

# Technical Data



**VärmeKabel**  
**Teknik**

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## *Drawings*

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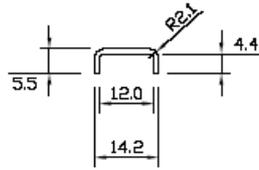
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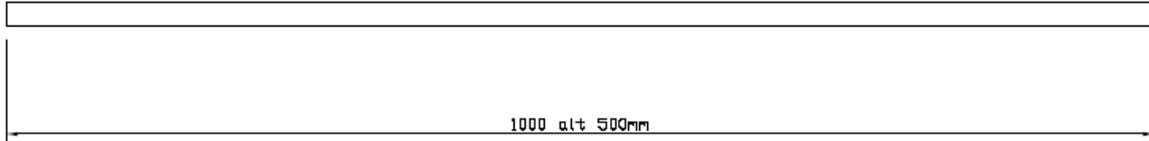
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STANDARD CAP

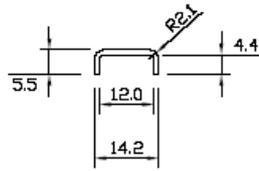


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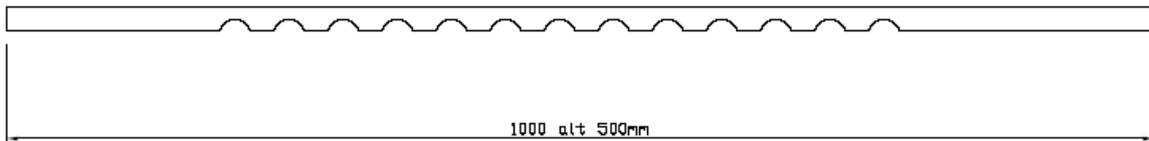

Datun	Slgs
Revisi	
Revisi	040207
Code	JGN

Cap type Velox 6-12-1  
JIN

Direksi	
VilmaKabaalTelenik	
W. No.	1
	6-12-1



FLEXIBLE CAP

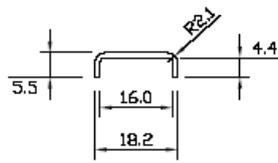


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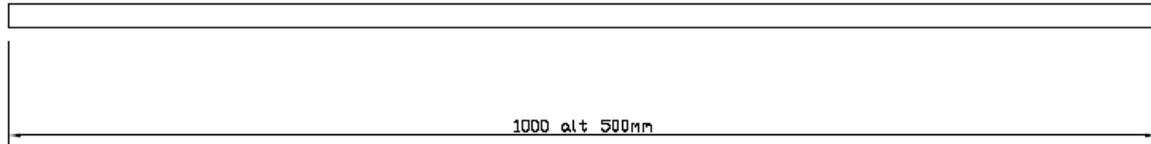

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Revisi	040207
Code	JGN

Cap type Velox 6-12-F  
JIN

Direksi	
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W. No.	1
	6-12-F



STANDARD CAP



**VITAC**

			Datum	Sign
			Reviz.	
			Riisad 040927	B.G.H.
			Goalk.	

Cap type Velox 6-16-1

DIN

Ürün No.

VİTAC Kablo Tekniklik

Reviz.

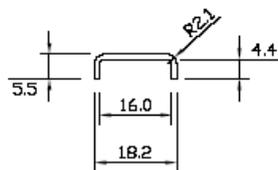
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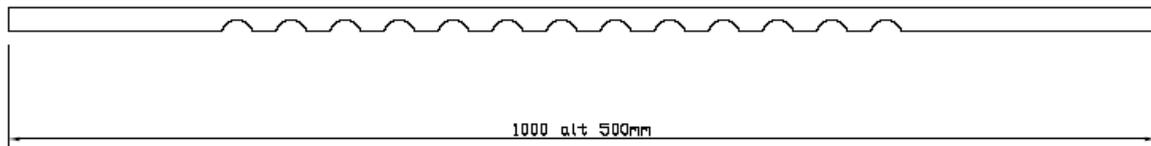
Yazan

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6-16-1



FLEXIBLE CAP



**VITAC**

			Datum	Sign
			Reviz.	
			Riisad 040927	B.G.H.
			Goalk.	

Cap type Velox 6-16-F

DIN

Ürün No.

VİTAC Kablo Tekniklik

Reviz.

1

Çizim

Yazan

1:1

6-16-F

Updated Clip chart as at 12/05/04  
 Compliance with RT/E/S/40 045 : Rail clips (AC)

Specif. Section	Rail type	Clip Description	Foot thickness (mm)	Art.nr/ drawing no.	Britclip equivalent	
20.1	a	Flat bottom Full Depth BS113A (56E1)	Stock rail heater	11.2	VX13-43-60	RHC-001
	b	Flat bottom Full Depth BS113A (56E1)	Switch rail heater	11.2	VX13-43-60	RHC-001
	c	Flat bottom Full Depth BS113A (56E1)	Stock or switch rail heater Connection clips	11.2	VX13-43-60*	RHC-004
20.2	a	Flat bottom Full Depth BS113A (56E1)	Stock rail heater	11.2	VX13-43-60	RHC-001
	b	Flat bottom Full Depth BS113A (56E1)	Stock rail heater Connection clip	11.2	VX13-43-60*	RHC-004
	c	Flat bottom Shallow Depth UIC54B (54E1A1)	Switch rail heater	20.0	VX22-43-69	RHC-003
	d	Flat bottom Shallow Depth UIC54B (54E1A1)	Switch rail heater connection clip	20.0	VX22-43-69*	RHC-014
20.3	a	Flat bottom Shallow Depth Zu1-60 (60E1A1)	Switch rail heater	20.0	VX22-43-69	RHC-003
	b	Flat bottom Shallow Depth Zu1-60 (60E1A1)	Switch rail heater connection clip	20.0	VX22-43-69*	RHC-014
	c	Flat bottom Full depth UIC60 (60E1)	Stock rail heater	11.5	VX22-43-69	RHC-001
	d	Flat bottom Full depth UIC60 (60E1)	Stock rail heater connection clip	11.5	VX22-43-69*	RHC-004
20.4	a	Bullhead 95 RBH	Switch rail heater (head)	20.6	VX29-43-head	RCH-025
	b	Bullhead 95 RBH	Stock or switch rail heater connection clip (foot)	20.6	VX36-43-foot	RHC-017

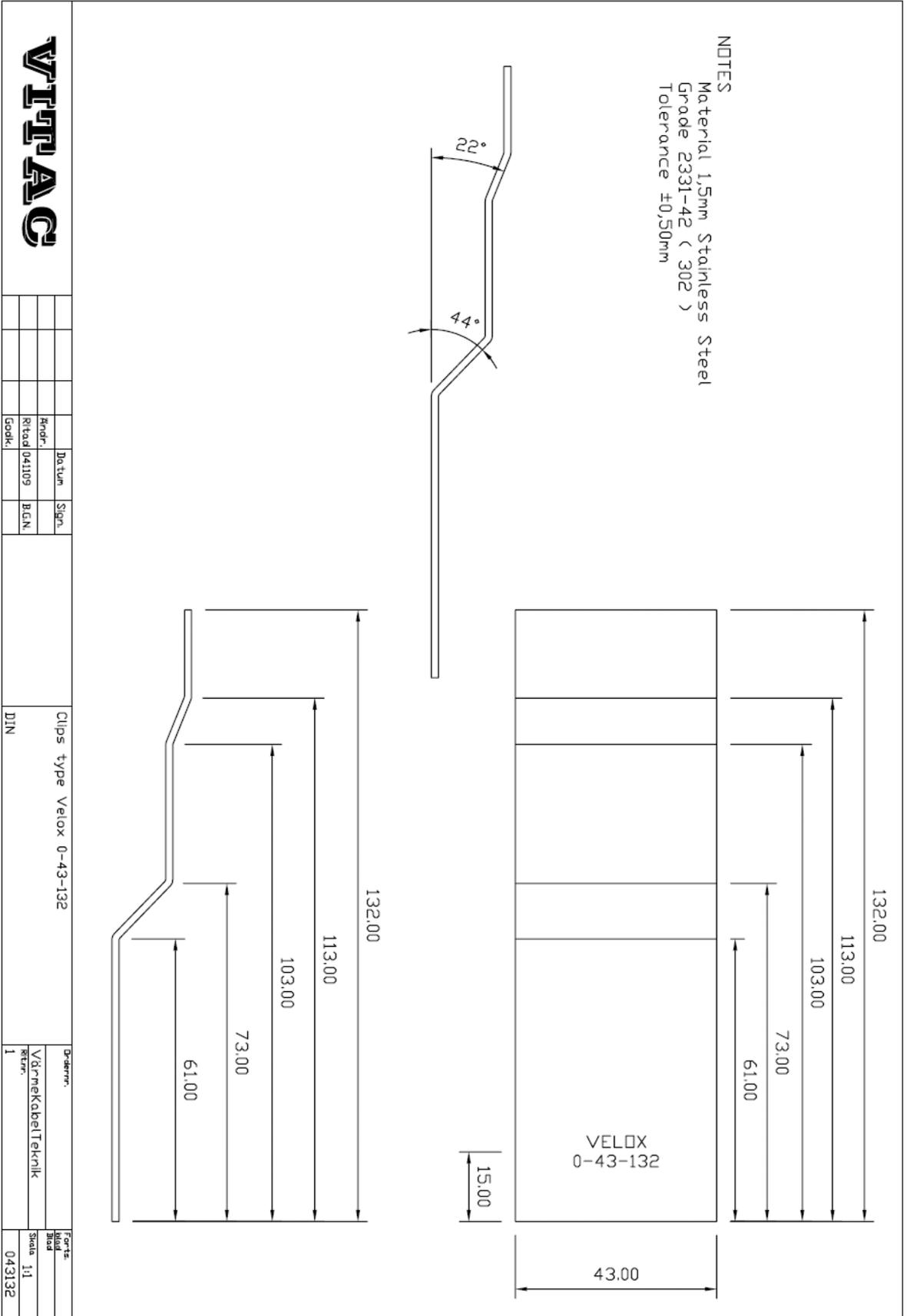
\*Incorporates a Jubilee clips

**Special rail clips**

7.8.5	P6*	Non slotted jaw blocks – under head fitting	Stock rail heater	N/A	**	N/A
7.8.5	P7*	UIC60 Type points – web fitting	Stock rail heaters	N/A	13-22-72	N/A
		UIC60 – web fitting	Switch rail heaters	N/A	22-22-72	N/A

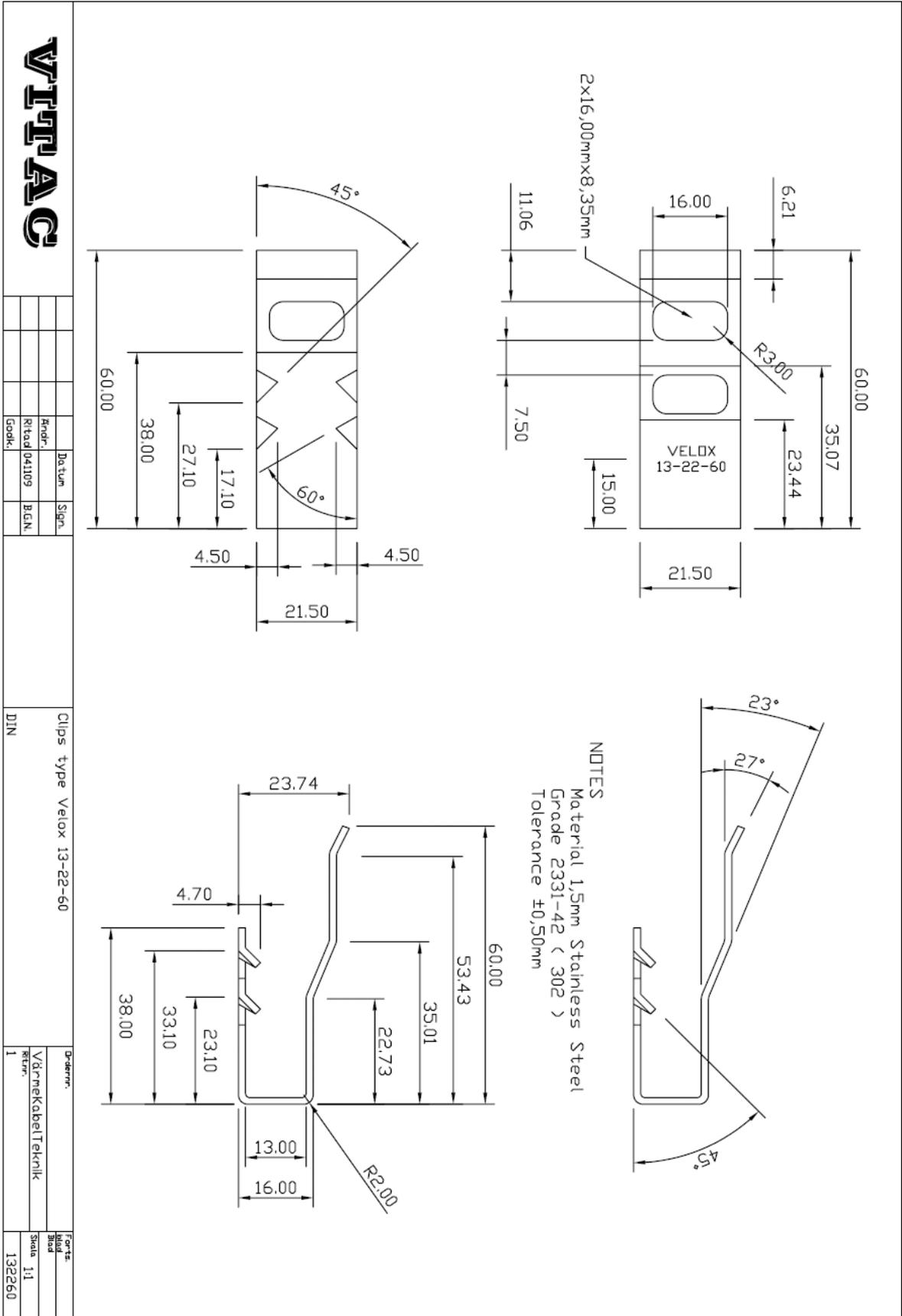
\*Paragraph number

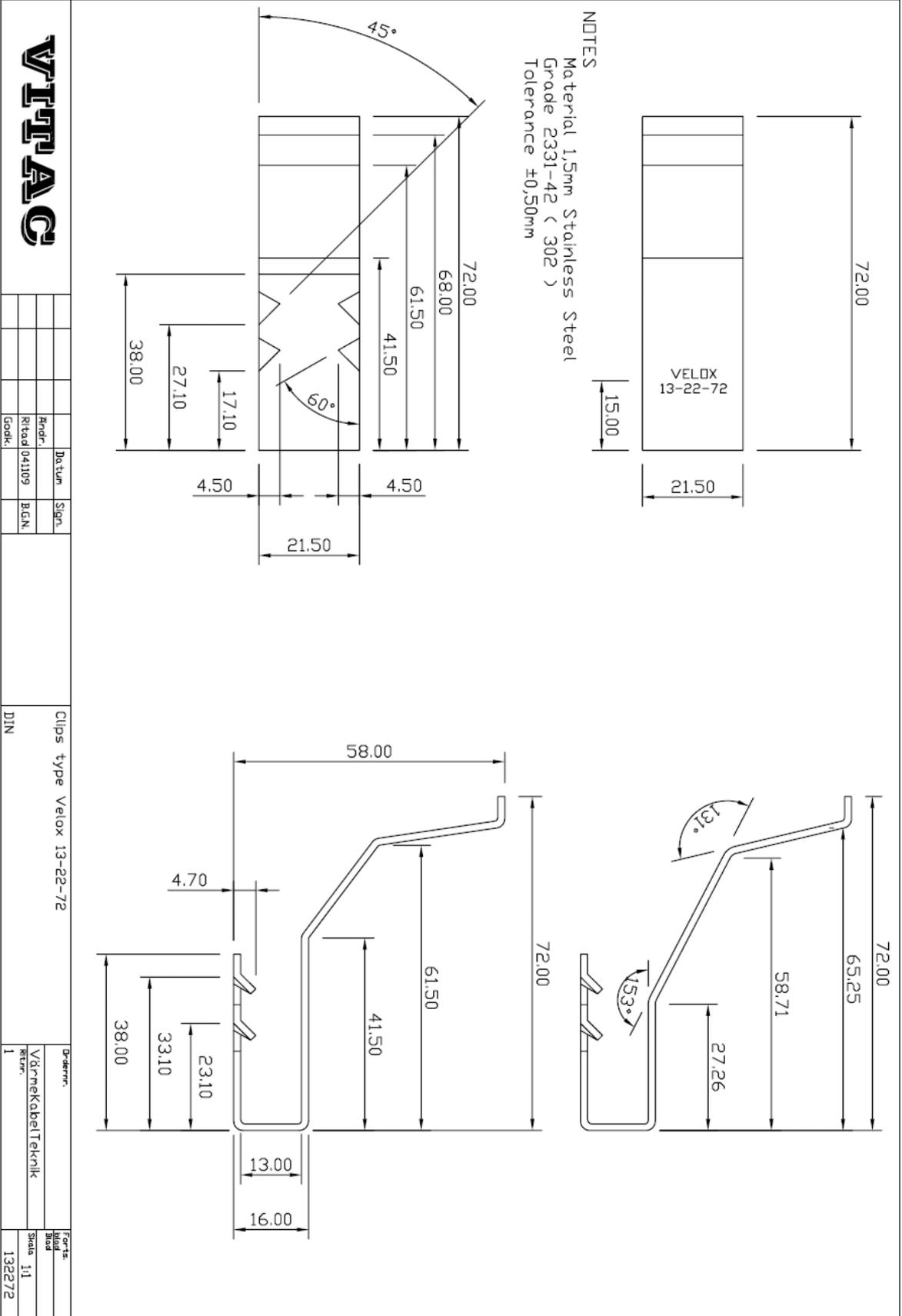
\*\*Manufactured if required (not stock-item)



