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# ***Introduction 1***

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***The heart of your Transformer is the core of our Business***

**We offer quality components at competitive prices  
with the backup of a highly motivated production  
and sales team.**

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## INTRODUCTION

ALLOY MAGNETIC CORES (Pty) Ltd (AMC) specialises in the manufacture and supply of high quality strip wound and folded magnetic cores using Grain Oriented Silicon Steel (GOSS) and Non Oriented Silicon Steel (NOSS) to suit a wide variety of applications.

AMC has been a manufacturer of strip-wound transformer cores (C Cores and E Cores) since 1970, E and I Laminations since 1986, mitred cores since 1992 and Jencores (Unicores) since 1999.

Mitre Core Technologies (MCT) specializes in the manufacture and supply of Mitred Cores built to customers' requirements ranging from 5kVA to 80MVA.

The first slitting line was installed and operational in May 2001. This slitting line was specifically used for the slitting of GOSS in sizes ranging from 10mm to 600mm. The Reusch Slitting line was installed in 2011, allowing us to import mother coils slit to specific customer requirements. The first Mitring Machine was purchased in 2006 allowing for the precision cutting of laminations for Mitred Cores and in 2014, the Amorphous Plant was purchased.

In addition to this, AMC offers a wide range of accessories that include

- Core clamps
- Box frames
- Saddle clamps
- Angle brackets
- Terminal holder brackets
- Terminals
- A very wide range of bobbins
- Nylon insulation washers

## GOSS

Since it is mandatory, because of the grain orientation of the steel, to apply the exciting field in parallel with the strip, the shapes best suited for magnetic cores are circular or rectangular toroids. Because of their construction, Jencores (Unicores) offer the same advantages as toroidal cores (see Graph: Flux Density vs. Ampere Turns on page 8). That is why Jencores (Unicores) are the preferred cores used by many transformer manufacturers today.

The benefits of Jencores (Unicores) are:

- Flexibility of design
- Unrestricted core size
- Smaller and lighter
- Lower watt loss
- Lower exciting current
- Better regulation
- Less winding time needed
- Quicker to assemble
- Major cost savings

## NOSS

The non-orientation of the grain in this type of steel allows the exciting field to be applied to the strip in any direction. Cores made from this type of steel offer numerous advantages over laminated cores, viz:

- Reduced price.
- Reduced assembly time.
- Reduced handling and storage costs.
- Best in applications that do not require high electrical qualities.
- Since these cores are all annealed, they run at higher operating flux density than laminations.

AMC has introduced a product that is widely used by transformer manufacturers viz. stamped laminations using NOSS. These laminations in turn have the following advantages:

- Economy.
- Low noise level.
- Ease of assembly.
- Variation in stack gives choice of V.A. for one lamination type.
- Choice of annealing.

## General Information 2

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## MATERIAL

All our material is slit in-house and therefore any strip width is available on request.

## GOSS

Cores manufactured by AMC are made from Cold Rolled Grain Oriented Silicon Steels (GOSS). These steels, which possess a very high degree of magnetic grain orientation, are available in various grades. Our Standard Grades (SG) are made up of M5 and M4 material; our Higher Grades (HG) are made up of MOH material and our Super Higher Grades (SHG) are made up of 23H75 and 23H85 material. The specific magnetic steels are selected according to electrical and mechanical properties to ensure suitability for the particular core to be manufactured. These cores have superior magnetic qualities because the exciting field is in parallel with the GOSS strip used.

Grade	Thickness (mm)	Density (g/cm <sup>2</sup> )	Max Core Loss at 50Hz (watt/kg)		Min Induction at 800A/m
			1.5T	1.7T	
23H75	0,23	7,65	0,52	0,75	1,88
23H85	0,23	7,65	0,59	0,85	1,88
23H90	0,23	7,65	0,64	0,92	1,88
MOH	0,27	7,65	0,77	1,05	1,88
M4	0,27	7,65	0,90	1,28	1,85
M5	0,30	7,65	0,97	1,39	1,80
M6	0,35	7,65	1,11	1,57	1,80

**NOTE:** The values given are typical values drawn from specifications issued by the Electrical Steel Manufacturers. Preferred strip widths are in increments of 10mm, starting at 10mm. The Stack Factor for 0.3 GOSS is 0.95 to 0.97.

## NOSS

In addition to the grain-oriented steels, AMC offers a range of economy cores and laminations manufactured from Non-Oriented Silicon Steels (NOSS), which possess only a slight degree of magnetic grain orientation. These steels are available in various grades, viz: 50H310, 50H470, etc.

Grade	Thickness (mm)	Density (g/cm <sup>2</sup> )	Max Core Loss at 50Hz (watt/kg)		Min Induction at 800A/m
			1.0T	1.5T	
35H210	0,35	7,65	0,90	2,10	1,62
50H290	0,50	7,65	1,15	2,90	1,62
50H350	0,50	7,65	1,50	3,50	1,62
50H470	0,50	7,65	2,00	4,70	1,64
50H530	0,50	7,65	2,30	5,30	1,65
50H600	0,50	7,65	2,60	6,00	1,66

**NOTE:** The values given are typical values drawn from specifications issued by the Electrical Steel Manufacturers. The stack factor for 0.5 NOSS is 0.95.

## STEEL ACCESSORIES

Steel accessories available are

- End frames
- Angle brackets
- Terminal holder brackets
- Saddle clamps

These are suitable for all our C and E wound cores, -s and E I Laminations. Details are available in this brochure.

## POWER RATINGS

The VA ratings quoted in the tables of standard cores, serve only as guides in determining the size of core required in a particular transformer design since there are many factors to be considered, viz:

1. Increase in temperature.
2. Frequency of supply.
3. Voltage regulation.
4. Voltage of individual windings.
5. The number of separate windings.
6. Air cooled or Oil cooled.

## PLASTIC ACCESSORIES

Plastic accessories available are

- Loose lead bobbins in nylon
- UI and 3UI Lamination bobbins
- PCB Transformer bobbins
- Nylon Bobbins with Terminals
- Flat pack transformer bobbins
- Terminals
- Housings
- Locating nylon washers

These are suitable for our range of E I Laminations, Jencores (Unicores), C and E wound cores.

## NON-STANDARD CORES

In addition to the considerable range of standard cores manufactured, AMC is able to manufacture magnetic cores to user specifications. When ordering these cores, please give us the dimensions in the following manner:

- A = Strip width.
- B = Build up.
- C = Window width.
- D = Window height.
- E = Single phase to 3 phase.

**AMC**

# Jencores 3 (Unicores)

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A Revolution in Transformer Design and Manufacture

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In 1997, a new concept was developed by AEM Cores (Pty) Ltd, using a mixture of the old Distributed Gap Core, C cores and stamped laminations. This new development was a radical departure from all of the traditional methods used before. This innovative concept allows complete freedom in transformer design because unrestricted core sizes are available. We have called this core a "Jencore" after the name of the founder, Mr. Jenkinson.

The Jencore (Unicore) offers advantages in technical performance that can be translated into economic benefits.

### Benefits Of The Jencore (Unicores)

- Flexibility of design
- Unrestricted core size
- Smaller and lighter
- Lower watt loss
- Lower exciting current
- Better regulation
- Less winding time needed
- Quicker to assemble
- Major cost savings

### Superior Performance

The performance of the Jencore (Unicore) is such that full retention of the magnetic properties of the parent material is possible.

This is because:

- the exciting field is in parallel with the strip
- the Distributed Gap Jencore (Unicore) effectively has no gaps.
- the steel suffers no more degradation after annealing.

The performance of this core allows the designer to run his transformer at peak "revs" i.e. at 1.8 Tesla. However, 1.7 Tesla is preferred for normal design with over-voltage requirements.

Typically, a Jencore (Unicore) in M5 material will have a loss of 1.24 W / kg at 1.7 Tesla 50Hz or 0.73 W / lb. at 1.7 Tesla 60Hz.

In other words, the graphs given by the steel manufacturers can be used for the results obtained by an annealed Jencore (Unicore).

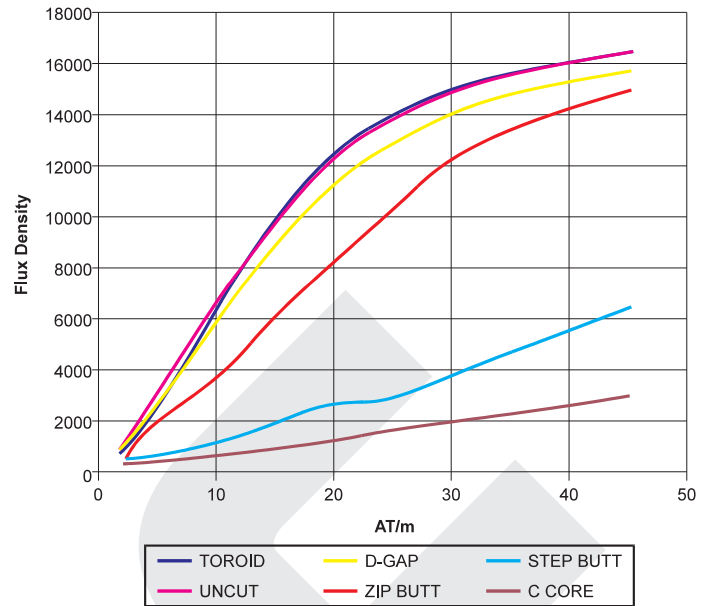
Flux Density vs Watt Loss at 50Hz

Tesla	W/kg Annealed
1.5	0.8
1.6	0.99
1.7	1.18
1.8	1.5
1.9	2.22

**NOTE:** Material used was an M5 grade with the test certificate reading 1.20W17/50.

In certain cases, where annealing is too costly or unobtainable, one can design without it. By adding 10% more cross-section to this Jencore (Unicore), one can achieve the same results as that of the annealed core.

Flux Density v AT/m



This graph shows the comparisons between various Jencore (Unicore) styles and conventional C Cores and Toroids. A series of cores of identical mean magnetic path length were produced under controlled conditions from the same coil.

- Uncut Jencores (Unicores) overlay conventional Toroidal cores.
- Distributed Gap Jencores (Unicores) are very close to Toroidal cores in characteristics.
- Zip Butt Jencores (Unicores) are better than Step Butt Jencores (Unicores) and conventional C Cores in characteristics.

Therefore, the Jencore (Unicore) is the most efficient core available today and offers users very high-energy savings at a low price. This makes the Jencore (Unicore) ideal for Distribution Transformers, Solar Inverters and Uninterruptable Power Supplies.

### Design Parameters

The most economical dimensions for a Jencore (Unicore) are similar to Scrapless Laminations. Where the Scrapless Lamination has physical ratios of 3:2:1 (3 = Window Length, 2 = Tongue Width, 1 = Window Width), the Jencore (Unicore) is most economical at a 3:1:3 ratio, which is essentially the same.

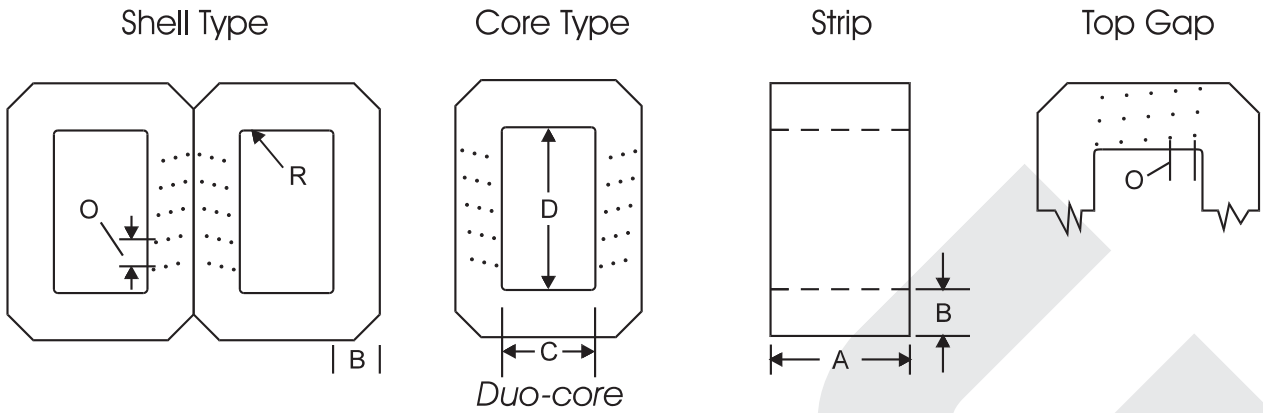
To understand these ratios, it is necessary to visualise the Scrapless Lamination cut longitudinally down the centre tongue. This will give two rectangular cores similar to a C Core. The ratio would be 3:1 (3 = Window Length, 1 = Window Width and Leg Width or Build-up in a C Core). The only dimension missing is the Lamination stack (or strip width in a C Core), which is variable. If the stack is fixed to the most economical size, we get a third dimension to our ratio.

When considering the most economical strip width for producing a Jencore (Unicore), we find that it should equal the window length, hence 3:1:3. This ratio makes an economical transformer of near-cubic shape with high core mass (low loss / kg) and low copper mass (high loss / kg). The low-loss core acts as a heat sink for the heat generated in the copper and there is a large core surface exposed to the copper with short transfer paths.

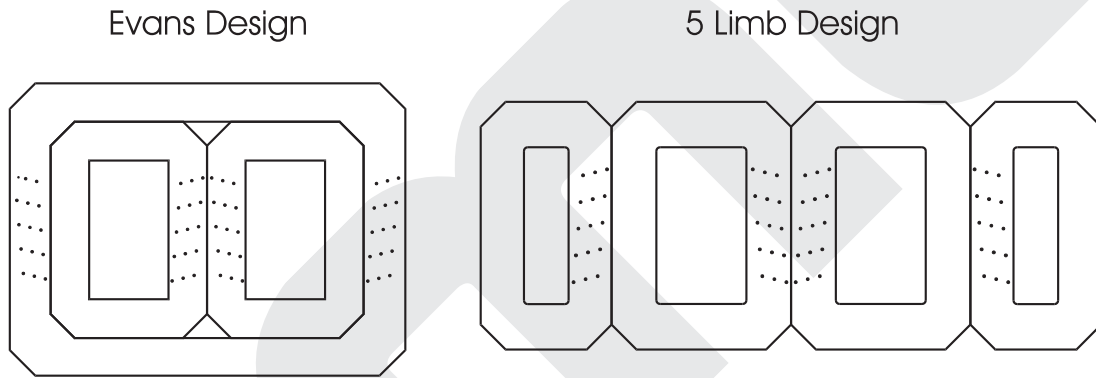
Note that the Jencore (Unicore) transformer generally has more core mass than a C Core or a Mitred Core, but lower copper mass. This is typical of a good Jencore (Unicore) design where, by increasing the low-loss core mass, it is possible to reduce the high-loss copper mass. The result is a lighter, cheaper and more efficient transformer with better regulation.

## Design Criteria of Single and Double (Duo) Distributed Gap Jencores (Unicores)

### Single Phase Configuration



### Three Phase Configuration



### Standard Specifications

	Min	Max
<b>Strip Width</b>	20mm	280mm
<b>Window Width</b>	40mm	Unlimited
<b>Window Height</b>	40mm	Unlimited
<b>Max Core Size</b>	Unlimited	

### Standard Terminology

Strip Width	A
Build-up	B
Window Width	C
Window Length	D
Gap Overlap	O
Radius	R

### Standard Tolerances

±0.3mm on all dimensions

## Jencore (Unicore) Shapes

All Jencores (Unicores) come in conventional Rectangular or Cruciform shapes. Cruciform shapes can have a maximum of three steps in their construction, either in Single or in Three Phase.

These shapes are available in 90°, 45° or 30° folds.

### 45° Folds

This is the preferred shape as it saves weight and is easier for the insertion of mounting screws.

