

VARMEPATRONER

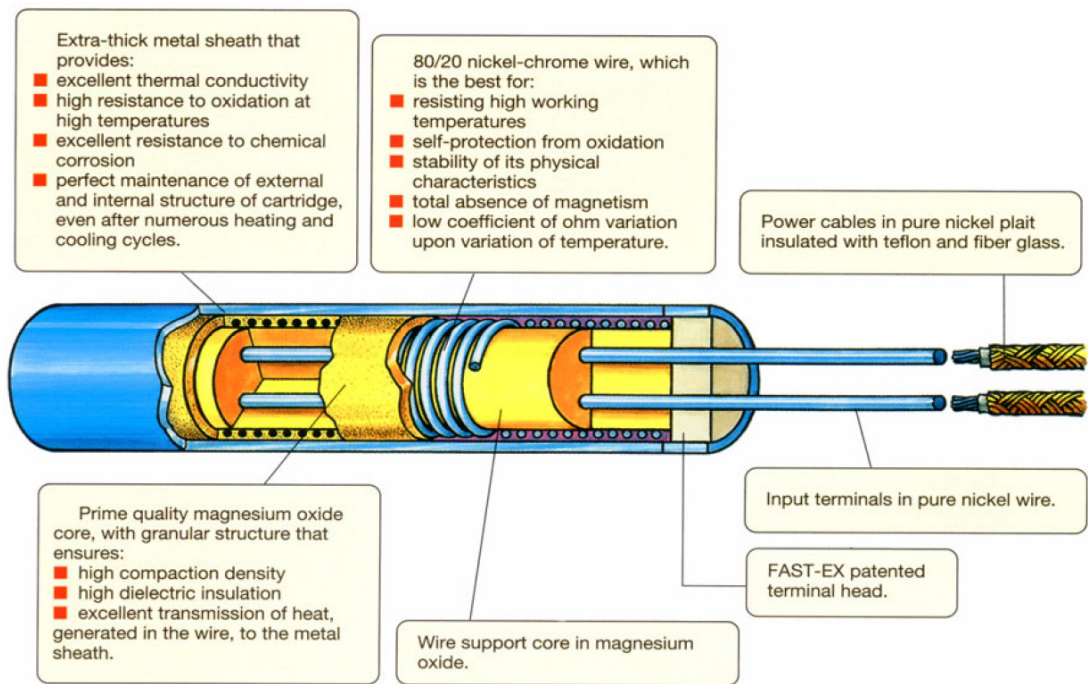


VARMEPATRONER

High Power-Density Cartridge Heaters

ULTRAMAX are a new generation of high wattage electric heating elements, having high power in a limited area and ensuring, all the same, excellent reliability under heavy-duty working conditions. The special technology used in their construction make them the most advanced type of heating element.

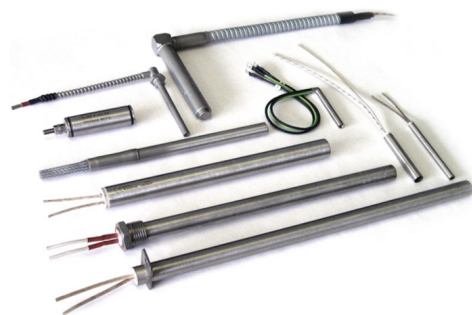
The nickel chrome wire wrapped around a magnesium oxide core is situated in a peripheral position, with a very thin compressed insulating layer between wire and sheath. This allows efficacious heat exchange, thus maintaining the temperature of the resistance wire at a much lower level compared to other heating elements where the wire is situated in the center. Furthermore, not only do they owe total reliability to the use of advanced technology and precise inspection techniques during manufacture, but also to the use of first-class material from the best sources on the market.



Over 60,000 models on stock

Over 60,000 standard semi-finished elements are kept on stock, ready to be finished according to customer specification, for example sealing, cable outlet, cable and insulation type, cable length, fittings and various other options.

Therefore the ULTRAMAX heating cartridges can usually be customized and shipped within 3 working days from order receipt. This large quantity of semi-finished heaters



Standard ULTRAMAX, Metric Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
6,5	-0,03 -0,05	25	75	25	6	Yes	2652575
6,5	-0,03 -0,05	25	100	33	6	Yes	26525100
6,5	-0,03 -0,05	25	150	50	6	Yes	26525150
6,5	-0,03 -0,05	25	175	58	6	Yes	26525175
6,5	-0,03 -0,05	40	100	18	8	Yes	26540100
6,5	-0,03 -0,05	40	125	22	8	Yes	26540125
6,5	-0,03 -0,05	40	150	27	8	Yes	26540150
6,5	-0,03 -0,05	40	175	31	8	Yes	26540175
6,5	-0,03 -0,05	40	200	36	8	Yes	26540200
6,5	-0,03 -0,05	40	250	44	8	Yes	26540250
6,5	-0,03 -0,05	50	125	17	10	Yes	26550125
6,5	-0,03 -0,05	50	150	20	10	Yes	26550150
6,5	-0,03 -0,05	50	175	24	10	Yes	26550175
6,5	-0,03 -0,05	50	200	27	10	Yes	26550200
6,5	-0,03 -0,05	50	250	34	10	Yes	26550250
6,5	-0,03 -0,05	60	125	13	11	Yes	26560125
6,5	-0,03 -0,05	60	150	16	11	Yes	26560150
6,5	-0,03 -0,05	60	175	19	11	Yes	26560175
6,5	-0,03 -0,05	60	200	21	11	Yes	26560200
6,5	-0,03 -0,05	60	250	26	11	Yes	26560250
6,5	-0,03 -0,05	60	300	32	11	-	26560300
6,5	-0,03 -0,05	80	125	9	14	Yes	26580125
6,5	-0,03 -0,05	80	175	13	14	Yes	26580175
6,5	-0,03 -0,05	80	200	15	14	Yes	26580200
6,5	-0,03 -0,05	80	250	19	14	Yes	26580250
6,5	-0,03 -0,05	80	300	22	14	Yes	26580300
6,5	-0,03 -0,05	100	125	7	17	-	265100125
6,5	-0,03 -0,05	100	150	9	17	Yes	265100150
6,5	-0,03 -0,05	100	200	12	17	Yes	265100200
6,5	-0,03 -0,05	100	250	15	17	Yes	265100250
6,5	-0,03 -0,05	100	300	17	17	Yes	265100300
6,5	-0,03 -0,05	100	350	20	17	Yes	265100350
6,5	-0,03 -0,05	100	400	23	17	-	265100400
6,5	-0,03 -0,05	130	125	7	21	-	265130125
6,5	-0,03 -0,05	130	150	8	21	-	265130150
6,5	-0,03 -0,05	130	200	9	21	-	265130200
6,5	-0,03 -0,05	130	250	11	21	-	265130250
6,5	-0,03 -0,05	130	300	13	21	-	265130300
6,5	-0,03 -0,05	130	350	15	21	-	265130350
6,5	-0,03 -0,05	130	400	17	21	Yes	265130400
6,5	-0,03 -0,05	160	150	5	25	-	265160150
6,5	-0,03 -0,05	160	200	7	25	Yes	265160200
6,5	-0,03 -0,05	160	300	10	25	Yes	265160300
6,5	-0,03 -0,05	160	350	12	25	Yes	265160350
6,5	-0,03 -0,05	160	400	14	25	-	265160400
6,5	-0,03 -0,05	160	500	17	25	-	265160500
8	-0,04 -0,06	40	125	18	12	Yes	2840125
8	-0,04 -0,06	40	150	21	12	Yes	2840150
8	-0,04 -0,06	40	200	28	12	Yes	2840200
8	-0,04 -0,06	50	125	13	14	Yes	2850125
8	-0,04 -0,06	50	150	16	14	Yes	2850150
8	-0,04 -0,06	50	200	22	14	Yes	2850200
8	-0,04 -0,06	50	250	27	14	Yes	2850250

Standard ULTRAMAX, Metric Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
8	-0,04 -0,06	60	125	11	17	Yes	2860125
8	-0,04 -0,06	60	150	13	17	Yes	2860150
8	-0,04 -0,06	60	200	17	17	Yes	2860200
8	-0,04 -0,06	60	250	21	17	Yes	2860250
8	-0,04 -0,06	60	300	25	17	Yes	2860300
8	-0,04 -0,06	60	400	34	17	-	2860400
8	-0,04 -0,06	80	150	9	21	Yes	2880150
8	-0,04 -0,06	80	175	11	21	Yes	2880175
8	-0,04 -0,06	80	200	12	21	Yes	2880200
8	-0,04 -0,06	80	250	15	21	Yes	2880250
8	-0,04 -0,06	80	300	18	21	Yes	2880300
8	-0,04 -0,06	80	400	24	21	Yes	2880400
8	-0,04 -0,06	100	175	8	25	Yes	28100175
8	-0,04 -0,06	100	200	9	25	Yes	28100200
8	-0,04 -0,06	100	250	12	25	Yes	28100250
8	-0,04 -0,06	100	300	14	25	Yes	28100300
8	-0,04 -0,06	100	400	19	25	Yes	28100400
8	-0,04 -0,06	130	175	6	32	-	28130175
8	-0,04 -0,06	130	200	7	32	-	28130200
8	-0,04 -0,06	130	250	9	32	Yes	28130250
8	-0,04 -0,06	130	300	10	32	Yes	28130300
8	-0,04 -0,06	130	400	14	32	Yes	28130400
8	-0,04 -0,06	160	200	6	42	-	28160200
8	-0,04 -0,06	160	250	7	42	Yes	28160250
8	-0,04 -0,06	160	300	8	42	Yes	28160300
8	-0,04 -0,06	160	400	11	42	Yes	28160400
8	-0,04 -0,06	160	500	14	42	-	28160500
8	-0,04 -0,06	160	600	17	42	-	28160600
10	-0,04 -0,07	25	75	16	11	-	2102575
10	-0,04 -0,07	25	100	21	11	-	21025100
10	-0,04 -0,07	25	150	32	11	-	21025150
10	-0,04 -0,07	25	200	43	11	-	21025200
10	-0,04 -0,07	40	100	12	15	Yes	21040100
10	-0,04 -0,07	40	125	15	15	Yes	21040125
10	-0,04 -0,07	40	150	18	15	Yes	21040150
10	-0,04 -0,07	40	200	21	15	Yes	21040200
10	-0,04 -0,07	40	250	30	15	Yes	21040250
10	-0,04 -0,07	40	300	37	15	Yes	21040300
10	-0,04 -0,07	50	125	11	19	-	21050125
10	-0,04 -0,07	50	150	13	19	Yes	21050150
10	-0,04 -0,07	50	200	18	19	Yes	21050200
10	-0,04 -0,07	50	250	22	19	Yes	21050250
10	-0,04 -0,07	50	300	28	19	Yes	21050300
10	-0,04 -0,07	50	400	36	19	Yes	21050400
10	-0,04 -0,07	60	125	9	21	-	21060125
10	-0,04 -0,07	60	150	11	21	Yes	21060150
10	-0,04 -0,07	60	200	14	21	Yes	21060200
10	-0,04 -0,07	60	250	18	21	Yes	21060250
10	-0,04 -0,07	60	300	21	21	Yes	21060300
10	-0,04 -0,07	60	400	28	21	Yes	21060400
10	-0,04 -0,07	80	150	7	27	Yes	21080150
10	-0,04 -0,07	80	200	10	27	Yes	21080200
10	-0,04 -0,07	80	250	12	27	Yes	21080250
10	-0,04 -0,07	80	300	15	27	Yes	21080300
10	-0,04 -0,07	80	400	20	27	Yes	21080400
10	-0,04 -0,07	80	500	25	27	Yes	21080500

Standard ULTRAMAX, Metric Sizes

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Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
10	-0,04 -0,07	100	200	8	34	Yes	210100200
10	-0,04 -0,07	100	250	9	34	Yes	210100250
10	-0,04 -0,07	100	300	11	34	Yes	210100300
10	-0,04 -0,07	100	350	13	34	Yes	210100350
10	-0,04 -0,07	100	400	15	34	Yes	210100400
10	-0,04 -0,07	100	500	19	34	Yes	210100500
10	-0,04 -0,07	100	600	23	34	Yes	210100600
10	-0,04 -0,07	130	250	7	43	Yes	210130250
10	-0,04 -0,07	130	300	8	43	Yes	210130300
10	-0,04 -0,07	130	400	11	43	Yes	210130400
10	-0,04 -0,07	130	500	14	43	Yes	210130500
10	-0,04 -0,07	130	600	17	43	Yes	210130600
10	-0,04 -0,07	130	800	22	43	Yes	210130800
10	-0,04 -0,07	160	300	7	54	Yes	210160300
10	-0,04 -0,07	160	400	9	54	Yes	210160400
10	-0,04 -0,07	160	500	11	54	Yes	210160500
10	-0,04 -0,07	160	600	13	54	Yes	210160600
10	-0,04 -0,07	160	800	18	54	Yes	210160800
10	-0,04 -0,07	200	400	7	67	Yes	210200400
10	-0,04 -0,07	200	500	9	67	Yes	210200500
10	-0,04 -0,07	200	600	10	67	Yes	210200600
10	-0,04 -0,07	200	800	14	67	Yes	210200800
10	-0,04 -0,07	200	1000	18	67	Yes	2102001000
12,5	-0,05 -0,08	40	125	13	22	-	212540125
12,5	-0,05 -0,08	40	160	16	22	Yes	212540160
12,5	-0,05 -0,08	40	200	20	22	Yes	212540200
12,5	-0,05 -0,08	40	250	25	22	Yes	212540250
12,5	-0,05 -0,08	40	300	30	22	Yes	212540300
12,5	-0,05 -0,08	40	350	35	22	Yes	212540350
12,5	-0,05 -0,08	40	400	40	22	Yes	212540400
12,5	-0,05 -0,08	40	500	50	22	-	212540500
12,5	-0,05 -0,08	50	160	12	26	Yes	212550160
12,5	-0,05 -0,08	50	200	15	26	Yes	212550200
12,5	-0,05 -0,08	50	250	18	26	Yes	212550250
12,5	-0,05 -0,08	50	300	22	26	Yes	212550300
12,5	-0,05 -0,08	50	350	25	26	Yes	212550350
12,5	-0,05 -0,08	50	400	29	26	Yes	212550400
12,5	-0,05 -0,08	50	500	36	26	-	212550500
12,5	-0,05 -0,08	50	600	44	26	-	212550600
12,5	-0,05 -0,08	60	125	7	30	-	212560125
12,5	-0,05 -0,08	60	160	9	30	-	212560160
12,5	-0,05 -0,08	60	200	12	30	Yes	212560200
12,5	-0,05 -0,08	60	250	15	30	Yes	212560250
12,5	-0,05 -0,08	60	300	17	30	Yes	212560300
12,5	-0,05 -0,08	60	350	20	30	Yes	212560350
12,5	-0,05 -0,08	60	400	23	30	Yes	212560400
12,5	-0,05 -0,08	60	500	29	30	Yes	212560500
12,5	-0,05 -0,08	60	600	35	30	-	212560600
12,5	-0,05 -0,08	80	125	5	40	-	212580125
12,5	-0,05 -0,08	80	160	6	40	-	212580160
12,5	-0,05 -0,08	80	200	8	40	Yes	212580200
12,5	-0,05 -0,08	80	250	10	40	Yes	212580250
12,5	-0,05 -0,08	80	300	12	40	Yes	212580300
12,5	-0,05 -0,08	80	350	14	40	Yes	212580350
12,5	-0,05 -0,08	80	400	16	40	Yes	212580400
12,5	-0,05 -0,08	80	500	20	40	Yes	212580500
12,5	-0,05 -0,08	80	600	24	40	Yes	212580600
12,5	-0,05 -0,08	80	750	30	40	Yes	212580750