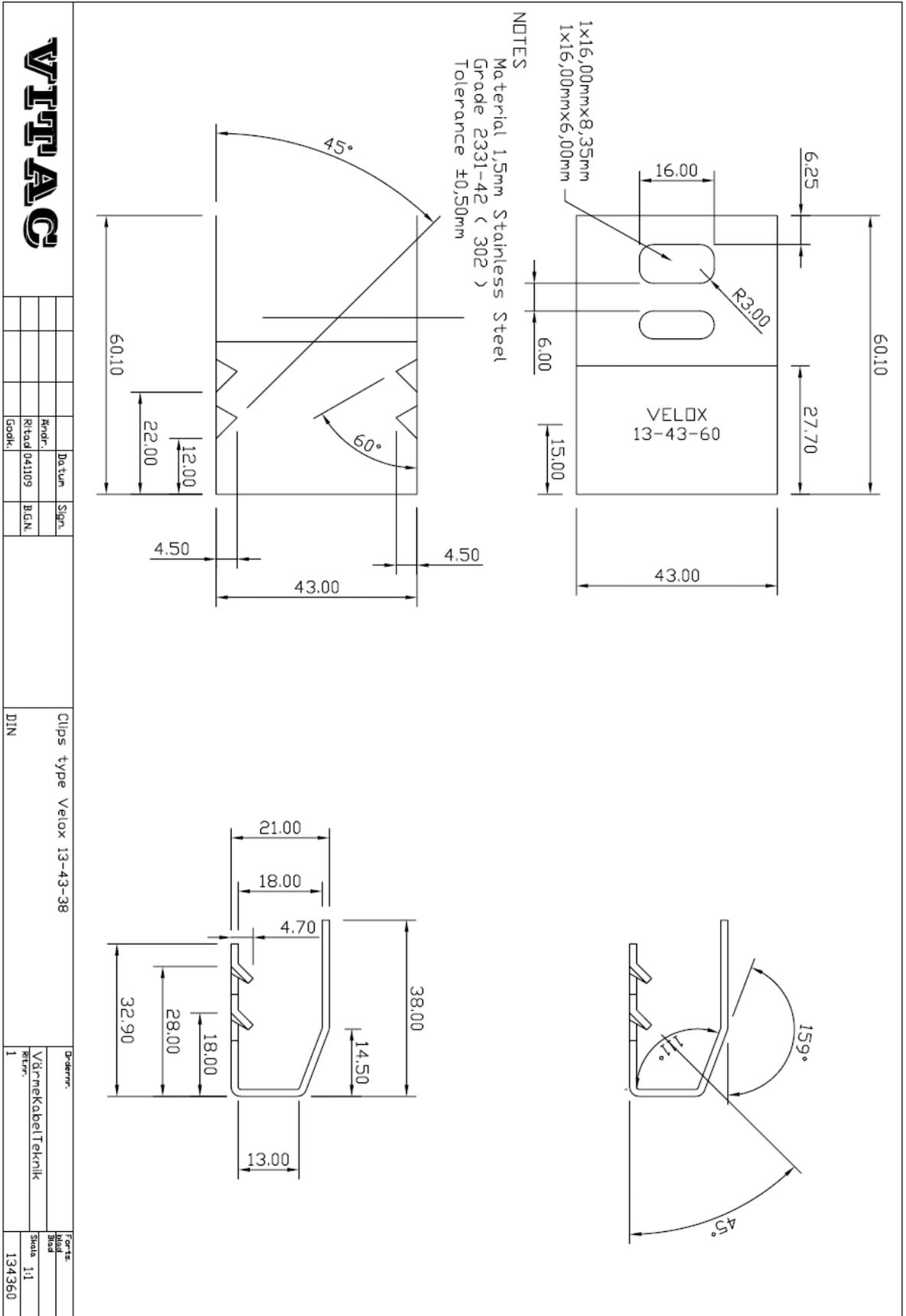
NOTES  
 Material 1,5mm Stainless Steel  
 Grade 2331-42 ( 302 )  
 Tolerance ±0,50mm

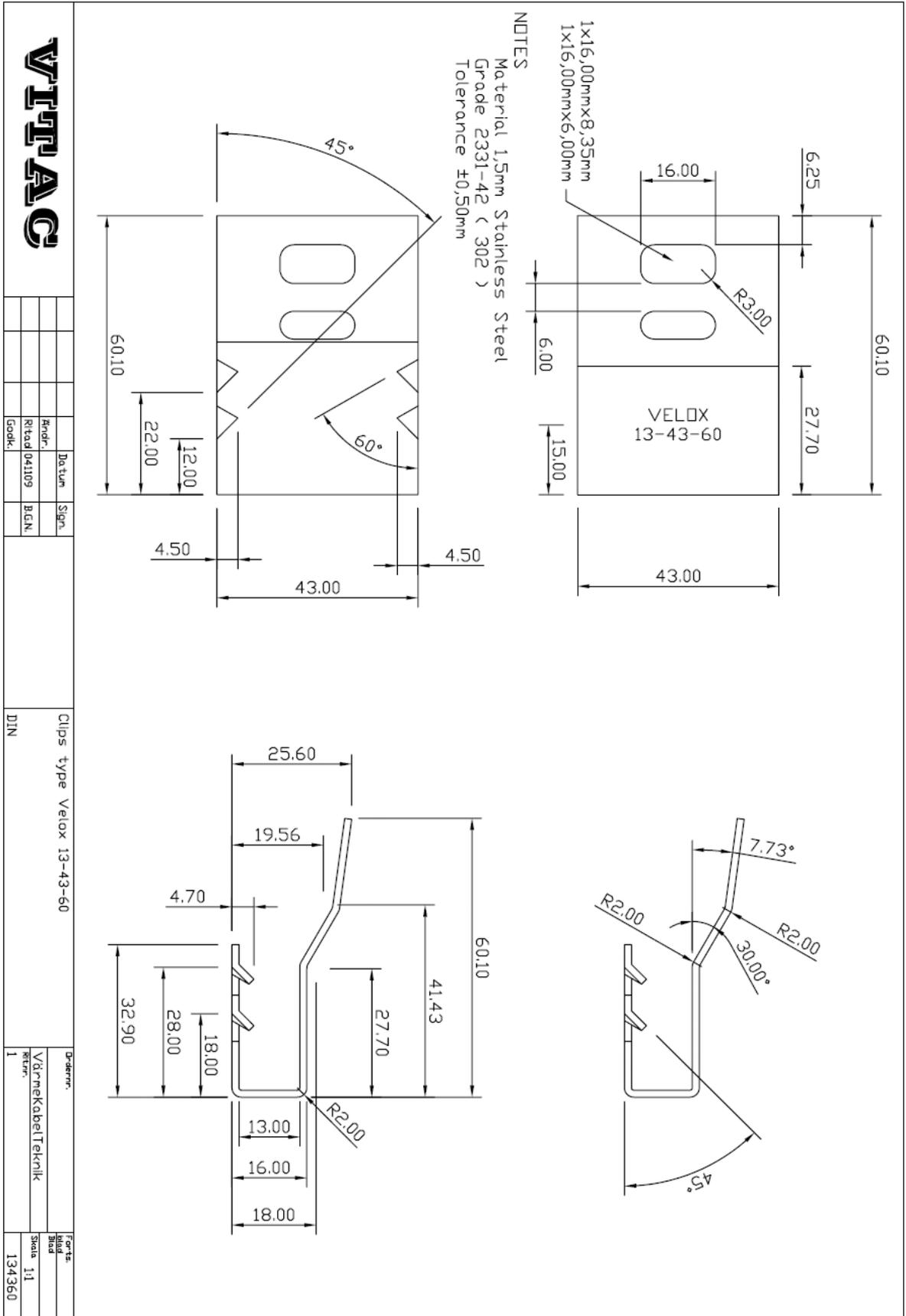
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		Rizad	04109	B.G.N.		1		Štala
		Godi.						043132



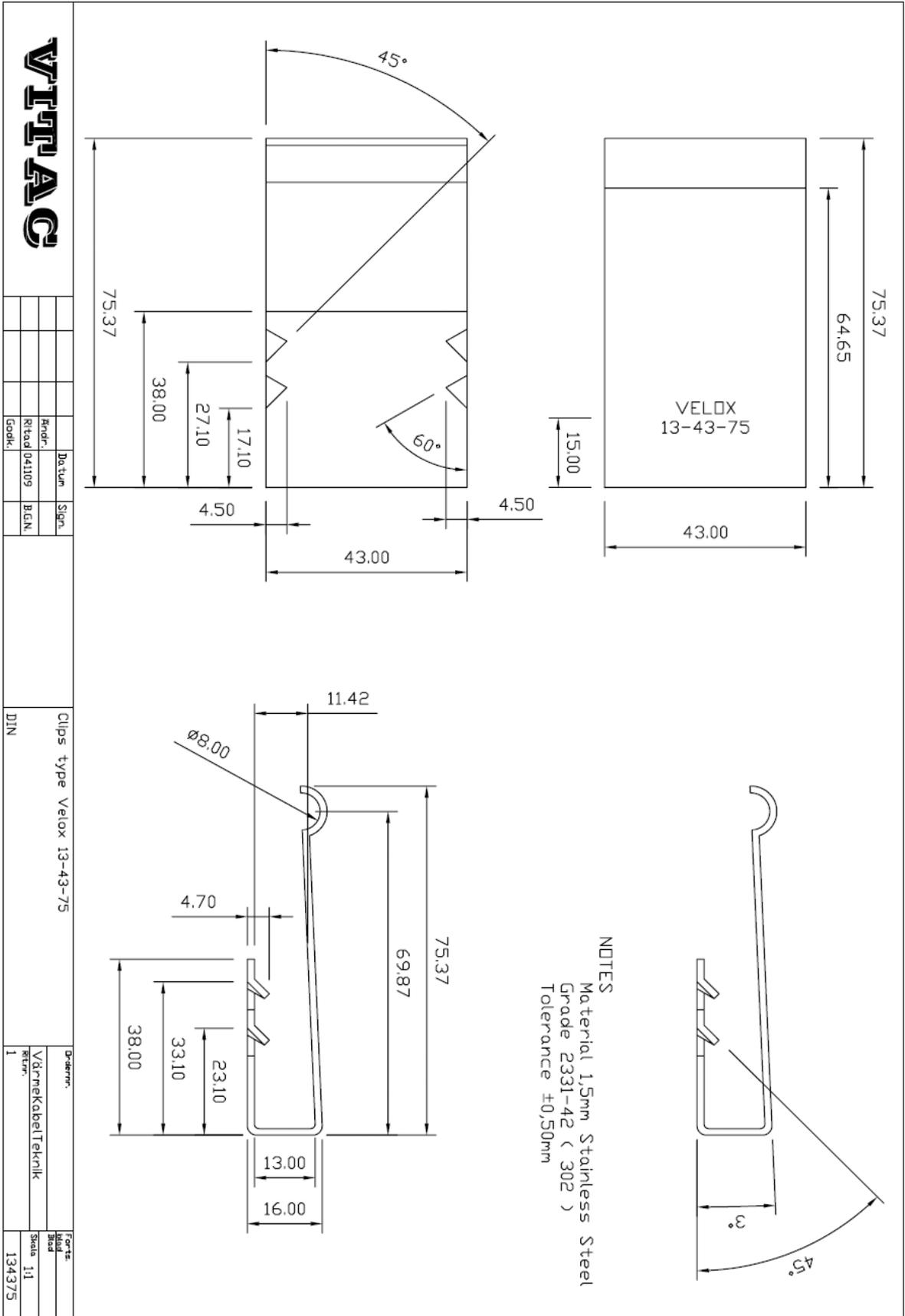


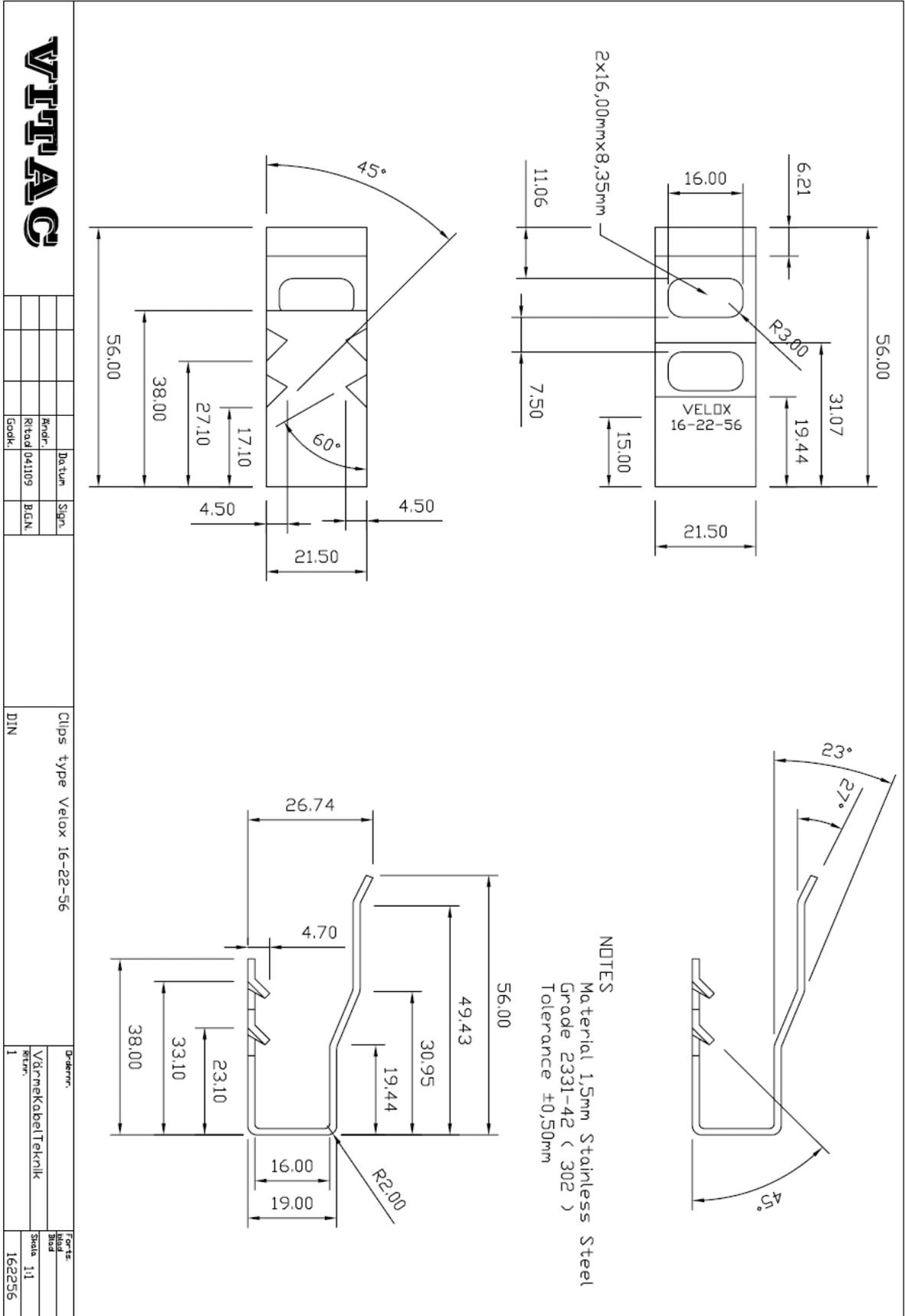
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		Redr.	041109	BGN.				VärmeKabel Teknik	Stals	1:1	132272
		Godk.									



