

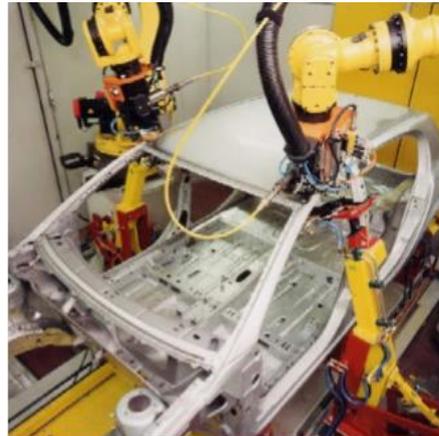
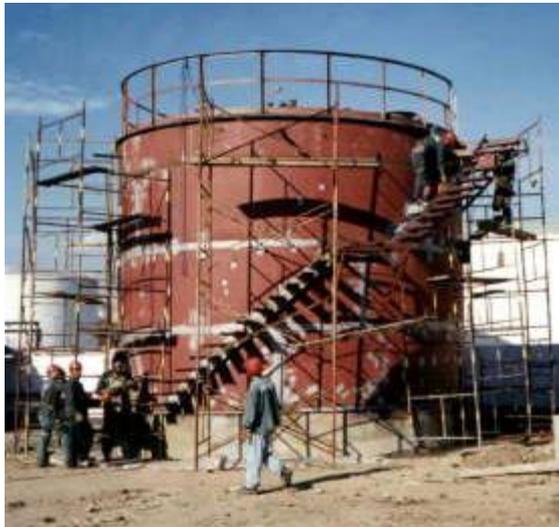
# DESENHO TÉCNICO MECÂNICO I (SEM0564)

## AULA 11 - NOÇÕES DE SOLDAGEM E SIMBOLOGIA

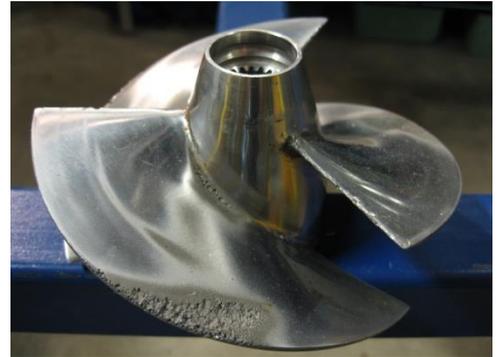


Notas de Aulas v.2022

## Casos Reais de Soldagem



## Casos Reais de Soldagem



## Casos Reais de Soldagem



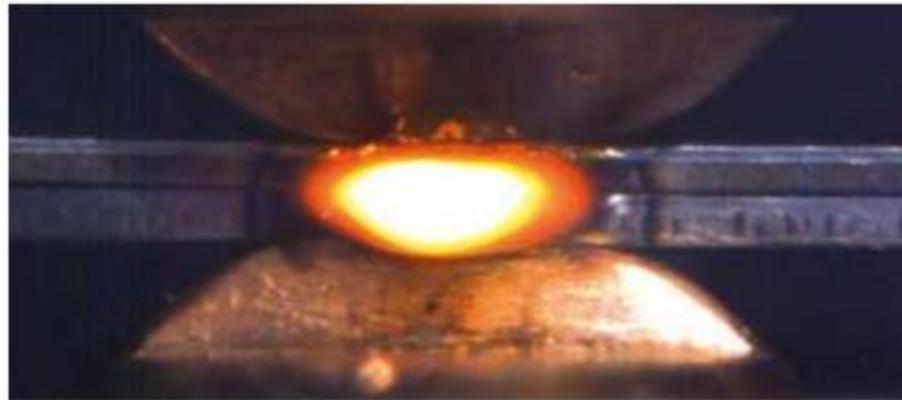
<https://www.piergo.com.br/produtos/vigas-soldadas/>

## Casos Reais de Soldagem



- Solda a ponto
- Solda MIG/MAG
- Solda a LASER

Ex: Automóvel possui cerca de 4.800 pontos de solda, diversos cordões de solda MIG/MAG