Standard ULTRAMAX, Metric Sizes

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Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
12,5	-0,05 -0,08	100	180	5	50	Yes	2125100180
12,5	-0,05 -0,08	100	200	6	50	Yes	2125100200
12,5	-0,05 -0,08	100	250	8	50	Yes	2125100250
12,5	-0,05 -0,08	100	300	9	50	Yes	2125100300
12,5	-0,05 -0,08	100	400	12	50	Yes	2125100400
12,5	-0,05 -0,08	100	500	15	50	Yes	2125100500
12,5	-0,05 -0,08	100	600	18	50	Yes	2125100600
12,5	-0,05 -0,08	100	800	25	50	Yes	2125100800
12,5	-0,05 -0,08	100	1000	31	50	Yes	21251001000
12,5	-0,05 -0,08	130	250	6	63	Yes	2125130250
12,5	-0,05 -0,08	130	300	7	63	Yes	2125130300
12,5	-0,05 -0,08	130	400	9	63	Yes	2125130400
12,5	-0,05 -0,08	130	500	11	63	Yes	2125130500
12,5	-0,05 -0,08	130	600	14	63	Yes	2125130600
12,5	-0,05 -0,08	130	800	18	63	Yes	2125130800
12,5	-0,05 -0,08	130	1000	22	63	Yes	21251301000
12,5	-0,05 -0,08	160	400	7	80	Yes	2125160400
12,5	-0,05 -0,08	160	500	8	80	Yes	2125160500
12,5	-0,05 -0,08	160	600	10	80	Yes	2125160600
12,5	-0,05 -0,08	160	800	13	80	Yes	2125160800
12,5	-0,05 -0,08	160	1000	17	80	Yes	21251601000
12,5	-0,05 -0,08	160	1200	20	80	Yes	21251601200
12,5	-0,05 -0,08	200	300	4	99	Yes	2125200300
12,5	-0,05 -0,08	200	500	7	99	Yes	2125200500
12,5	-0,05 -0,08	200	600	8	99	Yes	2125200600
12,5	-0,05 -0,08	200	800	11	99	Yes	2125200800
12,5	-0,05 -0,08	200	1000	14	99	Yes	21252001000
12,5	-0,05 -0,08	200	1200	17	99	Yes	21252001200
12,5	-0,05 -0,08	200	1500	21	99	Yes	21252001500
12,5	-0,05 -0,08	250	500	5	128	Yes	2125250500
12,5	-0,05 -0,08	250	800	9	128	Yes	2125250800
12,5	-0,05 -0,08	250	1000	11	128	Yes	21252501000
12,5	-0,05 -0,08	250	1250	14	128	-	21252501250
12,5	-0,05 -0,08	250	1500	17	128	-	21252501500
12,5	-0,05 -0,08	250	2000	22	128	-	21252502000
12,5	-0,05 -0,08	300	500	5	149	-	2125300500
12,5	-0,05 -0,08	300	800	7	149	Yes	2125300800
12,5	-0,05 -0,08	300	1000	9	149	Yes	21253001000
12,5	-0,05 -0,08	300	1250	11	149	Yes	21253001250
12,5	-0,05 -0,08	300	1500	14	149	Yes	21253001500
12,5	-0,05 -0,08	300	2000	18	149	Yes	21253002000
16	-0,05 -0,08	40	180	13	31	-	21640180
16	-0,05 -0,08	40	200	16	31	-	21640200
16	-0,05 -0,08	40	250	20	31	-	21640250
16	-0,05 -0,08	40	300	24	31	-	21640300
16	-0,05 -0,08	40	400	32	31	-	21640400
16	-0,05 -0,08	40	500	40	31	Yes	21640500
16	-0,05 -0,08	50	180	9	42	-	21650180
16	-0,05 -0,08	50	200	11	42	-	21650200
16	-0,05 -0,08	50	250	14	42	-	21650250
16	-0,05 -0,08	50	300	17	42	Yes	21650300
16	-0,05 -0,08	50	400	23	42	Yes	21650400
16	-0,05 -0,08	50	500	28	42	Yes	21650500
16	-0,05 -0,08	50	600	30	42	-	21650600

Standard ULTRAMAX, Metric Sizes

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Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
16	-0,05 -0,08	60	160	8	50	-	21660160
16	-0,05 -0,08	60	200	10	50	Yes	21660200
16	-0,05 -0,08	60	250	12	50	Yes	21660250
16	-0,05 -0,08	60	300	15	50	Yes	21660300
16	-0,05 -0,08	60	400	20	50	Yes	21660400
16	-0,05 -0,08	60	500	24	50	Yes	21660500
16	-0,05 -0,08	60	600	30	50	Yes	21660600
16	-0,05 -0,08	80	250	8	64	Yes	21680250
16	-0,05 -0,08	80	300	10	64	Yes	21680300
16	-0,05 -0,08	80	400	13	64	Yes	21680400
16	-0,05 -0,08	80	500	16	64	Yes	21680500
16	-0,05 -0,08	80	600	20	64	Yes	21680600
16	-0,05 -0,08	80	800	26	64	Yes	21680800
16	-0,05 -0,08	80	1000	33	64	Yes	216801000
16	-0,05 -0,08	100	300	7	77	Yes	216100300
16	-0,05 -0,08	100	400	10	77	Yes	216100400
16	-0,05 -0,08	100	500	12	77	Yes	216100500
16	-0,05 -0,08	100	600	15	77	Yes	216100600
16	-0,05 -0,08	100	800	20	77	Yes	216100800
16	-0,05 -0,08	100	1000	25	77	Yes	2161001000
16	-0,05 -0,08	100	1200	30	77	Yes	2161001200
16	-0,05 -0,08	130	400	7	100	Yes	216130400
16	-0,05 -0,08	130	500	9	100	Yes	216130500
16	-0,05 -0,08	130	600	11	100	Yes	216130600
16	-0,05 -0,08	130	800	14	100	Yes	216130800
16	-0,05 -0,08	130	1000	18	100	Yes	2161301000
16	-0,05 -0,08	130	1200	22	100	Yes	2161301200
16	-0,05 -0,08	160	400	6	124	Yes	216160400
16	-0,05 -0,08	160	500	7	124	Yes	216160500
16	-0,05 -0,08	160	600	8	124	Yes	216160600
16	-0,05 -0,08	160	800	11	124	Yes	216160800
16	-0,05 -0,08	160	1000	14	124	Yes	2161601000
16	-0,05 -0,08	160	1300	19	124	Yes	2161601300
16	-0,05 -0,08	160	1600	23	124	Yes	2161601600
16	-0,05 -0,08	200	500	6	156	Yes	216200500
16	-0,05 -0,08	200	800	9	156	Yes	216200800
16	-0,05 -0,08	200	1000	11	156	Yes	2162001000
16	-0,05 -0,08	200	1250	14	156	Yes	2162001250
16	-0,05 -0,08	200	1500	17	156	Yes	2162001500
16	-0,05 -0,08	200	2000	22	156	Yes	2162002000
16	-0,05 -0,08	250	500	4	192	Yes	216250500
16	-0,05 -0,08	250	800	7	192	Yes	216250800
16	-0,05 -0,08	250	1000	9	192	Yes	2162501000
16	-0,05 -0,08	250	1300	11	192	Yes	2162501300
16	-0,05 -0,08	250	1600	14	192	Yes	2162501600
16	-0,05 -0,08	250	2000	17	192	Yes	2162502000
16	-0,05 -0,08	300	500	4	235	-	216300500
16	-0,05 -0,08	300	800	6	235	Yes	216300800
16	-0,05 -0,08	300	1000	7	235	Yes	2163001000
16	-0,05 -0,08	300	1300	9	235	Yes	2163001300
16	-0,05 -0,08	300	1500	11	235	Yes	2163001500
16	-0,05 -0,08	300	1800	13	235	Yes	2163001800
16	-0,05 -0,08	300	2000	14	235	Yes	2163002000
16	-0,05 -0,08	300	2500	18	235	-	2163002500
16	-0,05 -0,08	350	750	5	269	Yes	216350750
16	-0,05 -0,08	350	1000	6	269	Yes	2163501000
16	-0,05 -0,08	350	1300	8	269	Yes	2163501300
16	-0,05 -0,08	350	1600	10	269	Yes	2163501600
16	-0,05 -0,08	350	2000	12	269	Yes	2163502000
16	-0,05 -0,08	350	2500	15	269	-	2163502500

Standard ULTRAMAX, Metric Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
16	-0,05 -0,08	400	1000	5	306	Yes	2164001000
16	-0,05 -0,08	400	1300	7	306	Yes	2164001300
16	-0,05 -0,08	400	1600	8	306	Yes	2164001600
16	-0,05 -0,08	400	2000	10	306	Yes	2164002000
16	-0,05 -0,08	400	2500	13	306	-	2164002500
20	-0,06 -0,10	60	200	8	72	-	22060200
20	-0,06 -0,10	60	300	12	72	-	22060300
20	-0,06 -0,10	60	500	20	72	-	22060500
20	-0,06 -0,10	60	600	24	72	-	22060600
20	-0,06 -0,10	60	800	32	72	-	22060800
20	-0,06 -0,10	80	300	8	95	-	22080300
20	-0,06 -0,10	80	400	11	95	-	22080400
20	-0,06 -0,10	80	500	14	95	Yes	22080500
20	-0,06 -0,10	80	600	16	95	Yes	22080600
20	-0,06 -0,10	80	800	22	95	-	22080800
20	-0,06 -0,10	80	1000	27	95	-	220801000
20	-0,06 -0,10	80	1250	34	95	-	220801250
20	-0,06 -0,10	100	400	8	118	Yes	220100400
20	-0,06 -0,10	100	600	12	118	Yes	220100600
20	-0,06 -0,10	100	800	16	118	-	220100800
20	-0,06 -0,10	100	1000	20	118	-	2201001000
20	-0,06 -0,10	100	1300	27	118	-	2201001300
20	-0,06 -0,10	100	1600	32	118	-	2201001600
20	-0,06 -0,10	130	400	6	153	-	220130400
20	-0,06 -0,10	130	500	7	153	-	220130500
20	-0,06 -0,10	130	600	9	153	-	220130600
20	-0,06 -0,10	130	800	12	153	-	220130800
20	-0,06 -0,10	130	1000	15	153	-	2201301000
20	-0,06 -0,10	130	1500	22	153	-	2201301500
20	-0,06 -0,10	130	2000	30	153	-	2201302000
20	-0,06 -0,10	160	500	6	184	-	220160500
20	-0,06 -0,10	160	800	9	184	-	220160800
20	-0,06 -0,10	160	1000	12	184	-	2201601000
20	-0,06 -0,10	160	1500	18	184	-	2201601500
20	-0,06 -0,10	160	2000	23	184	-	2201602000
20	-0,06 -0,10	200	800	7	230	-	220200800
20	-0,06 -0,10	200	1000	9	230	Yes	2202001000
20	-0,06 -0,10	200	1300	12	230	Yes	2202001300
20	-0,06 -0,10	200	1600	15	230	Yes	2202001600
20	-0,06 -0,10	200	2000	18	230	-	2202002000
20	-0,06 -0,10	200	2500	23	230	-	2202002500
20	-0,06 -0,10	250	800	6	286	-	220250800
20	-0,06 -0,10	250	1000	7	286	-	2202501000
20	-0,06 -0,10	250	1500	11	286	-	2202501500
20	-0,06 -0,10	250	2000	14	286	-	2202502000
20	-0,06 -0,10	250	2500	18	286	-	2202502500
20	-0,06 -0,10	300	1000	6	341	Yes	2203001000
20	-0,06 -0,10	300	1500	9	341	-	2203001500
20	-0,06 -0,10	300	2000	12	341	-	2203002000
20	-0,06 -0,10	300	2500	15	341	-	2203002500
20	-0,06 -0,10	350	1500	7	412	-	2203501500
20	-0,06 -0,10	350	2000	10	412	-	2203502000
20	-0,06 -0,10	350	2500	12	412	-	2203502500
20	-0,06 -0,10	350	3000	15	412	-	2203503000
20	-0,06 -0,10	350	3500	17	412	-	2203503500
20	-0,06 -0,10	400	1500	6	464	-	2204001500
20	-0,06 -0,10	400	2000	9	464	-	2204002000
20	-0,06 -0,10	400	2500	11	464	-	2204002500
20	-0,06 -0,10	400	3000	13	464	-	2204003000
20	-0,06 -0,10	400	3500	15	464	-	2204003500
20	-0,06 -0,10	400	4000	17	464	-	2204004000

