet.com
indexable tools:
T: +39 0523 55 19 11
F: +39 0523 55 18 00
info.it@dormerpramet.com

Netherlands

T: +31 10 2080 240
F: +31 10 2080 282
info.nl@dormerpramet.com
responsible for **Austria**
T: +31 10 2080 212
F: +31 10 2080 282
info.at@dormerpramet.com
responsible for **Belgium**
T: +32 3 440 59 01
F: +32 3 449 15 43
info.be@dormerpramet.com
responsible for **Switzerland**
T: +31 10 2080 212
F: +31 10 2080 282
info.ch@dormerpramet.com

New Zealand

T: +64 9 2735858
F: +64 9 2735857
info.int@dormerpramet.com

Norway

T: +47 67 17 56 00
F: +47 66 85 96 10
info.se@dormerpramet.com
Kundeservice
T: direkt 800 10 113
F: direkt +46 35 16 52 90

Poland

T: +48 32 78-15-890
F: +48 32 78-60-406
info.pl@dormerpramet.com

Russia

T: +7 495 775 10 28
info.ru@dormerpramet.com

Slovakia

T: +421 417 645 659
F: +421 417 637 449
info.sk@dormerpramet.com

Spain

T: +34 935717722
F: +34 935717765
info.es@dormerpramet.com
responsible for **Portugal**
T: +351 21 424 54 21
F: +351 21 424 54 25

Sweden

responsible for **Iceland**
T: +46 (0) 35 16 52 00
F: +46 (0) 35 16 52 90
info.se@dormerpramet.com
Kundeservice
T: direkt +46 35 16 52 96
F: direkt +46 35 16 52 90

United Kingdom

responsible for **Ireland**
T: 0870 850 4466
F: 0870 850 8866
info.uk@dormerpramet.com

United States of America

responsible for **Mexico**
T: (800) 877-3745
F: (847) 783-5760
cs@dormerpramet.com

Rest of the World

Dormer Pramet International UK
T: +44 1246 571338
F: +44 1246 571339
info.int@dormerpramet.com

Dormer Pramet International CZ
T: +420 583 381 520
F: +420 583 215 401
info.cz@dormerpramet.com