Formação do ponto de solda

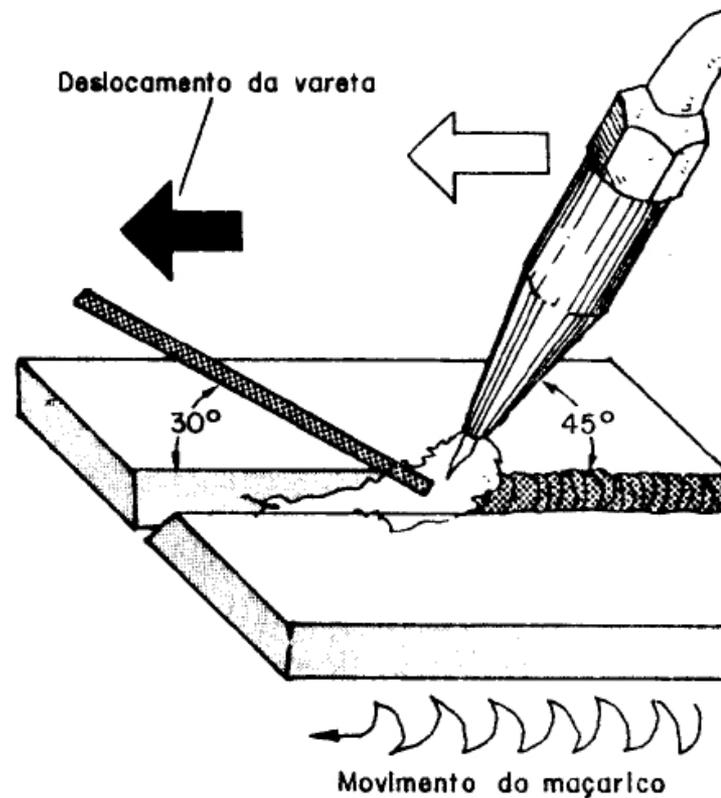
## Soldagem

Processo de união de peças metálicas, cujas superfícies tornam-se liquefeitas pela ação do calor e/ou pressão, com ou sem adição de metal.

### Processos de Soldagem

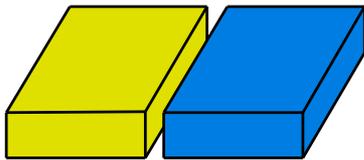
#### 1. Soldagem por chama:

- Um dos mais antigos
- Baixo custo
- Aquecimento das peças a soldar
- Oxigênio e acetileno
- Com ou sem adição de material

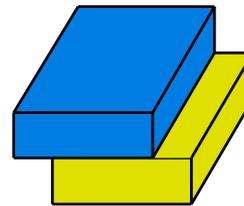


## Posições de soldagem

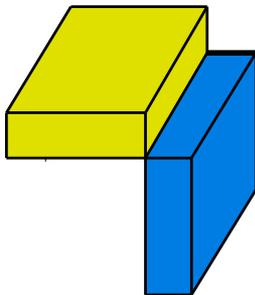
junta topo



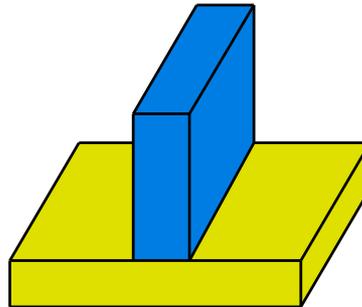
junta sobreposta



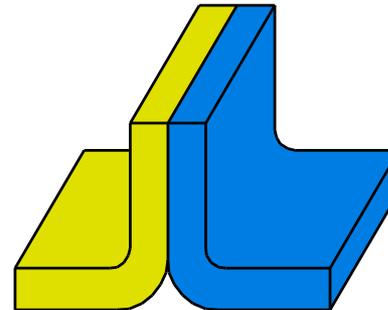
junta canto



junta tê



junta flange

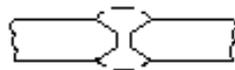


## Posições de soldagem



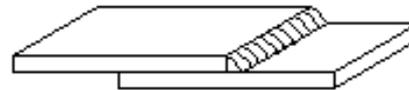
(a)

**Topo com flange**



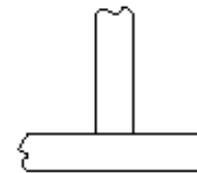
(d)

**Topo em duplo V**



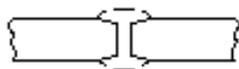
(g)

**Sobreposta**



(j)

**Em T**



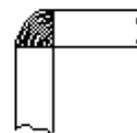
(b)

**Topo reta**



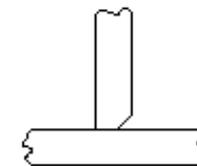
(e)