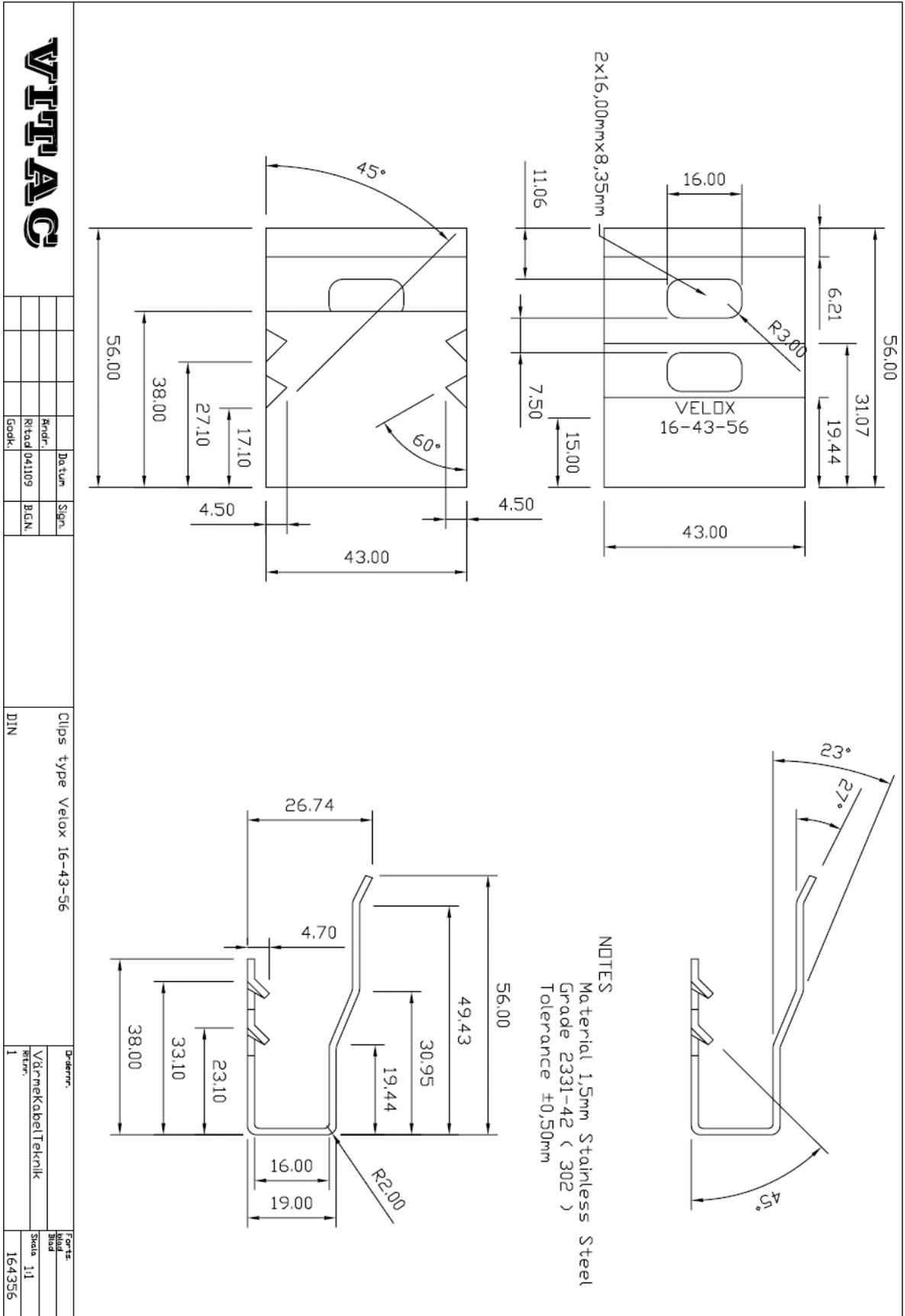


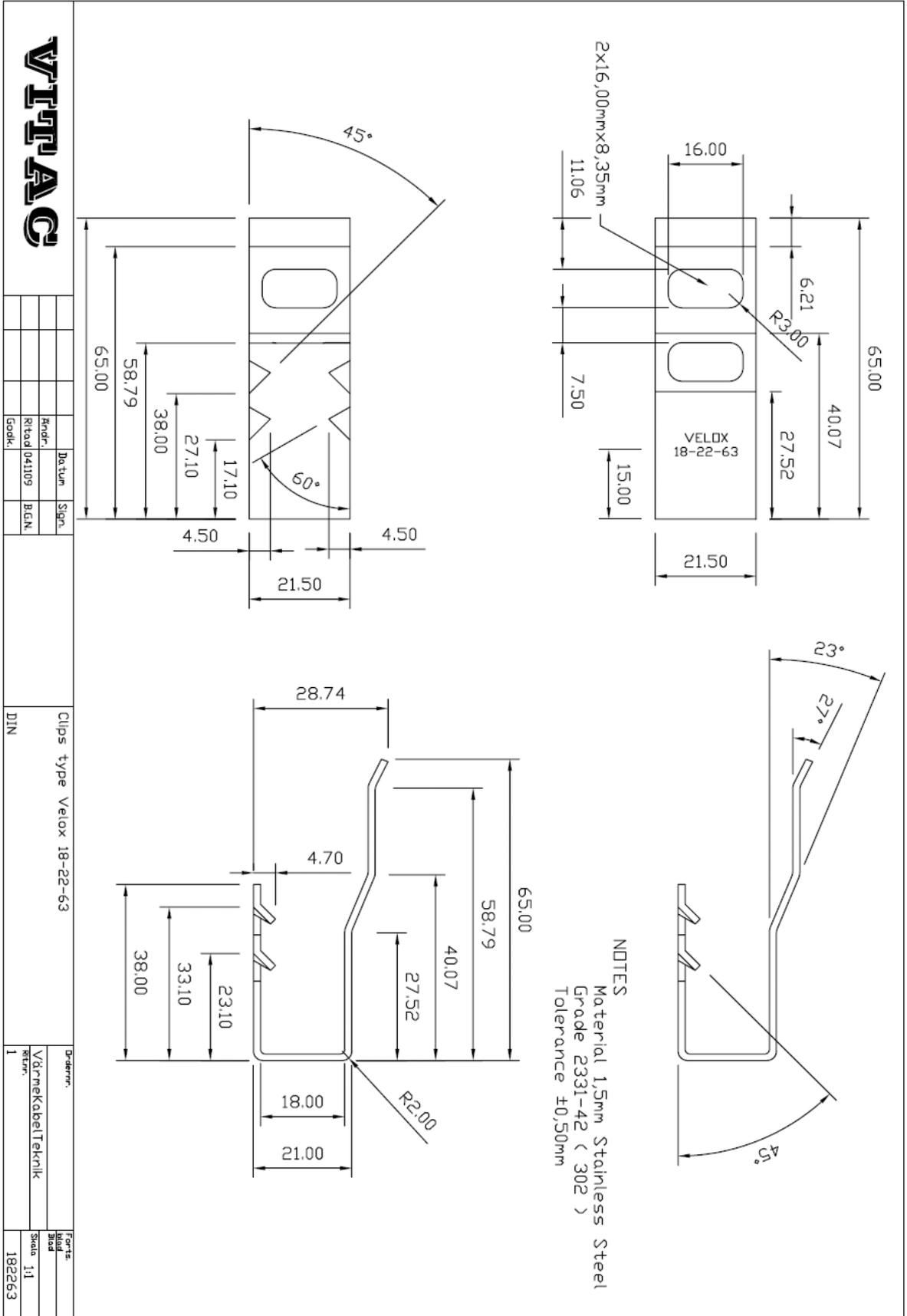
<b>VELLOX</b>		Revizija	Dezign	Sign.	Clips type Velox 13-43-60	Dobro	Varnikabelteknik	Scale	1:1
		Revizija	Dezign	Sign.					
Revizija	Dezign	Sign.	DIN			1			134360



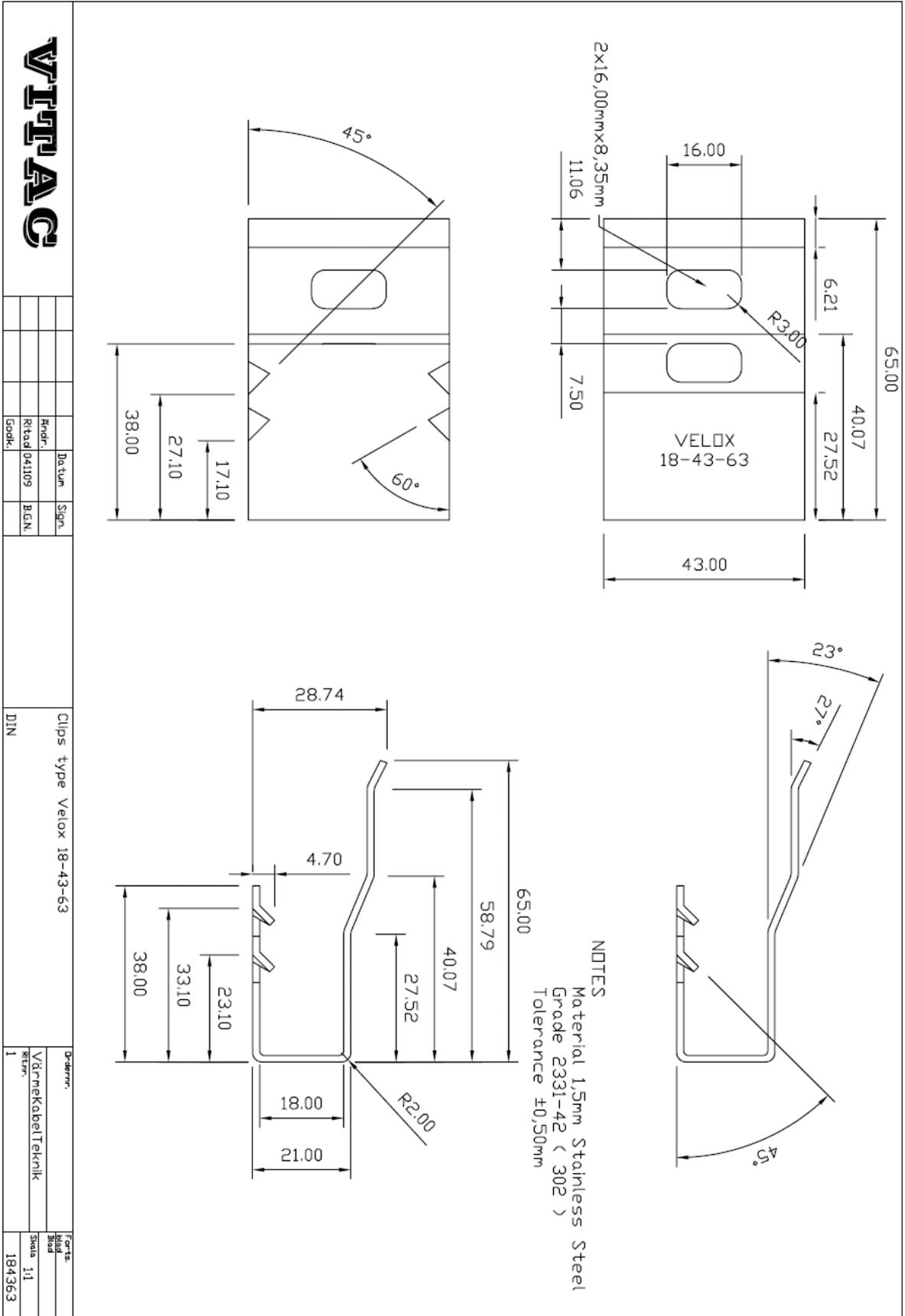


<b>VTAG</b>		Kindr.	Da.tun	Sign.	Clips type Velox 16-22-56	Dokument	E-ort:
		Ritadl 041109	B.G.N.				
Goak.					DIN	1	162256

