

# New Optimised Phase Control Thyristors

IUK-TSM-2014-006

Issue 2 June 2014

**As part of its ongoing program of optimising performance, increasing current ratings and reducing material content, IXYS UK presents its most recent introductions of optimised, high power phase control thyristors.**

These thyristors are constructed using an all diffused silicon slice, fused to a metal disc. The thermal capacity of the metal disc and its direct fusion to the silicon slice enhances performance, presenting excellent transient thermal characteristics and higher surge current ratings.

Each part features a new package design while retaining industry standard footprints, allowing for maximum silicon to package ratio giving a higher current density over older designs in similar package outlines.

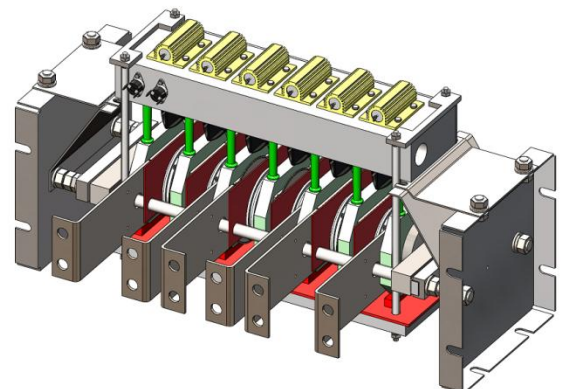
## Features & Benefits

- High average current ratings
- Lower thermal resistance
- Double side cooling
- Higher surge current ratings
- Enhanced mechanical design incorporating alloying technology
- Industry standard, fully hermetic packages



## Applications

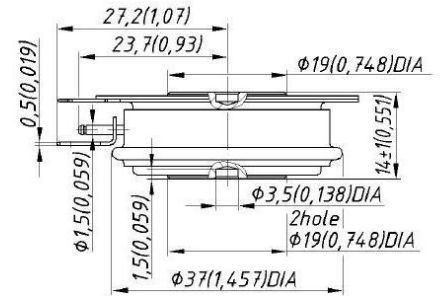
- Industrial Drives
- Wind Power Converters
- Soft Starters
- Excitation
- Utilities
- Controlled Rectifiers
- UPS Systems
- DC Drives



## N0465WNxx0

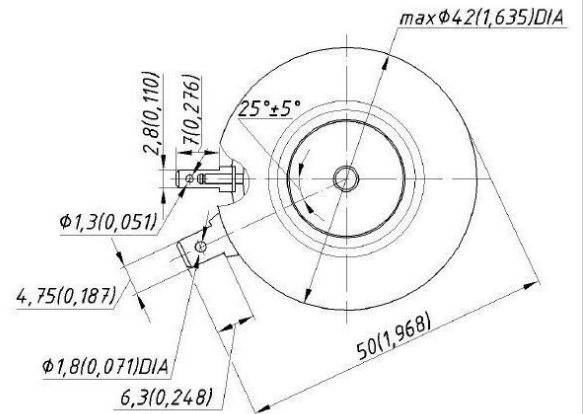
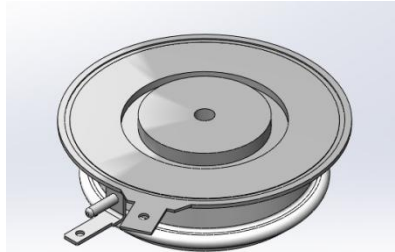
Available in two voltage ratings, 1400V and 1600V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$ V	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$ A	A	10ms ½ sine $V_R \leq 60\% V_{RRM}$ $A^2s$	@ $T_{JM}$ V	mΩ	180° Sine K/W
N0465WN140	1400	465	4500	$101 \times 10^3$	0.9	0.85	0.08
N0465WN160	1600						



19mm electrode diameter

$T_{JM} = 125^\circ C$



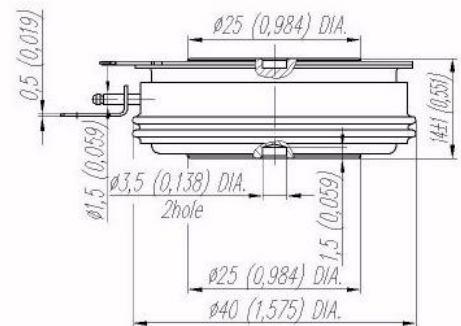
## N0530YNxx0 & N0795YNxx0

Both devices available in two voltage ratings.