### Jencore (Unicore) Styles

- Single Cut Distributed Gap face
- Single Cut Diverging Distributed Gap face
- Single Cut Spiral-wound Overlapped Distributed Gap face
- Single Cut Step Butt face
- Single Cut Gapped face
- Uncut face
- Double Cut Distributed Gap face (DUO-CORE)

Please note that the above styles can be used in many permutations, for example:

- Single or Three Phase Jencores (Unicores)
- 90°, 45° or 30° folds
- Cuts along limb or yoke of Jencores (Unicores)
- Chapters can be alternated on opposite sides
- Number of chapters can be selected
- Number of laminations per overlap can be selected e.g. Duo I, II or III
- Lamination overlap distance can be selected

### Jencore (Unicore) Assembly

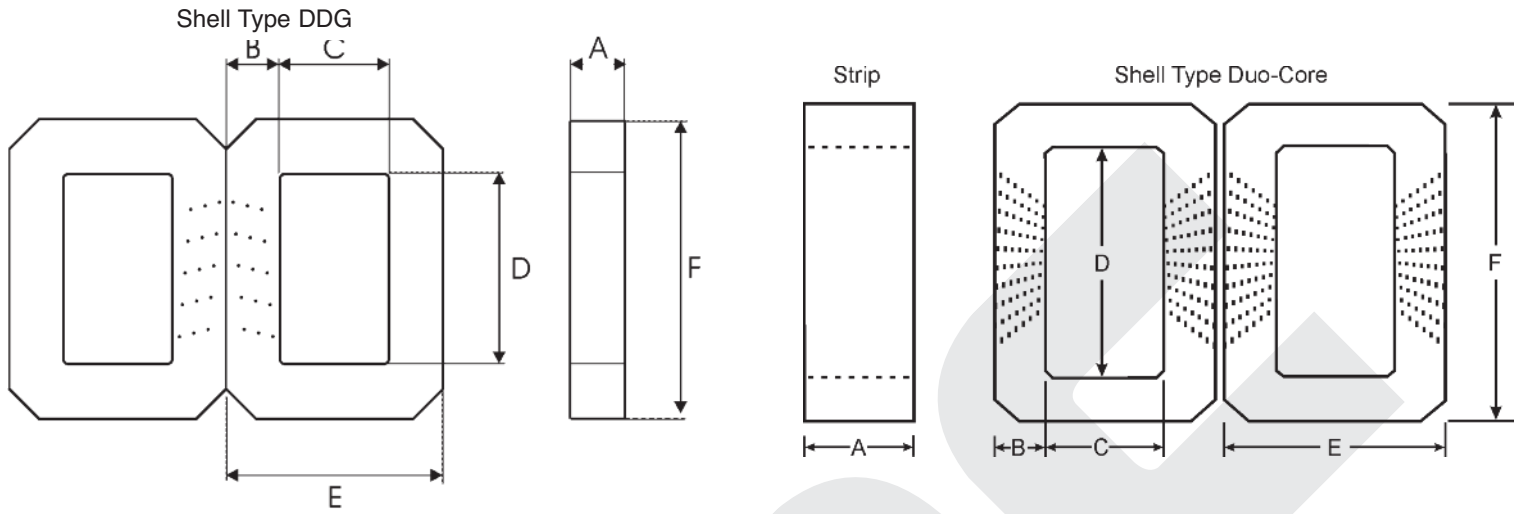
Assembly time for a Jencore (Unicore) has been greatly reduced because ten or more laminations can be assembled at once, whether it is a Step Butt, Duo or a D-Gap Jencore (Unicore). There is a special procedure for this assembly. The D-Gap Jencore (Unicore) is unwrapped chapter for chapter and then, starting from the smallest chapter, wrapped or inserted into the bobbin. The Duo-core is essentially a core in two halves inserted in the windings. Therefore, no extra space is required and this is the preferred core for the single phase Core type and three phase Evans design. Details for these procedures are available from AMC.

Jencores (Unicores) are supplied unbonded; therefore it is essential for the transformer manufacturer to impregnate the complete transformer after assembly. This has the effect of bonding the core laminations, bonding the winding and bonding the core to the winding for good heat transfer. This impregnation can be a simple hot dip into a suitable resin. Attention must be given to the correct procedure to ensure thorough resin impregnation and curing. Obviously impregnation of the transformer is not needed when it is oil cooled.

The use of normal light banding with the minimum of tension is recommended. In some cases where a special frame is used, banding is not required.

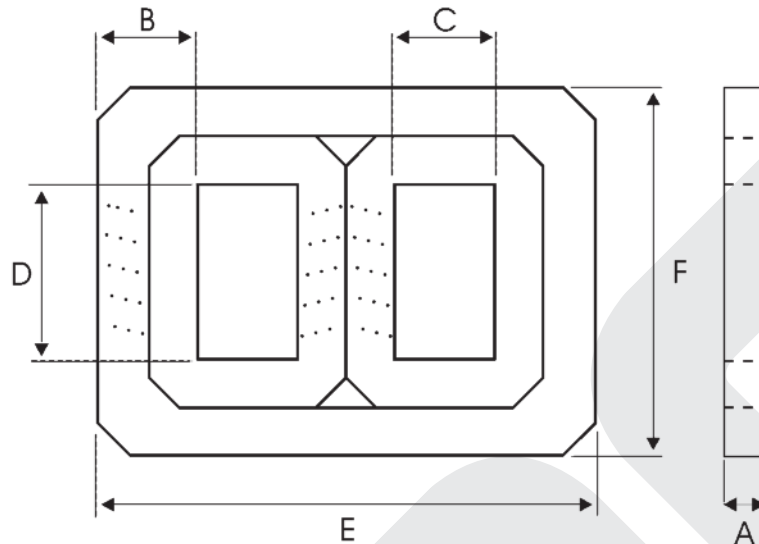
## Single phase Jencores (Unicores) in GOSS

Although Jencores (Unicores) can be made in any size, we have designed a standard range of Jencores (Unicores) to suit existing E and I Lamination bobbins.



CODE or VA/Set	V/T at 1.7 Tesla	Nominal Dimensions (mm)						Nett Area/ Set (cm <sup>2</sup> )	Nominal Weight/Set (kg)
		A	B	C	D	E	F		
JC 1000	0.717	40	25	35	90	85	140	19.00	5.09
JC 1500	0.896	50	25	35	90	85	140	23.75	6.36
JC 2000	1.076	60	25	35	90	85	140	28.50	7.63
JC 2500	1.344	75	25	35	90	85	140	35.63	9.54
JC 3000	1.742	90	27	35	90	89	144	46.17	12.64
JC 4000	2.151	100	30	35	96	95	156	57.00	16.66
JC 5000	2.151	100	30	40	105	100	165	57.00	17.88
JC 6500	2.868	100	40	45	120	125	200	76.00	28.49
JC 7500	3.227	100	45	45	120	135	210	85.50	33.36
JC 10000	3.442	120	40	45	120	125	200	91.20	34.19
JC 15000	3.585	100	50	60	180	160	280	95.00	49.42
JC 20000	5.163	120	60	60	180	180	300	136.80	75.35
JC 25000	5.163	120	60	70	210	190	330	136.80	83.72
JC 30000	5.163	120	60	80	240	200	360	136.80	92.10
JC 40000	7.027	140	70	80	240	220	380	186.20	131.04
JC 50000	7.027	140	70	90	240	230	380	186.20	133.90

## Three phase Jencores (Unicores) in GOSS

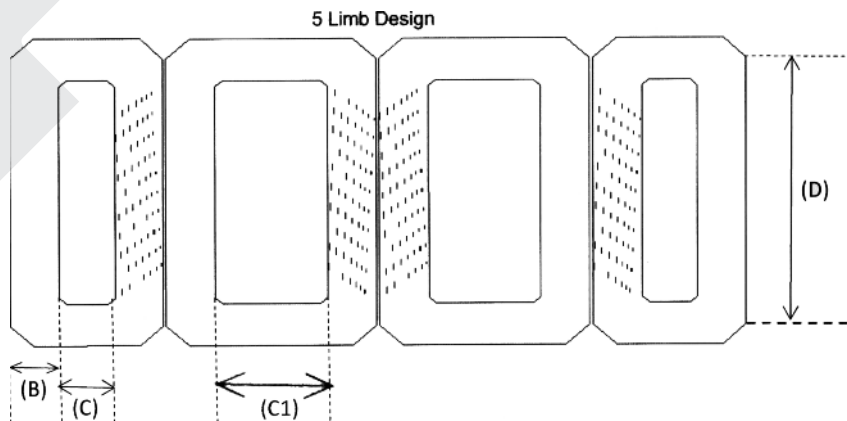
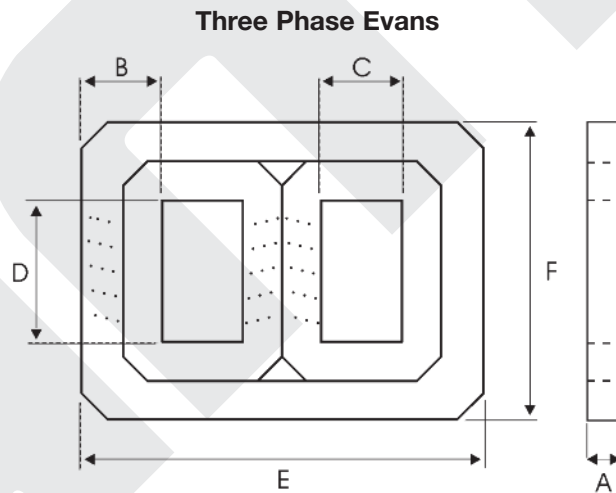
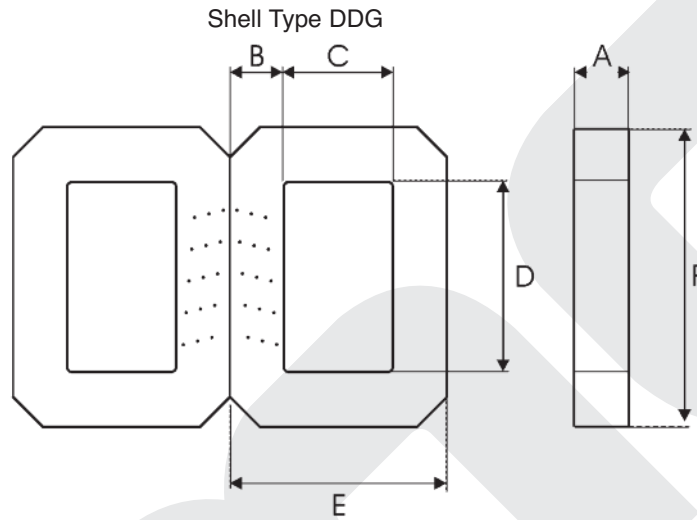


CODE or VA/Set	V/T at 1.7 Tesla	Nominal Dimensions (mm)						Nett Area/ Set (cm <sup>2</sup> )	Nominal Weight/Set (kg)
		A	B	C	D	E	F		
JE 2000	0.645	60	30	40	95	170	155	17.10	8.18
JE 3000	0.968	90	30	40	100	170	160	25.65	12.56
JE 4000	1.076	100	30	45	100	180	160	28.50	14.39
JE 5000	1.076	100	30	50	130	190	190	28.50	16.79
JE 6500	1.255	100	35	50	140	205	210	33.25	21.11
JE 7500	1.255	100	35	50	150	205	220	33.25	21.88
JE 8000	1.613	100	45	50	150	235	240	42.75	30.09
JE 10000	1.613	100	45	60	160	255	250	42.75	32.38
JE 15000	2.044	100	57	60	180	291	294	54.15	46.48
JE 20000	2.581	120	60	60	180	300	300	68.40	59.65
JE 25000	2.581	120	60	70	210	320	330	68.40	66.45
JE 30000	2.581	120	60	80	240	340	360	68.40	73.26
JE 40000	3.514	140	70	80	240	370	380	93.10	103.98
JE 50000	3.514	140	70	110	240	430	380	93.10	112.53
JE 75000	4.034	150	75	120	320	465	470	106.88	154.53
JE 100000	4.571	150	85	140	340	535	510	121.13	193.66

## NON-STANDARD JENCORES (UNICORES) TO USER SPECIFICATIONS

Jencores (Unicores) are specifically suited to user applications, Alloy Magnetic Cores can manufacture any size core that the design engineer wishes. We would need the following dimensions.

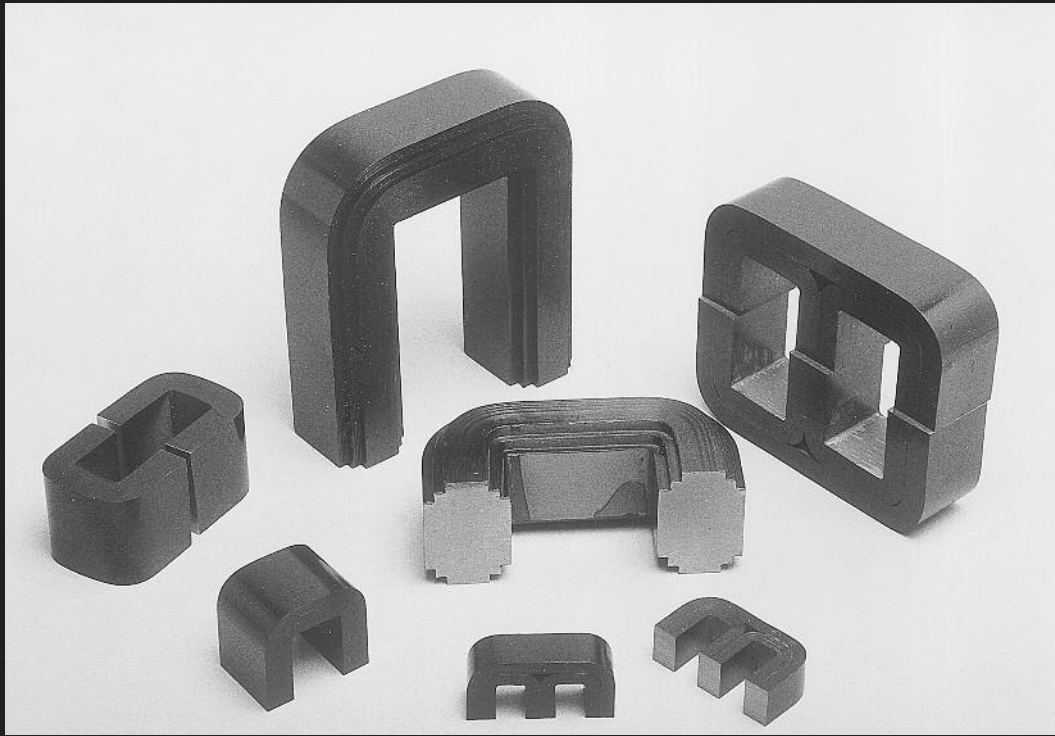
1. Minimum and maximum geometric dimensions (A, B, C, D, E, F)
2. Location of cut (if applicable)
3. Desired magnetic properties
4. Details of finish
5. Thickness of material (for higher frequencies if desired)



**AMC**

# Strip-Wound Cores 4

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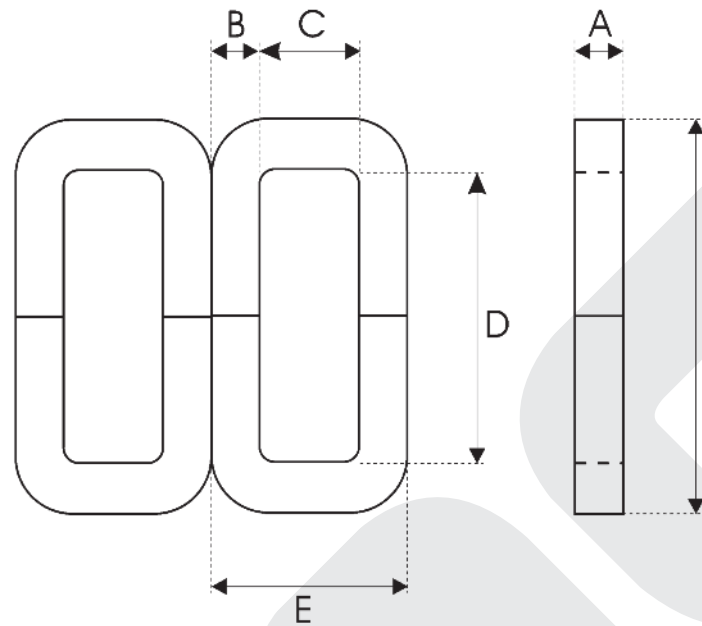
The single phase C-Core is a cut, bonded core having a rectangular window. The E-Cores are 3-phase cores which are formed from two adjacent identical C cores, surrounded by a third C-Core resulting in the three limbs each having the same nett cross sectional area. The cut is generally located in the middle of, and perpendicular to, the large axis of the window but may, however, be located elsewhere on request. The geometric characteristics are shown in the diagrams that follow. Material used is M5 GOSS or H530 NOSS. Other materials can be used depending on the availability thereof. Our speciality is making non-standard cores to user specifications. This includes any size of toroidal cores, from a 5mm strip to a 200mm strip.