Standard ULTRAMAX, Metric Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
20	-0,06 -0,10	450	2000	8	522	-	2204502000
20	-0,06 -0,10	450	2500	9	522	-	2204502500
20	-0,06 -0,10	450	3000	11	522	-	2204503000
20	-0,06 -0,10	450	3500	13	522	-	2204503500
20	-0,06 -0,10	450	4000	15	522	-	2204504000
20	-0,06 -0,10	500	2000	7	569	-	2205002000
20	-0,06 -0,10	500	3000	10	569	-	2205003000
20	-0,06 -0,10	500	4000	14	569	-	2205004000
20	-0,06 -0,10	500	5000	17	569	-	2205005000

Standard ULTRAMAX, Imperial Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
1/4" (6,35 mm)	-0,03 -0,05	1" (25,4 mm)	75	25	6	Yes	26352575
1/4" (6,35 mm)	-0,03 -0,05	1" (25,4 mm)	100	33	6	Yes	263525100
1/4" (6,35 mm)	-0,03 -0,05	1" (25,4 mm)	150	50	6	Yes	263525150
1/4" (6,35 mm)	-0,03 -0,05	1" (25,4 mm)	175	58	6	Yes	263525175
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	75	14	8	Yes	26353875
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	100	19	8	Yes	263538100
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	125	24	8	Yes	263538125
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	150	29	8	Yes	263538150
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	175	34	8	Yes	263538175
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	200	38	8	Yes	253538200
1/4" (6,35 mm)	-0,03 -0,05	1 1/2" (38,1 mm)	250	48	8	Yes	263538250
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	100	10	10	Yes	263550100
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	125	13	10	Yes	263550125
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	150	15	10	Yes	263550150
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	175	18	10	Yes	253550175
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	200	20	10	Yes	263550200
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	250	25	10	Yes	263550250
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	300	30	10	Yes	263550300
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	100	10	11	Yes	263563100
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	125	13	11	Yes	263563125
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	150	15	11	Yes	263563150
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	175	18	11	Yes	263563175
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	200	20	11	Yes	263563200
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	250	25	11	Yes	263563250
1/4" (6,35 mm)	-0,03 -0,05	2 1/2" (63,5 mm)	300	30	11	Yes	263563300
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	100	8	13	-	263576100
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	150	12	13	Yes	263576150
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	175	14	13	Yes	263576175
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	200	16	13	Yes	263576200
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	250	20	13	Yes	263573250
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	300	24	13	Yes	263576300
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	400	32	13	Yes	263576400
1/4" (6,35 mm)	-0,03 -0,05	3 1/2" (88,9 mm)	150	10	15	Yes	263588150
1/4" (6,35 mm)	-0,03 -0,05	3 1/2" (88,9 mm)	200	13	15	Yes	263588200
1/4" (6,35 mm)	-0,03 -0,05	3 1/2" (88,9 mm)	250	16	15	Yes	263588250
1/4" (6,35 mm)	-0,03 -0,05	3 1/2" (88,9 mm)	300	20	15	Yes	263588300

Standard ULTRAMAX, Imperial Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	125	7	17	-	2635101125
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	150	9	17	Yes	2635101150
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	175	10	17	Yes	2635101175
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	200	11	17	Yes	2635101200
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	250	14	17	Yes	2635101250
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	300	17	17	Yes	2635101300
1/4" (6,35 mm)	-0,03 -0,05	4" (101,6 mm)	350	19	17	Yes	2635101350
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	150	7	21	-	2635127150
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	200	9	21	-	2635127200
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	250	11	21	Yes	2635127250
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	300	13	21	Yes	2635127300
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	350	15	21	-	2635127350
1/4" (6,35 mm)	-0,03 -0,05	5" (127,0 mm)	400	18	21	-	2635127400
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	150	5	25	-	2635152150
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	200	7	25	-	2635152200
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	300	11	25	-	2635152300
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	350	13	25	-	2635152350
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	400	15	25	Yes	2635152400
1/4" (6,35 mm)	-0,03 -0,05	6" (152,4 mm)	500	18	25	Yes	2635152500
3/8" (9,52 mm)	-0,04 -0,07	1" (25,4 mm)	75	17	11	-	2952575
3/8" (9,52 mm)	-0,04 -0,07	1" (25,4 mm)	100	22	11	-	29525100
3/8" (9,52 mm)	-0,04 -0,07	1" (25,4 mm)	150	33	11	-	29525150
3/8" (9,52 mm)	-0,04 -0,07	1" (25,4 mm)	200	44	11	Yes	29525200
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	100	14	15	Yes	29538100
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	125	17	15	Yes	29538125
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	150	21	15	Yes	29538150
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	200	28	15	Yes	29538200
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	250	35	15	Yes	29538250
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	300	42	15	Yes	29538300
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	100	9	19	Yes	29550100
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	125	11	19	Yes	29550125
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	150	14	19	Yes	29550150
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	175	16	19	Yes	29550175
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	200	18	19	Yes	29550200
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	250	22	19	Yes	29550250
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	300	27	19	Yes	29550300
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	400	36	19	Yes	29550400
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	500	45	19	Yes	29550500
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	100	7	21	-	29563100
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	125	8	21	-	29563125
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	150	10	21	-	29563150
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	200	14	21	Yes	29563200
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	250	17	21	Yes	29563250
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	300	20	21	Yes	29563300
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	350	24	21	Yes	29563350
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	400	27	21	Yes	29563400
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	150	8	22	Yes	29576150
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	200	11	22	Yes	29576200
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	250	14	22	Yes	29576250
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	300	16	22	Yes	29576300
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	400	22	22	Yes	29576400
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	500	27	22	Yes	29576500
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	600	33	22	Yes	29576600
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	250	11	26	-	29588250
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	300	14	26	-	29588300
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	350	16	26	-	29588350
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	400	18	26	-	29588400
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	500	22	26	Yes	29588500

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Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	150	6	34	-	29510150
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	200	8	34	Yes	295101200
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	250	10	34	Yes	295101250
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	300	12	34	Yes	295101300
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	400	15	34	Yes	295101400
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	500	19	34	Yes	295101500
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	600	23	34	Yes	295101600
3/8" (9,52 mm)	-0,04 -0,07	4" (101,6 mm)	750	29	34	Yes	295101750
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	200	6	43	Yes	295127200
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	250	8	43	Yes	295127250
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	300	9	43	Yes	295127300
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	400	12	43	Yes	295127400
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	500	15	43	Yes	295127500
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	800	24	43	Yes	295127800
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	1000	30	43	-	2951271000
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	250	6	53	Yes	295152250
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	300	7	53	Yes	265152300
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	400	10	53	Yes	295152400
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	500	12	53	Yes	295152500
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	600	15	53	Yes	295152600
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	800	20	53	Yes	295152800
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	1000	25	53	Yes	2951521000
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	350	7	55	-	295177350
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	400	8	55	-	295177400
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	500	10	55	Yes	295177500
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	600	12	55	Yes	295177600
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	800	16	55	Yes	295177800
3/8" (9,52 mm)	-0,04 -0,07	7" (177,8 mm)	1000	21	55	-	2951771000
3/8" (9,52 mm)	-0,04 -0,07	8" (203,2 mm)	400	7	67	-	295203400
3/8" (9,52 mm)	-0,04 -0,07	8" (203,2 mm)	500	9	67	Yes	295203500
3/8" (9,52 mm)	-0,04 -0,07	8" (203,2 mm)	600	11	67	Yes	295203600
3/8" (9,52 mm)	-0,04 -0,07	8" (203,2 mm)	800	14	67	Yes	295203800
3/8" (9,52 mm)	-0,04 -0,07	8" (203,2 mm)	1000	18	67	-	2952031000
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	125	14	22	-	212738125
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	150	16	22	-	212738150
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	200	22	22	Yes	212738200
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	250	27	22	Yes	212738250
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	300	33	22	Yes	212738300
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	150	10	26	-	212750150
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	200	13	26	-	212750200
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	250	16	26	Yes	212750250
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	300	20	26	Yes	212750300
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	400	26	26	Yes	212750400
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	150	8	30	-	212763150
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	250	13	30	Yes	212763250
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	300	16	30	Yes	212763300
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	400	21	30	Yes	212763400
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	500	27	30	Yes	212763500
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	200	8	40	-	212776200
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	250	10	40	-	212776250
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	300	13	40	Yes	212776300
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	400	17	40	Yes	212776400
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	500	21	40	Yes	212776500
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	600	25	40	Yes	212776600
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	750	31	40	Yes	212776750
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	250	9	45	-	212788250
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	300	10	45	-	212788300
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	350	12	45	Yes	212788350
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	500	17	45	Yes	212788500
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	750	26	45	Yes	212788750

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Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	250	7	50	Yes	2127101250
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	300	9	50	Yes	2127101300
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	350	10	50	Yes	2127101350
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	400	12	50	Yes	2127101400
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	500	15	50	Yes	2127101500
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	600	18	50	Yes	2127101600
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	800	24	50	Yes	2127101800
1/2" (12,7 mm)	-0,05 -0,08	4" (101,6 mm)	1000	30	50	Yes	21271010000
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	300	7	63	Yes	2127127300
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	350	8	63	Yes	2127127350
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	400	9	63	Yes	2127127400
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	500	11	63	Yes	2127127500
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	600	14	63	Yes	2127127600
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	750	17	63	Yes	2127127750
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	900	20	63	Yes	2127127900
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	1000	23	63	Yes	21271271000
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	300	6	78	-	2127152300
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	400	7	78	Yes	2127152400
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	500	9	78	Yes	2127152500
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	600	11	78	Yes	2127152600
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	750	14	78	Yes	2127152750
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	850	16	78	Yes	2127152850
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	1000	19	78	Yes	21271521000
1/2" (12,7 mm)	-0,05 -0,08	7" (177,8 mm)	500	8	88	Yes	2127177500
1/2" (12,7 mm)	-0,05 -0,08	7" (177,8 mm)	600	9	88	Yes	2127177600
1/2" (12,7 mm)	-0,05 -0,08	7" (177,8 mm)	800	12	88	Yes	2127177800
1/2" (12,7 mm)	-0,05 -0,08	7" (177,8 mm)	1000	15	88	Yes	21271771000
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	500	7	99	Yes	2127203500
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	800	11	99	Yes	2127203800
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	1000	13	99	Yes	21272031000
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	1500	20	99	Yes	21272031500
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	2000	27	99	-	21272032000
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	500	6	117	Yes	2127228500
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	600	7	117	-	2127228600
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	750	9	117	Yes	2127228750
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	1000	12	117	Yes	21272281000
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	1200	14	117	-	21272281200
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	1500	18	117	Yes	21272281500
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	500	5	130	Yes	2127254500
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	750	8	130	Yes	2127254750
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	1000	11	130	Yes	21272541000
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	1200	13	130	Yes	21272541200
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	1500	16	130	Yes	21272541500
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	2000	21	130	Yes	21272542000
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	600	5	149	-	2127304800
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	800	7	149	Yes	2127304800
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	1000	9	149	Yes	21273041000
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	1500	13	149	Yes	21273041500
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	2000	17	149	-	21273042000
5/8" (15,87 mm)	-0,05 -0,08	2" (50,8 mm)	200	11	42	Yes	215850200
5/8" (15,87 mm)	-0,05 -0,08	2" (50,8 mm)	300	17	42	-	215850300
5/8" (15,87 mm)	-0,05 -0,08	2" (50,8 mm)	500	28	42	-	215850500
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	175	8	50	-	215863175
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	250	11	50	-	215863250
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	300	14	50	-	215863300
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	400	18	50	-	215863400
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	500	23	50	-	215863500
5/8" (15,87 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	750	34	50	-	215863750

Standard ULTRAMAX, Imperial Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	250	9	63	Yes	215876250
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	300	11	63	Yes	215876300
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	400	14	63	Yes	215876400
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	500	18	63	Yes	215876500
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	600	21	63	Yes	215876600
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	750	26	63	Yes	215876750
5/8" (15,87 mm)	-0,05 -0,08	3" (76,2 mm)	1000	35	63	Yes	2158761000
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	300	7	77	Yes	2158101300
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	400	10	77	Yes	2158101400
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	500	12	77	Yes	2158101500
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	600	14	77	Yes	2158101600
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	750	18	77	Yes	2158101750
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	1000	24	77	Yes	21581011000
5/8" (15,87 mm)	-0,05 -0,08	4" (101,6 mm)	1200	29	77	-	21581011200
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	400	7	100	-	2158127400
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	500	9	100	Yes	2158127500
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	600	11	100	Yes	2158127600
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	800	15	100	Yes	2158127800
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	1000	19	100	Yes	21581271000
5/8" (15,87 mm)	-0,05 -0,08	5" (127,0 mm)	1300	24	100	-	21581271300
5/8" (15,87 mm)	-0,05 -0,08	6" (152,4 mm)	400	6	118	Yes	2158152400
5/8" (15,87 mm)	-0,05 -0,08	6" (152,4 mm)	600	9	118	Yes	2158152600
5/8" (15,87 mm)	-0,05 -0,08	6" (152,4 mm)	800	12	118	Yes	2158152800
5/8" (15,87 mm)	-0,05 -0,08	6" (152,4 mm)	1000	15	118	Yes	21581521000
5/8" (15,87 mm)	-0,05 -0,08	6" (152,4 mm)	1500	23	118	Yes	21581521500
5/8" (15,87 mm)	-0,05 -0,08	7" (177,8 mm)	500	6	136	Yes	2158177500
5/8" (15,87 mm)	-0,05 -0,08	7" (177,8 mm)	750	9	136	Yes	2158177750
5/8" (15,87 mm)	-0,05 -0,08	7" (177,8 mm)	1000	13	136	Yes	21581771000
5/8" (15,87 mm)	-0,05 -0,08	7" (177,8 mm)	1500	19	136	Yes	21581771500
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	500	5	156	Yes	2158203500
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	750	8	156	Yes	2158203750
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	1000	11	156	Yes	21582031000
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	1200	13	156	Yes	21582031200
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	1500	16	156	Yes	21582031500
5/8" (15,87 mm)	-0,05 -0,08	8" (203,2 mm)	2000	22	156	Yes	21582032000
5/8" (15,87 mm)	-0,05 -0,08	9" (228,6 mm)	500	5	174	Yes	2158228500
5/8" (15,87 mm)	-0,05 -0,08	9" (228,6 mm)	750	7	174	Yes	2158228750
5/8" (15,87 mm)	-0,05 -0,08	9" (228,6 mm)	1000	10	174	Yes	21582281000
5/8" (15,87 mm)	-0,05 -0,08	9" (228,6 mm)	1300	13	174	Yes	21582281300
5/8" (15,87 mm)	-0,05 -0,08	9" (228,6 mm)	1600	15	174	Yes	21582281600
5/8" (15,87 mm)	-0,05 -0,08	10" (254,0 mm)	750	6	192	Yes	2158254750
5/8" (15,87 mm)	-0,05 -0,08	10" (254,0 mm)	1000	9	192	Yes	21582541000
5/8" (15,87 mm)	-0,05 -0,08	10" (254,0 mm)	1300	11	192	Yes	21582541300
5/8" (15,87 mm)	-0,05 -0,08	10" (254,0 mm)	1600	14	192	Yes	21582541600
5/8" (15,87 mm)	-0,05 -0,08	10" (254,0 mm)	2000	17	192	-	21582542000
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	750	5	235	Yes	2158304750
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	1000	7	235	Yes	21583041000
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	1500	11	235	Yes	21583041500
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	1800	13	235	-	21583041800
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	2000	14	235	-	21583042000
5/8" (15,87 mm)	-0,05 -0,08	12" (304,8 mm)	2500	18	235	-	21583042500
5/8" (15,87 mm)	-0,05 -0,08	14" (355,6 mm)	1000	6	269	-	21583551000
5/8" (15,87 mm)	-0,05 -0,08	14" (355,6 mm)	1600	10	269	-	21583551600
5/8" (15,87 mm)	-0,05 -0,08	14" (355,6 mm)	2000	12	269	-	21583552000
5/8" (15,87 mm)	-0,05 -0,08	14" (355,6 mm)	2500	15	269	-	21583552500
5/8" (15,87 mm)	-0,05 -0,08	16" (406,4 mm)	1000	5	306	-	21584061000
5/8" (15,87 mm)	-0,05 -0,08	16" (406,4 mm)	1600	8	306	-	21584061600
5/8" (15,87 mm)	-0,05 -0,08	16" (406,4 mm)	2000	10	306	-	21584062000
5/8" (15,87 mm)	-0,05 -0,08	16" (406,4 mm)	2500	13	306	-	21584062500
3/4" (19,05 mm)	-0,06 -0,10	3" (76,2 mm)	300	9	95	-	21976300
3/4" (19,05 mm)	-0,06 -0,10	3" (76,2 mm)	400	12	95	-	21976400
3/4" (19,05 mm)	-0,06 -0,10	3" (76,2 mm)	500	15	95	-	21976500