N0530YNxx0 - 2200V and 2500V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

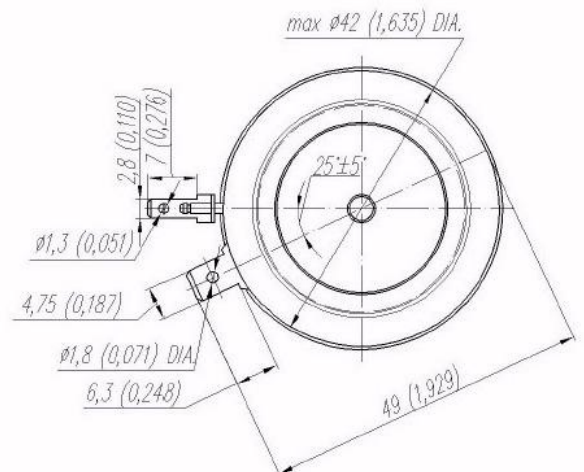
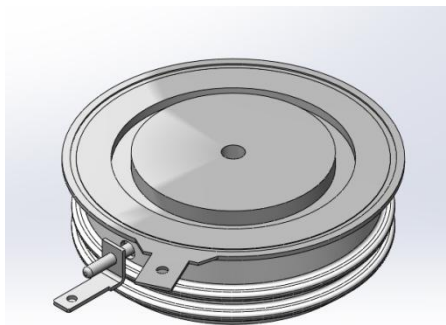
N0795YNxx0 - 1400V and 1800V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$ V	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$ A	A	10ms ½ sine $V_R \leq 60\% V_{RRM}$ $A^2s$	@ $T_{JM}$ V	mΩ	180° Sine K/W
N0530YN220	2200	530	6300	$198 \times 10^3$	1.1	1.25	0.048
N0530YN250	2500						
N0795YN140	1400	795	9450	$444 \times 10^3$	0.95	0.45	0.048
N0795YN180	1800						



25mm electrode diameter

$T_{JM} = 125^\circ C$

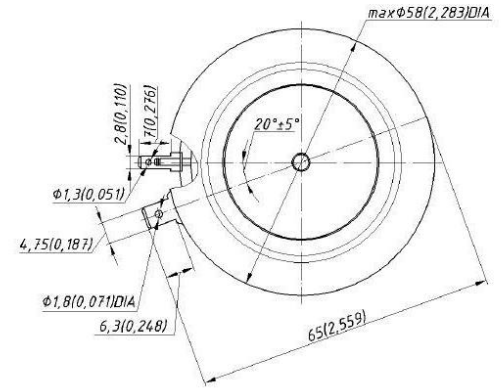
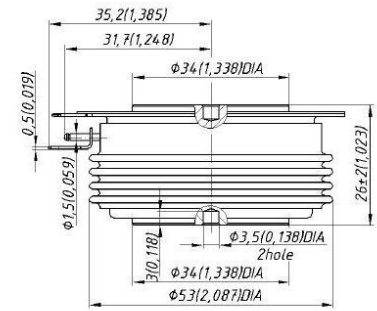
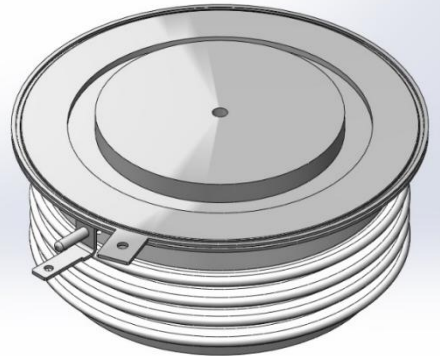