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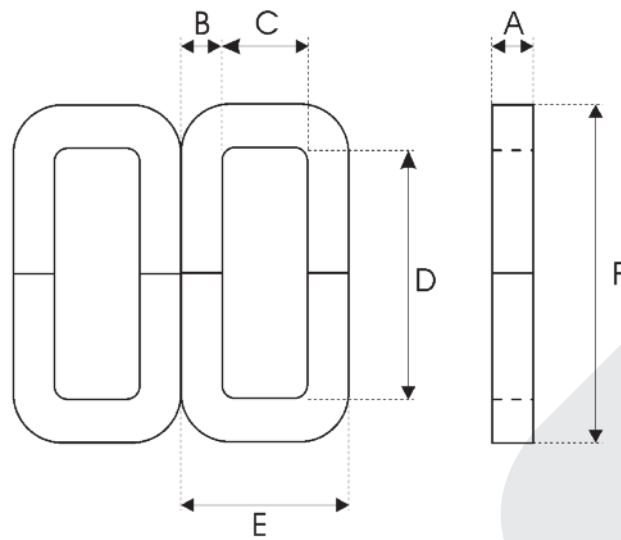
## C CORES

Standard Range: Single Phase Cores For Shell Type Transformers In GOSS



CODE or VA/Set	V/T at 1.7 Tesla	Nominal Dimensions (mm)						Length of Flux Path (cm)	Nett Area/ Set (cm <sup>2</sup> )	Nominal Weight/Set (kg)
		A	B	C	D	E	F			
C 50	0.258	40	9	13	38	33	59	12.4	6.84	0.72
C 100	0.344	40	12	19	54	46	83	17.7	9.12	1.36
C 250	0.430	40	15	26	64	59	100	22.1	11.40	2.10
C 350	0.537	50	15	26	64	59	100	22.1	14.25	2.61
C 500	0.645	60	15	26	64	59	100	22.1	17.10	3.14
C 750	0.716	40	25	30	102	83	158	33.3	19.00	5.29
C 1000	0.895	50	25	30	102	83	158	33.3	23.75	6.61
C 1250	1.074	60	25	30	102	83	158	33.3	28.50	7.94
C 1500	1.343	75	25	30	102	83	158	33.3	35.62	9.93
C 2000	1.558	75	29	30	127	91	193	40.0	41.32	13.60
C 3000	1.719	75	32	40	130	108	204	43.9	45.60	16.32
C 4000	2.041	75	38	40	165	120	252	53.0	54.15	23.27
C 5000	2.450	90	38	40	165	120	252	53.0	64.98	27.94
C 7500	2.450	90	38	42	229	122	317	64.8	64.98	34.50
C 10000	3.288	90	51	42	229	148	343	69.8	87.21	49.77
C 12000	3.674	90	57	50	270	168	396	82.4	97.47	64.72
C 15000	3.997	90	62	50	250	178	386	79.6	106.02	68.78
C 20000	4.126	90	64	57	273	189	414	86.3	109.44	76.69

## British Range: Single Phase HWR Cores For Shell Type Transformers In GOSS

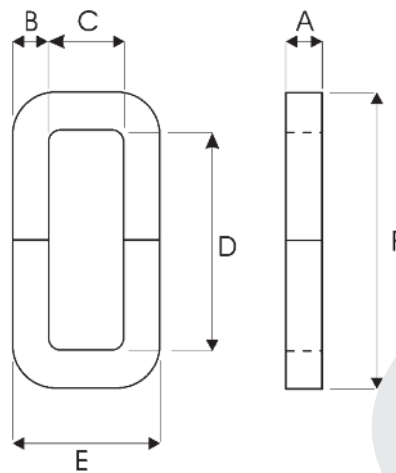


CODE HWR	VA/Set (0.3 mm)	V/T at 1.7 Tesla	Nominal Dimensions (mm)						Flux Path (cm)	Area/ Set (cm <sup>2</sup> )	Weight/ Set (kg)
			A	B	C	D	E	F			
10/8	17	0.074	13							1.98	0.20
* 10/12	26	0.115	20							3.04	0.31
* 10/16	32	0.143	25	8	13	38	31	56	12.82	3.80	0.39
* 10/24	40	0.23	40							6.08	0.62
30/8	38	0.093	13							2.47	0.33
30/12	53	0.143	20							3.80	0.51
* 30/16	70	0.179	25	10	16	51	37	73	16.57	4.75	0.63
* 30/20	84	0.215	30							5.70	0.76
40/12	63	0.143	20							3.80	0.56
* 40/16	80	0.179	25							4.75	0.70
* 40/20	95	0.215	30	10	19	57	40	79	18.20	5.70	0.84
* 40/24	120	0.287	40							7.60	1.12
* 50/18	150	0.28	30							7.41	1.27
* 50/24	210	0.373	40	13	22	64	50	92	21.10	9.88	1.69
* 50/32	270	0.466	50							12.35	2.12
* 70/12	210	0.229	20							6.80	1.27
* 70/18	320	0.344	30							9.12	1.91
* 70/24	390	0.459	40	16	29	76	62	111	25.90	12.16	2.55
* 70/32	490	0.574	50							15.20	3.19
90/16	420	0.341	25							9.03	2.24
90/24	630	0.545	40							14.44	3.58
* 90/32	810	0.881	50	19	35	89	75	130	30.72	18.05	4.47
90/44	1050	0.954	70							25.27	6.26
110/20	1000	0.538	30							14.25	4.56
110/32	1600	0.896	50	25	45	114	97	170	39.86	23.75	7.60
110/64	2700	1.793	100							47.50	15.19

\* Bobbins for these cores are available

## Continental Range: Single Phase SU Cores To DIN Standards For Core Type Transformers In GOSS

This range of cores is designed only for core type transformers i.e. where only a single loop is required. Therefore the window and cross section is larger than normal.

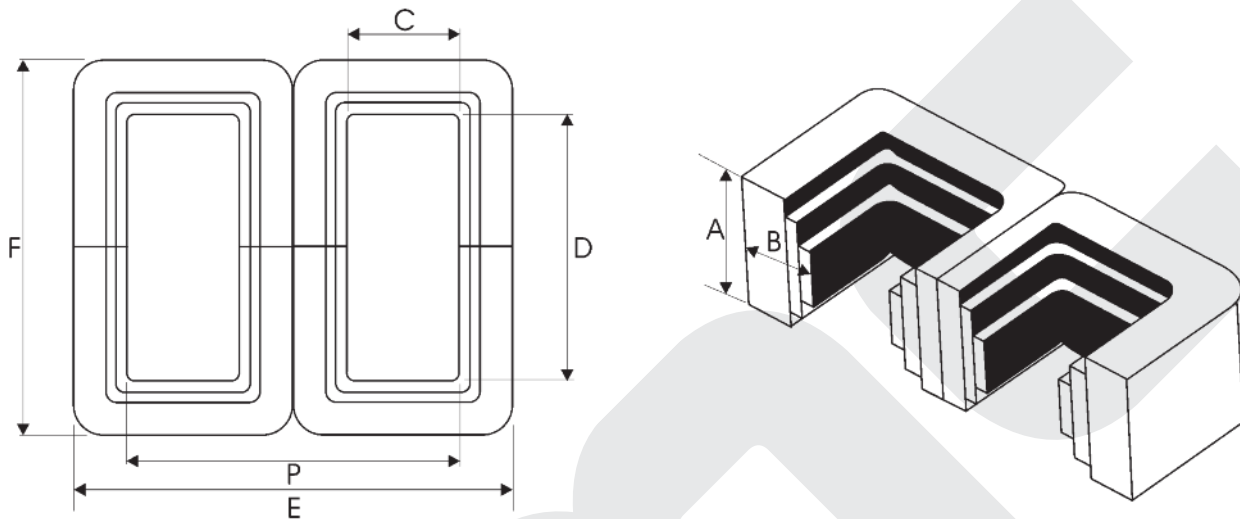


CODE SU	VA/Set (0.3 mm)	V/T at 1.7 Tesla	Nominal Dimensions (mm)						Flux Path (cm)	Area/ Set (cm <sup>2</sup> )	Weight/ Set (kg)
			A	B	C	D	E	F			
30a	3	0.032	10	9	10	32	30	53	11	0.85	0.08
30b	6	0.051	16	9	10	32	30	53	11	1.36	0.13
* 39a	12	0.056	13	12	13	41	39	68	15	1.48	0.18
* 39b	20	0.086	20	12	13	41	39	68	15	2.28	0.27
* 48a	30	0.086	16	15	16	50	48	83	18	2.28	0.33
* 48b	48	0.134	25	15	16	50	48	83	18	3.56	0.52
* 60a	82	0.136	20	19	20	63	60	104	23	3.61	0.67
* 60b	122	0.204	30	19	20	63	60	104	23	5.41	1.00
* 75a	200	0.215	25	24	25	78	75	129	28	5.70	1.32
* 75b	306	0.344	40	24	25	78	75	129	28	9.12	2.11
* 90a	387	0.311	30	29	30	95	90	156	34	8.26	2.31
* 90b	630	0.516	50	29	30	95	90	156	34	13.70	3.86
* 102a	620	0.411	35	33	34	106	102	176	38	10.90	3.46
* 102b	960	0.648	55	33	34	106	102	176	38	17.20	5.43
* 114a	920	0.528	40	37	38	118	114	196	43	14.00	4.95
* 114b	1440	0.792	60	37	38	118	114	196	43	21.00	7.42
* 132a	1580	0.675	45	42	44	136	132	226	50	17.90	7.25
* 132b	2370	1.052	70	42	44	136	132	226	50	27.90	11.28
* 150a	2370	0.860	50	48	50	154	150	256	56	22.80	10.46
* 150b	3380	1.290	75	48	50	154	150	256	56	34.20	15.69
* 168a	3620	1.063	55	54	56	172	168	286	63	28.20	14.50
* 168b	5400	1.738	90	54	56	172	168	286	63	46.10	23.73
* 180a	4560	1.244	60	58	60	184	181	307	68	33.00	18.20
* 180b	6500	1.557	75	58	60	184	181	307	68	41.30	22.76
* 180c	8400	1.866	90	58	60	184	181	307	68	49.50	27.31
* 210a	7800	1.704	70	68	70	214	211	357	79	45.20	29.05
* 210b	10500	2.435	100	68	70	214	211	357	79	64.60	41.51
* 210c	12900	3.163	130	68	70	214	211	357	79	83.90	53.96

\* Bobbins for these cores are available

## CO Range: Single Phase Cruciform Cores For Shell Type Transformers In GOSS

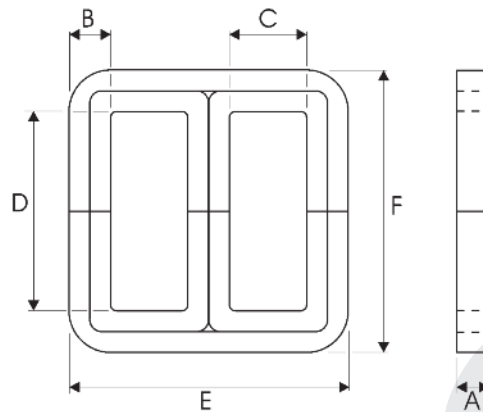
The CO range of cores is intended for single phase applications using circular section winding bobbins. A standard range is available on request and a table of physical sizes appears below.



CODE or VA/Set	V/T at 1.7 Tesla	Nominal Dimensions (mm)							Core Circle Diameter	Area/ Set (cm <sup>2</sup> )	Weight/ Set (kg)
		A	B	C	D	E	F	P			
CO 3000	1.182	75	28	70	155	250	220	196	80	31.35	15
CO 5000	1.554	75	32	60	175	258	247	184	86	41.23	20
CO 7500	2.120	90	39	55	210	272	297	188	98	56.24	30
CO10000	2.185	90	40	64	235	299	325	208	100	57.95	36
CO15000	2.389	90	43	70	275	315	370	226	103	63.36	42
CO20000	2.489	100	45	76	295	334	395	242	107	66.02	49
CO25000	2.722	100	47	76	295	348	400	246	111	72.20	53
CO30000	3.260	100	53	95	295	405	410	296	122	86.45	69
CO35000	3.456	100	55	101	295	425	415	312	126	91.67	75
CO40000	3.922	100	61	108	295	462	430	338	135	104.02	87

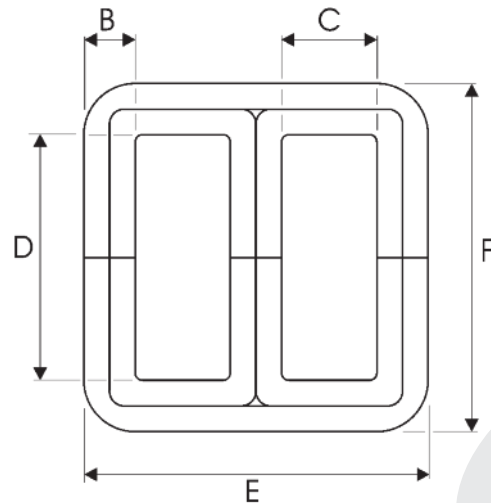
## E CORES

Standard Range: Three Phase E Cores In GOSS



CODE or VA/Set	V/T at 1.6 Tesla	Nominal Dimensions (mm)						Nett Area/ Set (cm <sup>2</sup> )	Nominal Weight (kg)
		A	B	C	D	E	F		
E 150	0.223	30	22	30	62	127	109	6.27	2.10
E 300	0.273	30	27	35	75	152	132	7.70	3.11
E 500	0.364	40	27	40	75	162	132	10.26	4.29
E 750	0.445	40	33	40	93	180	164	12.54	6.11
E 1000	0.513	40	38	40	105	196	186	14.44	7.77
E 1500	0.607	50	36	32	140	174	217	17.10	9.99
E 2000	0.675	50	40	40	140	202	227	19.00	11.92
E 3000	0.810	60	40	50	130	222	217	22.80	14.48
E 4000	0.911	60	45	55	140	247	237	25.65	17.86
E 5000	1.053	60	52	64	150	287	264	29.64	23.08
E 7500	1.276	60	63	70	150	332	283	35.91	30.44
E10000	1.519	75	60	80	150	343	280	42.75	36.96
E15000	1.519	75	60	70	220	323	353	42.75	42.51
E20000	1.519	75	60	80	270	343	403	42.75	48.73
E25000	1.822	90	66	70	340	338	472	56.43	73.21
E30000	2.004	90	66	70	450	342	597	56.43	87.46
E40000	2.227	100	66	100	370	402	517	62.70	91.42
E50000	2.564	100	76	100	370	432	537	72.20	108.59

## Continental Range: Three Phase S3U Cores In GOSS

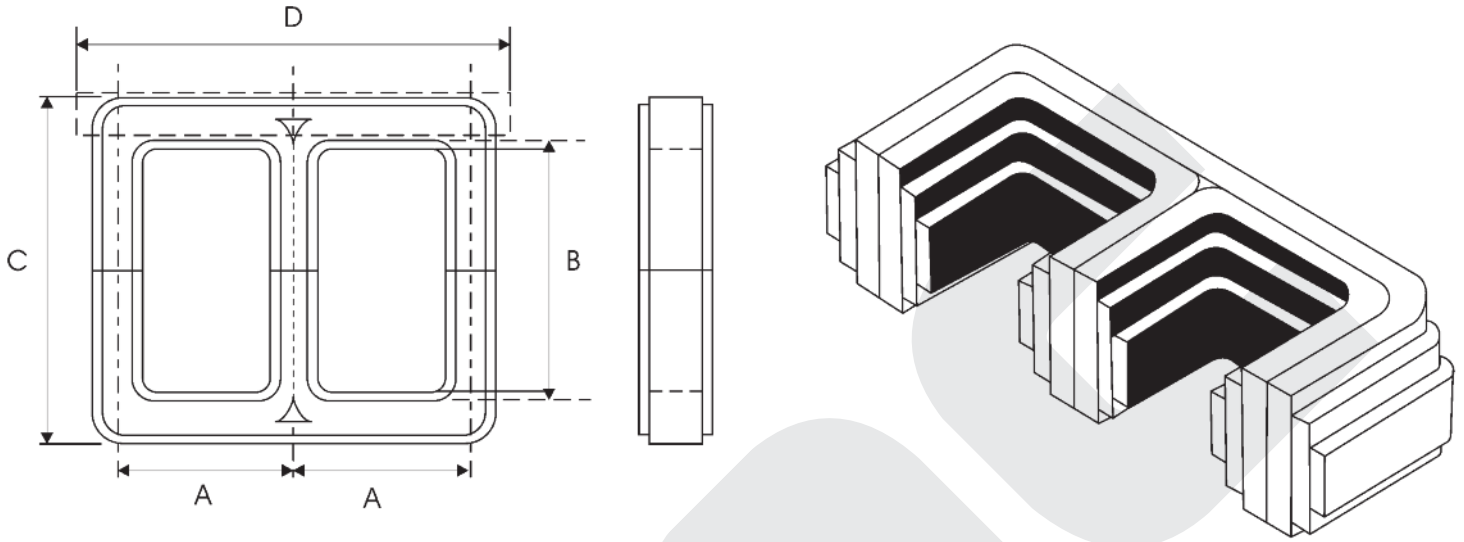


CODE S3U	VA/Set (0.3 mm)	V/T at 1.6 Tesla	Nominal Dimensions (mm)						Area/ Set (cm <sup>2</sup> )	Weight/ Set (kg)
			A	B	C	D	E	F		
30a	7	0.034	10	10	10	32	51	54	0.95	0.15
30b	15	0.054	16	10	10	32	51	54	1.52	0.24
* 39a	20	0.057	13	13	13	42	66	71	1.60	0.32
* 39b	25	0.088	20	13	13	42	66	71	2.47	0.49
* 48a	30	0.086	16	16	16	51	81	84	2.43	0.59
* 48b	40	0.135	25	16	16	51	81	84	3.80	0.92
* 60a	60	0.135	20	20	20	63	101	105	3.80	1.14
* 60b	100	0.202	30	20	20	63	101	105	5.70	1.71
* 75a	140	0.211	25	25	25	78	126	130	5.93	2.21
* 75b	180	0.337	40	25	25	78	126	130	9.50	3.53
* 90a	270	0.304	30	30	30	95	151	157	8.55	3.84
* 90b	450	0.506	50	30	30	95	151	157	14.25	6.40
102a	450	0.401	35	34	34	106	171	176	11.30	5.71
102b	700	0.631	55	34	34	106	171	176	17.76	8.97
* 114a	650	0.511	40	38	38	118	191	196	14.40	8.13
* 114b	1000	0.769	60	38	38	118	191	196	21.66	12.20
132a	1000	0.653	45	43	44	136	220	226	18.38	11.93
132b	1800	1.016	70	43	44	136	220	226	28.59	18.55
* 150a	2000	0.827	50	49	50	154	250	256	23.27	17.13
* 150b	3000	1.240	75	49	50	154	250	256	34.91	25.69
168a	3000	1.020	55	55	56	172	280	286	28.73	23.66
168b	4000	1.670	90	55	56	172	280	286	47.02	38.71
* 180a	3500	1.215	60	60	60	184	301	307	34.20	30.19
180b	4500	1.518	75	60	60	184	301	307	42.75	37.74
* 180c	5000	1.822	90	60	60	184	301	307	51.30	45.29
* 210a	6000	1.653	70	70	70	214	351	357	46.55	47.86
210b	8000	2.362	100	70	70	214	351	357	66.50	68.37
* 210c	10000	3.071	130	70	70	214	351	357	86.45	88.88

\* Bobbins for these cores are available

## EO Range: Three Phase Cruciform Cores In GOSS

The EO range of cores is a three-phase core intended for use with circular section bobbins. AMC offers the following standard range:



Code or VA	V/T at 1.6 Tesla	Leg Centre	Leg Length	Overall Height	Frame Length	Core Circle Diameter	Nett Area/ Set (cm <sup>2</sup> )	Weight (kg)
		A	B	C	D			
EO15000	1.42	166	250	380	535	83	39.80	48
EO20000	1.54	181	250	388	580	87	43.36	55
EO25000	1.84	195	250	408	620	93	51.73	68
EO30000	2.06	201	250	410	635	98	57.76	77

## TOROIDAL CORES

There is no standard series of toroidal cores, but we recommend that users choose a nominal ID that is a multiple of 1 mm while keeping the  $ID < OD/2$ .