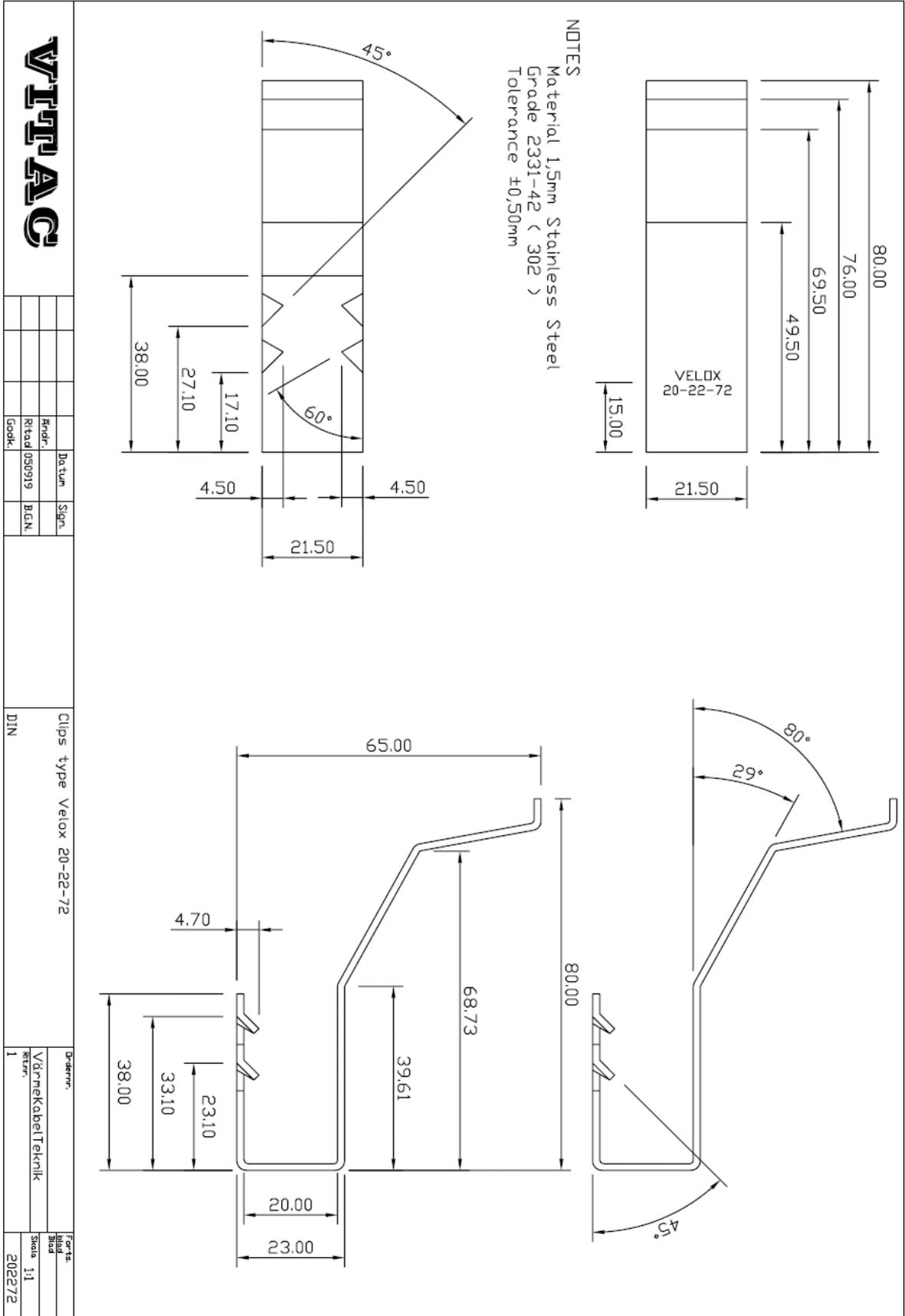


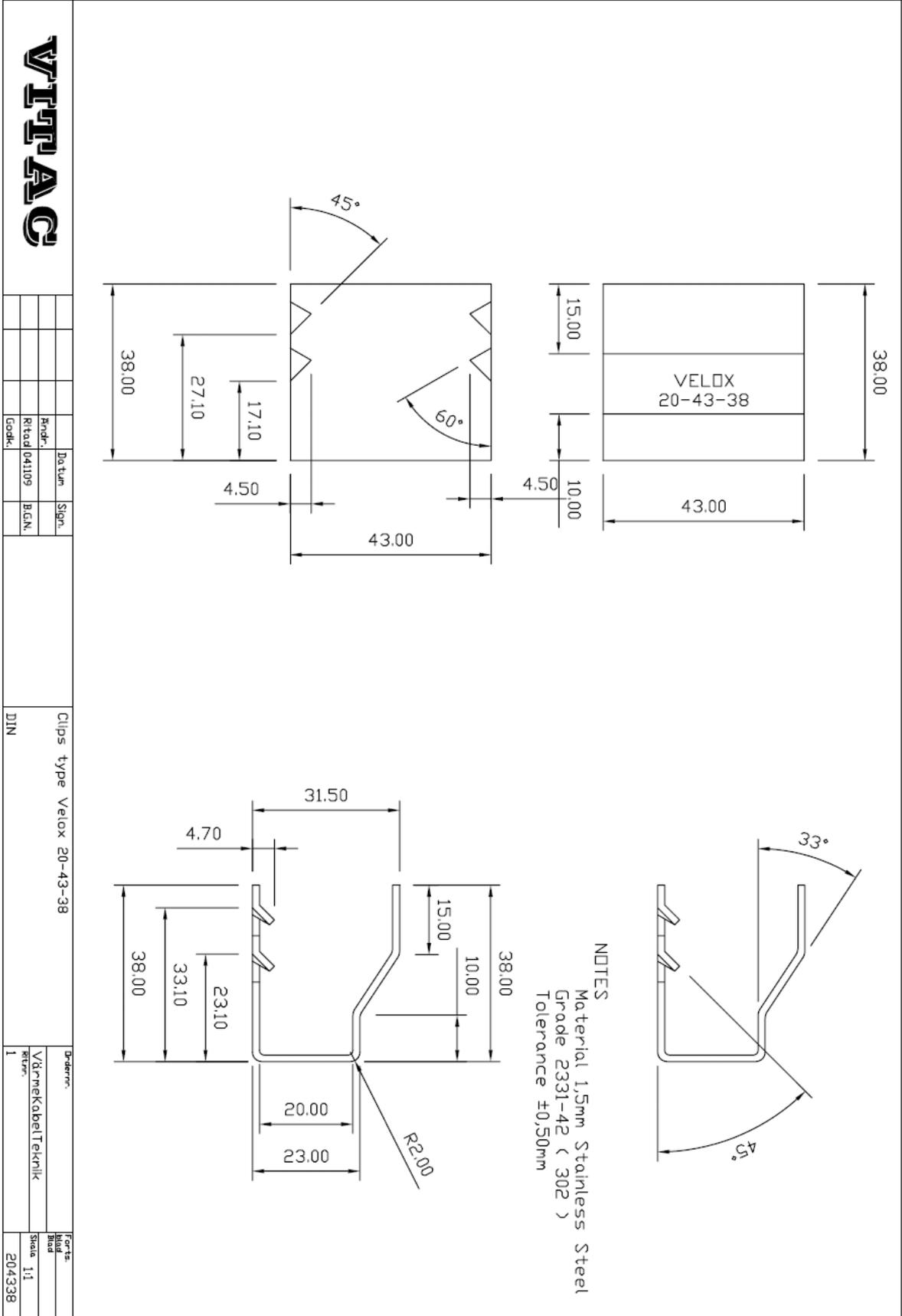


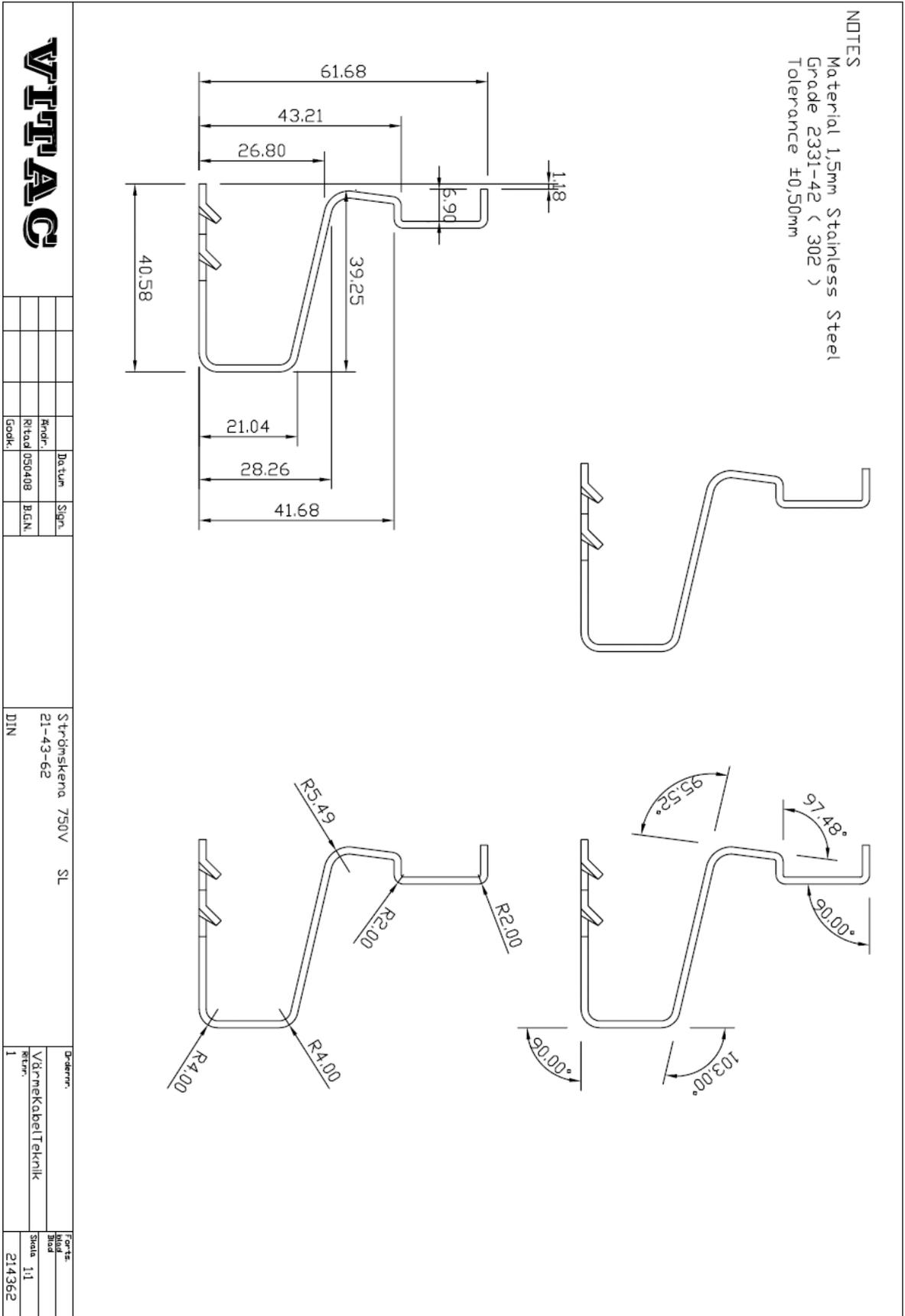
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Rind.	041109	B.G.N.	Värmebehandl.			Skala	
Ritad			1:1				
Godk.			182263				

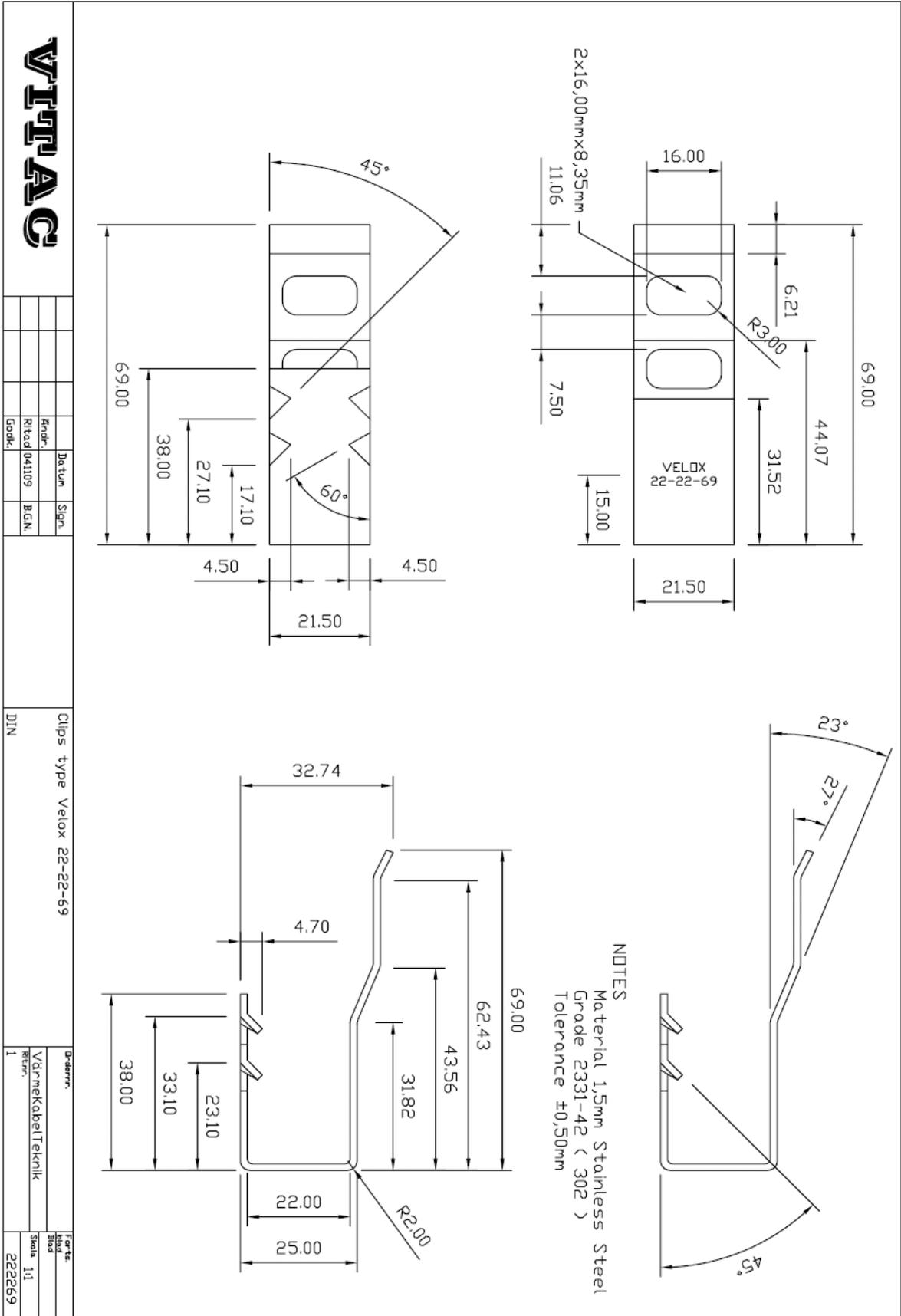


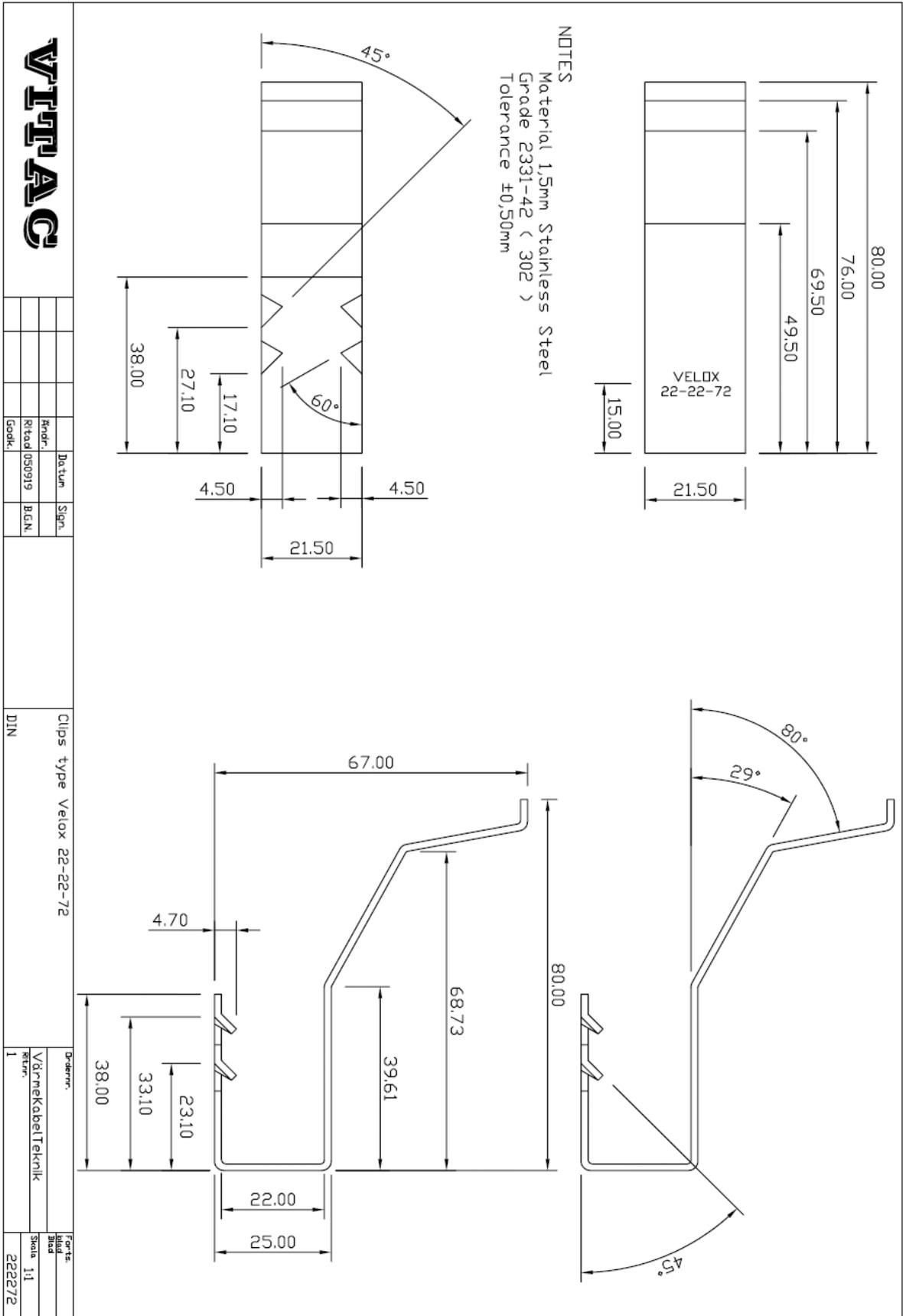
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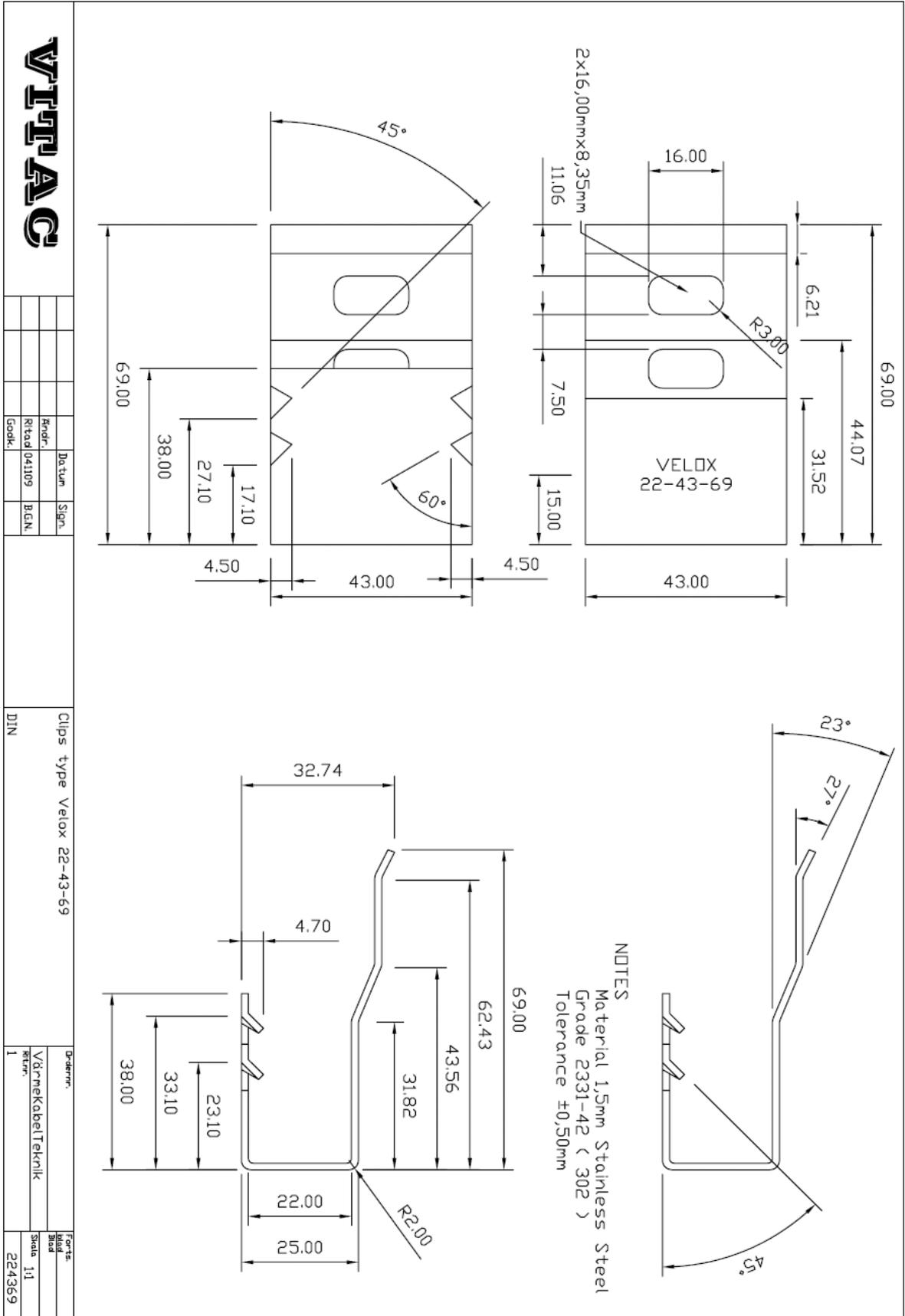