## N1075LN180 & N1140LN140

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	A	A <sup>2</sup> s	V	mΩ	K/W
N1075LN180	1800	1240	15750	$1.24 \times 10^6$	0.85	0.32	0.033
N1140LN140	1400	1315	17500	$1.53 \times 10^6$	0.82	0.28	0.033

34mm electrode diameter

$T_{JM} = 130^\circ C$



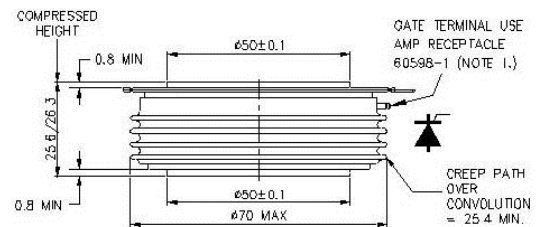
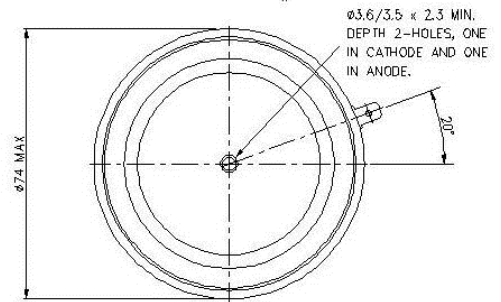
## N2055MCxx0

Available in three voltage ratings, 1800V, 2200V and 2800V (xx =  $V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N2055MC180	1800	2055	21.8	$2.38 \times 10^6$	1.00	0.25	0.015
N2055MC220	2200						
N2055MC280	2800						

50mm electrode diameter

$T_{JM} = 125^\circ C$



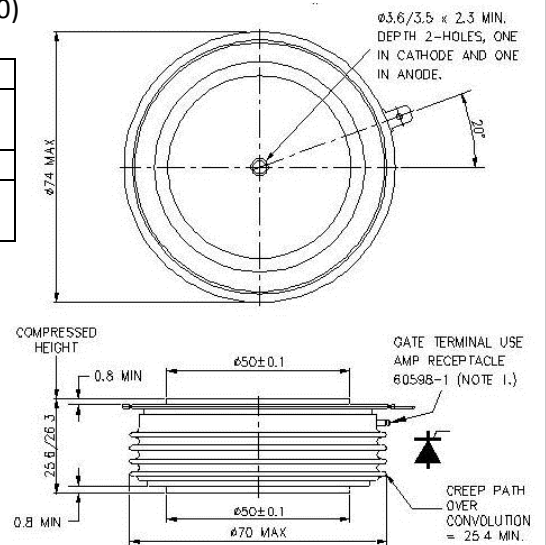
## N2600MCxx0

Available in two voltage ratings, 1600V and 1800V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N2600MC160	1600	2600	30	$4.5 \times 10^6$	0.95	0.13	0.015
N2600MC180	1800						

50mm electrode diameter

$T_{JM} = 125^\circ C$



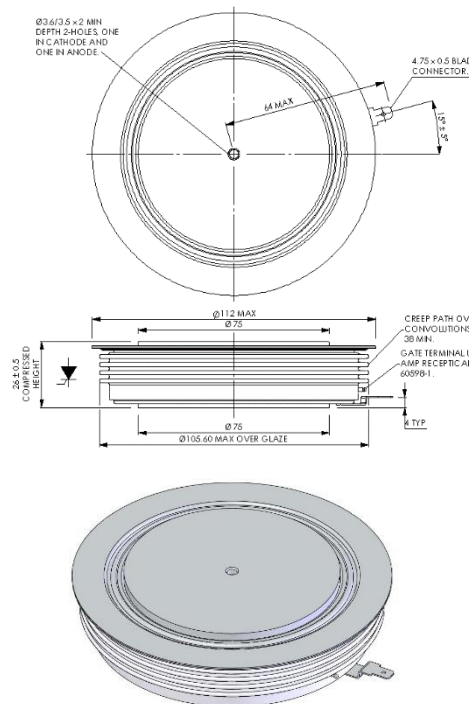
## N2825T#xx0

Available in two voltage ratings, 4000V and 4500V ( $xx = V_{RRM}/V_{DRM} \div 100$ ) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