**Topo em U**



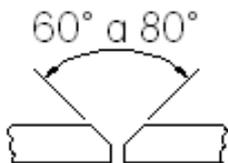
(h)

**De centro**



(k)

**Em T**



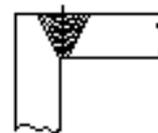
(c)

**Topo em V**



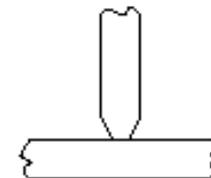
(f)

**Topo em duplo U**



(i)

**De canto**

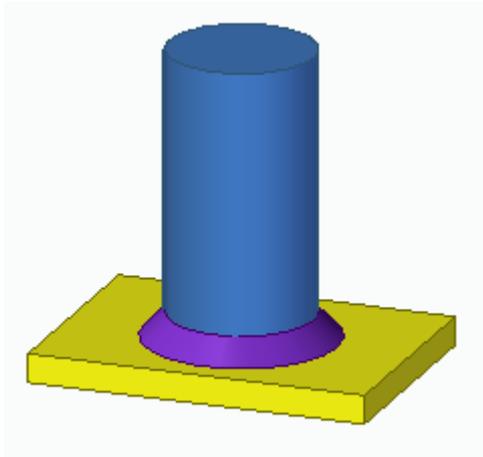


(l)

**Em T**

# Símbolos Básicos

SÍMBOLOS BÁSICOS					
SEM PREPARAÇÃO		COM PREPARAÇÃO			
FILETE OU CANTO	SEM CHANFRO	V	BISEL	U	J
					



SÍMBOLOS COMPLEMENTARES	
SOLDA EM TODA VOLTA	SOLDA NO CAMPO (ou na montagem)
	

## Representação das Juntas e Símbolos

Designação	Ilustração	Símbolo
1 Junta de bordas rebordadas completamente fundidas		
2 Junta de borda reta		
3 Junta em V simples		
4 Junta em meio V simples		
5 Junta em Y simples		
6 Junta em meio Y simples		
7 Junta em tulipa (ou em U)		
8 Junta em meio U (ou em J)		
9 Cordão de confirmação na raiz da junta		
10 Junta em ângulo		

Designação	Ilustração	Símbolo
11 Soldagem em entalhe (ou perna de solda)		
12 Soldagem por pontos		
13 Soldagem em linha contínua		
14 Junta em V simples de bordas inclinadas		
15 Junta em meio V simples de bordas inclinadas		
16 Soldagem de borda		
17 Enchimento		
18 Junta de superfície		
19 Junta inclinada		
20 Junta dobrada		

## Simbologia de Soldagem – ISO2553

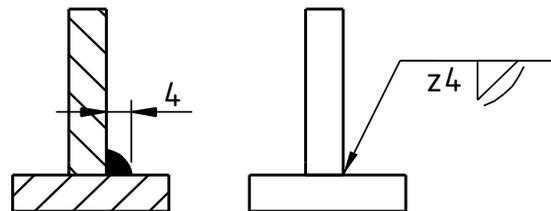
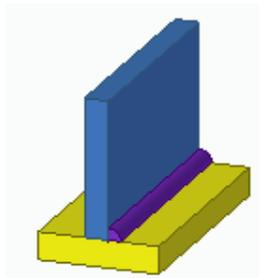
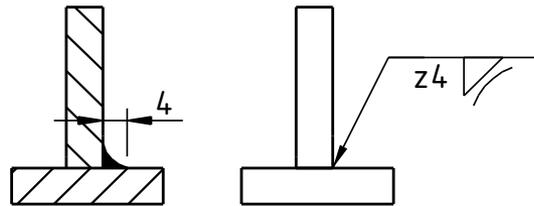
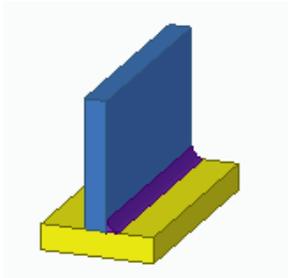
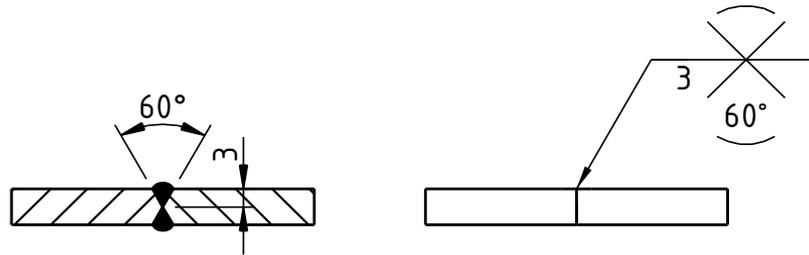
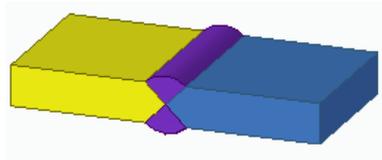
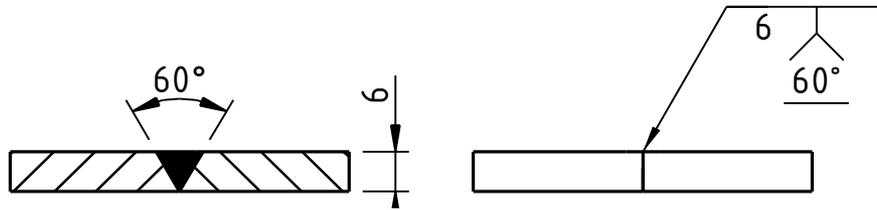
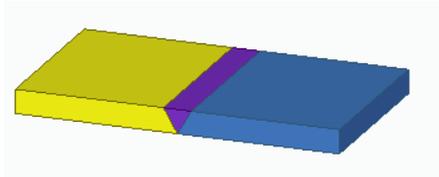
### Símbolos Elementares (Juntas)