The Preferred strip widths are 10,15,20,25,30,40,50,60,75,90 and 100 mm.

It is possible, however, to manufacture cores whose dimensions differ from the above specifications. The geometric dimensions are as indicated in the sketch below. Specifications submitted should include:

- a. Minimum inside diameter – ID.
- b. Minimum outside diameter – OD.
- c. Minimum strip width – A.
- d. Desired magnetic properties.
- e. Details of finish.

Due to the fact that toroidal cores are not usually resin-impregnated nor cut, it is possible to operate them satisfactorily at flux densities as high as 1.8 Tesla. These cores are well-suited to voltage and current transformer applications where high accuracy is required. In some cases these cores can replace cores made from more expensive materials, thus providing an immediate saving. It must be noted, however, that degradation of the magnetic properties occurs when toroidal cores are epoxy-coated or epoxy resin-impregnated.

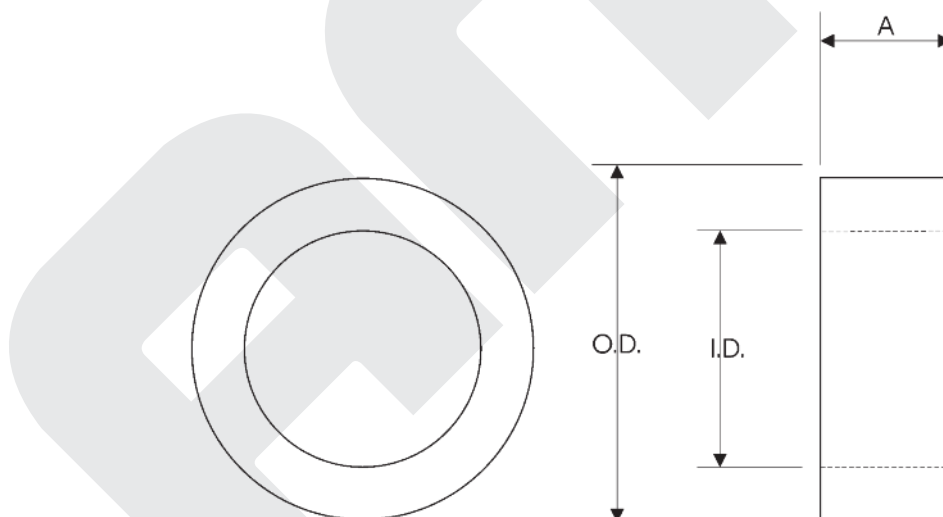
### Special Finishes

Toroidal cores can be supplied, upon request, with either a painted or epoxy-coated finish. Paint colours available are black, red and green. Epoxy colours available are blue and brown.

### Plastic End Caps

Toroidal cores may be supplied with plastic end caps. The electrical advantage thereof is that the core suffers no degradation of the magnetic properties, since the end caps induce no stress on the cores. These caps are made from Nylon 66 or polypropylene, depending on the temperature rating required. Nylon 66 can operate at 155°C, while polypropylene can operate at 95°C.

AMC has various sizes of end caps ex stock and can manufacture caps to customer specifications, provided that the quantities are economically viable.

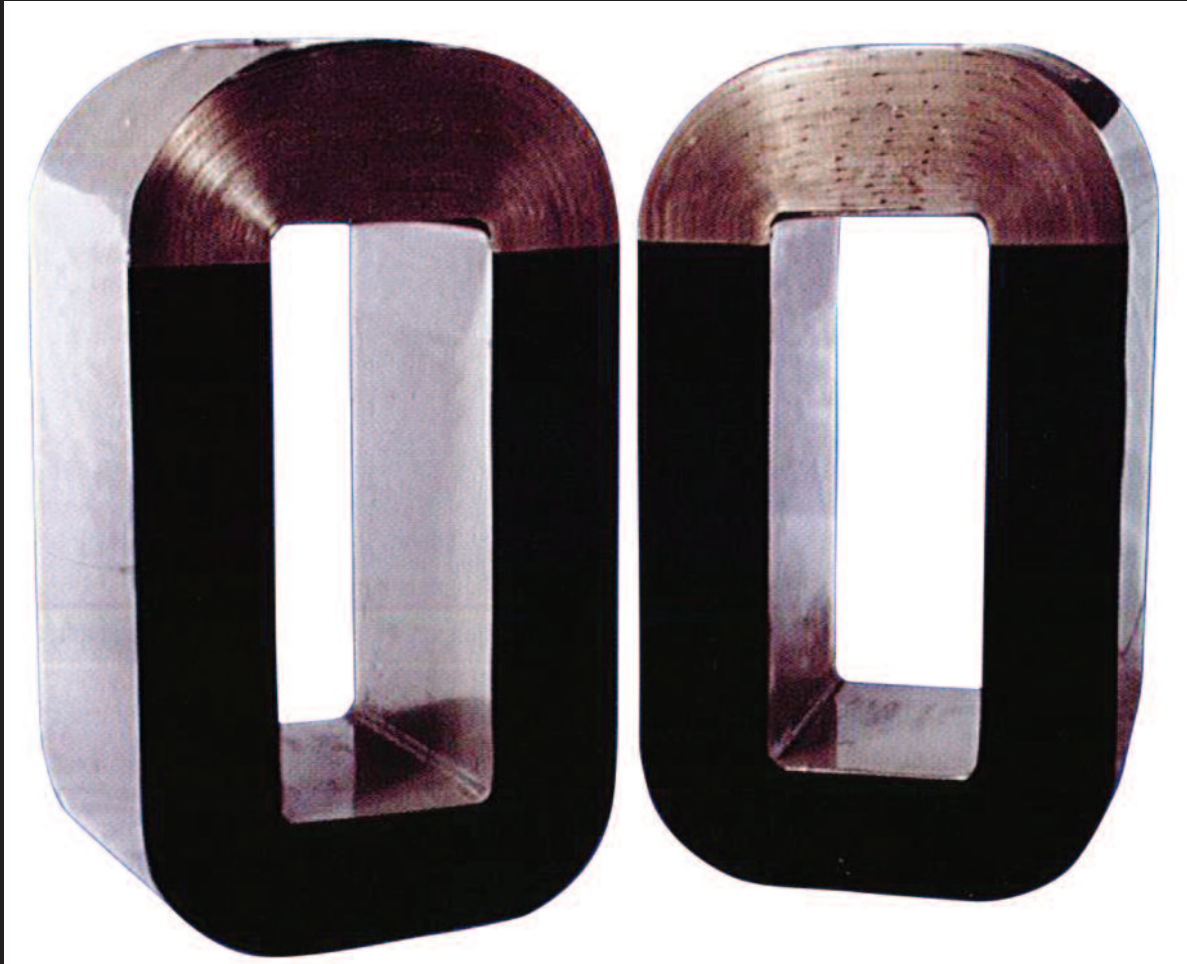




**AMC**

# *Amorphous Metal Cores* 5

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## MAGNETIC PROPERTIES:

1. Operating Flux Density:
  - Typical Single Phase: 1.3 - 1.4 Tesla.
  - Typical Three Phase: 1.25 - 1.35 Tesla.
2. Saturation:
  - Induction (T) as cast: 1.56.
3. No - load Core Loss and Exciting Power:
  - At the test condition of 1.3T, 50Hz, specific loss  $\leq 0.18\text{W/kg}$ ; specific exciting power  $\leq 0.45\text{VA/kg}$ .
  - At the test condition of 1.3T, 50Hz, specific loss  $\leq 0.20\text{W/kg}$ ; specific exciting power  $\leq 0.60\text{VA/kg}$ .
  - The no-load loss and exciting power of the three phase - Evans core will be approximately 25% higher and will vary according to specific design.

## PHYSICAL PROPERTIES:

Core Space Factor:

- Guaranteed Minimum: 86%.

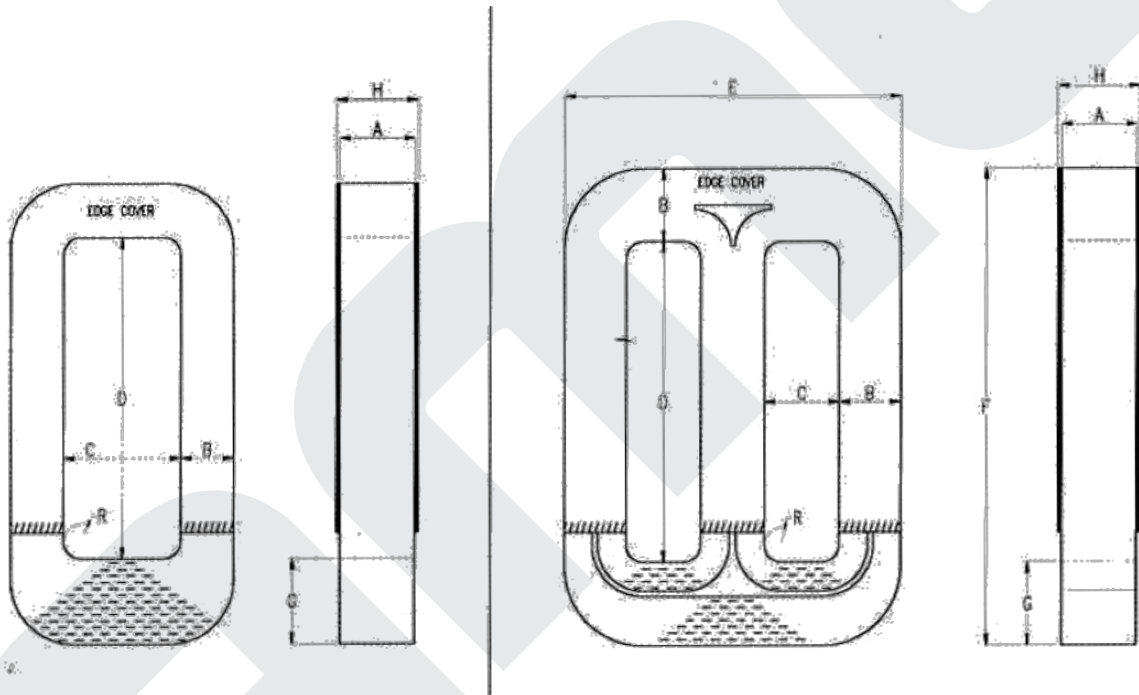
Density:

- $\text{g/cm}^3$  as cast: 7.19.

Core Design Standards:

- Ribbon width (A): 142mm, 170mm, 213mm.
- Core build-up (B): 0~300mm; maximum.
- Window width (C): 55~1500mm; tolerance: +3/-0mm.
- Window height (D): 180~2000mm; tolerance: +3/-0mm.
- Joint build (G):  $B \times 1.10 \sim 1.20\text{mm}$ .
- Window radius (R):  $6.4 \pm 1.5\text{mm}$ .
- Outermost layer shearing length: not more than 100000mm.
- Continuous service temperature: 150°C.

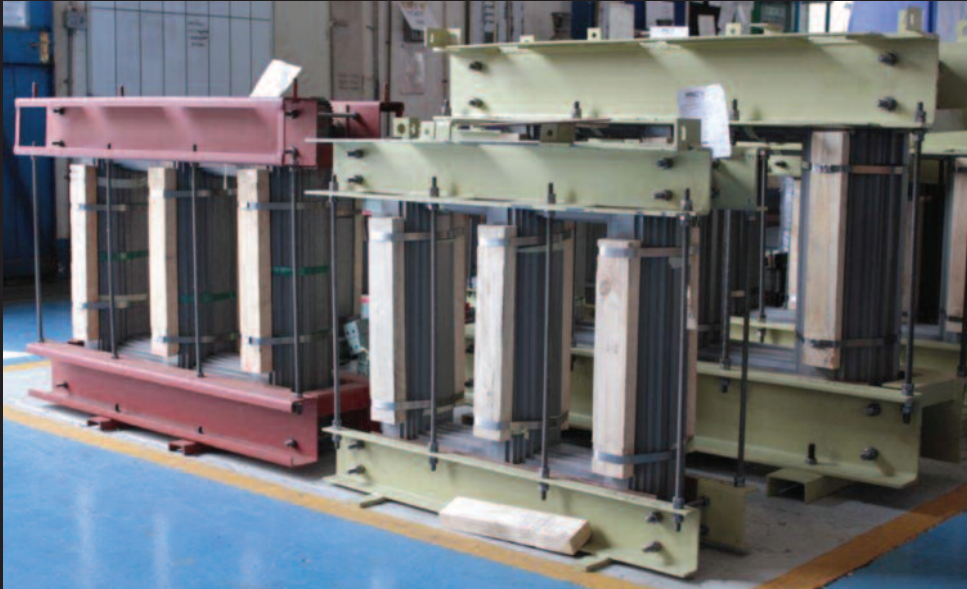
Core surface is coated in Epoxy Resin, not more than 2mm thick per side, (Dimension (H)) Ribbon width +4mm.



SINGLE CORE = CORE TYPE  
 DOUBLE CORE = SHELL TYPE  
 2 LARGE + 2 SMALL CORES = 3 PHASE

THREE PHASE - THREE COLUMN EVANS  
 CORE

# Step-Lap Mitred Cores 6



## Cut-to length Lamination Strips

MCT offers cut-to-length silicon steel strips for single and three-phase applications. When stacked they form cores ready for use. The range varies from 10KVA to 80MVA.

Both GOSS and NOSS can be used, while the cut available is square or mitred. Holes can also be punched. Hole sizes on offer are 8, 10, 13, 18, 24 and 32 Ø.

AMC supplies various forms of cut-to-length lamination strips as shown below.

### MITRED LAMINATIONS

Fully mitred cores are made by adding a notch on the yoke, but this incurs a degree of waste.

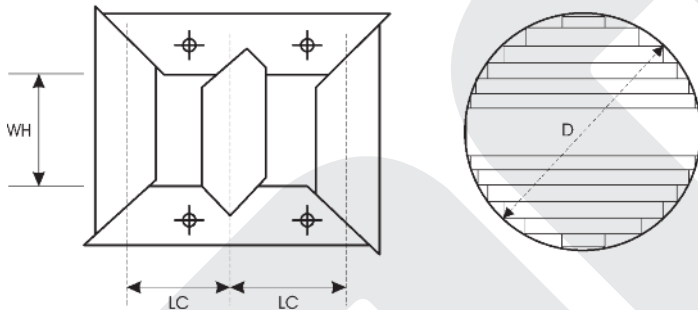
Step Lap mitred cores allow:

- The flux to jump the gap in the lamination without any adverse effect on losses.
- The step overlap can be controlled depending on the performance required.

The usual type of cores available can be ordered i.e.

- Single phase shell type
- Single phase core type
- Three phase Evans design
- Three phase 5 limb

These cores are stacked by MCT using customers' frames. MCT can manufacture core clamps as per detailed drawings provided by the customer.



When ordering please supply the following details:

- Type: Single or Three phase
- Core Circle Diameter: D (mm)
- Leg Centres: LC (mm)
- Window Height: WH (mm)
- Stacking: If required
- Required losses at Specific Flux Density
- Oil or Dry Type



All mitred cores are tested and supplied with comprehensive test certificates.