Standard ULTRAMAX, Imperial Sizes

Unheated length is 5 mm from bottom end and 10 mm from cable end. See tolerances further down.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Normally in stock	Catalogue no.
3/4" (19,05 mm)	-0,06 -0,10	4" (101,6 mm)	400	8	118	-	219101400
3/4" (19,05 mm)	-0,06 -0,10	4" (101,6 mm)	600	12	118	-	219101600
3/4" (19,05 mm)	-0,06 -0,10	4" (101,6 mm)	800	16	118	-	219101800
3/4" (19,05 mm)	-0,06 -0,10	4" (101,6 mm)	1000	20	118	-	2191011000
3/4" (19,05 mm)	-0,06 -0,10	5" (127,0 mm)	400	6	153	-	219127400
3/4" (19,05 mm)	-0,06 -0,10	5" (127,0 mm)	500	8	153	-	219127500
3/4" (19,05 mm)	-0,06 -0,10	5" (127,0 mm)	1000	16	153	-	2191271000
3/4" (19,05 mm)	-0,06 -0,10	5" (127,0 mm)	1500	24	153	-	2191271500
3/4" (19,05 mm)	-0,06 -0,10	6" (152,4 mm)	400	5	182	-	219152400
3/4" (19,05 mm)	-0,06 -0,10	6" (152,4 mm)	600	8	182	-	219152600
3/4" (19,05 mm)	-0,06 -0,10	6" (152,4 mm)	1000	13	182	-	2191521000
3/4" (19,05 mm)	-0,06 -0,10	6" (152,4 mm)	1500	19	182	-	2191521500
3/4" (19,05 mm)	-0,06 -0,10	8" (203,2 mm)	500	5	230	-	219203500
3/4" (19,05 mm)	-0,06 -0,10	8" (203,2 mm)	600	6	230	-	219203600
3/4" (19,05 mm)	-0,06 -0,10	8" (203,2 mm)	1000	9	230	-	2192031000
3/4" (19,05 mm)	-0,06 -0,10	8" (203,2 mm)	2000	18	230	-	2192032000
3/4" (19,05 mm)	-0,06 -0,10	10" (254,0 mm)	800	6	286	-	219254800
3/4" (19,05 mm)	-0,06 -0,10	10" (254,0 mm)	1000	7	286	-	2192541000
3/4" (19,05 mm)	-0,06 -0,10	10" (254,0 mm)	2000	14	286	-	2192542000
3/4" (19,05 mm)	-0,06 -0,10	12" (304,8 mm)	800	5	341	-	219304800
3/4" (19,05 mm)	-0,06 -0,10	12" (304,8 mm)	1000	6	341	-	2193041000
3/4" (19,05 mm)	-0,06 -0,10	12" (304,8 mm)	1500	9	341	-	2193041500
3/4" (19,05 mm)	-0,06 -0,10	12" (304,8 mm)	2000	12	341	-	2193042000
3/4" (19,05 mm)	-0,06 -0,10	12" (304,8 mm)	2500	15	341	-	2193042500
3/4" (19,05 mm)	-0,06 -0,10	14" (355,6 mm)	1500	8	412	-	2193551500
3/4" (19,05 mm)	-0,06 -0,10	14" (355,6 mm)	2000	10	412	-	2193552000
3/4" (19,05 mm)	-0,06 -0,10	14" (355,6 mm)	2500	13	412	-	2193552500
3/4" (19,05 mm)	-0,06 -0,10	14" (355,6 mm)	3000	15	412	-	2193553000
3/4" (19,05 mm)	-0,06 -0,10	14" (355,6 mm)	3500	18	412	-	2193553500

Standard Tolerances

Diameter:

See charts above

Length:

For length of up to 100 mm: +/-2mm. For length of over 100 mm: +/-2% of the length

Power:

-10% / +5%

Resistance:

-5% / +10%

Arrow:

For length of up to 100 mm: 0,1 mm. For length of between 150 and 300 mm: 0,2 mm. For length of over 300 mm: Arrow (mm) = $L/250\ 000$ (Where L = length of the heater in mm)

Technical Recommendations

Distribute the required load over the highest possible number of heaters in order to reduce the density in W/cm² of each heater.

Insert the ULTRAMAX cartridges in bored holes. Clearance between heater and hole reduces heat transmission, increases cartridge temperature, intensifies the oxidation process, increases energy consumption and considerably decreases heater life.

If the cartridges are mounted on moving parts of the machine, make sure the cables are well anchored a few centimeters upstream of the heater's outlet to prevent movements that could result in break-downs. Even though small movements are generally acceptable, there is always a high risk of break-downs- It is advisable to make a few extra turns of the cable upstream of the outlet to lengthen its life. If the application requires continuous movement, it is indispensable to advise Rotfil with the width and type of motion. In many cases an intermediate box is very useful for transferring motion to an additional cable that can easily be replaced.

If there are a significant number of vibrations, it is advisable to use an intermediate connection box as described above.

Protect cables and cartridge head especially if not sealed, against contamination from oils, liquids, sprays, corrosive gases, splashes of water. With repeated hot/cold cycles, the cartridge absorbs any substance that comes into contact with the insulating material. Most Substances char and produce short circuits. The only sealant that ensures total protection is SC400.

If the cables stay in areas with a constant temperature above 250C, one of the following actions becomes indispensable:

- Use flexible nickel cables insulated with ceramic fiber or ceramic beads.
- Use rigid nickel conductors, not insulated or insulated with sheath of ceramic beads.
- Extend cold zone of heater enough to bring the cables out of the high temperature area.

Prevent the cartridge head, and consequently the cables, from entering the hole. The heat of the metal ground could damage the insulating material and the sealant.

Avoid using adhesive tape near the cartridge head. The adhesive of certain types of tape could enter the head, char and produce short circuits. If taping is unavoidable, use silicone-base adhesives.

At high temperatures it is always advisable to thermally insulate the heated parts. The following positive effects are obtained by insulation:

- Energy consumption is lowered by up to 40%
- Less powerful and consequently longer-lasting elements can be used.
- Higher temperatures are reached in a shorter time.

To improve heat conductivity and ease the extraction of the cartridge, use our LUBRIHOT compound. Make sure the compound does not dirty the cartridge has a high watt density. The use of proportional microprocessor themoregulators is essential for extending heaters' life

Oxidation of ULTRAMAX heaters and the hole in which they are inserted, produced by many hours of work at high temperatures, can make it difficult to extract the burnt element. After having attempted extraction by using EXTRACTOR, make a hole with a bit 0,2-0,3 mm smaller than the nominal diameter of the heater. After extraction, use a boring machine to rebore the hole; if necessary, use an iron rod and a hammer as well.

AROTFIL cartridge heater, if used correctly, provides a very long life. To obtain maximum performance, advise Rotfil with all the details that might be important in order to determine the most suitable heater.

HEATING OF LIQUIDS

The compactness and high watt density of ULTRAMAX heaters make it an excellent solution for the heating of liquids.

Place the heater as far as possible from the tank walls to favour the highest circulation of liquid by convection.

Make sure the heater is always covered with at least 20 mm of liquid.

Avoid too frequent ON/OFF cycles using a proportional thermoregulator.

Make sure no powder, rust, lime deposit or other foreign substance pollutes the heater's sheath.

To avoid emptying the tank when replacing the used heater is advisable to use our additional sheaters.

If there is risk of liquid's overflowing, or there is humidity or steam, sealed heaters shall be used.

Do not exceed the densities in W/cm² suggested in the following table. Shall there be forced re-circulation, the density can be slightly higher. A lower density, on the other side, increases the heater's life.

MATERIAL	Max °C	Max W/cm ²
Water	100	30
Asphalt, tar and high viscosity compounds	95	1,5
	150	1,2
	200	1
	250	0,8
Petrol - Kerosene	150	3,5
Freon	150	0,5
Ethylene glycol	150	4,5
Molasses	40	0,7
Metals in liquid state	260-500	4
Fuel oil	90	1,5
Diathermal oil	400	3,5
SAE 30 motor oil	120	3
Vegetable oil	200	4,5
Salt bath	500	4,5
Caustic soda 10%	90	4
Caustic soda 75%	70	2,3
Acid solutions	70	6
Alkaline solutions	100	6
Degreasing solutions	130	3,5

HEATING OF METALS

The charts below show maximum admissible clearance in millimeters between hole and ULTRAMAX cartridge as a function of the density in W/cm² and the working temperatures. For aluminum and brass, choose the clearance in the column corresponding to the temperature immediately superior to that of the working temperature (+100C).

The clearance is obtained by the difference between the hole diameter and the real diameter of the cartridge (nominal diameter - maximum tolerance)

Example:

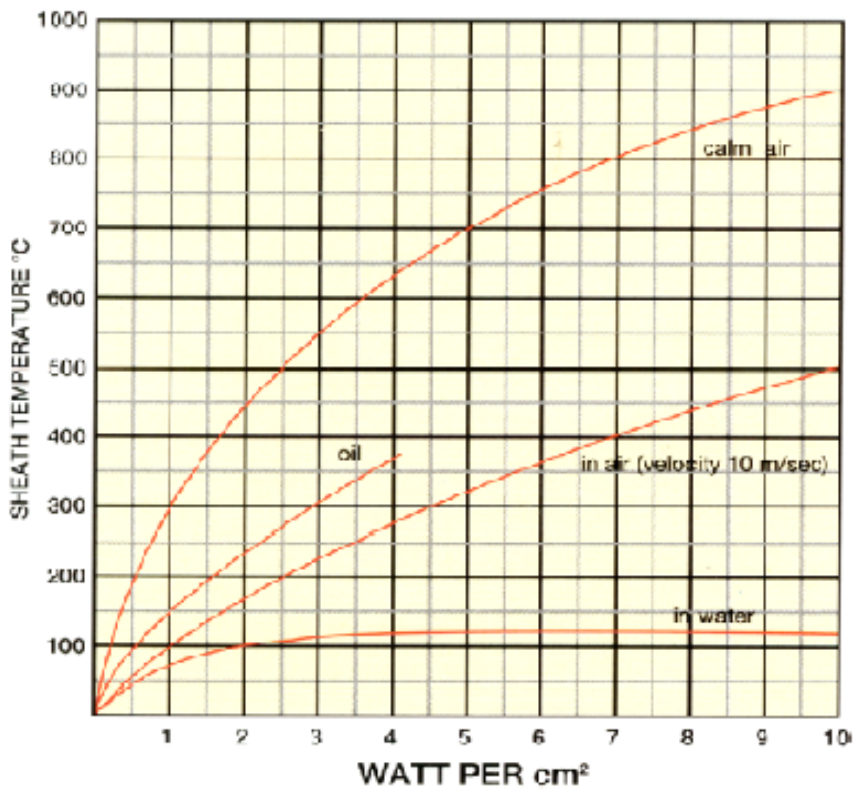
Hole diameter 12,6 mm; nominal diameter of cartridge 12,5 mm.
 12,6 mm - 12,42 mm (12,5 - 0,08 max. catalog tolerance) = 0,18 mm.
 (max. admissible clearance).