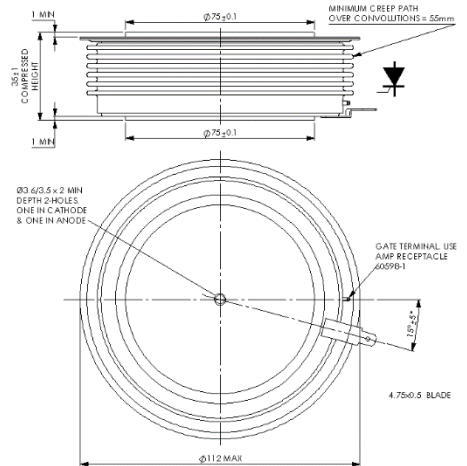
Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N2825TJ400	4000	2825	36.9	$6.81 \times 10^6$	1.21	0.27	0.008
N2825TJ450	4500						
N2825TE400	4000						
N2825TE450	4500						

75mm electrode diameter

$T_{JM} = 125^\circ C$



TJ Housing

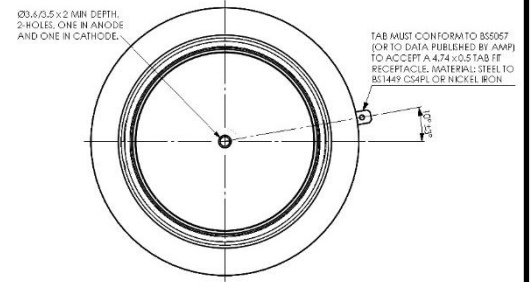


TE Housing

## N3175HExx0

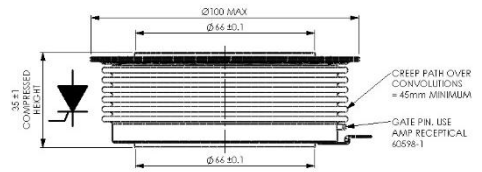
Available in two voltage ratings, 1600V and 1800V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N3175HE160	1600	3175	45.5	$1.07 \times 10^7$	0.90	0.11	0.0125
N3175HE180	1800						



66mm electrode diameter

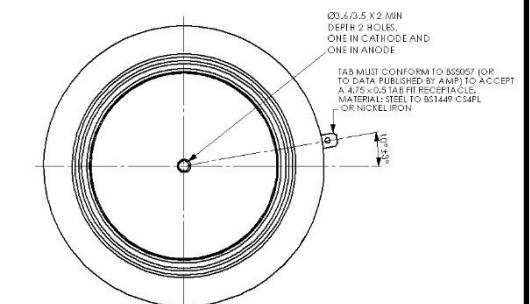
$T_{JM} = 125^\circ C$



## N3565HAxx0

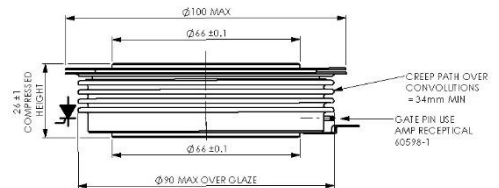
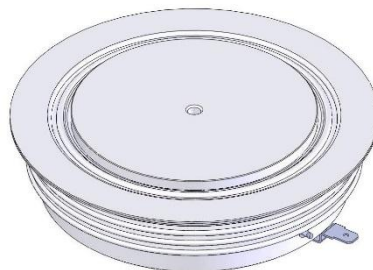
Available in two voltage ratings, 1600V and 1800V ( $xx = V_{RRM}/V_{DRM} \div 100$ )

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N3565HA160	1600	3565	45.5	$1.07 \times 10^7$	0.90	0.11	0.0105
N3565HA180	1800						