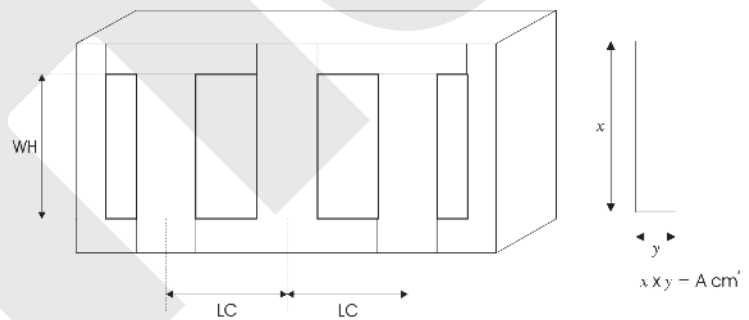
### SQUARE CUT LAMINATIONS

The various types available are:

- Single phase shell type
- Single phase core type
- Three phase Evans design
- Three phase 5 limb

The above types can have the following configuration:

- 1 Holes
- 2 Square cross section
- 3 Stepped or cruciform cross sections
- 4 Square yokes and stepped limbs
- 5 Resin impregnated



When ordering, please supply the following details:

- Type: Single phase shell or core type; Three phase Evans design or 5 limb
- Core circle diameter: D (mm)
- OR Cross section A (cm<sup>2</sup>) if rectangular
- Leg centres LC
- Window height: WH
- Stacking: If required

# Slitting Line 7



ALLOY MAGNETIC CORES (Pty) Ltd (AMC) installed a new slitting line on 1st May 2001. This slitting line is specifically used for the slitting of Grain Oriented Silicon Steel (GOSS) in sizes ranging from 5mm to 600mm.

Another Slitter was purchased in 2009 for slitting grain orientated silicone steel (GOSS), AU & CU in sizes ranging from 40mm to 1200mm. Silicon carbide knives are used to achieve the high quality slitting that is required for Grain Oriented Silicon Steel.

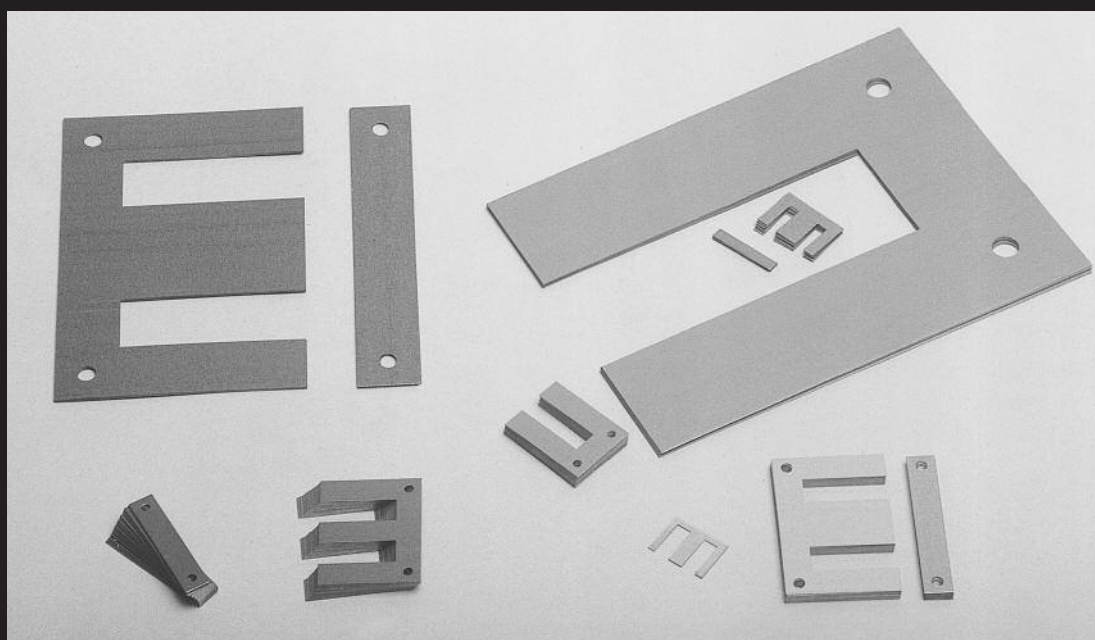
We are therefore able to satisfy our customers' demands in a very short time when Jencores (Unicores), C and E Cores, Toroidal Cores and Cut-to-length laminations are required.

Because this slitting line is of high capacity, we are also able to offer a slitting service for any client requiring special widths of silicon steel strip. AMC has wide coils of GOSS in stock (see Table: GOSS on page 6) or customer own material can be used.

<b>Technical Details</b>		
	<b>MIN</b>	<b>MAX</b>
Strip Width	10mm	1250mm
Strip Thickness	0.15mm	0.65mm
Decoiler Capacity		5T
Material Types	Grain Orientated Silicon Steel Non Grain Orientated Silicon Steel Copper Aluminium	

# Pressed Laminations 8

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To meet the various requirements of all our customers, AMC offers a wide range of laminations for use in transformers and chokes.

Some of the laminations produced require heat treatment facilities to develop the best properties of the material. AMC also has a range of controlled atmosphere furnaces available to satisfy this need.

Quality control is provided to ensure that the products are of the highest mechanical and electro-magnetic quality. We are always available to discuss with you any special requirements.

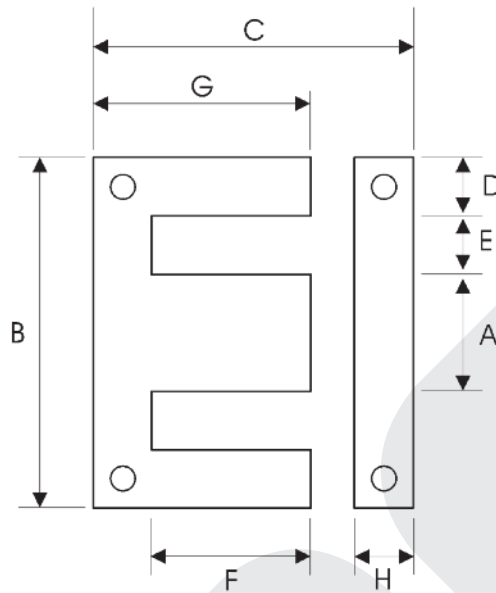
Material used is fully processed Non-Oriented Silicon Steel with a coating on both sides. The watt loss figures are given at 1.5 Tesla so "50H 350" or "V350 – 50A" would indicate a material 0.50mm thick showing a loss of 3.50 w/kg at 1.5 Tesla. Generally 50H 350 and 50H 530 are kept in stock while a full range (50H 230-50H 600) is available at short notice.

For specific requirements where size and losses must be kept to a minimum, and C cores cannot be used, laminations in M6 GOSS can be used. AMC keeps a wide range of these laminations to satisfy customers' immediate demands.

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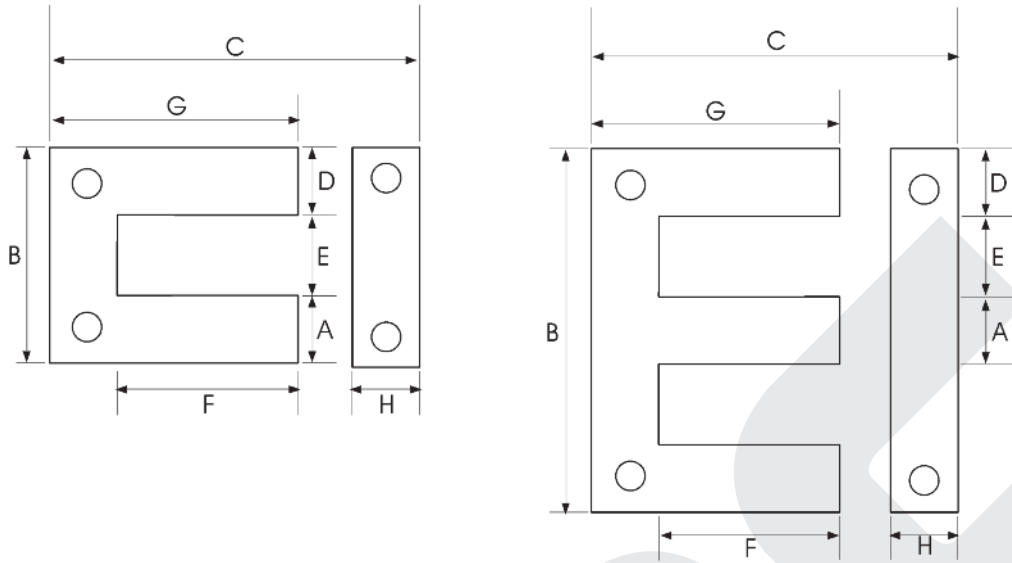


## Continental Range of Laminations: DIN Economy Range (No Waste)



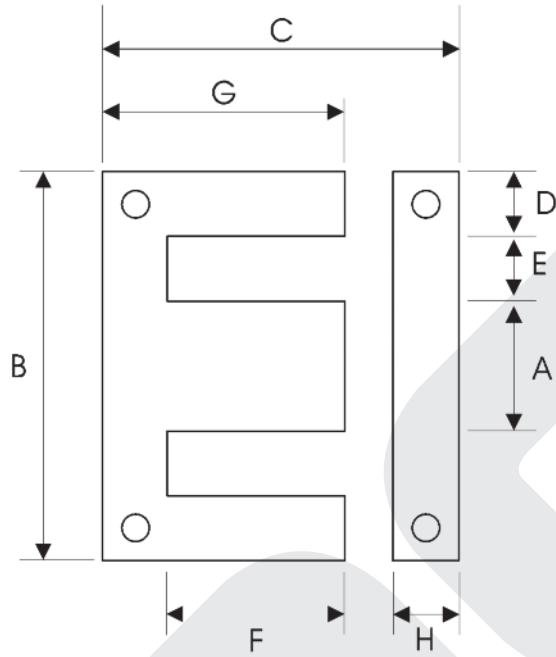
Type	Nominal Dimensions (mm)									Weight (kg/cm)
	A	B	C	D	E	F	G	H	Ø	
EI 30	10	30	25	5	5	15	20	5	-	0,044
EI 33	10	33	27	5,0	6,5	17	22	5,0	-	0,052
EI 38	12,8	38,4	32	6,4	6,4	19,2	25,6	6,4	-	0,072
EI 42	14	42	35	7	7	21	28	7	3,5	0,085
EI 48	16	48	40	8	8	24	32	8	3,5	0,112
EI 54	18	54	45	9	9	27	36	9	3,5	0,148
EI 57	19	57	47,5	9,5	9,5	28,5	38	9,5	3,5	0,158
EI 60	20	60	50	10	10	30	40	10	4	0,175
EI 66	22	66	55	11	11	33	44	11	4,5	0,211
EI 76	25,4	76,2	63,5	12,7	12,7	38,10	50,8	12,7	5,5	0,281
EI 96	32	96	80	16	16	48	64	16	5,5	0,480
EI 114	38	114,2	95,1	19,1	19,1	57	76,2	19,1	5,5	0,635
EI 135	45	135	112,5	22,5	22,5	67,5	90	22,5	7,5	0,935
EI 150	50	150	125	25	25	75	100	25	8	1,090
EI 180	60	180	150	30	30	90	120	30	9/10	1,660
EI 192	64	192	160	32	32	96	128	32	11	1,850
EI 220	70	220	190	35	40	110	150	40	12	2,444
EI 240	80	240	200	40	40	120	160	40	11,5	2,870

## Continental Range of Laminations: UI and 3UI Series: (Single and Three Phase)



Type	Nominal Dimensions (mm)									Weight (kg/cm)
	A	B	C	D	E	F	G	H	Ø	
UI 30	10	30	50	10	10	30	40	10	3.5	0.088
UI 39	13	39	65	13	13	39	52	13	3.5	0.15
UI 48	16	48	80	16	16	48	64	16	4.5	0.228
UI 60	20	60	100	20	20	60	80	20	4.5	0.36
UI 75	25	75	125	25	25	75	100	25	5.5	0.562
UI 90	30	90	150	30	30	90	120	30	7.8	0.806
UI 120	40	120	200	40	40	120	160	40	8	1.434
UI 150	50	150	250	50	50	150	200	50	11	2.020
UI 180	60	180	300	60	60	180	240	60	11	3.080
UI 210	70	210	350	70	70	210	280	70	15	4.230
UI 240	80	240	400	80	80	240	320	80	15	5.735
3 UI 30 = EI 50/50	10	50	50	10	10	30	40	10	3.5	0.14
3 UI 39 = EI 65/65	13	65	65	13	13	39	52	13	3.5	0.24
3 UI 48 = EI 80/80	16	80	80	16	16	48	64	16	4.5	0.36
3 UI 60 = EI 100/100	20	100	100	20	20	60	80	20	4.5	0.57
3 UI 75 = EI 125/125	25	125	125	25	25	75	100	25	7	0.90
3 UI 90 = EI 150/150	30	150	150	30	30	90	120	30	8.5	1.29
3 UI 120 = EI 200/200	40	200	200	40	40	120	160	40	11	2.297
3 UI 150 = EI 250/250	50	250	250	50	50	150	200	50	11	3.596
3 UI 180 = EI 300/300	60	300	300	60	60	180	240	60	11	5.162
3 UI 210 = EI 350/350	70	350	350	70	70	210	280	70	15	7.037
3 UI 240 = EI 400/400	80	400	400	80	80	240	320	80	15	9.235

## M6 Transformer Laminations in GOSS



Type	Nominal Dimensions (mm)									Weight (kg/cm)
	A	B	C	D	E	F	G	H	∅	
EI 30	10	30	25	5	5	15	20	5		0.044
EI 42	14	42	35	7	7	21	28	7	3.5	0.085
EI 48	16	48	40	8	8	24	32	8	3.5	0.112
EI 57	19	57	47.5	9.5	9.5	28.5	38	9.5	3.5	0.158
EI 66	22	66	55	11	11	33	44	11	4.5	0.211
EI 76	25.4	76.2	63.5	12.7	12.7	38.1	50.8	12.7	4.5	0.281
EI 96	32	96	80	16	16	48	64	16	5.5	0.480
EI 114	38	114.2	95.1	19.1	19.1	57	75.4	19.1	5.5	0.635
EI 135	45	135	112.5	22.5	22.5	67.5	90	22.5	7.5	0.935



To offer a better service to our customers, AMC has a wide range of accessories available for immediate delivery. AMC is becoming a "one stop shop" where the customer can get all his transformer components under one roof. Accessories available are as follows:

## Steel Accessories

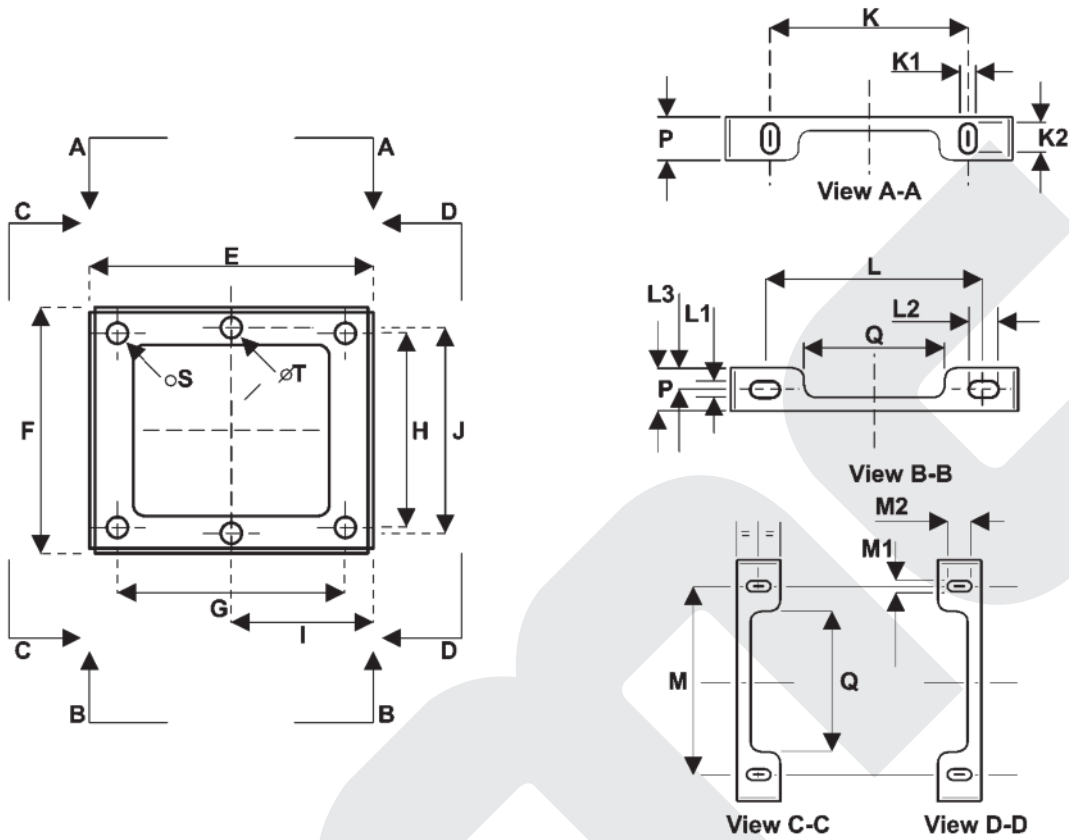
- Box frames
- Mounting frames
- Saddle clamps
- Angle brackets
- Terminal holder brackets

## Plastic Accessories

- Loose lead bobbins in nylon
- UI and 3UI Lamination bobbins
- PCB Transformer bobbins and housings
- Nylon Bobbins with terminals
- Flat pack transformer bobbins and housings
- Terminals
- Nylon insulation washers
- Other types of housings
- Pins