For optimum working conditions, energy-saving and longer heater life, it is advisable to bore holes with a tolerance of H7,

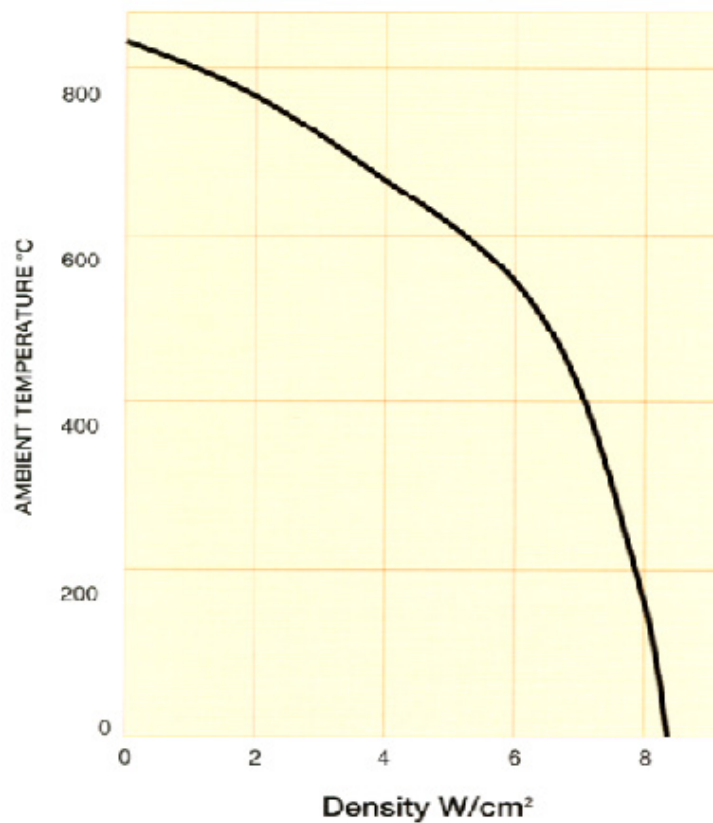
		WORKING TEMPERATURE							
		100°C	200°C	300°C	400°C	500°C	600°C	700°C	800°C
Power Density (W/cm ²)	2								1,30
	3								0,35
	4							1,00	0,15
	5						2,00	0,60	0,08
	6					2,00	1,50	0,50	0,065
	7		2,00	1,75	1,30	1,50	0,70	0,30	0,040
	8	2,00	1,75	1,50	1,20	1,30	0,55	0,20	0,035
	9	1,75	1,50	1,30	1,00	1,00	0,45	0,15	0,030
	10	1,50	1,25	1,00	0,70	0,60	0,35	0,10	0,025
	12	1,00	0,75	0,70	0,60	0,50	0,25	0,085	0,015
	15	0,65	0,60	0,55	0,50	0,35	0,20	0,065	0,010
	18	0,55	0,50	0,50	0,40	0,30	0,15	0,050	
	20	0,50	0,45	0,40	0,35	0,20	0,10	0,040	
	25	0,40	0,35	0,35	0,30	0,15	0,08	0,030	
	30	0,30	0,25	0,25	0,20	0,10	0,05	0,025	
	35	0,25	0,20	0,18	0,10	0,085	0,045	0,020	
	40	0,22	0,18	0,15	0,08	0,075	0,040	0,015	
	50	0,20	0,15	0,10	0,07	0,050	0,035		
60	0,15	0,12	0,085	0,065	0,045	0,030			
70	0,13	0,10	0,075	0,060	0,040	0,025			
80	0,10	0,08	0,060	0,050	0,035	0,020			

OPERATING TEMPERATURES

Sheath temperature, depending on power density and media:



Sheath temperature, depending on power density and media:



Any type of ULTRAMAX heater can be manufactured with a built-in thermocouple, and a big stock of finished heaters is kept, ready for prompt shipment.

THERMOCOUPLE TYPES:

CODE	TYPE OF THERMOCOUPLE		TEMPERATURE RANGE
	POSITIVE	NEGATIVE	
J	IRON (red)	CONSTANTAN (blue)	-20°C to +750°C (-4°F to 1380°F)
K	CHROMEL (red)	ALUMEL (green)	-20°C to +1250°C (-4°F to 2280°F)

THERMOCOUPLE POSITIONS:

UTC Type 1

Grounded to a special bottom disk. Guarantees excellent accuracy of the temperature and quick response. Widely used in injection systems for plastic materials.



UTC Type 2 (Standard)

Insulated in proximity to the bottom disk. Suitable for avoiding disturbances to very sensitive equipment. This type is used for the models in stock (see sizes).



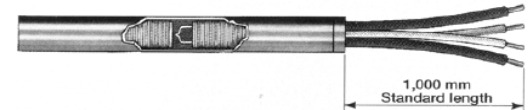
UTC Type 3

Grounded to the metal sheath within 12 mm cold section, located at the center of the heater. Guarantees excellent accuracy of the temperature and quick response. It cannot be used in cartridges with a diameter below 10 mm.



UTC Type 4

Insulated at center of the heater. It provides the heater's temperature allowing the evaluation of the heat exchange for a better use of both heater and energy.



OPTIMAL USE OF ULTRAMAX HEATERS WITH THERMOCOUPLE:

As shown in the drawing above, in heaters with thermocouple UTC 1 and UTC 2 the sensing joint of the thermocouple is located at one end of the cartridge, sensibly colder than the body of the cartridge. This causes the thermocouple to sense heat with a certain delay to its production in the heating core of the cartridge.

Therefore, if the heater is controlled by an electronic thermoregulator, great care must be put in setting its switching temperature to avoid burning the heater just because the thermocouple is exposed to heat much later than the central body of the heater.

If the heater is in free air (or in a small metal body with more than 10 W/cm²), it is advisable that the limit temperature is set (at start-up) at values increasing by intervals of, say 100C (example: 80C, 180C, 280C ect. till desired value), with a necessary resting time before re-switching-on at each increase of the limit value. This because of the risk of the heater's burning before the thermoregulator switching off (example: the body could go over 1000C before the thermocouple reaches 500C).

If the heater is inserted in a greater metallic body, in a hole honed to H7 tolerance, it is possible to directly set the thermoregulator at the target working temperature straight from start-up.

With UTC 3 and UTC 4 heaters the above precautions are normally not necessary. If the temperature control has a soft-start function, the above precautions can be reduced, nonetheless, trial cycles are always advisable.

STANDARD ULTRAMAX WITH THERMOCOUPLE, METRIC SIZES

Standard versions is with Fe-Co (Type J) thermocouple, position UTC Type 2, with 1000-mm cables. All the models listed below are normally kept in stock.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Catalogue no.
6,5	-0,03 -0,05	40	125	22	8	38540125
6,5	-0,03 -0,05	40	150	27	8	38540150
6,5	-0,03 -0,05	40	175	31	8	38540175
6,5	-0,03 -0,05	40	200	36	8	38540200
6,5	-0,03 -0,05	50	150	20	10	38550150
6,5	-0,03 -0,05	50	175	24	10	38550175
6,5	-0,03 -0,05	50	200	27	10	38550200
6,5	-0,03 -0,05	50	250	34	10	38550250
6,5	-0,03 -0,05	60	200	21	11	38580200
6,5	-0,03 -0,05	60	250	26	11	38580250
6,5	-0,03 -0,05	60	300	32	11	38580300
6,5	-0,03 -0,05	80	200	15	14	38580200
6,5	-0,03 -0,05	80	250	19	14	38580250
6,5	-0,03 -0,05	80	300	22	14	38580300
6,5	-0,03 -0,05	100	250	15	17	385100250
6,5	-0,03 -0,05	100	300	17	17	385100300
6,5	-0,03 -0,05	100	400	23	17	385100400
8	-0,04 -0,06	40	150	21	12	3840150
8	-0,04 -0,06	40	200	28	12	3840200
8	-0,04 -0,06	50	150	18	14	3850150
8	-0,04 -0,06	50	200	22	14	3850200
8	-0,04 -0,06	50	250	27	14	3850250
8	-0,04 -0,06	60	200	17	17	3880200
8	-0,04 -0,06	60	250	21	17	3880250
8	-0,04 -0,06	60	300	25	17	3880300
8	-0,04 -0,06	80	200	12	21	3880200
8	-0,04 -0,06	80	250	15	21	3880250
8	-0,04 -0,06	80	300	18	21	3880300
8	-0,04 -0,06	80	400	24	21	3880400
8	-0,04 -0,06	100	200	9	25	38100200
8	-0,04 -0,06	100	250	12	25	38100250
8	-0,04 -0,06	100	300	14	25	38100300
8	-0,04 -0,06	100	400	19	25	38100400
8	-0,04 -0,06	130	250	9	32	38130250
8	-0,04 -0,06	130	300	10	32	38130300
8	-0,04 -0,06	130	400	14	32	38130400
8	-0,04 -0,06	160	300	8	42	38160300
8	-0,04 -0,06	160	400	11	42	38160400
8	-0,04 -0,06	160	500	14	42	38160500
10	-0,04 -0,07	40	150	18	15	31040150
10	-0,04 -0,07	40	200	24	15	31040200
10	-0,04 -0,07	40	250	30	15	31040250
10	-0,04 -0,07	50	200	18	19	31050200
10	-0,04 -0,07	50	250	22	19	31050250
10	-0,04 -0,07	50	300	26	19	31050300
10	-0,04 -0,07	60	250	18	21	31080200
10	-0,04 -0,07	60	300	21	21	31080300
10	-0,04 -0,07	60	400	28	21	31080400
10	-0,04 -0,07	80	250	12	27	31080250
10	-0,04 -0,07	80	300	15	27	31080300
10	-0,04 -0,07	80	400	20	27	31080400
10	-0,04 -0,07	100	300	11	34	310100300
10	-0,04 -0,07	100	400	15	34	310100400
10	-0,04 -0,07	100	500	19	34	310100500
10	-0,04 -0,07	130	300	8	43	310130300
10	-0,04 -0,07	130	400	11	43	310130400
10	-0,04 -0,07	130	500	14	43	310130500
10	-0,04 -0,07	160	400	9	54	310160400
10	-0,04 -0,07	160	600	13	54	310160800

STANDARD ULTRAMAX WITH THERMOCOUPLE, METRIC SIZES

Standard versions is with Fe-Co (Type J) thermocouple, position UTC Type 2, with 1000-mm cables. All the models listed below are normally kept in stock.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Catalogue no.
12,5	-0,05 -0,08	40	200	20	22	312540200
12,5	-0,05 -0,08	40	250	25	22	312540250
12,5	-0,05 -0,08	50	300	22	28	312550300
12,5	-0,05 -0,08	50	400	29	28	312550400
12,5	-0,05 -0,08	60	300	17	30	312560300
12,5	-0,05 -0,08	60	400	23	30	312560400
12,5	-0,05 -0,08	80	400	16	40	312580400
12,5	-0,05 -0,08	80	500	20	40	312580500
12,5	-0,05 -0,08	100	500	15	50	3125100500
12,5	-0,05 -0,08	130	600	14	73	3125130800
12,5	-0,05 -0,08	160	800	13	80	3125160800
12,5	-0,05 -0,08	200	1000	14	99	31252001000
12,5	-0,05 -0,08	250	1250	14	126	31252501250
12,5	-0,05 -0,08	300	1500	14	149	31253001500

STANDARD ULTRAMAX WITH THERMOCOUPLE, METRIC SIZES

Standard versions is with Fe-Co (Type J) thermocouple, position UTC Type 2, with 1000-mm cables. All the models listed below are normally kept in stock.



Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Catalogue no.
1/4" (6,35 mm)	-0,03 -0,05	1½" (38,1 mm)	125	24	8	36338125
1/4" (6,35 mm)	-0,03 -0,05	1½" (38,1 mm)	150	29	8	36338150
1/4" (6,35 mm)	-0,03 -0,05	1½" (38,1 mm)	175	34	8	36338175
1/4" (6,35 mm)	-0,03 -0,05	1½" (38,1 mm)	200	38	8	36338200
1/4" (6,35 mm)	-0,03 -0,05	2½" (63,5 mm)	200	20	11	36363200
1/4" (6,35 mm)	-0,03 -0,05	2½" (63,5 mm)	250	25	11	36363250
1/4" (6,35 mm)	-0,03 -0,05	2½" (63,5 mm)	300	30	11	36363300
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	150	20	10	36350150
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	175	23	10	36350175
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	200	26	10	36350200
1/4" (6,35 mm)	-0,03 -0,05	2" (50,8 mm)	250	33	10	36350250
1/4" (6,35 mm)	-0,03 -0,05	3½" (88,9 mm)	250	16	15	36368250
1/4" (6,35 mm)	-0,03 -0,05	3½" (88,9 mm)	300	20	15	36368300
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	200	16	13	36376200
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	250	20	13	36376250
1/4" (6,35 mm)	-0,03 -0,05	3" (76,2 mm)	300	24	13	36376300
1/4" (6,35 mm)	-0,03 -0,05	4" (101,0 mm)	250	14	17	363101250
1/4" (6,35 mm)	-0,03 -0,05	4" (101,0 mm)	300	17	17	363101300
1/4" (6,35 mm)	-0,03 -0,05	4" (101,0 mm)	400	23	17	363101400

STANDARD ULTRAMAX WITH THERMOCOUPLE, IMPERIAL SIZES

Standard versions is with Fe-Co (Type J) thermocouple, position UTC Type 2, with 1000-mm cables. All the models listed below are normally kept in stock.