Designação	Ilustração	Símbolo
Junta em V dupla		X
Junta em meio V dupla		K
Junta em Y dupla		Y
Junta em meioY dupla		K
Junta em U dupla		U

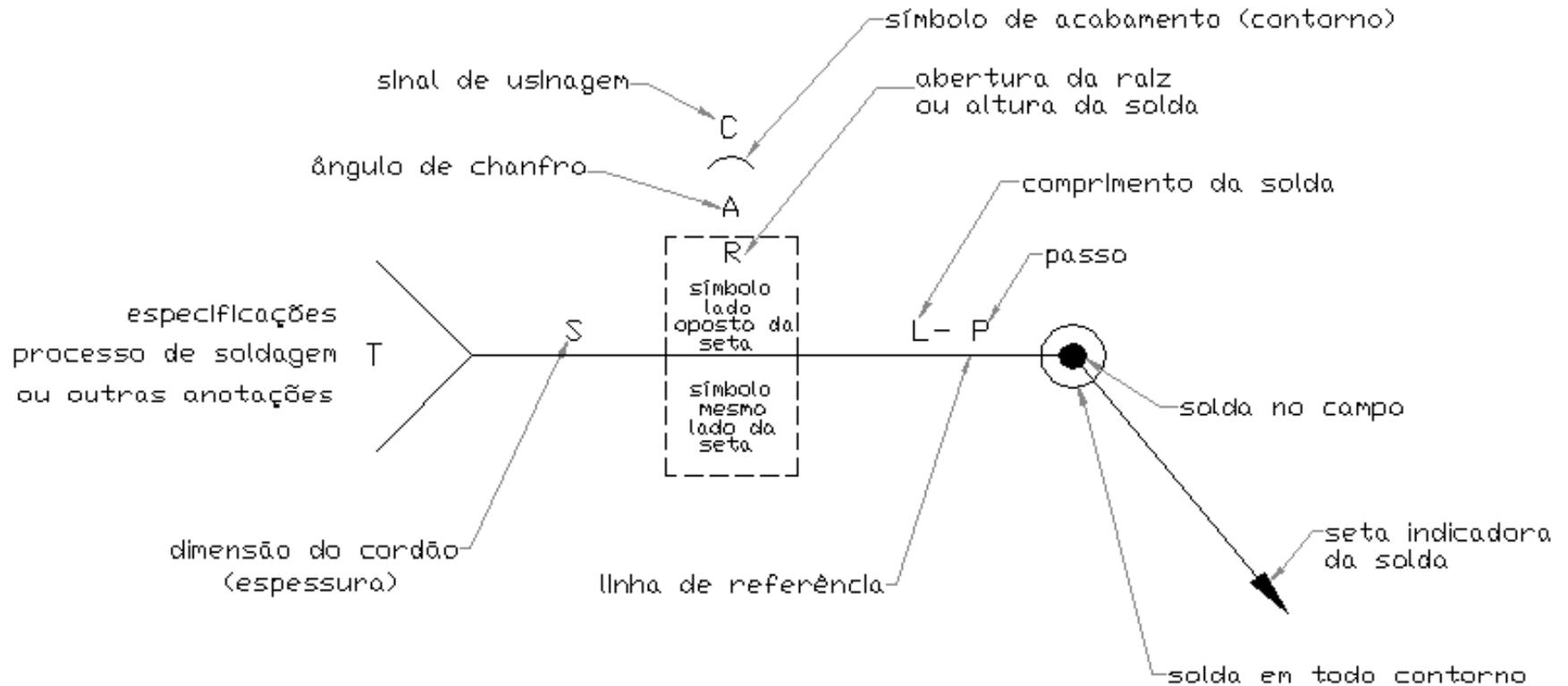
### Símbolos Suplementares (Solda)