## BOX FRAMES

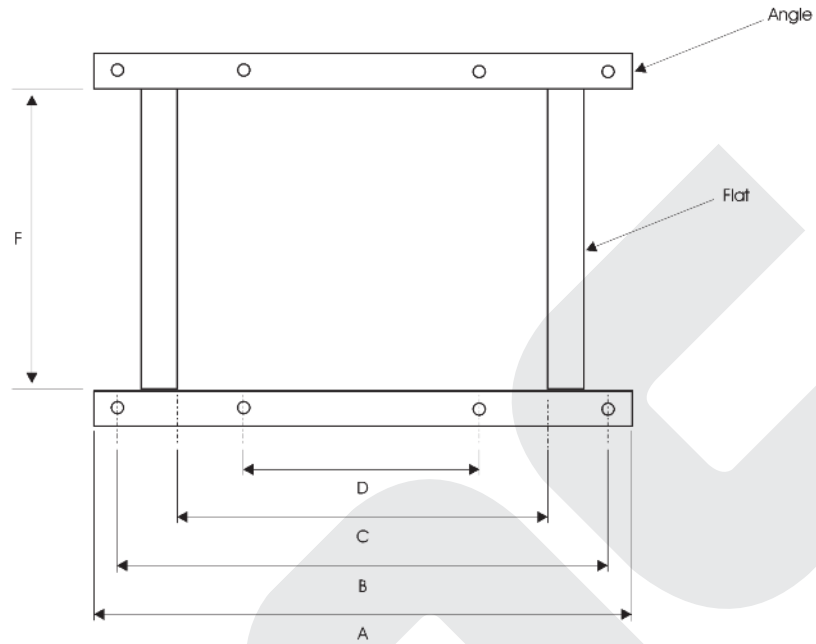
For clamping C cores, Jencores (Unicores) and E I Laminations



SA Code	Type	Nominal Dimensions (mm)																			
		E	F	G	H	I	J	K	K1	K2	L	L1	L2	L3	M	M1	M2	Q	P	$\phi S$	$\phi T$
111	1"	80	69	63	50.5	40	57.5	53.5	4	7.5	57	4	7.5	6.7	53	4	7.5	40.5	13.8	5	5
133	1-1/4"	100.3	85.5	78.5	63	50	72	68.5	5	9	72	5	13.5	7	63.5	5	9	40.3	16.5	6	6
149	1-1/2"	121.5	103.5	95.5	76.5	61	88	74	5	9	78.5	5	20	7.5	63.5	5	9	46	15.5	6.5	6.5
233	1-3/4"	138	115	111	90	-	118	80	6.5	12.5	80	12.5	6.5	12	94	6.5	12.5	58.5	32.5	7	-
246	2"	176	176	146	140	88	158	132	7	11	125	7	13	12.3	122	7	11	80	24.5	8x18	8
41	2-1/2"	220	195	186	155	-	-	165	7	12	-	-	-	-	-	-	-	-	25	10	-
248	3"	246	246	203	203	-	-	177	7	12	-	-	-	-	-	-	-	-	25	13	-
150	-	156	132	125	100	-	-	100.5	9	15	100	9	15	12	90	9	15	65	25	8.5	-
180	-	184	155	150	120	-	-	115	9	14	-	-	-	-	115	8	14	80	28	8	-
192	-	197	165	165	135	-	-	135	6	12	-	-	-	-	105	6	12	-	22	8X15	-
240	-	249	207	200	159.5	123	159.5	150	10	20	-	-	-	-	150	10	20	100	37	12	12

## FABRICATED MOUNTING FRAMES

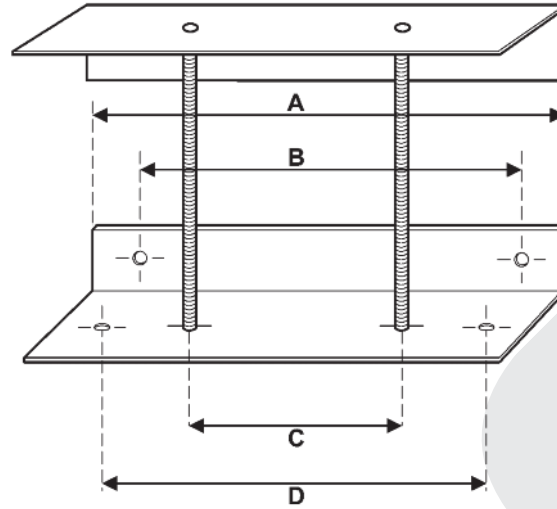
For the standard range of C cores



Code	Nominal Dimensions (mm)					Flat	Angle
	A	B	C	D	F		
C 2000	220	190	130	120	137	25	30 x 30
C 3000	250	225	155	135	145	25	30 x 30
C 5000	280	250	165	175	175	40	40 x 40
C 7500	280	250	165	175	240	40	40 x 40
C 10000	325	300	190	150	240	50	50 x 50
C 12000	400	370	240	255	295	50	50 x 50
C 15000	420	380	255	190	285	50	50 x 50
C 20000	440	390	260	210	315	64	50 x 50

## FABRICATED MOUNTING FRAMES

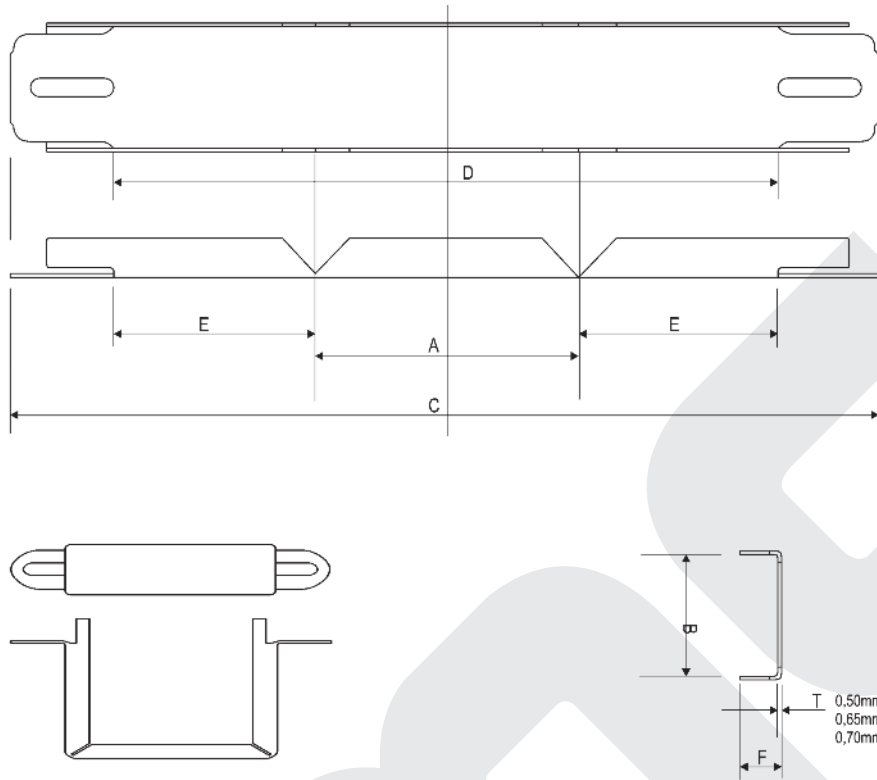
For the standard range of E cores



VA	Nominal Dimensions (mm)				Angle	Rod Length	Rod Diameter
	A	B	C	D			
E 150	150	130	52	100	25 X 25	150	6
E 500	190	165	65	110	25 X 25	170	8
E 750	200	180	75	120	30 X 30	200	8
E 1000	230	200	80	140	30 X 30	230	8
E 1500	200	175	70	130	30 X 30	260	8
E 2000	230	200	85	130	40 X 40	265	8
E 3000	270	240	95	180	40 X 40	265	8
E 4000	290	265	100	200	40 X 40	280	8
E 5000	335	305	120	235	50X 50	315	10
E 7500	370	330	135	260	50 X 50	340	10
E 10000	375	340	140	275	50 X 50	340	10
E 15000	370	330	130	200	50 X 50	400	10
E 17000	380	350	140	220	50 X 50	450	10
E 20000	380	340	140	280	50 X 50	450	10
E 25000	400	340	140	280	50 X 50	450	12
E 30000	400	360	140	270	50 X 50	670	12
E 40000	460	400	170	270	50 X 50	550	14
E 50000	490	430	180	320	50 X 50	600	16

## SADDLE CLAMPS

For E I Laminations

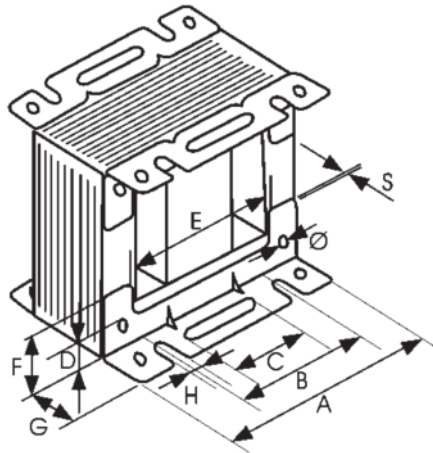


SA Code	Nominal Dimensions (mm)					
	A	B	C	D	E	F
13x13	44	13	131	111	33.5	5.3
16x16	48	16	159	123	37.5	6.5
16x17.5	48	17.5	159	123	37.5	6.5
16x19	48	19	159	123	37.5	6.5
16x25	48	25	159	123	37.5	6.5
19x19	57	19	190	146	44.5	7
19x25	57	25	190	146	44.5	7
19x32	57	32	186	141	42.5	5
22x22	66	22	214.4	170	52	8
22x25	66	25	214.4	170	52	8
22x32	66	32	214.4	170	52	8
25x25	76.2	25	240	196.2	60	8.5



## ANGLE BRACKETS

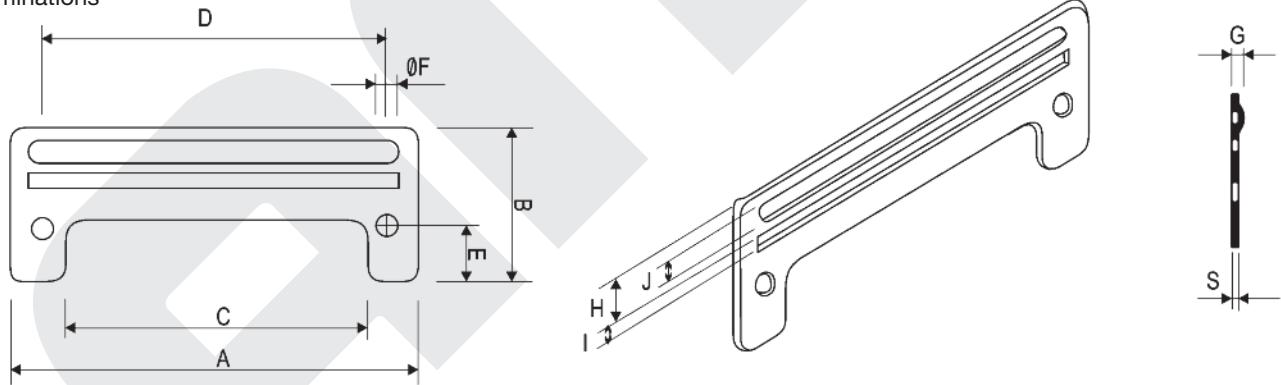
For E I Laminations



SA Code	Type	Nominal Dimensions (mm)									
		A	B	C	D	E	F	G	H	S	Ø
111	1"	76	53.5	43	8.5	54	20	16	4.5	1.5	5
133	1 1/4"	96	68.5	52	12.5	72	25	18	5.5	1.6	6.5
149	1 1/2"	114.5	74	58	15.0	88	28	20	5.5	2.0	6.5
233	1 3/4"	135	90	68	16.0	100	30	22	6.5	2.0	7.5
150	-	150	104.5	84	18.0	109.6	36	21	7	1.5	7.5
180	-	180	114.5	80.5	20.0	125	46	27.5	8.5	2.0	9.0

## TERMINAL HOLDER BRACKETS

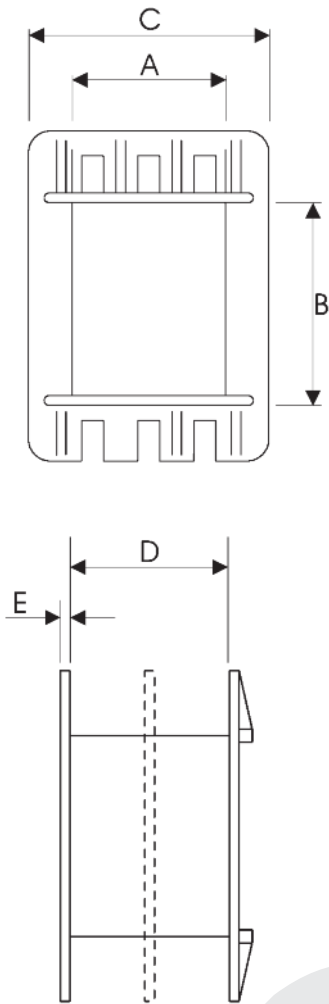
For E I Laminations



SA Code	Type	Nominal Dimensions (mm)											
		A	B	C	D	E	F Ø	G	S	H	I	J	K
111	1"	76	30	54	63.5	10.5	5.0	2.2	1.6	10	3.5	5	11.5
133	1 1/4"	96	35	72	79.5	12.5	6.5	2.2	1.6	10	3.5	5	14
149	1 1/2"	114.5	40	88	95.5	15.5	6.5	2.2	1.6	10	3.5	5	17.5
233	1 3/4"	135	45	100	112	18.5	7.5	2.2	1.6	10	3.5	5	21
150	-	150	50	110	125	18.5	7.5	-	2	10	4	-	15
180	-	180	70	125	150	29.5	9.5	-	2	11	5	-	23

## LOOSE LEAD BOBBINS IN NYLON

For C Cores, Jencores (Unicores), EI, UI and 3UI Laminations



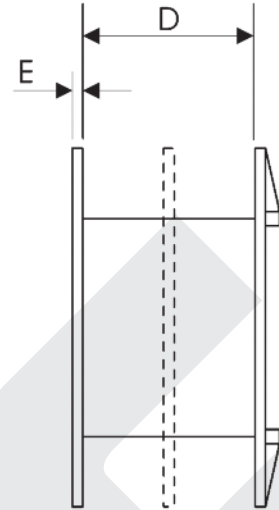
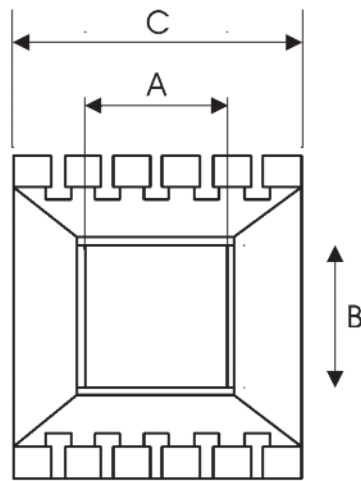
Pattern	SA Code		Bobbin Code	Nominal Dimensions (mm)				
				A	B	C	D	E
-	1/2"	237	13/13	13.0	13.0	27.5	17.6	1.2
145A	5/8"	222	16/16	16.5	16.0	31.0	21.5	1.0
145A			16/25					
35A	3/4"	70	19/19	19.5	19.0	37.0	25.4	1.2
35A			19/25					
147A	7/8"	223	22/22	22.5	22.0	43.0	30.0	1.2
147A			22/25					
147A			22/30					
147A			22/35					
147A			22/40					
29A	1"	111	25/25	25.5	26.0	49.0	33.6	1.6
29A			25/30					
29A			25/35					
29A			25/40					
196A	1-1/8"	158	28/30	28.5	30.0	54.5	38.0	1.5
196A			28/40					
78A	1-1/4"	133	32/25	32.5	25.0	63.5	44.0	1.5
78A			32/32					
78A			32/35					
78A			32/40					
78A			32/45					
78A			32/50					
78A			32/60					
78A			32/70					
120A	1-1/2"	149	38/38	38.0	38.0	75.0	53.0	1.5
120A			38/44					
120A			38/50					
120A			38/60					
120A			38/76					
248	1-3/4"	233	45/45	45.5	45.0	89.0	62.0	2.0
248			45/50					
248			45/60					
248			45/70					
248			45/90					
** ENDS & CHANNELS	2"	246	50/50 50/65 50/75 50/100	50.5	55.0 65.0 75.0 100.0	120.0	107.0	3.0