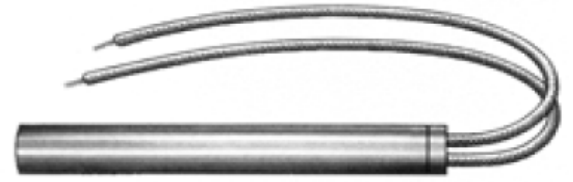
Diameter (mm)	Tolerance (mm)	Length (mm)	Power (W/230V)	W/cm ²	Weight (g)	Catalogue no.
3/8" (9,52 mm)	-0,04 -0,07	1 3/4" (44,4 mm)	150	17	17	39544150
3/8" (9,52 mm)	-0,04 -0,07	1 3/4" (44,4 mm)	200	22	17	39544200
3/8" (9,52 mm)	-0,04 -0,07	1 3/4" (44,4 mm)	250	28	17	39544250
3/8" (9,52 mm)	-0,04 -0,07	1 3/4" (44,4 mm)	300	33	17	39544300
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	150	21	15	39538150
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	200	28	15	39538200
3/8" (9,52 mm)	-0,04 -0,07	1 1/2" (38,1 mm)	250	35	15	39538250
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	250	17	21	39563250
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	300	20	21	39563300
3/8" (9,52 mm)	-0,04 -0,07	2 1/2" (63,5 mm)	350	23	21	39563350
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	200	18	19	39550200
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	250	22	19	39550250
3/8" (9,52 mm)	-0,04 -0,07	2" (50,8 mm)	300	27	19	39550300
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	300	14	26	39588300
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	400	18	26	39588400
3/8" (9,52 mm)	-0,04 -0,07	3 1/2" (88,9 mm)	500	22	26	39588500
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	250	14	22	39576250
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	300	16	22	39576300
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	350	19	22	39576350
3/8" (9,52 mm)	-0,04 -0,07	3" (76,2 mm)	400	22	22	39576400
3/8" (9,52 mm)	-0,04 -0,07	4" (101,0 mm)	300	12	34	395101300
3/8" (9,52 mm)	-0,04 -0,07	4" (101,0 mm)	400	15	34	395101400
3/8" (9,52 mm)	-0,04 -0,07	4" (101,0 mm)	500	19	34	395101500
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	400	12	43	395127400
3/8" (9,52 mm)	-0,04 -0,07	5" (127,0 mm)	500	15	43	395127500
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	400	10	53	395152400
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	500	12	53	395152500
3/8" (9,52 mm)	-0,04 -0,07	6" (152,4 mm)	600	15	53	395152600
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	200	22	22	312738200
1/2" (12,7 mm)	-0,05 -0,08	1 1/2" (38,1 mm)	250	27	22	312738250
1/2" (12,7 mm)	-0,05 -0,08	1 3/4" (44,4 mm)	250	20	24	312744250
1/2" (12,7 mm)	-0,05 -0,08	1 3/4" (44,4 mm)	300	25	24	312744300
1/2" (12,7 mm)	-0,05 -0,08	10" (254,0 mm)	1200	13	130	31272541200
1/2" (12,7 mm)	-0,05 -0,08	12" (304,8 mm)	1500	13	149	31273041500
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	300	16	30	312763300
1/2" (12,7 mm)	-0,05 -0,08	2 1/2" (63,5 mm)	400	21	30	312763400
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	300	20	26	312750300
1/2" (12,7 mm)	-0,05 -0,08	2" (50,8 mm)	400	26	26	312750400
1/2" (12,7 mm)	-0,05 -0,08	3 1/2" (88,9 mm)	500	17	45	312788500
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	400	17	40	312776400
1/2" (12,7 mm)	-0,05 -0,08	3" (76,2 mm)	500	21	40	312776500
1/2" (12,7 mm)	-0,05 -0,08	4" (101,0 mm)	500	15	50	3127100500
1/2" (12,7 mm)	-0,05 -0,08	5" (127,0 mm)	600	14	63	3127127600
1/2" (12,7 mm)	-0,05 -0,08	6" (152,4 mm)	750	14	78	3127152750
1/2" (12,7 mm)	-0,05 -0,08	7" (177,8 mm)	1000	15	88	31271771000
1/2" (12,7 mm)	-0,05 -0,08	8" (203,2 mm)	1000	13	99	31272031000
1/2" (12,7 mm)	-0,05 -0,08	9" (228,6 mm)	1200	14	117	31272281200

CABLE OPTIONS

S1

ULTRAMAX WITH FLEXIBLE CABLES

ULTRAMAX Heaters can be supplied with flexible cables coming directly out of the cartridge. These are suitable when a highly flexible cable is required also near the head. With this solution, the cartridge head must not exceed the temperature of 260C. For higher temperatures, contact our customer service.



S2

ULTRAMAX WITH CABLES PROTECTED BY FLEXIBLE TUBE

ULTRAMAX cartridges can be supplied with cables protected by a flexible tube of galvanized steel (standard version), or stainless steel (on request). This type of protection is advisable to avoid the cable being smashed, grazed or torn.



Cartridge Diameter	6,5-1/4"	8	10-3/8"	12-1/2"	16-5/8"	20-3/4"
Tube Size "T"	6,7	7,5	8,5	10,5	12,5	13,0

S3

ULTRAMAX WITH CABLES PROTECTED BY FLEXIBLE METAL BRAID

ULTRAMAX cartridges can be supplied with the cable protected by a flexible metallic braid, in galvanized steel in the standard version, in the stainless steel braid upon request. This type of protection is advisable for protecting the cable from operations and tears while maintaining excellent flexibility.



S4

ULTRAMAX WITH SOLID NICKEL WIRES

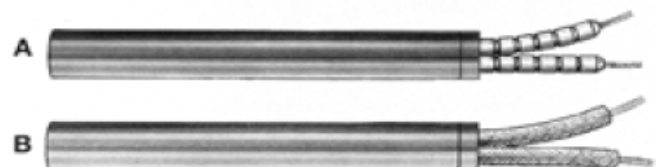
ULTRAMAX cartridges can be supplied with solid nickel wires, either naked or insulated by a silicone sheath, silicone glass, teflon, or ceramic beads. This solution is useful when for assembly purposes or mechanical needs the input wires need to be particularly rigid.



S5

ULTRAMAX WITH INSULATED CABLES FOR HIGH TEMPERATURES

ULTRAMAX cartridges can be supplied with nickel cables insulated with ceramic beads (A), or with ceramic fiber (B). One of these solutions is indispensable when the cables are in areas with constant temperatures above 260C.



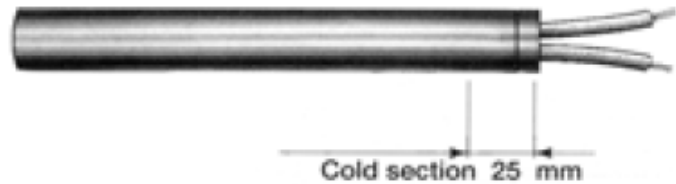
S6 ULTRAMAX WITH CABLES PROTECTED BY CORRUGATED (LIQUID-PROOF) FLEXIBLE TUBE

ULTRAMAX cartridges can be supplied with cables protected by corrugated flexible tube with continuous wall of stainless steel welded to the cartridge sheath. This solution is indispensable when the cables are exposed to liquids, corrosive gases, dangerous areas, ect.



S7 SEALED ULTRAMAX

ULTRAMAX cartridges can be supplied completely sealed. Due to the hygroscopicity insulating ceramic material, our ULTRAMAX cartridges can easily absorb atmospheric humidity and thus decrease their electrical insulation. Though this can be avoided with a short period of pre-heating, to solve once and for all the problems, ULTRAMAX cartridges must be sealed with resins or silicones when head temperature is below 260C with our patented SC 400 system when the temperature is over 260C. Sealing is indispensable, when the cartridge head might be exposed to washing, oil leaks, corrosive gases ect.



90C - CABLE OUTLETS

S8
ULTRAMAX WITH CABLES PROTECTED BY GALVANIZED FLEXIBLE TUBE.

S9
ULTRAMAX with cables protected by galvanized steel braid.

Dia.	6.5-1/4"	8-5/16"	10-3/8"	12-1/2"	16-5/8"	20-3/4"
L (mm)	7,5	8	10	12,5	16	20
D (mm)	18	20	23	27	30	36
T (mm)	6,7	7,5	8,5	10,5	12,5	13

S10
ULTRAMAX with flexible cables at 90° through a side opening.

Dia.	6.5-1/4"	8-5/16"	10-3/8"	12-1/2"	16-5/8"	20-3/4"
L (mm)	8	8	10	12	14	16

S11
ULTRAMAX with 90° bend, in copper.

Dia.	6.5-1/4"	8-5/16"	10-3/8"	12-1/2"	16-5/8"	20-3/4"
A (mm)	20	21,5	23	26	34	36
T (mm)	6,7	7,5	8,5	10,5	12,5	13

S12
ULTRAMAX WITH 90C - BENT BODY

ULTRAMAX cartridges can be built with curved cold sections. It is recommended to use them especially in 90C outlets into high temperature environments and for incorporation in fusions. Upon request the cold and hot zone of the elements can be manufactured with any length. Input cables can have S 8 or S 9 protection.

Dia.	6.5-1/4"	8-5/16"	10-3/8"	12-1/2"	16-5/8"	20-3/4"
R (mm)	12	12	13	20	25	30
M (mm)	50	60	60	70	80	95

S33
ULTRAMAX WITH 90C CUBIC-BLOCK HEAD.

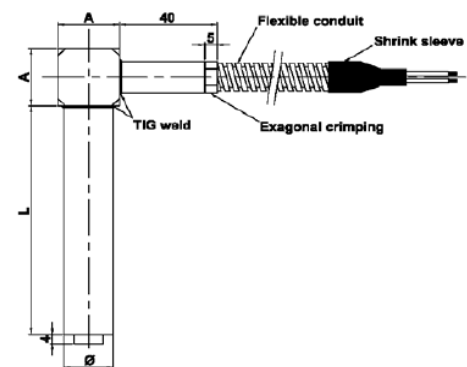
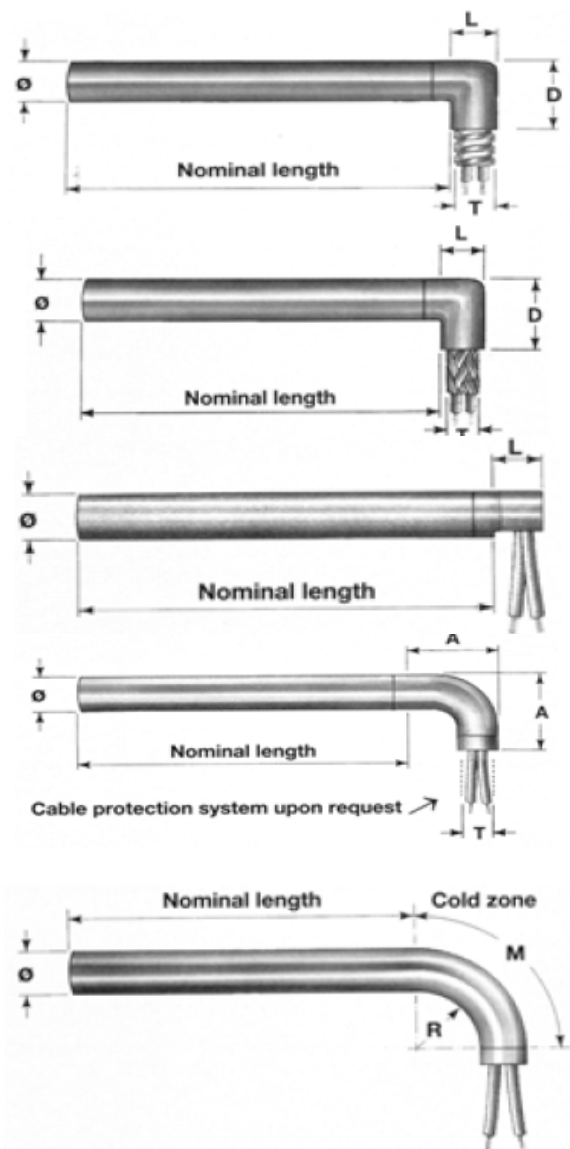
ULTRAMAX cartridges can be built with a cubic-block head for hammering during insertion, plus a reinforced bottom for hammering during extraction.

Diameter	10-3/8"	12-1/2"	16-5/8"	20-3/4"
A (mm)	12	14	18	25

Pins and Fast-Ons

S13
 ULTRAMAX cartridges with a diameter of 12,5 or more can have threaded end, with nuts and washers for electrical connections. This solution is useful for connecting two or more ULTRAMAX cartridges in parallel near one another.

S14
 ULTRAMAX cartridges with a diameter over 14 mm can be supplied with faston connectors, dolidly built into the cartridge head.

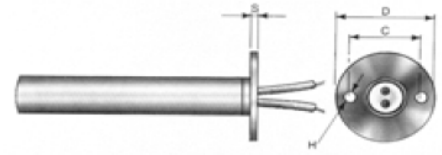


FLANGE MOUNTS

S15

ULTRAMAX WITH FLANGE

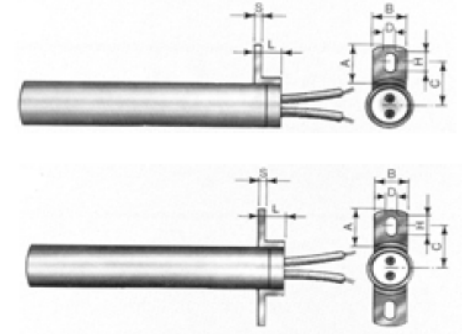
Cartridge Diameter	D	C	H	S
6.5-1/4" 8-5/16"	25	19	3,5	2
10-3/8" 12.5-1/2"				
6.5-1/4" 8-5/16"	35	28	4,5	2
10-3/8" 12.5-1/2"				
16-5/8" 20-3/4"				



S15

ULTRAMAX WITH ONE/TWO RIGHT-ANGLE FLANGES

Dia.	6.5-1/4"	8-5/16"	10-3/8"	12-1/2"	16-5/8"	20-3/4"
A	10	11	13	15	18	22
B	8,7	7	9	10	13	15
C	3,2	10	13	15,8	18	23
D	6	3,2	4,2	5,3	5,4	6,2
H	5,7	7	9	11	13,5	16,6
L	1	6	6,6	6,8	10,3	12
S	1	1	1	1	1,5	2



Feeding at both Ends

S18

ULTRAMAX WITH SMOOTH NICKEL PINS



S19

ULTRAMAX WITH THREADED PINS AND NUTS



S20

ULTRAMAX WITH FLEXIBLE CABLES

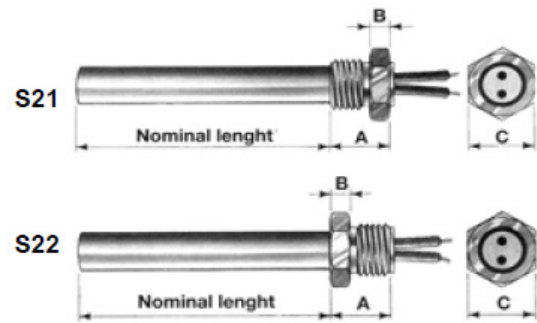


THREADED MOUNTS

S21 & 22

ULTRAMAX WITH WELDED STAINLESS-STEEL THREADED FITTING

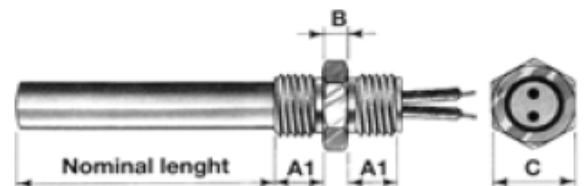
Any type of ULTRAMAX can be supplied with a threaded fitting in stainless steel as indicated on the tabel below. For any type of non-standard threaded cap, contact our Customer Service. These versions are particulrly suitable for heating liquids.