66mm electrode diameter

$T_{JM} = 125^\circ C$



## N3790T#xx0

Available in two voltage ratings, 2400V and 2800V ( $xx = V_{RRM}/V_{DRM} \div 100$ ) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N3790TJ240	2400	3790	49.5	$12.3 \times 10^6$	0.90	0.15	0.008
N3790TJ280	2800						
N3790TE240	2400						
N3790TE280	2800						

75mm electrode diameter

$T_{JM} = 125^\circ C$

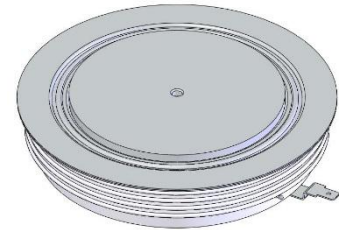
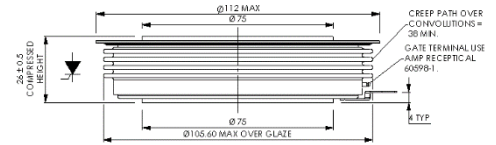
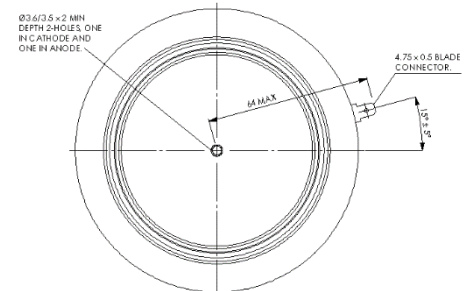
## N4340T#xx0

Available in two voltage ratings, 1800V and 2200V ( $xx = V_{RRM}/V_{DRM} \div 100$ ) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

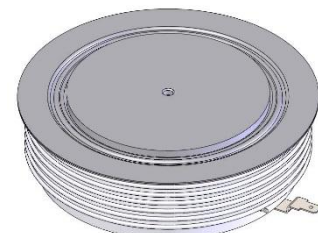
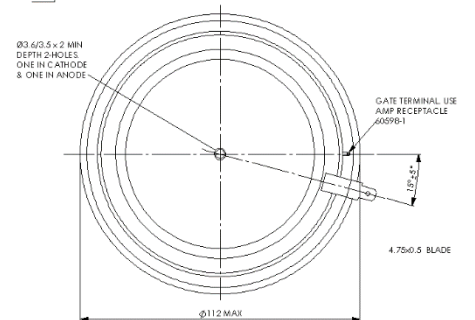
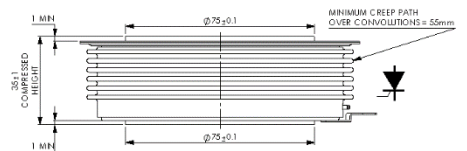
Part Number	$V_{DRM}/V_{RRM}$	$I_{TAV}$	$I_{TSM}$	$I^2t$	$V_{TO}$	$r_T$	$R_{thJC}$
		$T_K = 55^\circ C$	10ms ½ sine $V_R \leq 60\% V_{RRM}$		@ $T_{JM}$		180° Sine
	V	A	kA	A <sup>2</sup> s	V	mΩ	K/W
N4340TJ180	1800	4340	55.0	$15.1 \times 10^6$	0.886	0.105	0.008
N4340TJ220	2200						
N4340TE180	1800						
N4340TE220	2200						

75mm electrode diameter

$T_{JM} = 125^\circ C$



TJ Housing



TE Housing



## Supporting Components

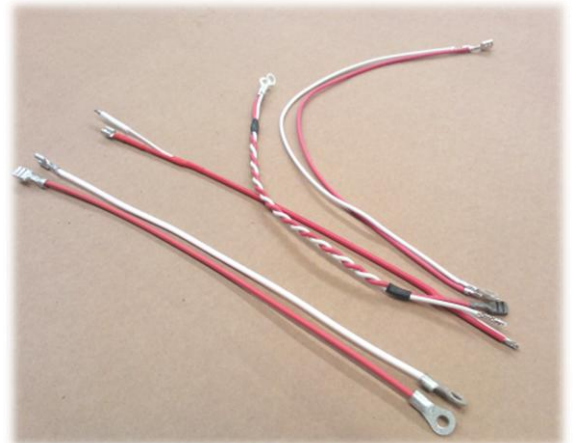
As part of our continuing commitment to meet our customers' demands, IXYS UK offers a range of complimentary products to support our high power semiconductor devices

All supporting components are designed to match our extensive range of devices in order to achieve maximum performance capability.