\* Used for C Cores

## LOOSE LEAD BOBBINS IN NYLON (cont.)

Pattern	SA Code		Bobbin Code	Nominal Dimensions (mm)				
				A	B	C	D	E
EI 150 EI 150 EI 150 EI 150 EI 150 EI 150	50mm	150	50/50	51	50	100	70	2.0
50/60			60					
50/70			70					
50/80			80					
50/90			90					
50/100			100					
EI 180 EI 180 EI 180 EI 180 EI 180 EI 180	60mm	180	60/60	61	60	117	83	2.0
60/70			70					
60/80			80					
60/90			90					
60/100			100					
60/120			120					
EI 192 EI 192 EI 192 EI 192 EI 192	64mm	192	64/64	65	64	126	90.6	2.5
64/80			80					
64/90			90					
64/100			100					
64/120			120					
EI 240 EI 240 EI 240 EI 240 EI 240	80mm	240	80/80	80	80	158	109	3.0
80/90			90					
80/100			100					
80/110			110					
80/120			120					
UI 150 / 3UI 150	50x50x150		UI 150/50	51	50	97.5	144	2.0
	50x60x150		UI 150/60		60			
	50x70x150		UI 150/70		70			
	50x80x150		UI 150/80		80			
	50x90x150		UI 150/90		90			
	50x100x150		UI 150/100		100			
UI 180 / 3UI 180	60x60x180		UI 180/60	61	60	117.5	173	2.0
	60x70x180		UI 180/70		70			
	60x80x180		UI 180/80		80			
	60x90x180		UI 180/90		90			
UI 210 / 3UI 210	70x70x210		UI 210/70	71	70	138	203	3.0
	70x80x210		UI 210/80		80			
	70x90x210		UI 210/90		90			
	70x100x210		UI 210/100		100			
UI 240 / 3UI 240	80x80x240		UI 240/80	81	80	159	232	3.0
	80x100x240		UI 240/100		100			
	80x120x240		UI 240/120		120			
	80x140x240		UI 240/140		140			

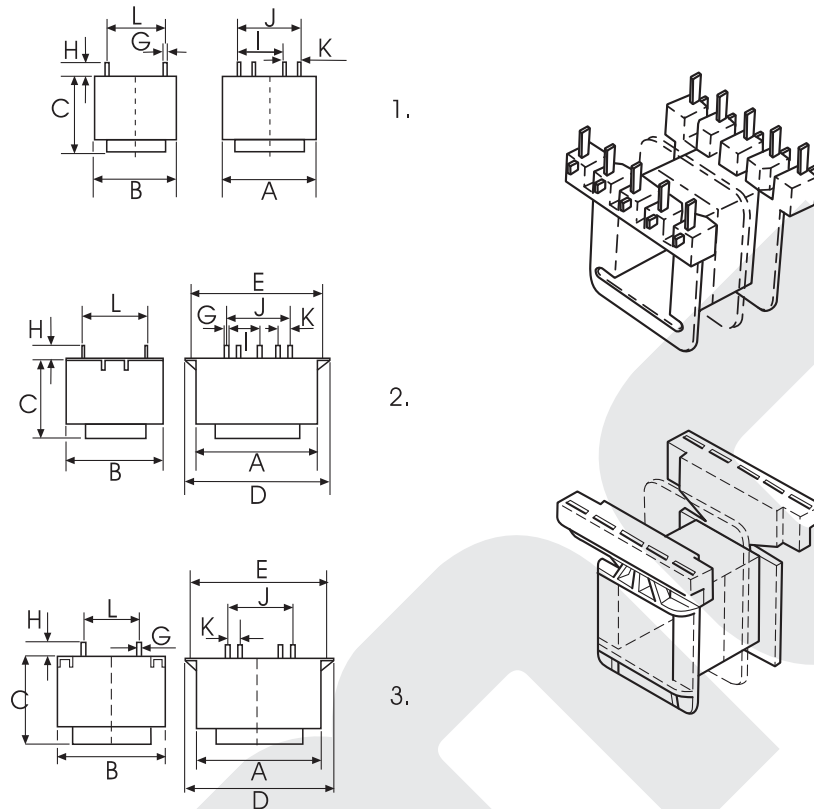
## NYLON BOBBINS WITH PIN SPACINGS



Pattern	SA Code		Bobbin Code	Nominal Dimensions (mm)				
				A	B	C	D	E
* 145A	5/8"	222	16/16	16.3	15.9	29.8	20.4	1.5
* 35A	3/4"	70	19/19	19.4	19.1	36.2	25.3	1.5
* 35A			19/25					
* 147A	7/8"	223	22/22	22.6	22.2	42.0	29.5	1.8
* 147A			22/25					
* 147A			22/32					
* 29A	1"	111	25/25	25.8	25.4	48.7	34.0	1.9
* 29A			25/32					
* 29A			25/38					
* 196A	1-1/8"	158	29/29	29	28.6	54.6	39.0	1.8
* 78A	1-1/4"	133	32/32	32.3	31.8	61.0	43.5	1.8

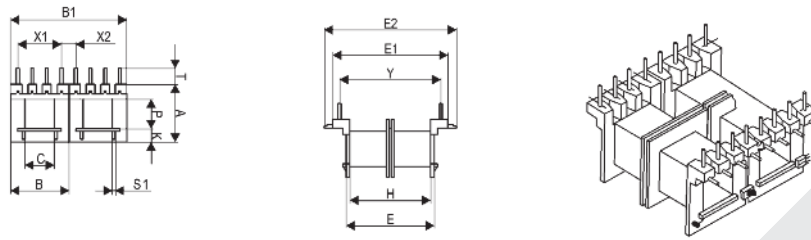
\* Available in single and double section.

## HOUSINGS AND BOBBINS FOR P.C.B. TRANSFORMERS

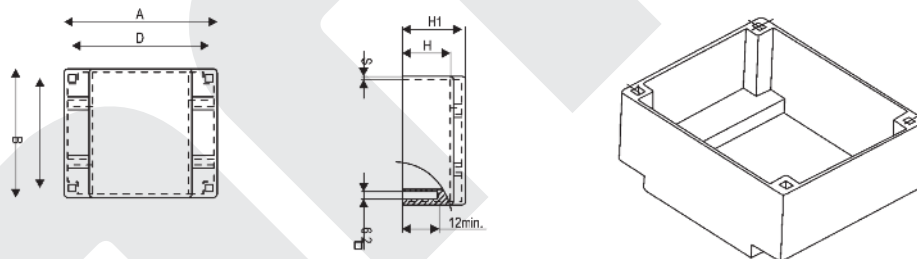


Type No.		Housing Dimensions (mm)					Bobbin Pin Spacing (mm)						Fig.	VA Rating
		A	B	C	D	E	G	H	I	J	K	L		
EI 30/12.5	2st	32	27	24	-	-	0.8	5	15	20	5	20	1	1
EI 30/15.5	2st	32	27	27	-	-	0.8	5	15	20	5	20	1	1.5
EI 30/18	2st	32	27	30	-	-	0.8	5	15	20	5	20	1	1.75
EI 38/13.6	2st	42	35	28	-	-	0.8	5	15	20	5	25	1	2.0
EI 42/14.8	2st	45	38	33	63.5	55	1.5	5	12.5	25	5	25	2	3.0
EI 48/16.8	2st	51	43	38	68.5	60	1.5	5	15	25	5	27.5	2	5.5
EI 54/18.8	2st	57	48	42	75.0	65	1.5	7.5	27	35	7.5	30	3	10.0
EI 60/21	2st	64	54	47	81.0	72.5	1.5	7.5	25	30	5	33	3	15.0
EI 66/23	2st	70	59	49	87.0	78	1.5	5	30	35	5	35	3	22.0

## TRANSFORMER BOBBINS AND HOUSINGS FOR SU FLAT PACK LAMINATION

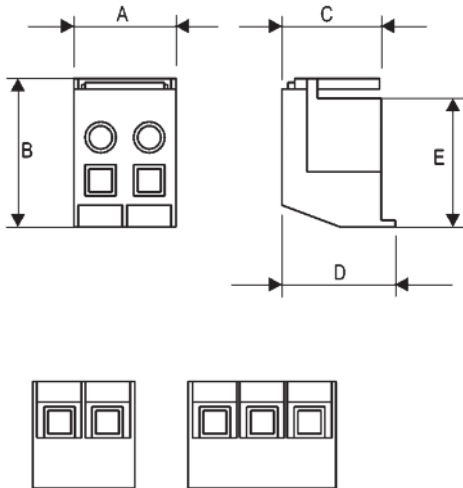


Code	VA/Set	Nominal Dimensions (mm)																	
		A	B	B1	E1	E2	S1	H	S2	I	L	K	T	X1	X2	Y	C	P	E
UI 30/10	3	19.8	19.9	39.8	39.6	42.8	0.8	28.0	1.2	13.4	13.4	4.3	5.5	5x3	5x1	20	10.6	10.5	29.6
UI 30/16.5	6	25.8	19.9	39.8	39.6	42.8	0.8	28.0	1.2	13.4	13.4	4.3	5.5	5x3	5x1	20	10.6	16.5	29.6
UI 39/10.5	9	22.5	25.9	51.8	50	55.2	0.95	37.0	1.2	17.9	17.9	5.6	5.5	5x4	6x1	45	13.6	10.5	38.6
UI 39/13.5	12	25.5	25.9	51.8	50.0	55.2	0.95	37.0	1.2	17.9	17.9	5.6	5.5	5x4	6x1	45	13.6	13.5	38.6
UI 39/17	16	29.0	25.9	51.8	50.0	55.2	0.95	37.0	1.2	17.9	17.9	5.6	5.5	5x4	6x1	45	13.6	17.0	38.6
UI 39/21	20	33.0	25.9	51.8	50.0	55.2	0.95	37.0	1.2	17.9	17.9	5.6	5.5	5x4	6x1	45	13.6	21.0	38.6
UI 48/17	30	34.4	31.9	63.8	57.2	63.6	1.2	45.3	1.5	21.9	21.9	7.8	5.5	5x5	7x1	52.5	17.0	17.0	47.5
UI 48/26	48	43.4	31.9	63.8	57.2	63.6	1.2	45.3	1.5	21.9	21.9	7.8	5.5	5x5	7x1	52.5	17.0	26.0	47.5



Code	VA/Set	Nominal Dimensions (mm)									
		A	B	D	I	S	H	H1	C	P	E
UI 30/10	3	52.8	44	47.5	37.5	0.9	16.9	22.4	10	10	30
UI 30/16.5	6	52.8	44	47.5	37.5	0.9	22.9	28.4	10	16	30
UI 39/10.5	9	68.0	57.0	62.5	50.0	1.0	17.8	24.5	13	10	39
UI 39/13	12	68.0	57.0	62.5	50.0	1.0	21.3	27.8	13	13	39
UI 39/17	21	68.0	57.0	62.5	50.0	1.0	24.8	31.3	13	17	39
UI 39/21	20	68.0	57.0	62.5	50.0	1.0	28.8	35.3	13	21	39
UI 48/17	30	85.8	69.6	75.0	60.0	1.2	28.2	37.2	16	17	48
UI 48/26	48	85.8	69.6	75.0	60.0	1.2	37.2	46.2	16	26	48

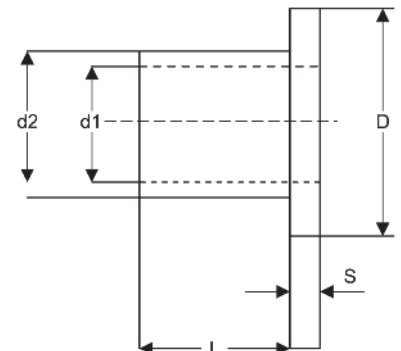
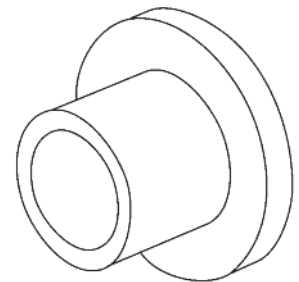
## TERMINALS



Type	Nominal Dimensions (mm)				
	A	B	C	D	E
16 Amp 2 Way	23.5	28.5	20.0	25.0	25.0
16 Amp 3 Way	28.5	28.5	20.0	25.0	25.0
30 Amp 2 Way	23.5	28.5	20.0	25.0	25.0
30 Amp 3 Way	34.5	28.5	20.0	25.0	25.0
63 Amp 1 Way	19.0	36.0	36.5	40.0	31.5

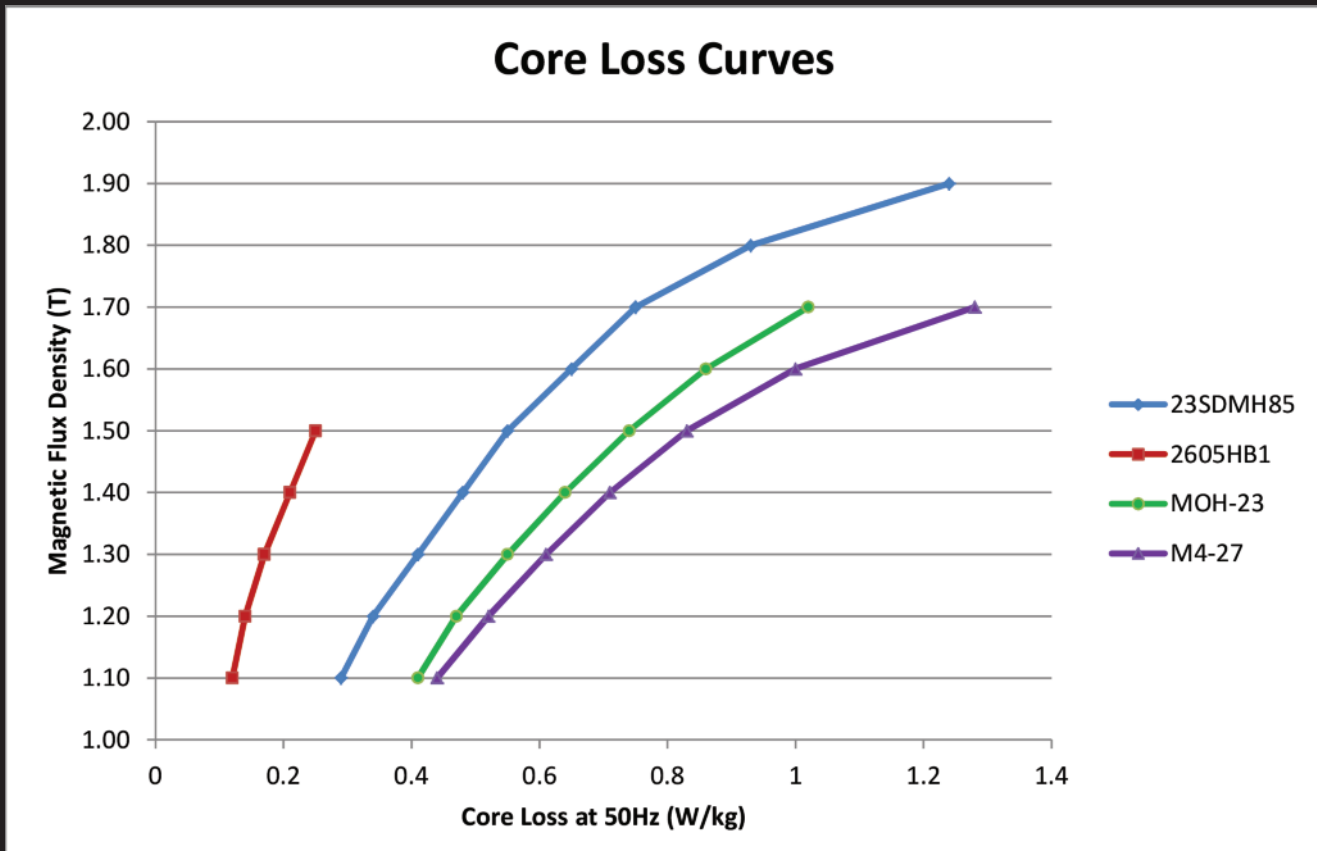
## NYLON INSULATION WASHERS

Code/ID	D/mm	d1/mm	d2/mm	S/mm
3	5.5	3.2	4.2	0.8
4	7.0	4.2	5.2	1.0
5	8.5	5.2	6.2	1.2
6	12.0	6.3	7.7	2.0
8	17.0	8.3	10.5	2.7



**NOTE:** All dimensions have a tolerance of 0.2 mm

# Performance Curves 10





## GOSS

Magnetic Properties according to Specifications conforming to AISI\* standards.

GOSS is guaranteed in terms of its maximum core loss at either 1.5 T or 1.7 T and at 50 Hz. Induction is guaranteed at 800 A/m.

Grade	Thickness (mm)	Density (g/cm <sup>2</sup> )	Max Core Loss at 50Hz (watt/kg)		Min Induction at 800A/m
			1.5T	1.7T	
23H75	0,23	7,65	0,52	0,75	1,88
23H85	0,23	7,65	0,59	0,85	1,88
23H90	0,23	7,65	0,64	0,92	1,88
MOH	0,27	7,65	0,77	1,05	1,88
M4	0,27	7,65	0,90	1,28	1,85
M5	0,30	7,65	0,97	1,39	1,80
M6	0,35	7,65	1,11	1,57	1,80

### NOTE:

Tests are conducted in accordance with JIS C 2550 – 1986 methods which are practically the same as ASTM A 34 using specimens taken longitudinal to the rolling direction and then annealed to develop full magnetic properties.

### Magnetising Characteristics and Core Losses Performance Curves

These curves are taken from samples off the production line, to give a good indication of results that can be obtained in the final product.

The magnetic characteristics given for cores in M2H and M5 GOSS give only the material VA/kg.