Diam.	6,5	8	10	12,5	16	20	1/4"	3/8"	1/2"	5/8"	3/4"
A1	7	8,5	10	11,5	14	18	7	10	11,5	14	18
B	4	4,5	5	5,5	6	7	4	5	5,5	6	7

S23

ULTRAMAX WITH WELDED STAINLESS-STEEL DOUBLE-THREAD CAP



Diam.	6,5	8	10	12,5	16	20	1/4"	3/8"	1/2"	5/8"	3/4"
A1	7	8,5	10	11,5	14	18	7	10	11,5	14	18
B	4	4,5	5	5,5	6	7	4	5	5,5	6	7

S24

ULTRAMAX WITH ANTI-EXPLOSION BOX (CENELEC STANDARDS)

ULTRAMAX cartridges can be mounted on commercial boxes for danger zones. EExd, IIC, T5, IP65. (Note: The resulting assembly is not certified).



S25

ULTRAMAX WITH THREADED CROWN

ULTRAMAX cartridges can be supplied with a threaded crown that helps the removal from their working seat. The threaded crown can be welded onto whichever end of the cartridge.



S26

ULTRAMAX WITH WATERPROOF CABLE CLAMP

ULTRAMAX cartridges can be supplied with multi-polar input cable and connections protected from squirts and contamination by waterproof cable clamp.



S27

ULTRAMAX WITH WATERPROOF HEAD SLEEVE

ULTRAMAX cartridges can be supplied with multi-polar input cable and connections protected from squirts and contamination by waterproof cable clamp.



S28

ULTRAMAX WITH BUILT-IN THERMOSTAT

These cartridge heaters with built-in thermostats are ideal solution when you need an extremely compact system for heating while also controlling the temperature. They are especially suitable for heating liquids and especially when you need an effective safety control against exceeding the maximum allowed temperature. The thermostat has a non-adjustable pre-setting.



S29

ULTRAMAX WITH CONTACTS FOR SLIDING ELECTRICAL SUPPLY

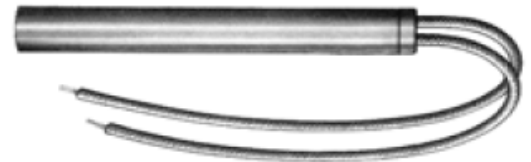
Optimum for rotating heating cylinders.



S30

ULTRAMAX WITH TEFLON BUSHING

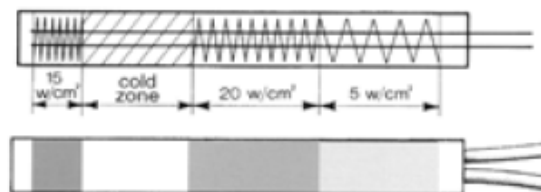
All ULTRAMAX cartridges can be supplied with head bushing in teflon instead of ceramic material. The teflon bushing offers moderate protection from humidity and excellent protection against mechanical shocks.



S31

ULTRAMAX WITH DIFFERENTIATED HEATING SECTIONS

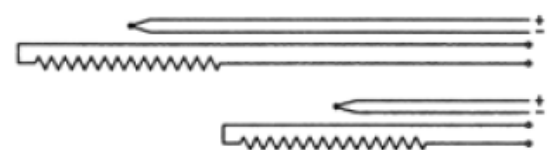
ULTRAMAX heaters can be supplied with differentiated wattage density heating sections and with cold sections.



S32

ULTRAMAX WITH SEPARATE TEMPERATURE CONTROL AREAS

ULTRAMAX heaters with individual temperature control areas that allow you to have a diversified temperature control on predetermined areas of the system to be heated. The areas can have constant or diversified wattage and length, with internal or external thermocouples. When you order, specify accurately the diameter, length, wattage and voltage, the position of the areas and the thermocouples. Our technical office will rapidly conduct a feasibility study.



HIGH-TEMPERATURE SEALING

SC 400 is a sealing against humidity, compatible with high temperatures.

The magnesium oxide in the core of all high-power density cartridges heaters is an excellent electrical insulator and a good heat conductor. However it has a high hygroscopic characteristic, therefore heaters that are not "turned on" and are in a humid environment tend to lower their level of insulation, which sometimes can cause safety devices to intervene at start-up. In the worst cases the heaters might get irreversibly damaged by short circuit.

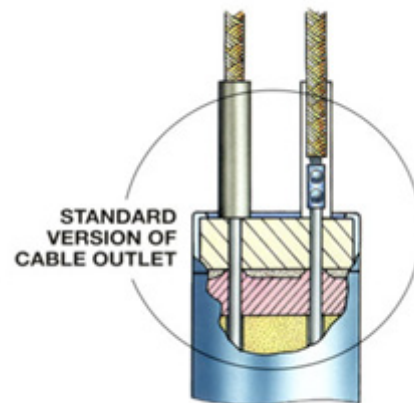
If the temperature of the heater's head does not exceed 260C, the head sealing can be made in resins or silicone. but for higher temperatures of higher safety ratios, other solutions are required.

Rotfil found and patented the solution to this problem: SC400 is a perfect sealant against humidity, irreversible. resistant to high pressures and continuous high temperatures of up to 400C.

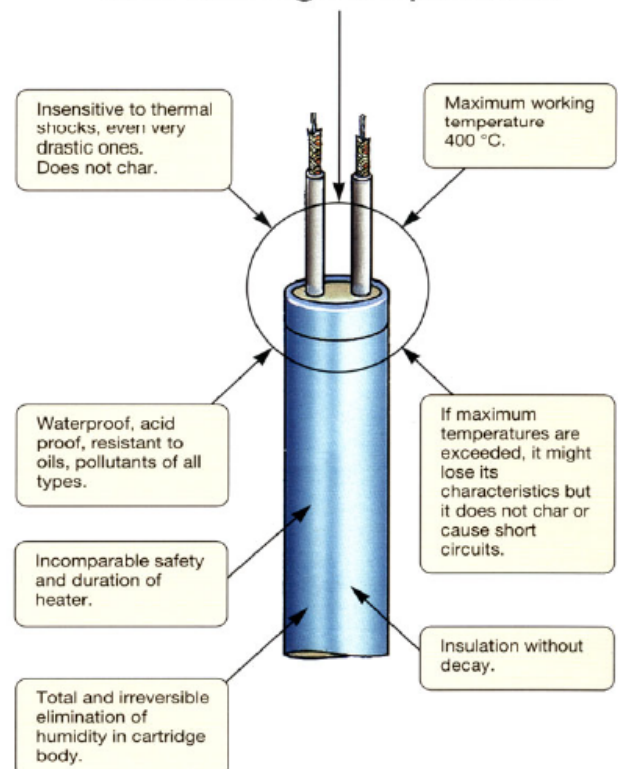
It does not change its structure or characteristics in the years, it is resistant to water, acids, air pollution, and does not char. It is not immersion proof.

SC400 is an inorganic compound that is fused into the heater's head in a controlled-cycle process, thus forming a cohesive seal adherent to the metal surface at molecular level. It totally protects all internal components from pollution and oxidation, increasing the life of the heater.

The use of ULTRAMAX SC400 cartridges is indispensable every time you need a high safety level and high reliability. Typical application fields include medical and surgical equipment, aerospace, nuclear-energy, military.



TOTALLY SEALED AGAINST HUMIDITY even with high temperatures



IPERMAX EXTRA-HIGH DENSITY CARTRIDGE HEATERS

IPERMAX extra-high density cartridge heaters are a product of Rotfil's research laboratories.

Developing an exclusive manufacturing technology, Rotfil technicians have standardised a production first intended for aerospace industry.

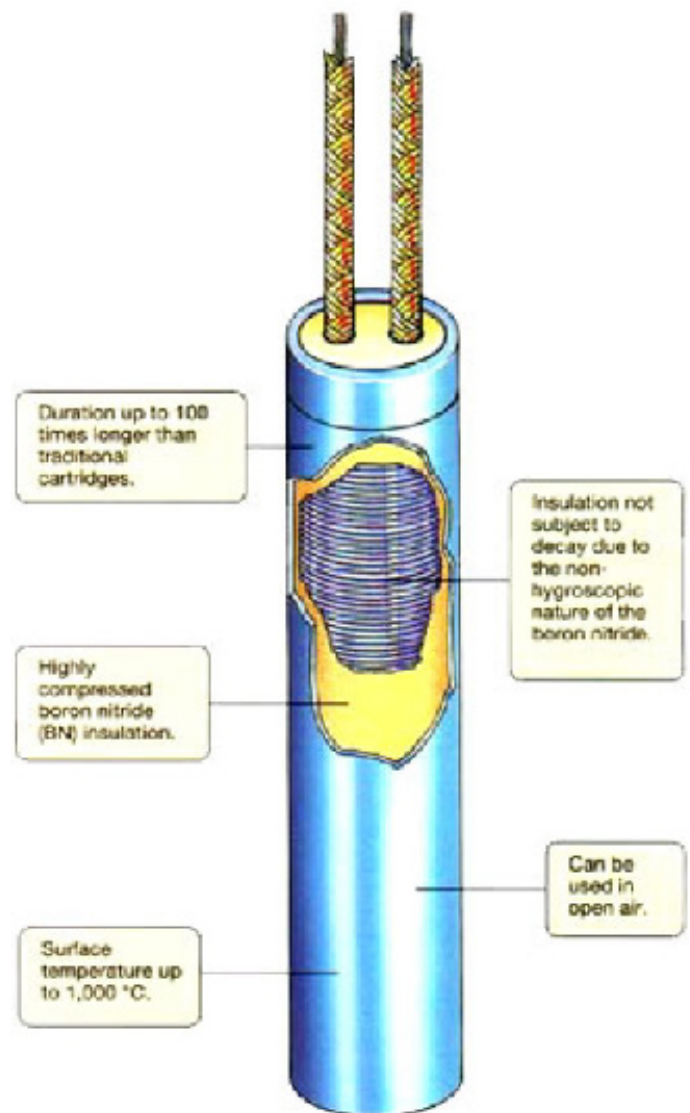
Such technology allows high compression ratios even on low-density insulating powders such as boron nitride (BN), obtaining a product similar to ULTRAMAX cartridges but much superior in performance.

IPERMAX cartridge heaters are the best heaters under all following aspects:

- High Watt density reached
- High insulation at high temperatures
- Same insulation values when cold
- Max. working temperature up to 1000C
- High thermal conductivity
- Maintenance of the electrical and mechanical characteristics throughout time
- Ability to work in open air
- Ability to work in spoiled seats or in seats with too big clearance
- Ability to work in heat-accumulating or low-dissipation environments
- Very long life duration

It is recommended to use these heaters not only when the work conditions required are incompatible with other types of heaters but also when there is the need to use an extremely reliable heater.

Particularly suitable for applications in the aerospace, medical, military industry, or in high-output fully-automated plants with high downtime costs. Due to its very special construction technology, IPERMAX cartridges are currently manufactured only in diameters: 12,5 - 14-16 mm. Ask our Customer Service for other sizes.





TRIDGE HEATERS

SUPERMAX cartridges are recommended wherever the performance of ULTRAMAX cartridges is not fully needed. In SUPERMAX construction, the same materials used in ULTRAMAX are used though manufacturing technology is simpler, due to lower watt density and therefore the whole process is more economical. SUPERMAX cartridges have one or more U-bent spirals in a cartridge core of compacted magnesium oxide, with the spirals nearer to the axis of the cartridge than in ULTRAMAX heaters, as heating power is lower and thermal conductivity of compacted magnesium oxide is highly sufficient to spread heat, therefore with total reliability and safety even in extreme work conditions.

Due to their simple constructions, SUPERMAX cartridges are perfect for being shaped in various ways for the application needed. They can have cold sections at ends, and/or with differentiated watt densities or independent circuits for separate sections. They are widely used in elements longer than 500 mm whenever watt density is kept below the value of 15 W/cm².

USAGE RECOMMENDATIONS

Efficiency and life of SUPERMAX heaters as for all electric heater, depend on proper use. When the purpose is to heat a metal object, the hole that is to house the cartridge shall be manufactured with the strictest possible tolerance and minimum clearance. The smallest the clearance, the higher the heat exchange, the lower the cartridge temperature and therefore the longer the life of the heater.

If holes are manufactured with a considerable clearance or a high watt density is used, or in any case in which the application is demanding, we advise one of the following:

- A higher number of heaters can be used, therefore with lower watt density and heat exchange
- A lower wattage can be used, while extending the heating up time
- A shorter life of the heaters can be accepted
- ULTRAMAX cartridges can be used instead of SUPERMAX cartridges.

APPLICATIONS

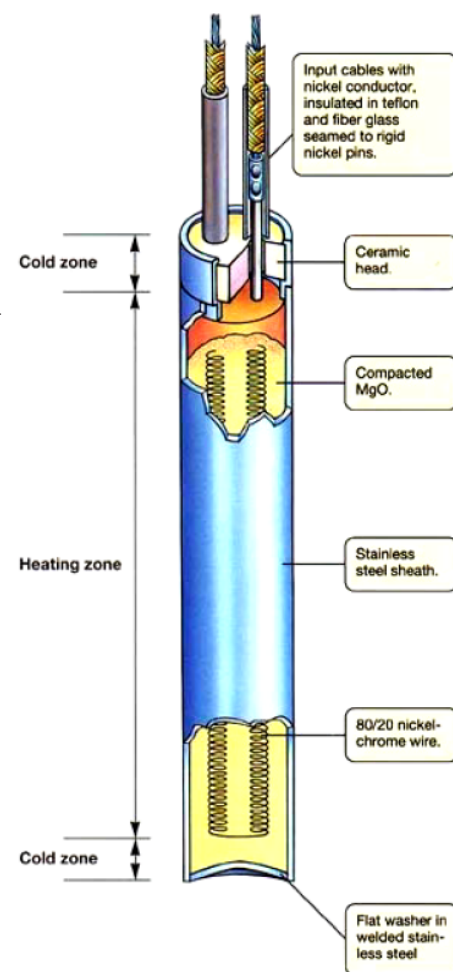
SUPERMAX heaters are normally used in practically any cartridge heating application, depending only on the watt density needed. Their most typical applications, though, are those in which a long element with medium watt density is required, and in particular in welding bars for thermoplastics, press plates, dryers, defrosters, etc. Also typical is the application in the heating of gases and liquids or of small metallic bodies, as well as in relatively progressive heating. They are used as single heaters, in batteries, and quite often with threaded mounting fittings.