These quality products are available to help reduce vendor count and offer a one-stop supplier for all your power semiconductor needs

### Products available:

- Bar Clamps
- Standard Base Clamp Assemblies
- Box Clamps
- Coolers
- Heatsinks
- Insulator Capsules
- PTFE Tubing
- Leads
- Mounting Grease

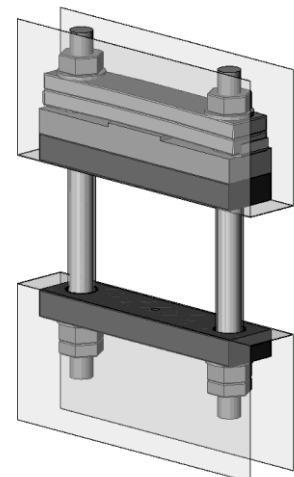
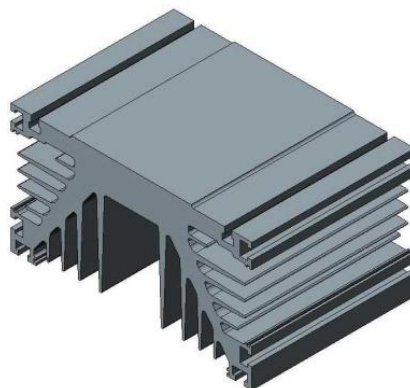
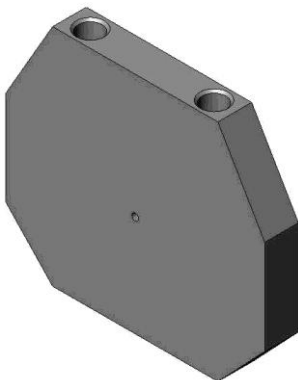
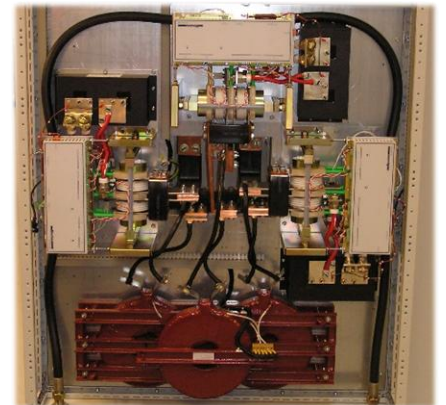


Standard gate leads

IXYS UK can also provide snubber and power capacitors, ultra rapid semiconductor protection fuses, trigger circuits, gate drives and a host of other accessories to supply customers with a complete total solution. Please consult factory or visit our website, [www.ixysuk.com](http://www.ixysuk.com), for more information