Designação	Símbolo
Plana	
Convexa	
Côncava	
De bordos arredondados tangentes	
Cobre-junta permanente	
Cobre-junta removível	

# Simbologia de Soldagem

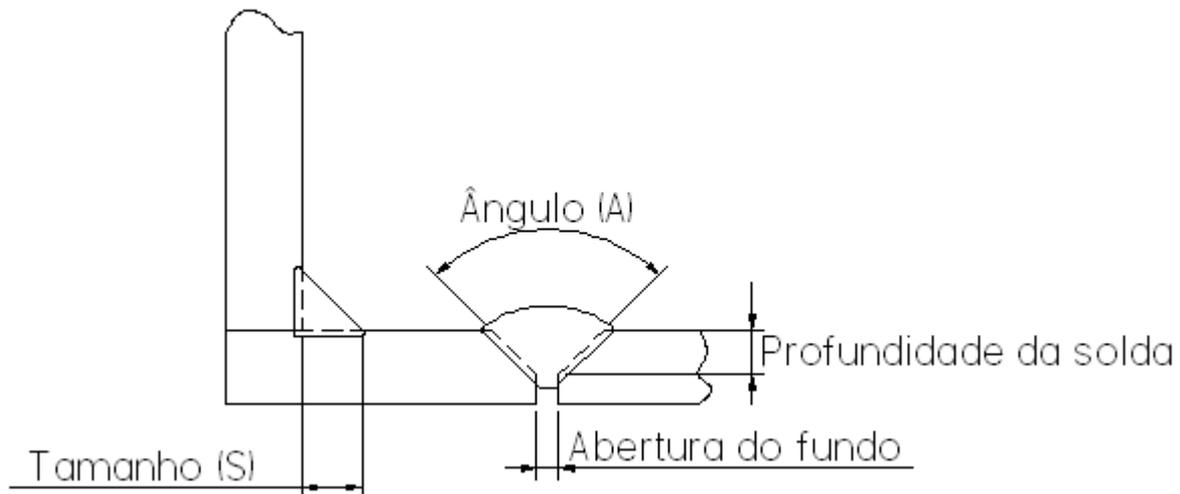


# Simbologia

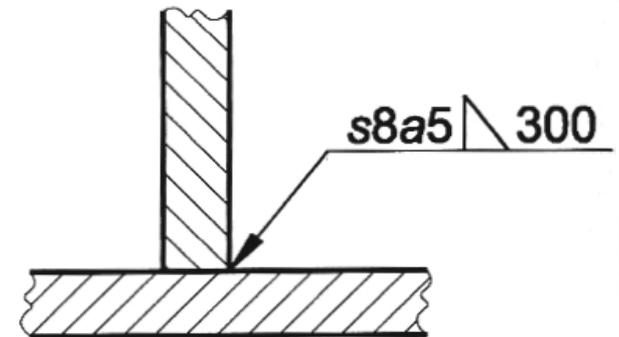
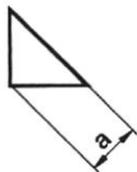
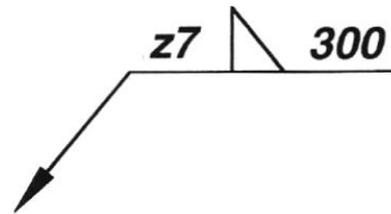
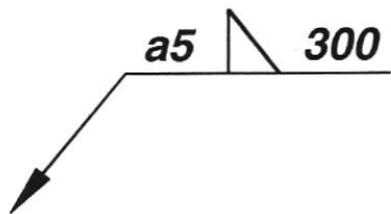
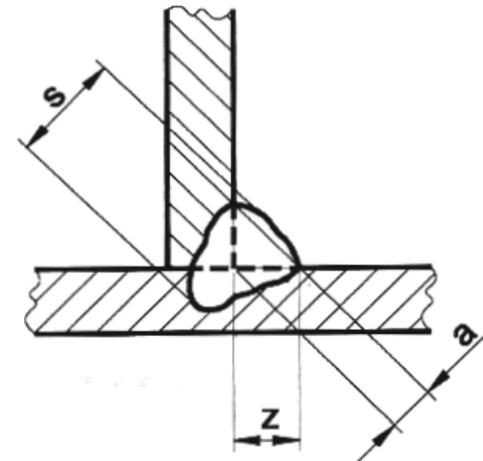
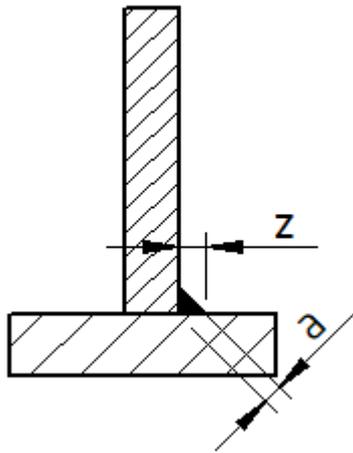