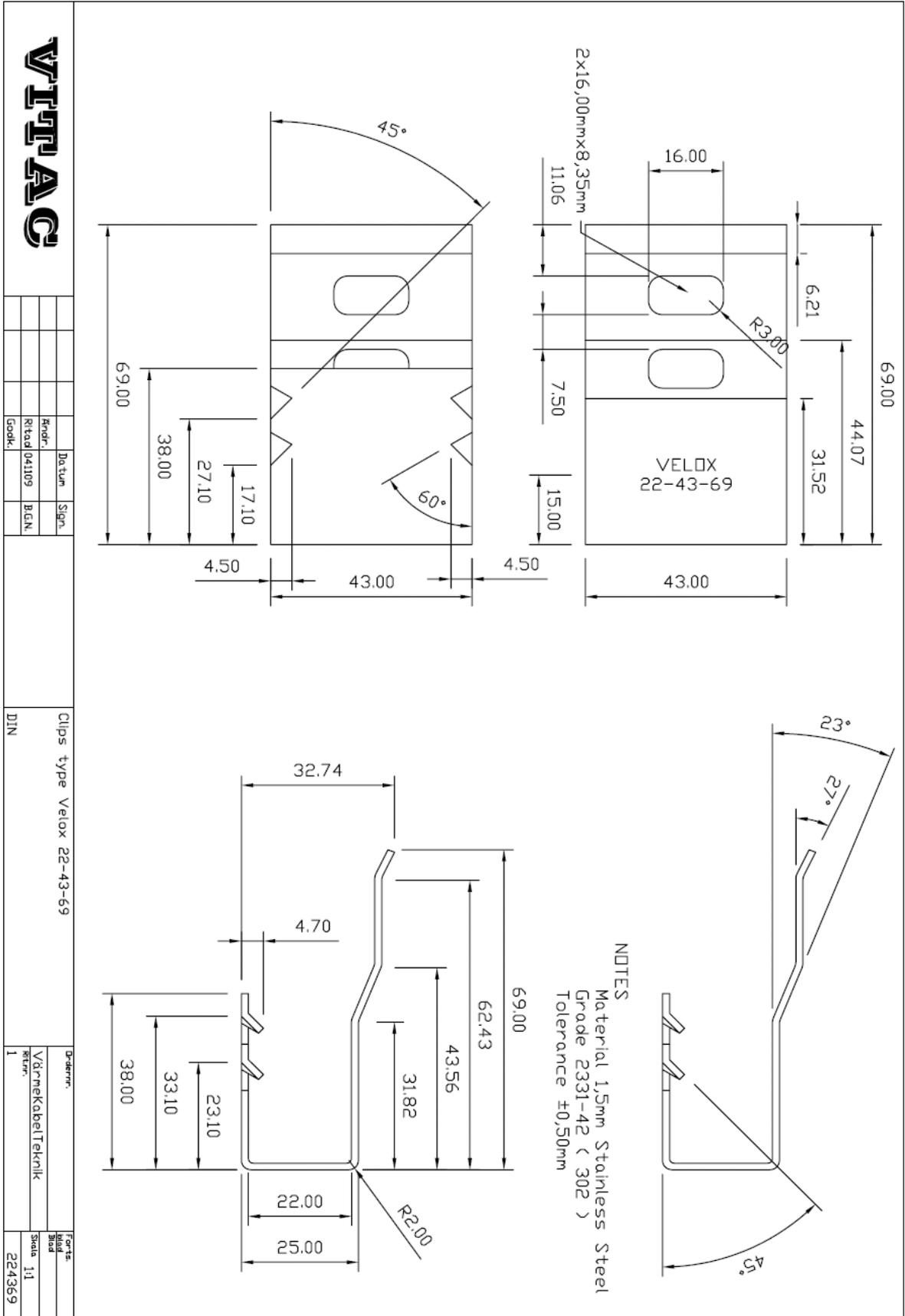




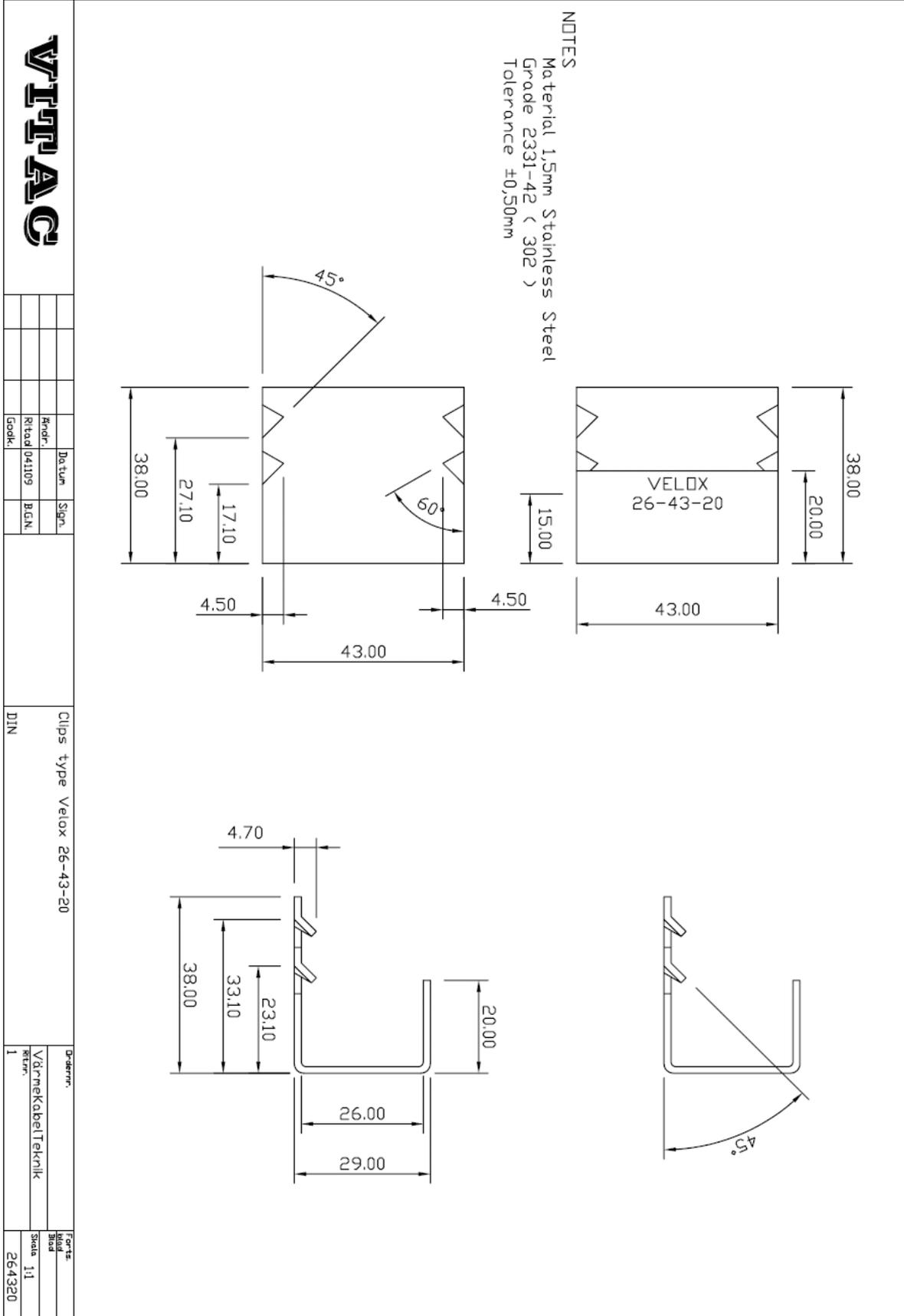


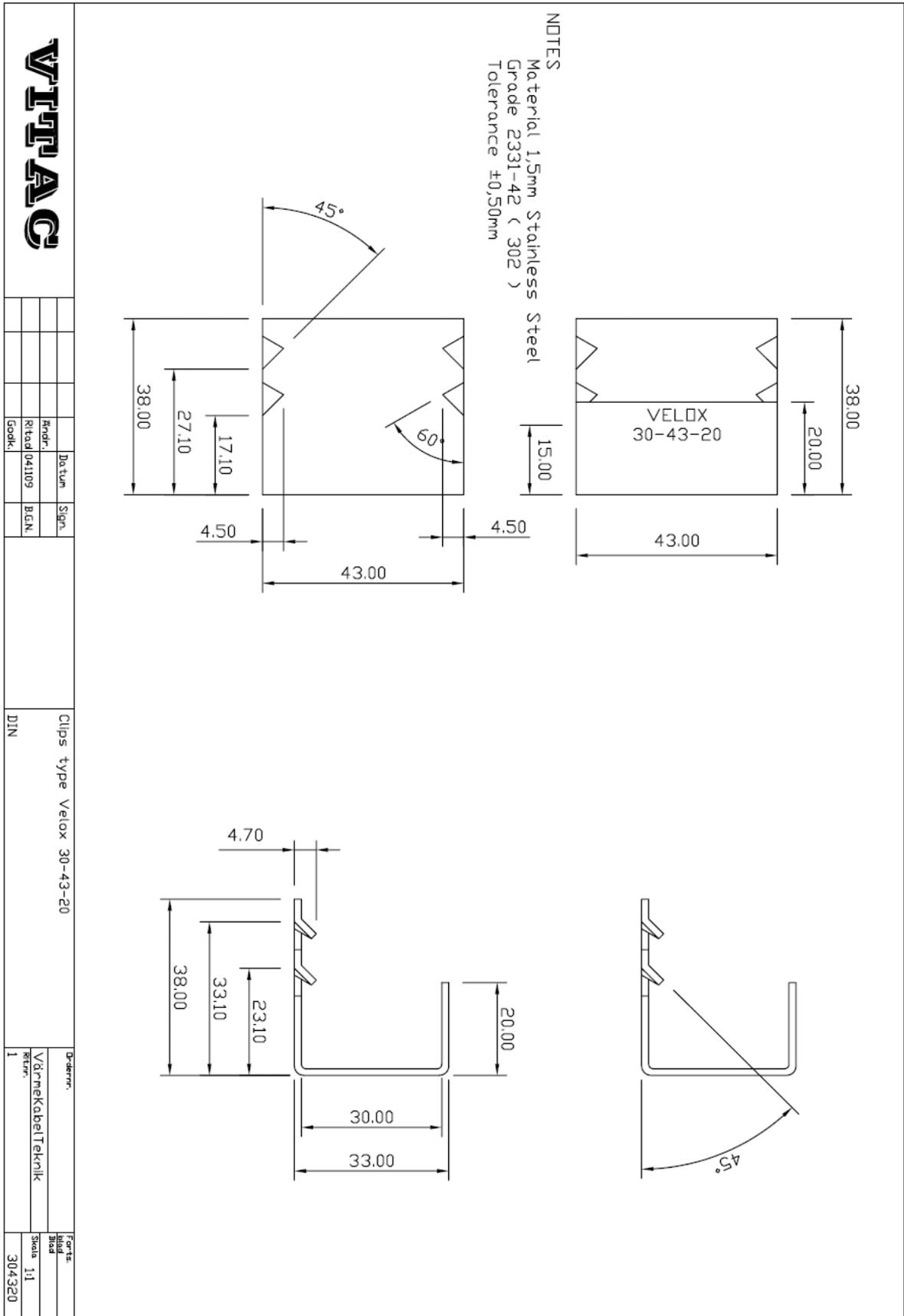


		Kindr.	Do tun	Sign.	Clips type Velox 22-43-69	D-Idemr.	Vgrmekabelteknik 1	Skala 1:1 224369
		Ritad	04109	BGN				
		Godek.			DIN			



<b>VELUX</b>		Kindr.	Do.tun	Sign.	Clips type Velox 22-43-69	D-Ideterr.	For-Id.
		Ritad. 041109	B.G.N.			Vårnetkabelteknik	Skala 1:1
Godk.					DIN	1	224369