SPECIAL FEATURES

As ULTRAMAX cartridges SUPERMAX cartridges can incorporate a variety of options that include built-in thermocouple, special cable protections and special outlets, in both shape and construction.

TECHNICAL DATA

Diameter	6.5 mm 1/4"	8 mm	10 mm 3/8"	12.5 mm 1/2"	16 mm 5/8"	20 mm 3/4"
Tolerance on Diameter (mm)	-0.05 -0.10	-0.08 -0.12	-0.08 -0.14	-0.10 -0.16	-0.10 -0.16	-0.12 -0.18
Maximum current (A)	8	10	15	20	25	30
Maximum Power/Length (W/cm)	20	20	30	40	50	55
Maximum Tension (V)	240	380	380	380	380	380
Minimum Length (mm)	150	150	150	200	200	300



NORMAX LOW DENSITY CARTRIDGE HEATERS

NORMAX heating cartridges are made of these elements: An 80/20 nickel-chrome, heating wire spiral, studied for the desired watt density, inserted in a ceramic insulator that resists well to temperature variations and bears good thermal conductivity, all contained in a gauged stainless steel tube.

The ceramic insulation consists in a mass of powder magnesium oxide, with a physical structure and particle dimensions that allow:

- Excellent density and compactness
- Perfect maintenance of the spiral's position, even when bent or at high temperatures
- Minimum oxidation
- Optimal heat transmission from the wire to the metal sheath

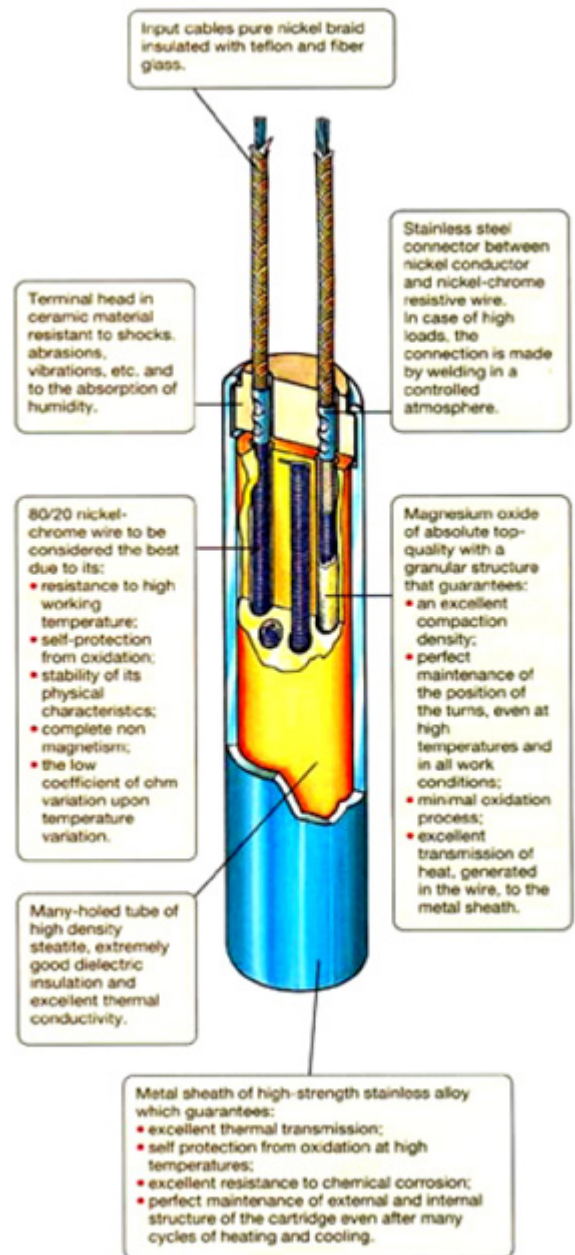
The heater is fed by pure nickel flexible cables, insulated with PTFE and fiberglass.

APPLICATION

NORMAX cartridges are generally used in practically any cartridge heating application, depending only on the watt density needed. Their most typical applications, though, are in presses for thermo-welding, dies for footwear, refrigerators, air conditioners, food-processing machinery, packaging machinery, household appliances. Also typical is the application in the heating of gases, liquids or small metallic bodies, as well as in relatively progressive heating. Very used is also the waterproof version for water heating radiators.

SPECIAL FEATURES

As ULTRAMAX cartridges, NORMAX cartridges can incorporate a variety of options that include built-in thermocouple, special cable protections and special outlets, in both shape and construction (connectors, flanges, threaded fittings, with flexible, rigid, bent, liquid-proof cable outlets).



TECHNICAL DATA

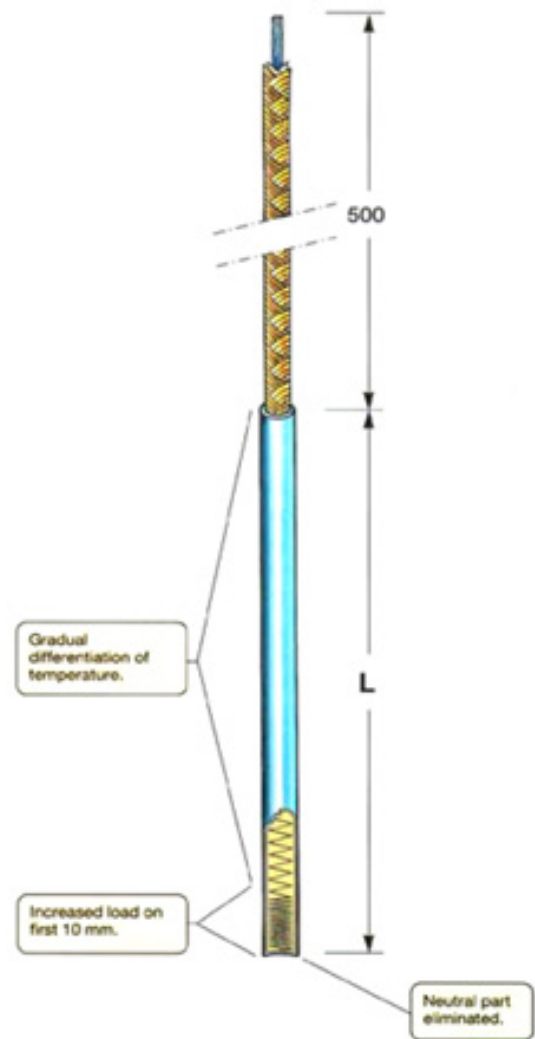
Diameter	9.5 mm	12 mm	14 mm	17 mm	20 mm	24 mm	30 mm
	10 mm	12.5 mm	15 mm	18 mm	22 mm	25 mm	32 mm
	1 mm	12.7 mm	15.8 mm	19 mm	7/8"	27 mm	36 mm
	3/8"	13 mm	16 mm	11/16"	1"		
		1/2"	9/16"	3/4"			
			5/8"				
Maximum current (A)	10	12.5	15	20	25	27	30
Maximum Power/Length (W/cm)	12	24	30	34	40	47	60
Maximum Tension (V)	240	240	380	380	380	415	415
Minimum Length (mm)	40	40	40	50	60	60	80

MICROMAX LOW VOLTAGE CARTRIDGE HEATERS

MICROMAX cartridge heaters are exclusively designed for low-voltage supply (48 V or less). One of the two poles of the resistance wire is welded to the metal sheath, therefore supply voltage is fed to the ground and to the insulated cable.

MICROMAX heater applications include use in vehicles (industrial vehicles, caravans, boats, ect.) as well as in the heating of injection nozzles for plastics, at a supply voltage of 24 V, due to their being easy to install, small and resistant.

Please check MICROMAX standard sizes and technical data. Some of the most important features include increased watt density at the cartridge bottom (unlike other cartridge models that have a cold length), gradually decreasing watt density on the cartridge toward the cable outlet, perfect repeatability controlled and guaranteed on each single part produced.



TECHNICAL DATA

Ø (mm)	L (mm)	Power (W)	Tension (V)	Catalogue No.
4.5	40	60	24	4454060
		80	24	4454080
		100	24	44540100
	50	80	24	4455080
		100	24	44550100
	60	80	24	4456080
		100	24	44560100
	70	80	24	4457080
		100	24	44570100
	80	80	24	4458080
		100	24	44580100
		150	24	44580150
	100	100	24	445100100
		150	24	445100150
130	150	24	445130150	
	180	24	445130180	

AUTOMAX SELF-LIMITING PTC CARTRIDGE HEATERS

PTC elements are electronic components made of a polycrystalline ceramic material with a barium titanate base, suitable doped according to the desired work characteristics.

Its peculiar property is instantly rising its resistance in a logarithmic ratio when temperature rises. This process, practically instantaneous, reaches stability at a certain temperature (Curie point). At such temperature the only energy absorbed is the one needed to keep the PTC element's temperature constant.

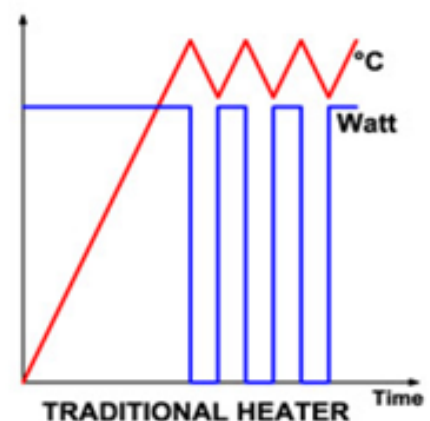
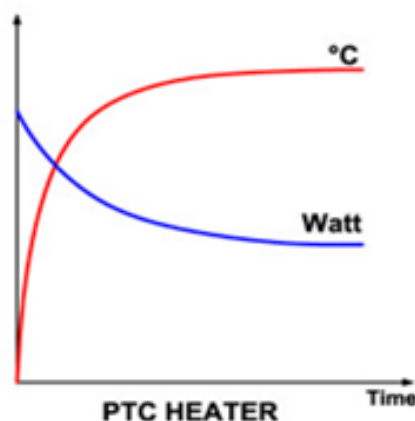
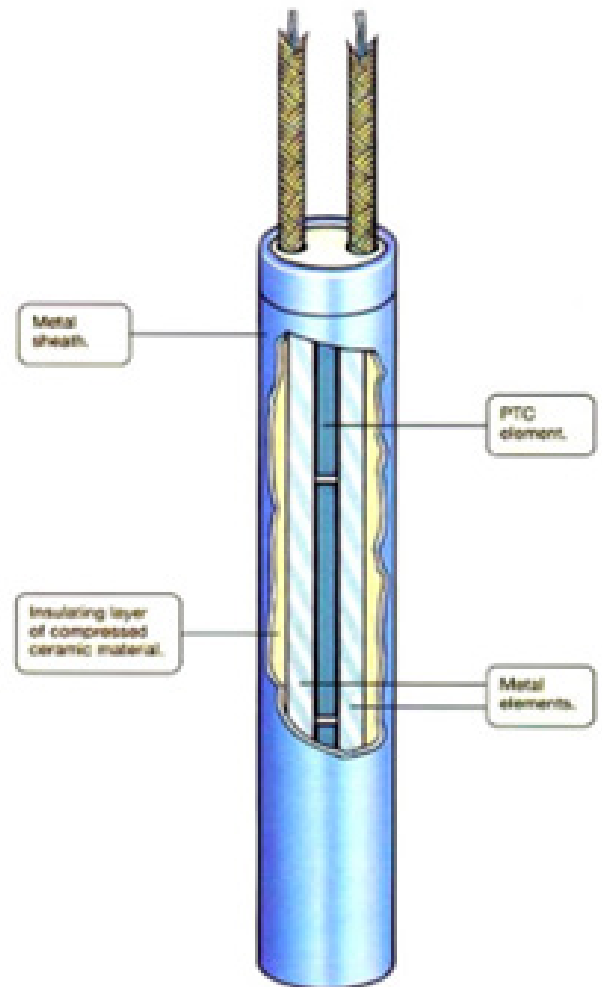
Therefore a rather high energy absorption will occur initially, that will then decrease depending, after a while, only on the dissipation coefficient. PTC is indeed the acronym of "Positive Temperature Coefficient".

AUTOMAX cartridges incorporate PTC elements, thus cannot be classified with a fixed wattage absorption. Their most significant measurable feature is instead the temperature that the heater's sheath reaches when the cartridge is powered at the specified voltage and placed in open air at ambient temperature.

In AUTOMAX cartridges PTC lend their properties to the whole heater according to a technology exclusively developed by Rotfil's technicians. This involves irreversibly compressing the electrodes on the entire surface of both input faces. This avoids a decrease of the efficiency due to oxidation, mechanical shocks, vibrations, ect. Insulation between electrodes and external sheath is given by a ceramic tube with high thermic conductivity, also compressed to provide maximum efficiency in heat transfer.

The main advantages of AUTOMAX heaters' performances are therefore:

- Self-regulation
- Safety
- Energy saving
- Quick heating





ELVARME



VORES PRODUKTSORTIMENT INKLUDERER:



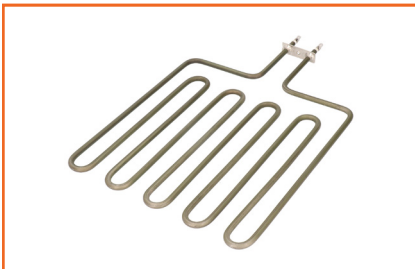
FORDAMPBAKKE VARMEPATRONER



ELPATRONER



MODSTANDSFØLERE



RØRVARMELEGEMER



SPIRAL HEATERS

VI FØRER PRODUKTER INDENFOR KATEGORIERNE:



AUTOMATIK



**HVAC & BYGNINGS-
AUTOMATIK**



KØLEPROFILER



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