## Dimensão da solda

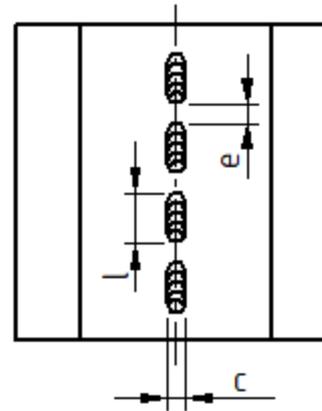
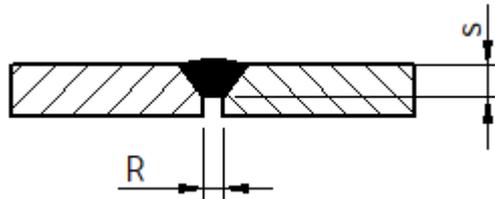
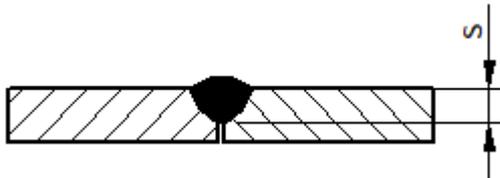
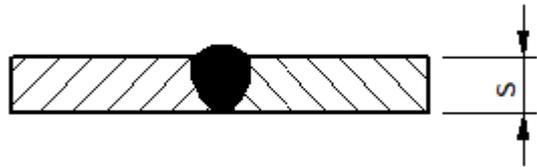
Dimensões fundamentais a serem dadas nos símbolos de soldagem.



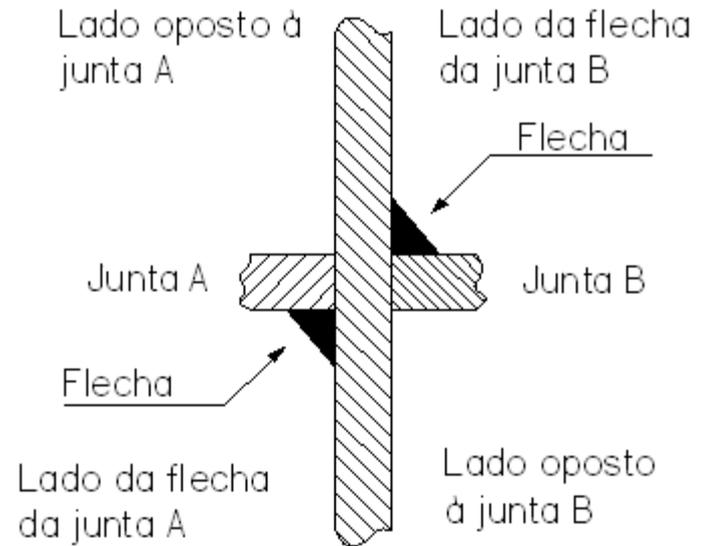
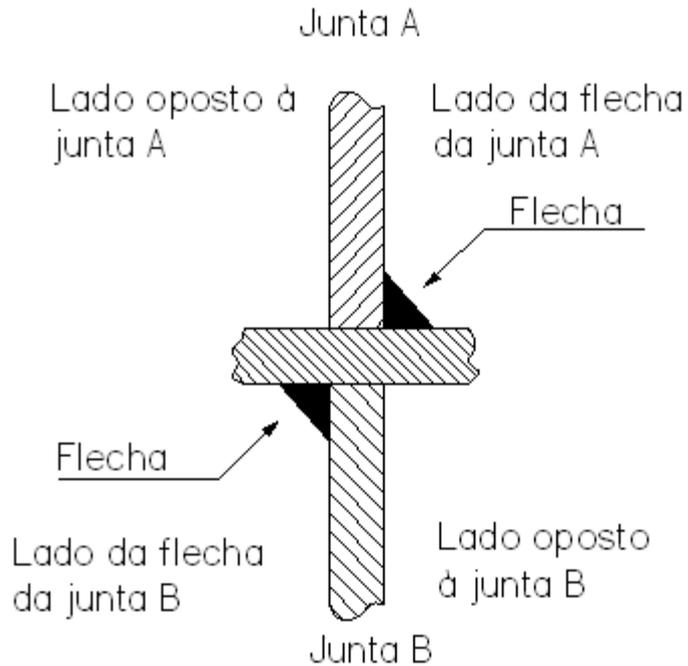
# Cotagem dos Cordões de Solda