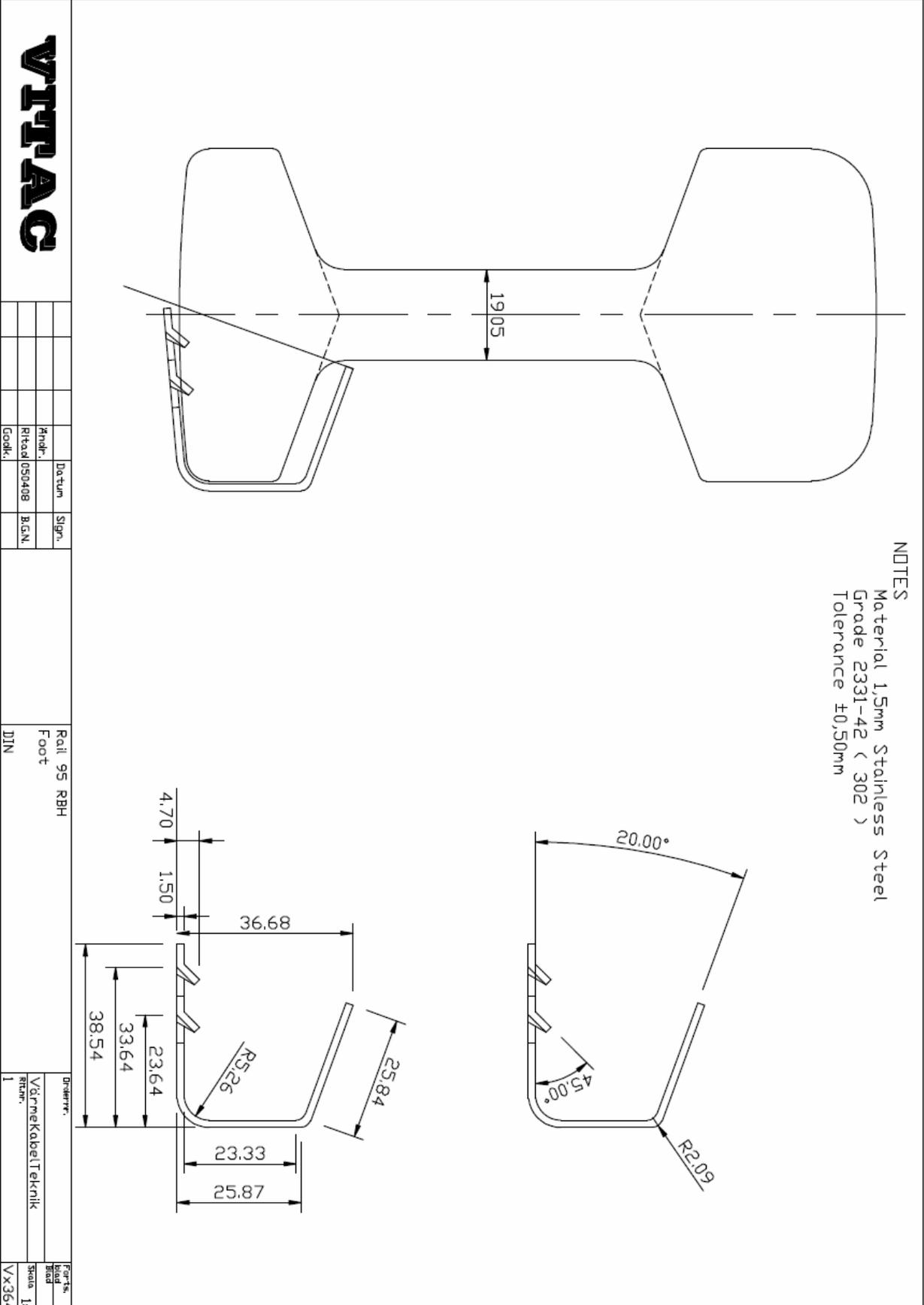


**VITTA**

Revizija	041109	B.G.N.
Godište		

Clips type Velox 30-43-20  
 DIN

Dokumenti	Varnikabeli tehnika	Skala	1:1
1			304320



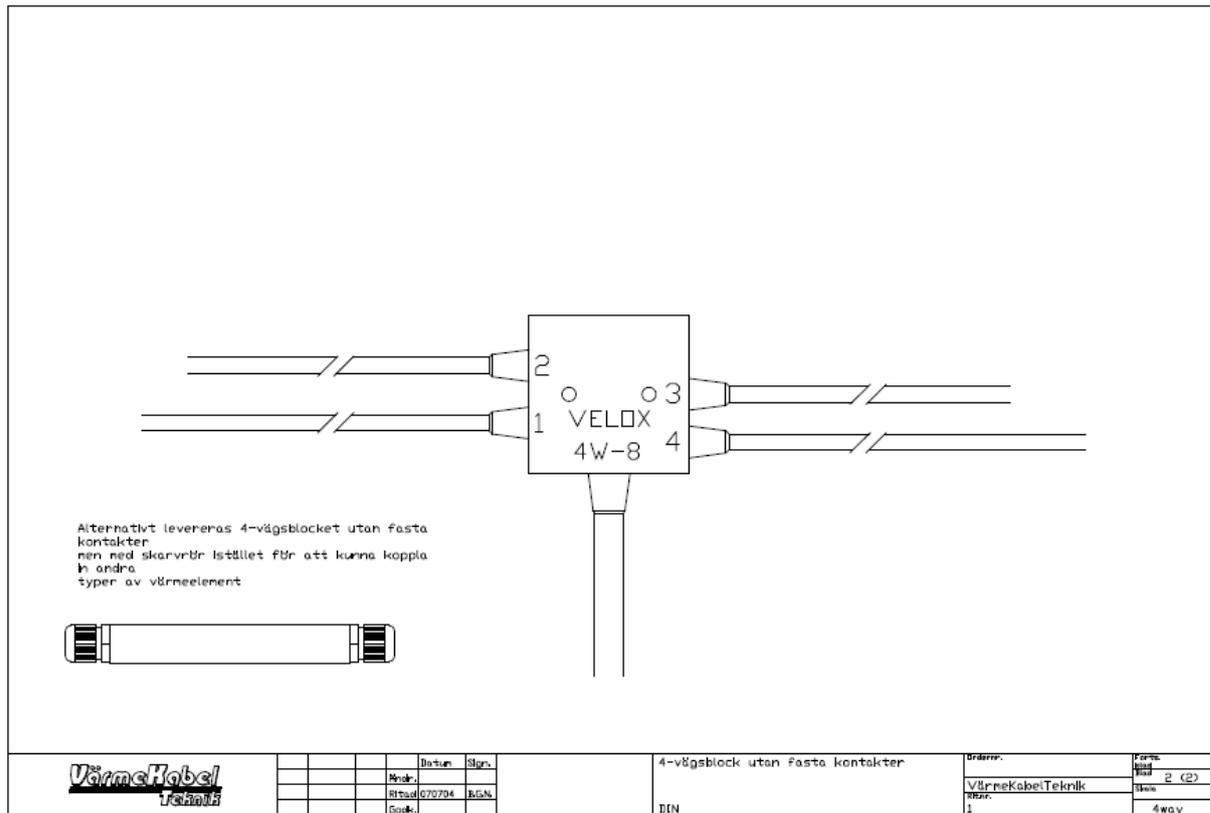
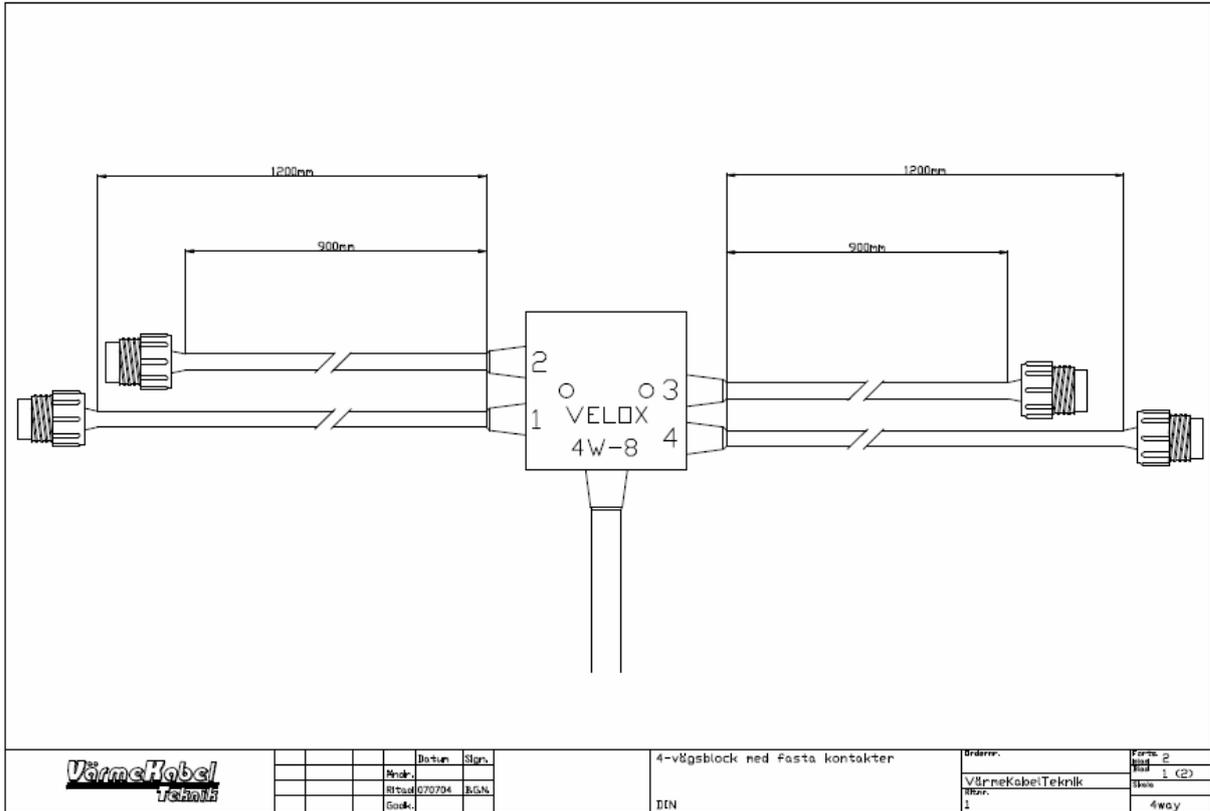
**NOTES**  
 Material 1,5mm Stainless Steel  
 Grade 2331-42 ( 302 )  
 Tolerance ±0,50mm

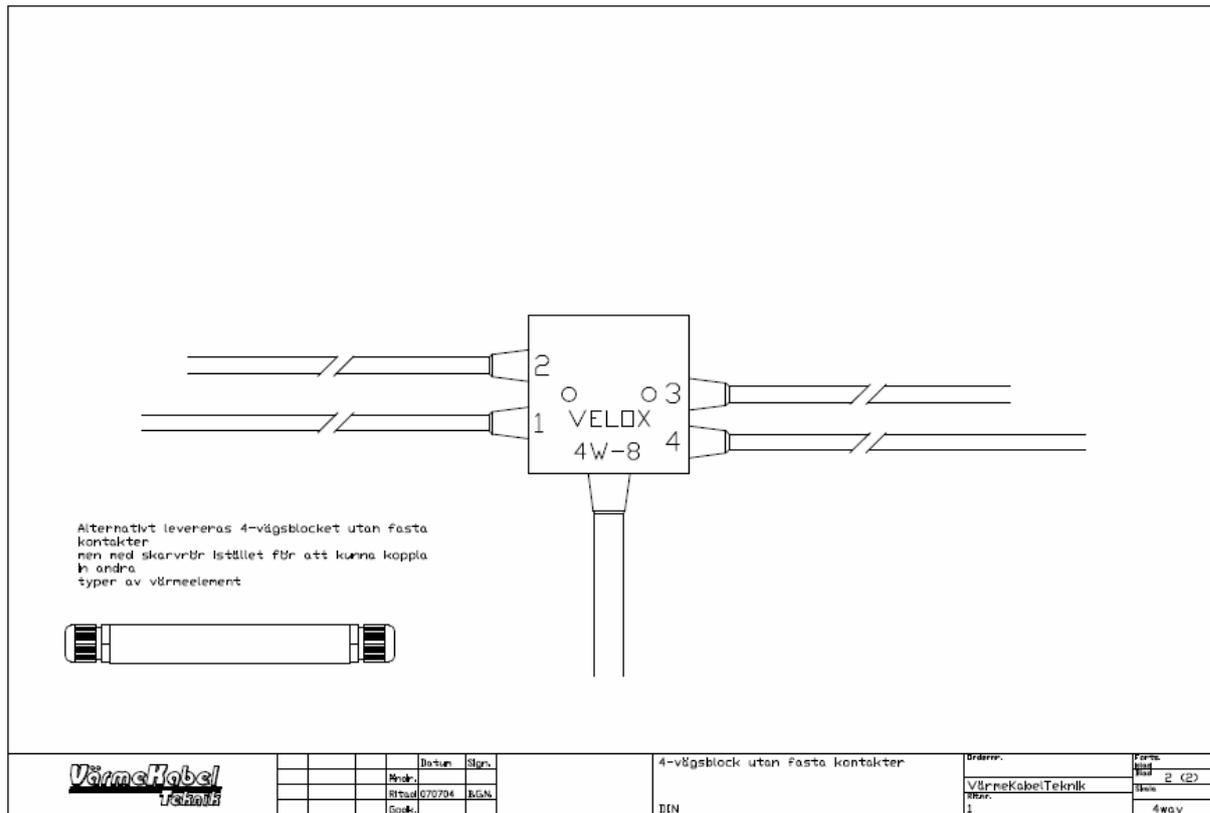
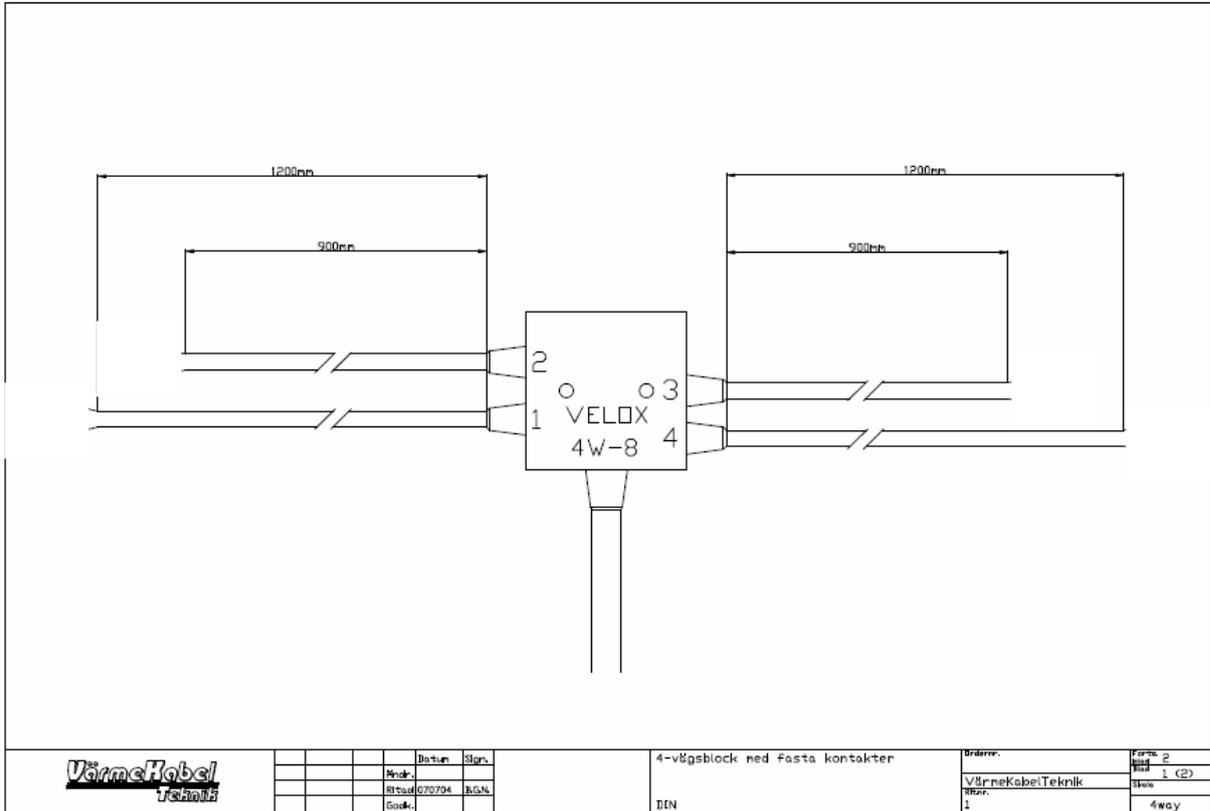
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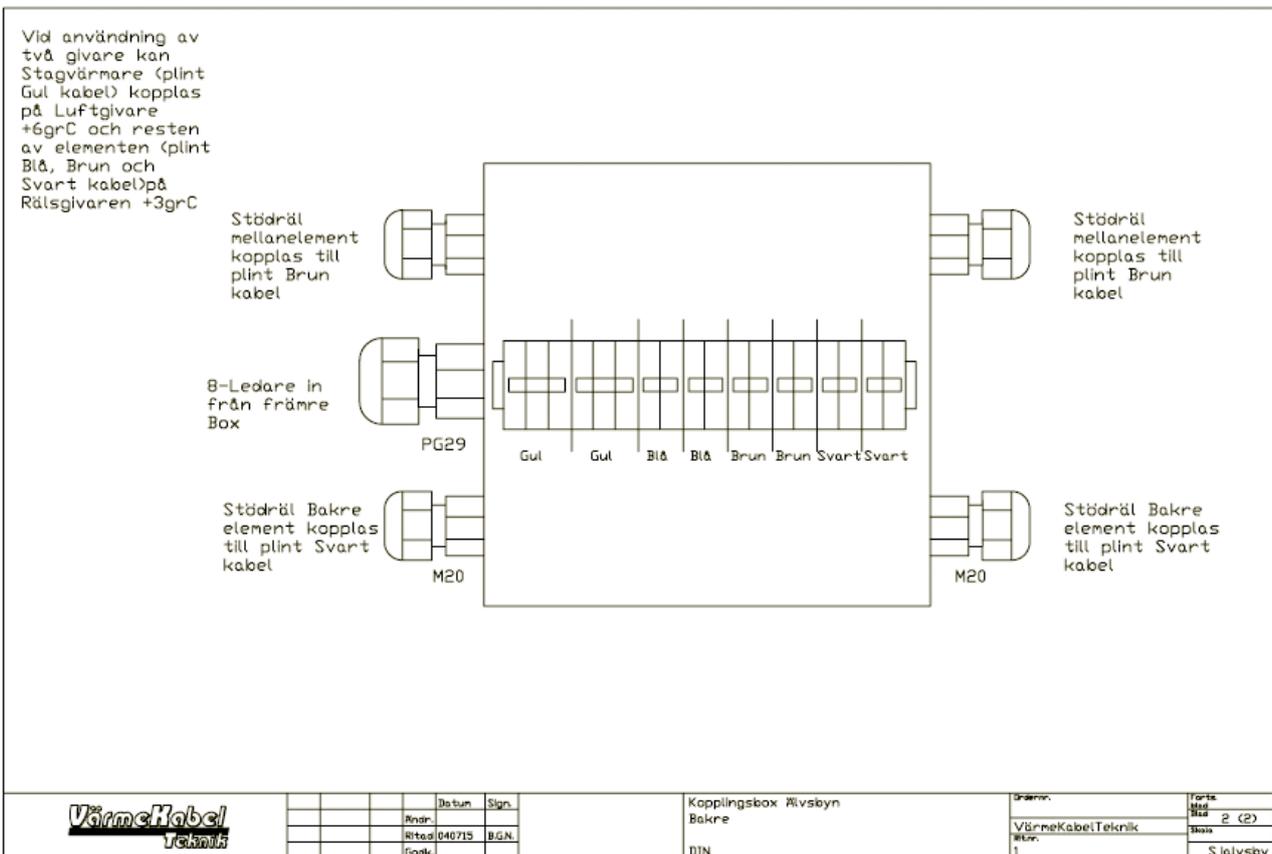
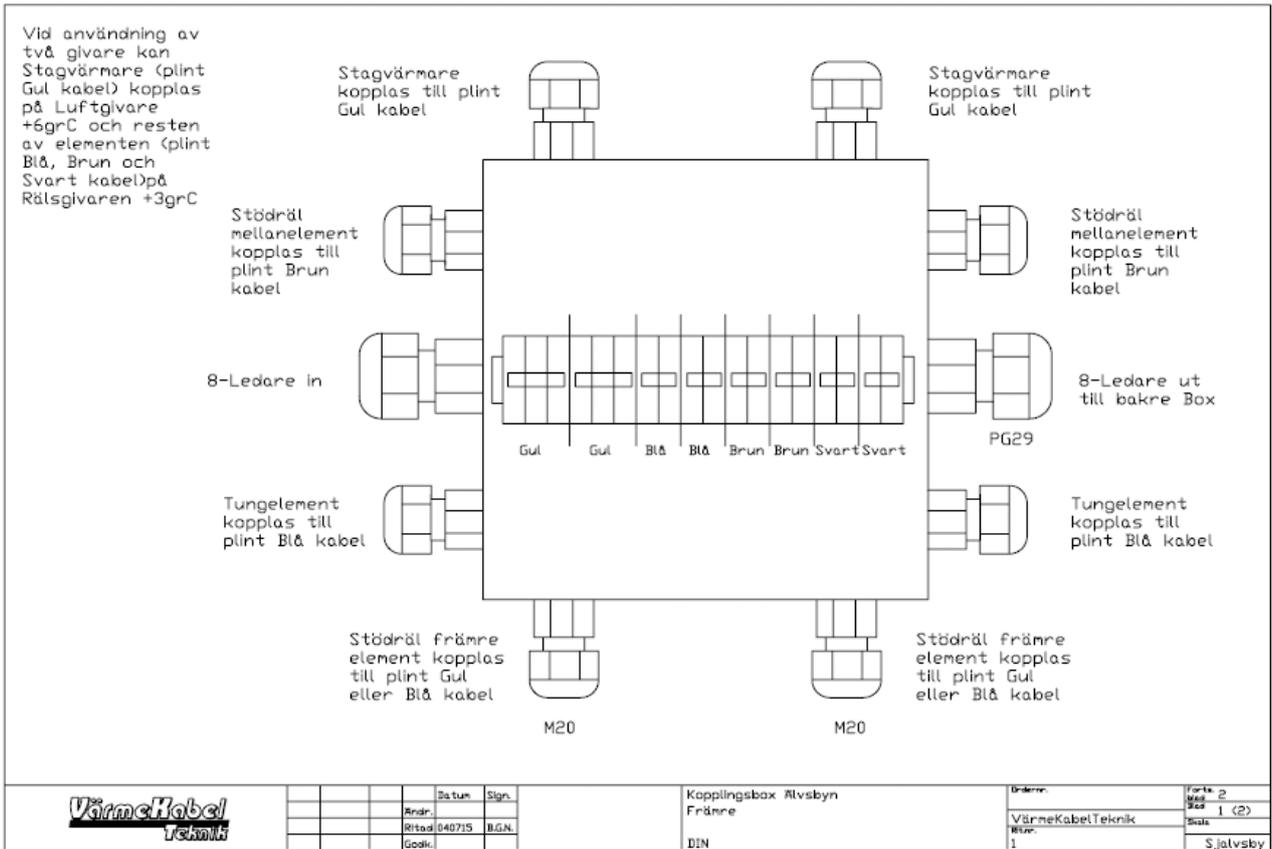
Kindr.	Datum	Sign.
Ritkad 050408		B.G.M.
Goalk.		