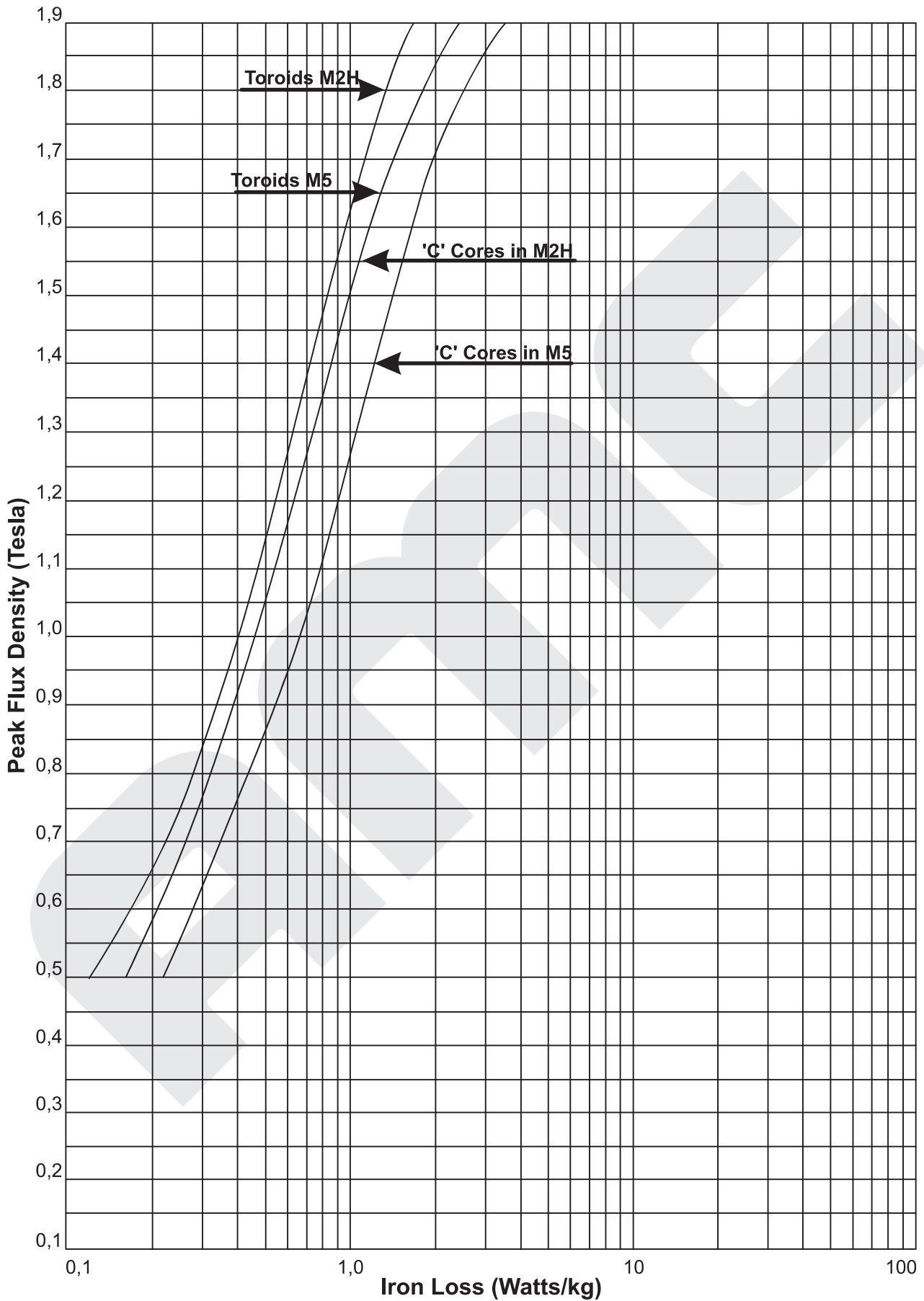
The total VA/kg for a C Core = (Material VA/kg + Gap VA/kg) x Core Weight.

The gap allowance is given by:

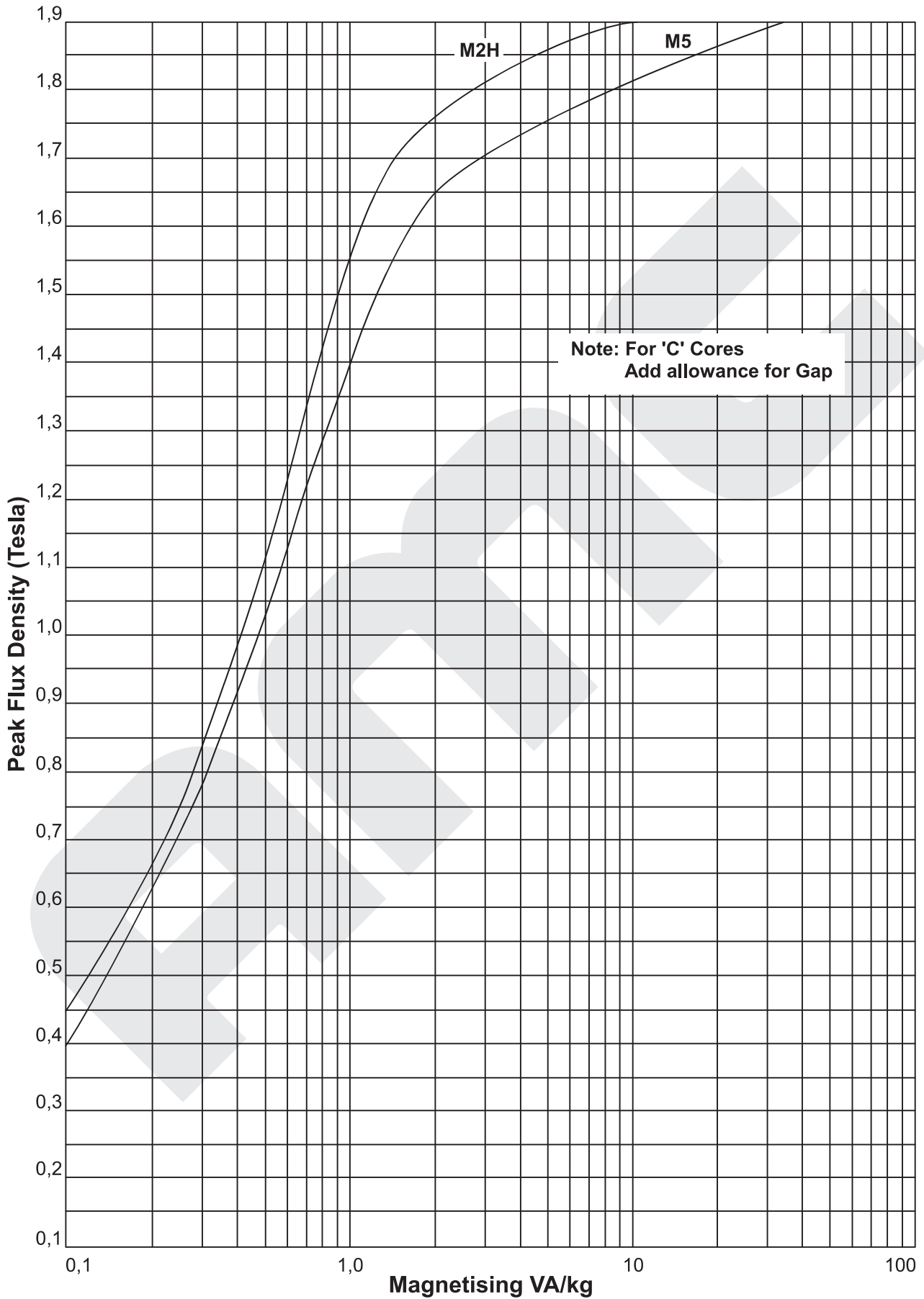
$$\frac{27\hat{B}^2}{Lm} \times VA/KG$$

Where  $\hat{B}$  is the peak flux density in Tesla, and Lm the mean magnetic path in cm.

## Core Loss (Iron Losses) - 0.3mm GOSS - Tested at 50Hz



## Magnetising Characteristics - Toroids in 0.3mm GOSS - Tested at 50Hz



## NOSS

### Magnetic Properties to the Specifications in conformity with JIS\*

Each grade is guaranteed in terms of minimum core loss, minimum induction and minimum lamination factor. The core loss value is specified at either 1.0 T or 1.5 T and at 50 Hz. Induction is guaranteed at 5000 A/m.

Unless otherwise specified, each grade is supplied with its core loss value at 1.5 T and 50 Hz and its induction value at 5000 A/m.

Grade	Thickness (mm)	Density (g/cm <sup>2</sup> )	Max Core Loss at 50Hz (watt/kg)		Min Induction at 5000 A/m, T
			1.0T	1.5T	
35H210	0,35	7,65	0,90	2,10	1,62
50H290	0,5	7,65	1,15	2,90	1,62
50H350	0,5	7,65	1,50	3,50	1,62
50H470	0,5	7,65	2,00	4,70	1,64
50H530	0,5	7,65	2,30	5,30	1,65
50H600	0,50	7,65	2,60	6,00	1,66

#### NOTE:

Tests are conducted in accordance with JIS C 2550 – 1986 methods, using as-sheared specimens one half longitudinal and one half transverse to the rolling direction.

\*JIS = Japanese Industrial Standards.

### Magnetising Characteristics and Core Losses Performance Curves

These curves are taken from samples off the production line, to give a good indication of results that may be obtained in the final product. Results from our cores and laminations will vary according to air gap, mean magnetic path, and stresses due to stamping (if not stress relief annealed).

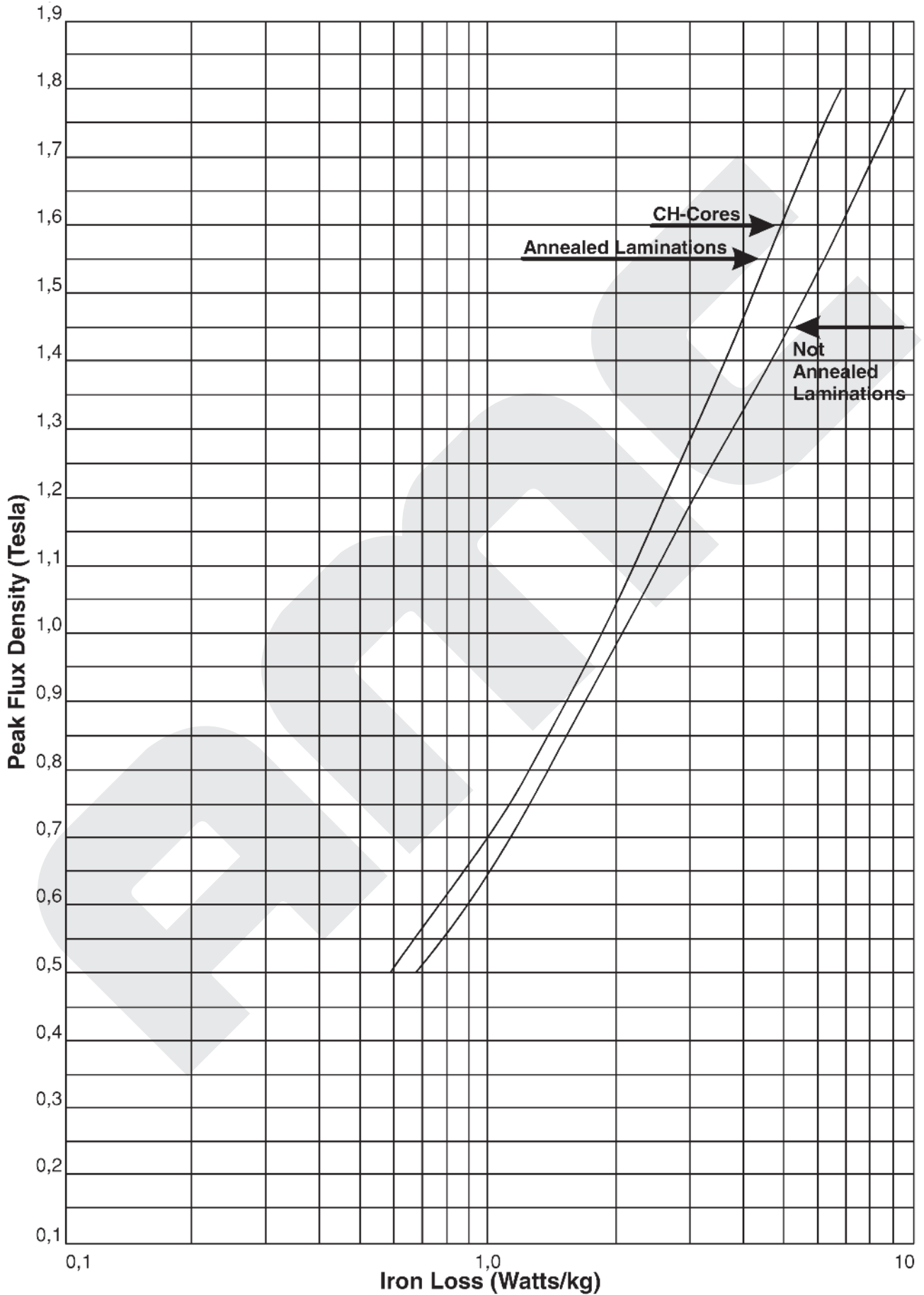
The magnetic characteristics given for cores in 530 NOSS give only the material VA/kg.  
The total VA/kg for any C Core = (Material VA/kg + Gap VA/kg) x Core Weight.

The gap allowance is given by:

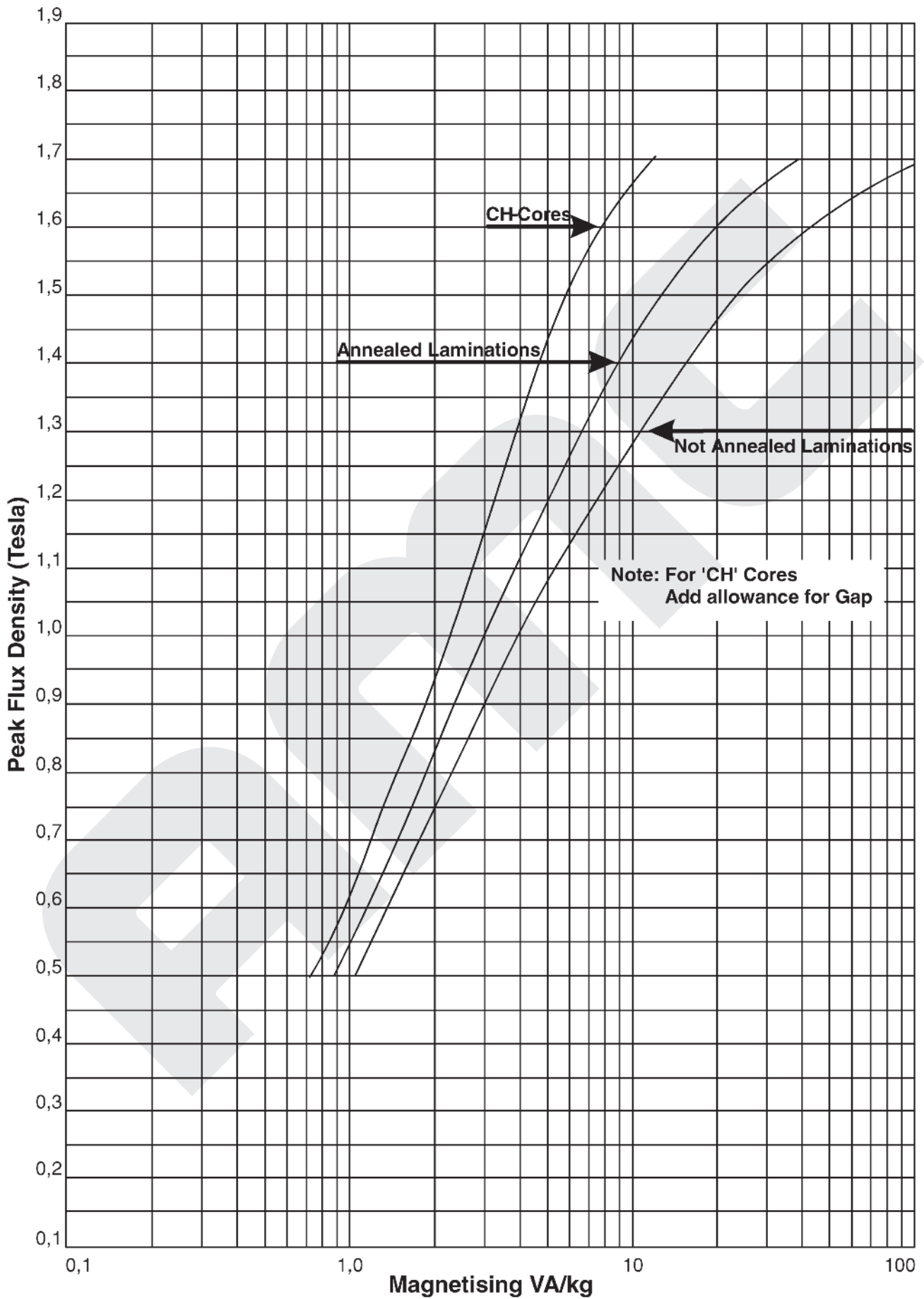
$$\frac{27\hat{B}^2}{Lm} \times VA/KG$$

Where  $\hat{B}$  is the peak flux density in Tesla, and Lm the mean magnetic path in cm.

Core Loss (Iron Losses) - 0.5 mm 530 NOSS – Tested At 50Hz



## Magnetising Characteristics – 0.5mm 530 NOSS – Tested At 50 Hz



**AMC**

# Contact Information 11

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