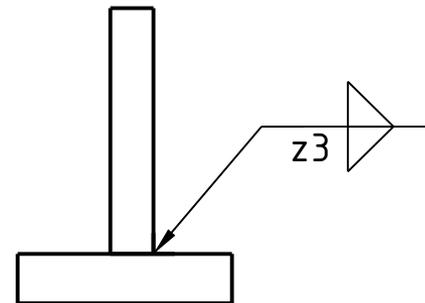
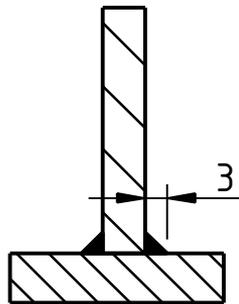
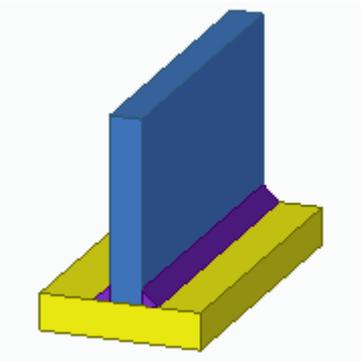
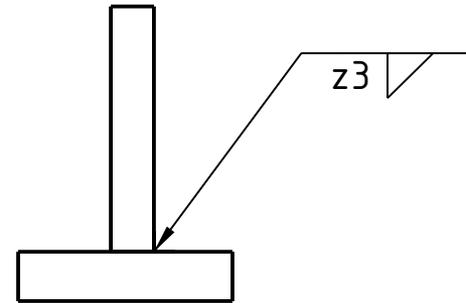
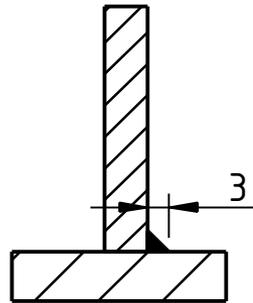
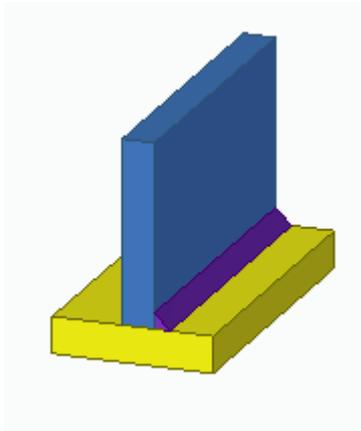
# Cotagem dos Cordões de Solda



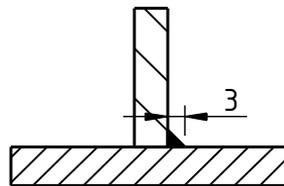
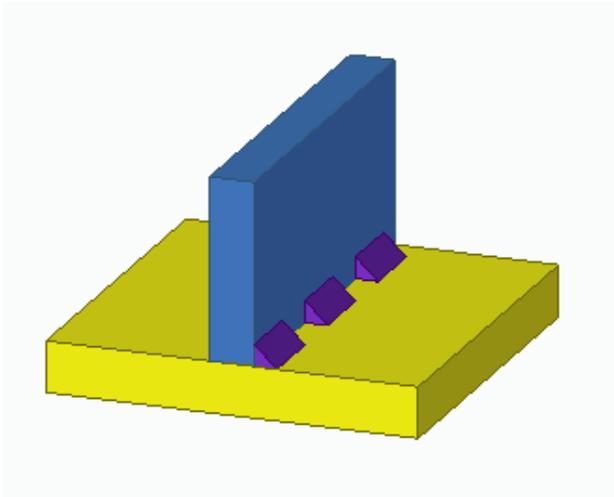
## Posicionamento flechas