Rail 95 RBH  
 Foot  
 DIN

Brutt	Form
V&meKabel Teknik	1
1	





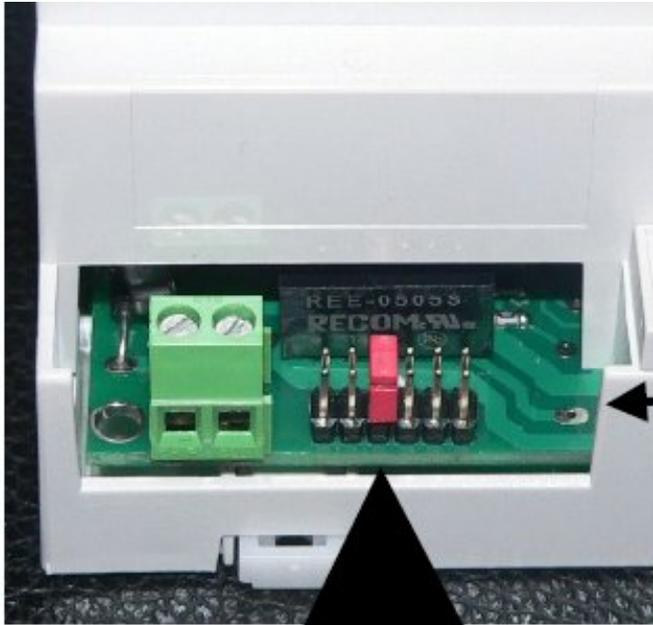


## SENSOR CARD – NEW TYPE

### SENSOR Card 4 Channel – Installation/replacement

The sensor boards must be addressed during installation to be able to communicate with the system, the modules work each for themselves or in pairs with equal address except for "low / high mode (low / high nibble)."

Note that when replacing address the new module as the old and reconnect cables in the same order as they were located on replaced module.

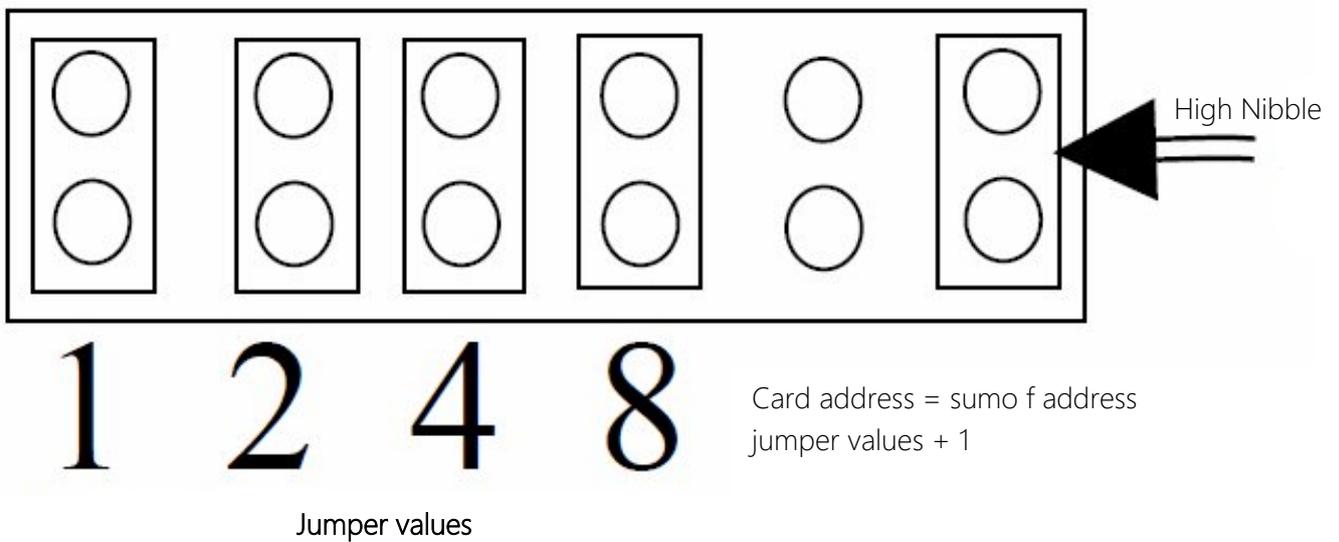


The illustration shows:

Total address jumper value = 4  
so the address =  $4+1 = 5$

No high Nibble jumper so this card will respond to channels 1, 2, 3, 4 and 9 (cold junction).

If the high nibble jumper is fitted the card would then respond to channels 5, 6, 7 and 8.



	Ritztal 031219 B.G.N.	D-terr. Värmekabel Teknik Ritztal	1 or 1's Ritztal 1 (1) Kats MPset	1 2 4 8 16 32 =1	1 2 4 8 16 32 =2	1 2 4 8 16 32 =3	1 2 4 8 16 32 =4	1 2 4 8 16 32 =5	1 2 4 8 16 32 =6	1 2 4 8 16 32 =7	1 2 4 8 16 32 =8	1 2 4 8 16 32 =9
				1 2 4 8 16 32 =10	1 2 4 8 16 32 =11	1 2 4 8 16 32 =12	1 2 4 8 16 32 =13	1 2 4 8 16 32 =14	1 2 4 8 16 32 =15	1 2 4 8 16 32 =16	1 2 4 8 16 32 =17	1 2 4 8 16 32 =18
				1 2 4 8 16 32 =19	1 2 4 8 16 32 =20	1 2 4 8 16 32 =21	1 2 4 8 16 32 =22	1 2 4 8 16 32 =23	1 2 4 8 16 32 =24	1 2 4 8 16 32 =25	1 2 4 8 16 32 =26	1 2 4 8 16 32 =27
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36
				1 2 4 8 16 32 =19	1 2 4 8 16 32 =20	1 2 4 8 16 32 =21	1 2 4 8 16 32 =22	1 2 4 8 16 32 =23	1 2 4 8 16 32 =24	1 2 4 8 16 32 =25	1 2 4 8 16 32 =26	1 2 4 8 16 32 =27
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36
				1 2 4 8 16 32 =28	1 2 4 8 16 32 =29	1 2 4 8 16 32 =30	1 2 4 8 16 32 =31	1 2 4 8 16 32 =32	1 2 4 8 16 32 =33	1 2 4 8 16 32 =34	1 2 4 8 16 32 =35	1 2 4 8 16 32 =36

## FORMULAS

Required conductor cross-section for electric cables.

Given		Direct current	Single-phase alternating current	Three-phase alternating current
Voltage drop, current	A=	$\frac{200 \cdot L \cdot I}{\gamma \cdot U^\circ \cdot U}$	$\frac{200 \cdot L \cdot I \cdot \cos\phi}{\gamma \cdot U^\circ \cdot U}$	$\frac{173 \cdot L \cdot I \cdot \cos\phi}{\gamma \cdot U^\circ \cdot U}$
Voltage drop, power	A=	$\frac{200 \cdot L \cdot P}{\gamma \cdot U^\circ \cdot U^2}$	$\frac{200 \cdot L \cdot P}{\gamma \cdot U^\circ \cdot U^2}$	$\frac{100 \cdot L \cdot P}{\gamma \cdot U^\circ \cdot U^2}$
Power consumption, current	A=	$\frac{200 \cdot L \cdot I^2}{\gamma \cdot P^\circ \cdot P}$	$\frac{200 \cdot L \cdot I^2}{\gamma \cdot P^\circ \cdot P}$	$\frac{300 \cdot L \cdot I^2}{\gamma \cdot P^\circ \cdot P}$
Power consumption, power	A=	$\frac{200 \cdot L \cdot P}{\gamma \cdot P^\circ \cdot U^2}$	$\frac{200 \cdot L \cdot P}{\gamma \cdot P^\circ \cdot U^2 \cdot \cos^2\phi}$	$\frac{100 \cdot L \cdot P}{\gamma \cdot P^\circ \cdot U^2 \cdot \cos^2\phi}$

I = Power in Ampere

$\gamma$  = Conductivity (copper 56, aluminium 34)

L = Conductor length (single) in metres

P = Transmission power in watt

$P^\circ$  = Power loss in % of the transmission power

A = Conductor cross-section in mm<sup>2</sup>

$U^\circ$  = Voltage drop in % of the operating voltage

U = Operating voltage in Volts

$\cos\phi$  = Power factor (usually assumed to be 0.8)

The formulas stated for alternating and three-phase current do not give any consideration to the inductive resistance.

This resistance is a function of the distance of the individual conductors between one another.

### Direct current

$$I = \frac{P}{U \cdot \eta}$$

P = Power in W

U = Voltage in V

I = Current in A

$\eta$  = Efficiency

Example

What is the current that a heating unit of 3.4kW absorbs at 440V?

( $\eta = 1$ )

$$I = \frac{3400}{440 \cdot 1} = 7.7 \text{ A}$$

### Alternating current

$$I = \frac{P}{U \cdot \cos\phi}$$

P = Power in W

U = Voltage in V

I = Current in A

$\cos\phi$  = Phase shift

$\eta$  = Efficiency

Example:

What is the current consumption of an alternating current motor of 1.9kW at  $\cos\phi = 0.77$  and an efficiency of 79%?

The voltage is 230V, 50 Hz.

$$I = \frac{1900}{230 \cdot 0.77 \cdot 0.79} = 13.6 \text{ A}$$

### Three-phase current:

$$I = \frac{P}{1.73 \cdot \cos\phi \cdot \eta \cdot U}$$

P = Power in W

U = Outer conductor voltage in V

I = Outer conductor current in A

$\cos\phi$  = Phase-shift

$\eta$  = Efficiency

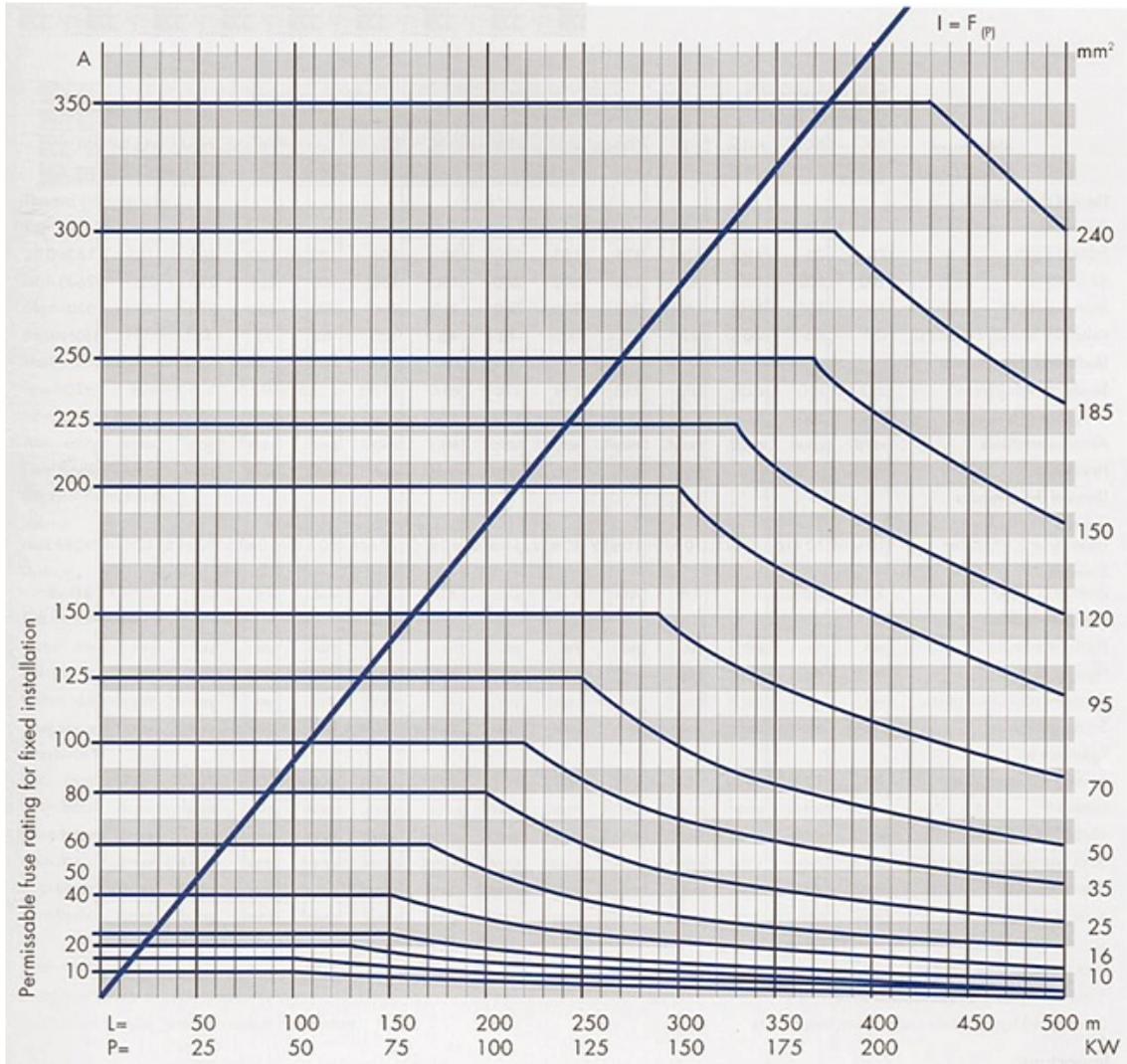
Example

What current does a three-phase motor of 22kW consume at 400V, 50 Hz, with  $\cos\phi = 0.89$  and an efficiency of 90%?

$$I = \frac{22000}{1.73 \cdot 400 \cdot 0.89 \cdot 0.9} = 39.7 \text{ A}$$

# PERMISSIBLE THREE-PHASE CABLE LOADING AT 5% VOLTAGE DROP

Representation:  $I = F(L)$  and  $I = F(P) \cos\phi = 0.82$



## Example:

A power of 70 kW is to be transmitted across a distance of  $L = 450$  m. The function  $I = F(P)$  gives us 70 kW  $\square$  130 A (mixed users).

The function  $I = F(L)$  provides the cable cross-section of 95mm<sup>2</sup>.

A length of 500m would already require a cable of 120mm<sup>2</sup> to ensure that the voltage loss and therefore also the power loss would be in an acceptable and economical range.