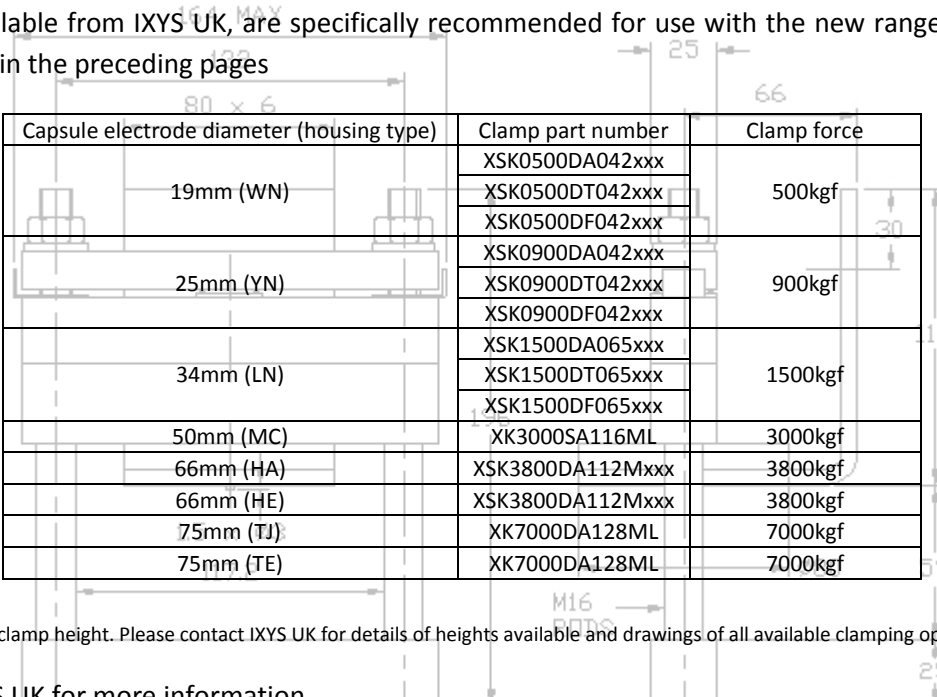


IXYS UK's range of clamps and accessories are used worldwide with the array of semiconductor devices we can offer in applications such as rectification, energy generation, industrial drives, excitation and many more



## Supporting Components – Bar Clamps

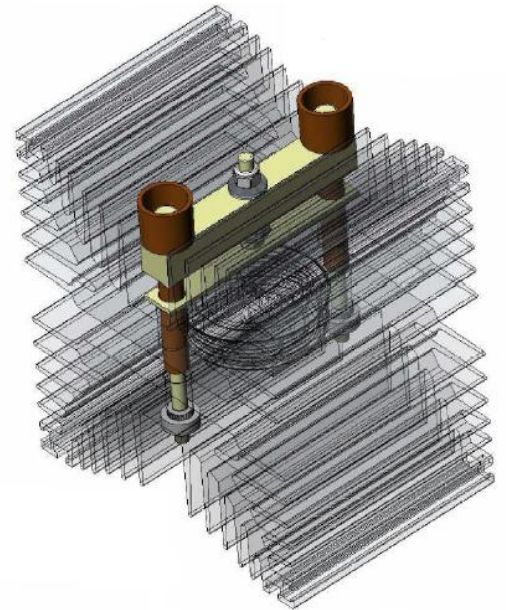
These clamps, available from IXYS UK, are specifically recommended for use with the new range of phase control thyristors detailed in the preceding pages



Capsule electrode diameter (housing type)	Clamp part number	Clamp force
19mm (WN)	XSK0500DA042xxx	500kgf
	XSK0500DT042xxx	
	XSK0500DF042xxx	
25mm (YN)	XSK0900DA042xxx	900kgf
	XSK0900DT042xxx	
	XSK0900DF042xxx	
34mm (LN)	XSK1500DA065xxx	1500kgf
	XSK1500DT065xxx	
	XSK1500DF065xxx	
50mm (MC)	XK3000SA116ML	3000kgf
66mm (HA)	XSK3800DA112Mxxx	3800kgf
66mm (HE)	XSK3800DA112Mxxx	3800kgf
75mm (TJ)	XK7000DA128ML	7000kgf
75mm (TE)	XK7000DA128ML	7000kgf

xxx – Indicates maximum clamp height. Please contact IXYS UK for details of heights available and drawings of all available clamping options

Please contact IXYS UK for more information



IXYS UK Westcode Ltd's BS EN ISO9001 quality system is registered by BSI



Langley Park Way  
 Chippenham, SN15 1GE  
 United Kingdom  
 Tel: +44 (0)1249 444524  
 Fax: +44 (0)1249 659448  
 E-mail: sales@ixysuk.net



Edisonstr. 15  
 D-68623 Lampertheim  
 Germany  
 Tel: +49 (0) 6206 503-0  
 Fax: +44 (0) 6206 503627  
 E-mail: marcom@ixys.de

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