Representation:  $I = F(L)$  shows that, for example, for 95mm<sup>2</sup> the permissible fuse of 200A determines the load limit up to  $L = 300$ m, i.e.  $U_v < 5\%$ .

From 300m the cross-section can no longer be fully utilized.

# TYPICAL CHARACTERISTICS OF VARIOUS INSULATION MATERIAL FOR CABLES

Insulation compounds														
Thermoplastics														
Crosslinked materials														
Abbreviation <sup>(1)</sup>	PVC	PE	PBT-FR	TPE-E	ETFE	FEP	PTFE	EPR	PE-X	RX 125	RX 1555	RX 155	PVDF-X	SIR
CENELEC-type	T11							EI6						EI2
<b>Thermal characteristics</b>														
Thermal resistance														
20,000 h (°C)	70	70	110	110	135	180	250	90	90	120	130	135	135	180
24 h (°C)	100	100	160	160	220	240	300	180	180	200	220	220	220	260
Short circuit (°C)	160	100	160	160	250	250	300	250	250	280	280	280	300	350
Resistance to cold, moved (°C)	-5	-55	-40	-40	-55	-55	-70	-40	-55	-40	-55	-55	-55	-55
<b>Mechanical characteristics</b>														
Tensile strength (N/mm <sup>2</sup> )	≥12.5	≥10	≥25	≥30	≥30	≥10	≥20	≥5.0	≥12.5	≥12.5	≥12.5	≥15	≥28	≥5.0
Elongation at break (%)	≥125	≥300	≥200	≥200	≥150	≥200	≥200	≥200	≥200	≥200	≥200	≥300	≥200	≥150
Abrasion resistance	satisf.	good	good	excell.	excell.	satisf.	satisf.	satisf.	excell.	good	excell.	good	excell.	poor
Flexibility <sup>(2)</sup>	satisf.	poor	poor	poor	poor	poor	poor	excell.	poor	satisf.	poor	satisf.	poor	excell.
<b>Electrical characteristics</b>														
Volume resistivity at 20°C(Ωcm)	10 e14	10 e16	10 e15	10 e15	10 e16	10 e18	10 e18	10 e15	10 e16	10 e14	10 e16	10 e16	10 e14	10 e15
Dielectric constant at 1 kHz	5.0	2.3	3.7	3.8	2.6	2.2	2.0	3.0	2.4	4.2	2.6	2.8	5.7	3.0
<b>Fire characteristics</b>														
Flame retardant	yes	no	yes	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes
Halogen free	no	yes	yes	yes	no	no	no	yes	yes	yes	no	no	no	yes
Corrosive combustion gases	yes	no	no	no	yes	yes	yes	no	no	no	yes	yes	yes	no
Smoke generation	strong	average	average	average	low	low	low	average	average	low	strong	strong	low	average
<b>Resistance to</b>														
Ionizing radiation (kGy)	100	1000	1000	1000	2000	100	1	2000	1000	1000	1000	1000	1000	500
Solvents <sup>(3)</sup>	satisf.	satisf.	good	good	excell.	excell.	excell.	satisf.	satisf.	satisf.	good	satisf.	excell.	satisf.
Oils and fuels <sup>(3)</sup>	satisf.	satisf.	good	good	excell.	excell.	excell.	poor	satisf.	satisf.	good	satisf.	excell.	satisf.
acids and alkaline solutions <sup>(3)</sup>	good	excell.	satisf.	satisf.	excell.	excell.	excell.	excell.	excell.	good	good	good	excell.	satisf.
Water/Hydrolysis <sup>(3)</sup>	good	excell.	satisf.	satisf.	excell.	excell.	excell.	good	excell.	good	excell.	excell.	excell.	excell.
Weather/UV radiation	good	poor	good	good	excell.	excell.	excell.	good	satisf.	good	good	good	excell.	excell.

Jacket compounds									
Thermoplastics									
Crosslinked material									
Abbreviation <sup>(1)</sup>	LSFH	TPU	CR	RX 125A	RX 125M	RX125TM	REMS	REMS FH	
CENELEC-ty		TMPU	EM2						EI6
<b>Thermal characteristics</b>									
Thermal resistance									
20,000 h (°C)		90	90	60	120	120	120	130	120
24 h (°C)		130	140	120	200	200	200	200	200
Short circuit (°C)		250	200	200	280	280	280	280	280
Resistance to cold, moved (°C)		-25	-55	-25	-25	-25	-25	-40	-25
<b>Mechanical characteristics</b>									
Tensile strength (N/mm <sup>2</sup> )		≥9.0	≥25	≥10	≥10	≥9	≥10	≥15	≥10
Elongation at break (%)		≥125	≥300	≥300	≥125	≥125	≥125	≥300	≥125
Abrasion resistance		B	U	B	B	B	B	B	B
Flexibility <sup>(2)</sup>		T	T	U	T	B	B	B	B
<b>Electrical characteristics</b>									
Volume resistivity at 20°C(Ωcm)		10 e13	10 e12	10 e10	10 e14	10 e12	10 e12	10 e12	10 e12
Dielectric constant at 1 kHz		5	7	8	4.8	6	5	4.8	5.5
<b>Fire characteristics</b>									
Flame retardant		yes	no	yes	yes	yes	yes	yes	yes
Halogen free		yes	yes	no	yes	yes	yes	no	yes
Corrosive combustion gases		no	no	yes	no	no	no	yes	no
Smoke generation		low	average	strong	low	low	low	strong	low
<b>Resistance to</b>									
Ionizing radiation (kGy)		1000	5000	500	1000	1000	1000	1000	1000
Solvents <sup>(3)</sup>		poor	satisf.	satisf.	satisf.	satisf.	satisf.	satisf.	satisf.
Oils and fuels <sup>(3)</sup>		poor	good	good	satisf.	good	good	excell.	excell.
Acids and alkaline solutions <sup>(3)</sup>		satisf.	satisf.	excell.	good	good	excell.	excell.	good
Water/Hydrolysis <sup>(3)</sup>		satisf.	excell.	good	good	good	excell.	good	good
Weather/UV radiation		satisf.	good	good	good	good	good	excell.	good

## **MATERIAL DESIGNATIONS**

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### Thermoplastics

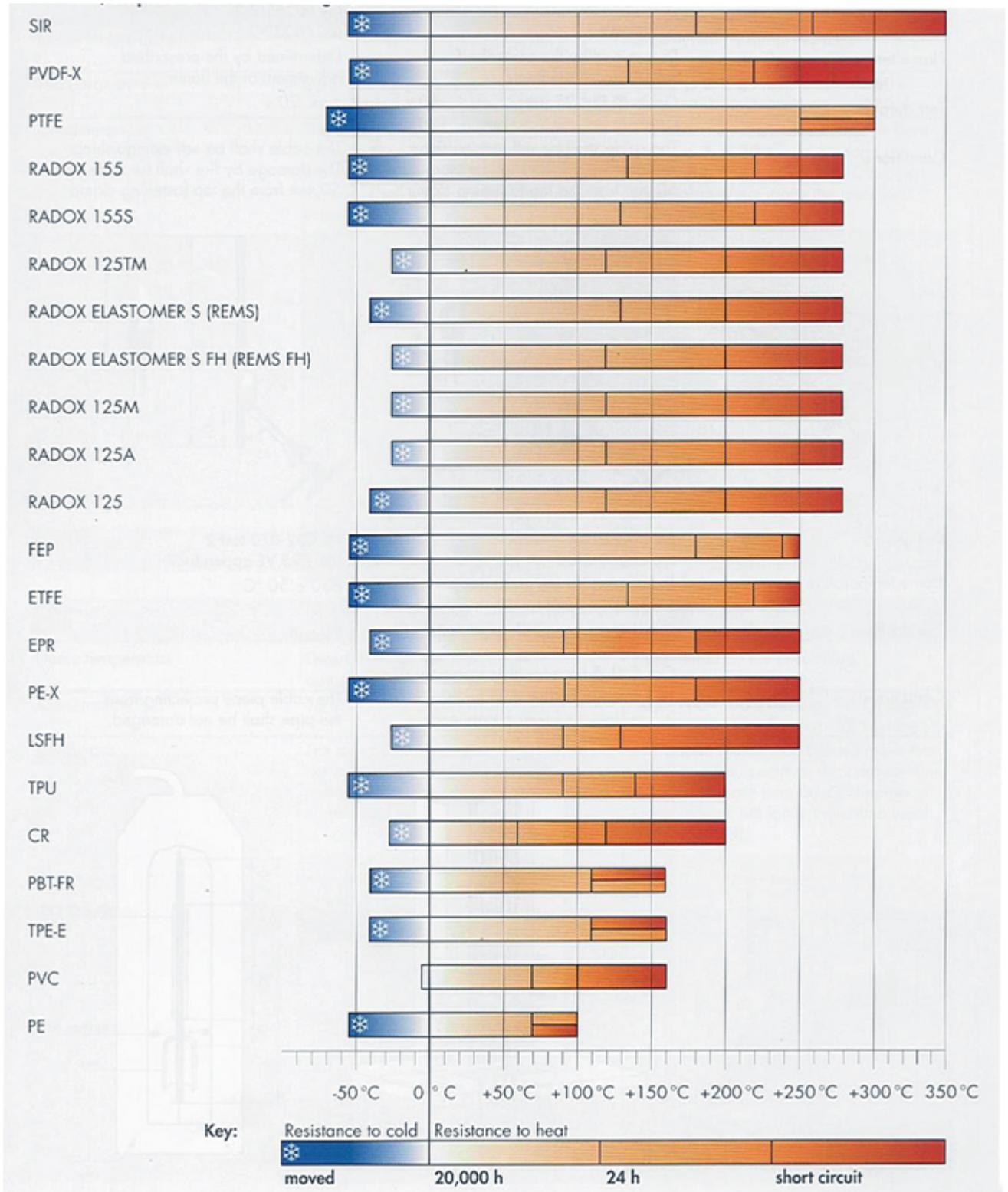
ETFE.....	Ethylene-tetrafluoroethylene copolymer
FEP.....	Tetrafluoroethylene-perfluoropropylene copolymer
LSFHTM.....	Halogen free, flame retardant material (low smoke free of halogen)
PBT-FR.....	Flame retardant polybutylene terephthalate
PE.....	Polyethylene
PTFE.....	Polytetrafluoroethylene
TPE-E.....	Thermoplastic polyester elastomers
TPU.....	Thermoplastic polyurethane

### Crosslinked materials

CR.....	Chloroprene rubber
EPR.....	Ethylene propylene rubber
PE-X.....	Crosslinked polyethylene
PVDF-X.....	Crosslinked polyvinylidene fluoride
RADOX® 125.....	Polyolefin copolymer
RADOX® 125A.....	Polyolefin copolymer
RADOX® 125M.....	Polyolefin copolymer
RADOX® 125TM.....	Ethylene acrylate copolymer
RADOX® 155.....	Polyolefin copolymer
RADOX® 155S.....	Polyolefin copolymer
RADOX® ELASTOMER S (REMS).....	Ethylene acrylate copolymer
RADOX® ELASTOMER S FH (REMS FH).....	Ethylene acrylate copolymer
SIR.....	Silicone rubber

# RESISTANCE TO COLD AND HEAT OF DIFFERENT INSULATIONS AND SHEATHS

(temperature service range)

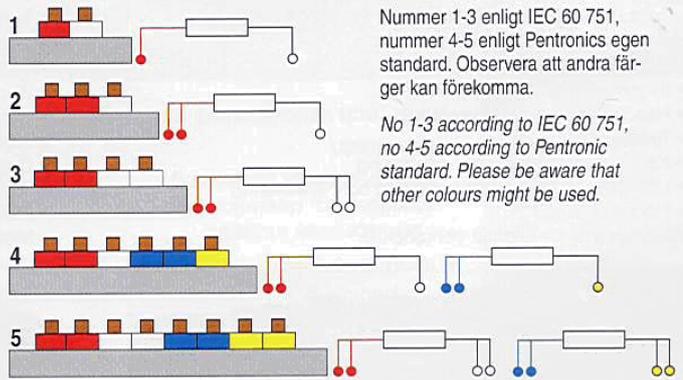


# COLOUR CODES FOR THERMOCOUPLES

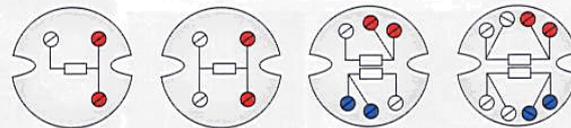
## Färgkoder för termoelement Colour codes for thermocouples

	IEC 60584-3 (1989) Internationell standard	ANSI 96.1 (1982) Amerikansk standard	DIN 43714 (1979) Tysk standard ersatt av IEC 60584-3	BS 1843 (1952) Britisk standard ersatt av IEC 60584-3
E				
J				
K				
N				
T				
B				
S/R				

## Anslutningskabel för Pt100 Connecting cable for Pt100 RTD



## Anslutning till plint för Pt100 Connection to terminal block for Pt100 RTD



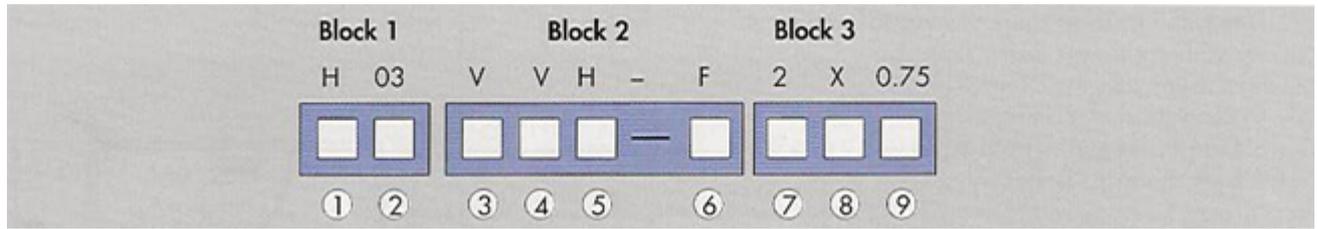
Observera att andra färger kan förekomma.  
Please be aware that other colours might be used.

## STANDARDS

System for type designations of electric cables according to CENELEC HD 361

Example:

Lightweight PVC-sheathed cable, flat



### Block 1:

#### ① Type of standard

H: Harmonized type

A: Acknowledged national type

#### ② Voltage rating U°/U

01: 100/100V

03: 300/300V

05: 300/500V

07: 450/750V

### Block 2:

#### ③ Insulation material ④ Sheath material

R: Ethylene propylene rubber, 90°C

G: Ethylene vinylacetate

N: Polychloroprene rubber

Q: Polyurethane

R: Ethylene propylene rubber, 60°C

S: Silicone rubber

V: PVC

V2: PVC, 90°C

V3: PVC, cold resistant

V5: PVC, oil resistant

Z: Crosslinked polyolefine compound, little corrosive gases, low smoke

Z1: Thermoplastic polyolefine compound, little corrosive gases, low smoke

#### ⑤ Construction features

H: Flat, divisible line

H2: Flat, non-divisible line

#### ⑥ Conductor type

F: Stranded (Class 5) with flexible cables

H: Stranded (Class 6) with flexible cables

K: Stranded (Class 5) with permanently installed cables

R: Stranded (Class 2)

U: Solid (Class 1)

### Block 3

#### ⑦ Number of cores

#### ⑧ Protective earth conductor

X: without protective earth-protection (green-yellow)

G: with protective earth-protection (green-yellow)

#### ⑨ Conductor cross-section in mm<sup>2</sup>

## CONVERSION AWG ← → METRIC WIRE CROSS-SECTIONS AND WIRE DIAMETERS

AWG = American Wire Gauge

AWG	With UL/CSA		With MIL
	Cross-section mm <sup>2</sup> nom.	Diameter mm nom.	Cross-section mm <sup>2</sup> nom.
36	0.013	0.13	-
34	0.020	0.16	-
32	0.032	0.20	-
30	0.051	0.25	0.057
28	0.081	0.32	0.090
26	0.13	0.40	0.15
24	0.21	0.51	0.24
22	0.32	0.64	0.38
20	0.52	0.81	0.62
18	0.82	1.0	0.96
16	1.3	1.3	1.2
14	2.1	1.6	1.9
12	3.3	2.1	3.0
10	5.3	2.6	4.7
8	8.84	3.3	8.6
6	13	4.1	14
4	21	5.2	22
3	27	5.8	-
2	34	6.5	34
1	42	7.3	41
1/0	54	8.3	53
2/0	67	9.3	67
3/0	85	10	84
4/0	107	12	107

*Thermal classes of insulating material according to IEC 60085*

Thermal class	Max. limiting temperature	Thermal class	Max. limiting temperature	Thermal class	Max. limiting temperature
Y	90°C	B	130°C	200	200°C
A	105°C	F	155°C	220	220°C
E	120°C	H	180°C	250	250°C





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