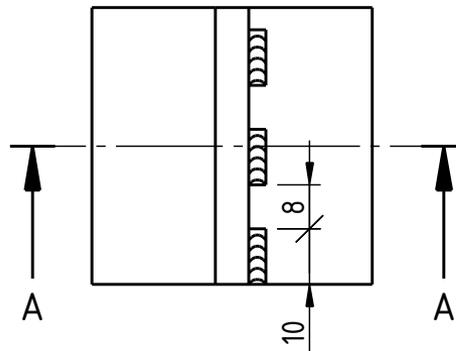
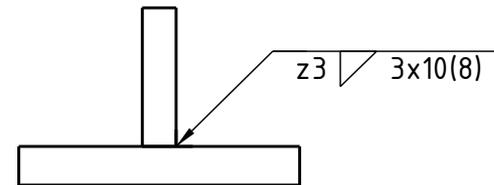
## EXEMPLO – Uniões em T: cordão contínuo



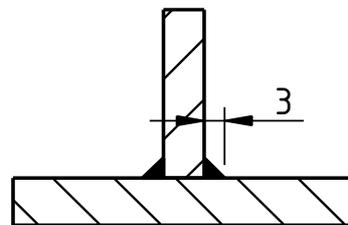
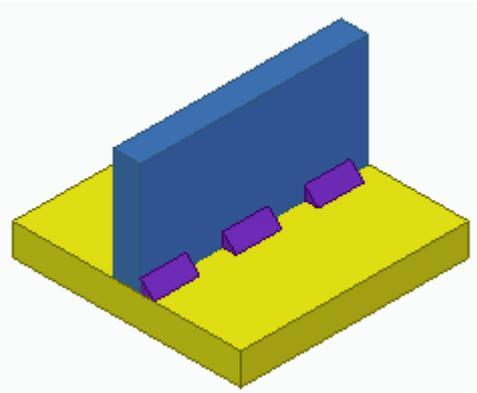
# EXEMPLO – Uniões em T: cordão intermitente



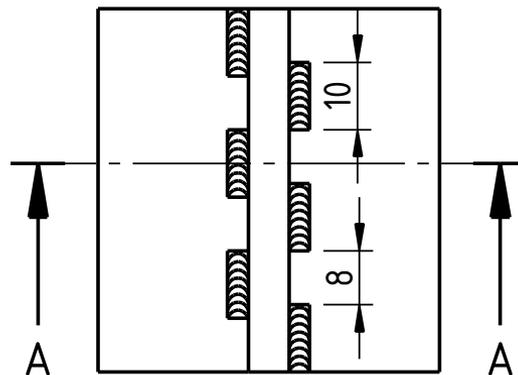
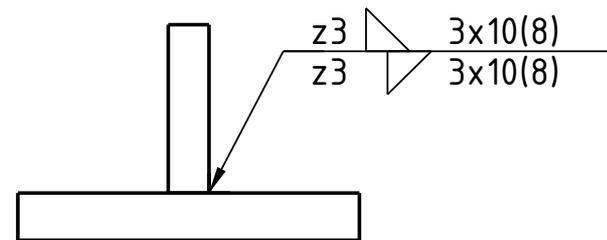
corte A-A



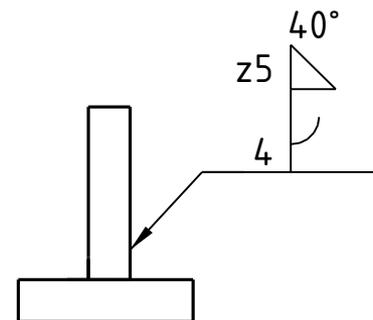
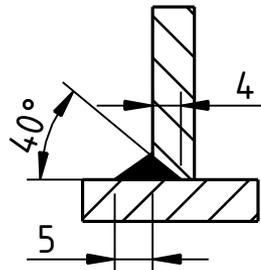
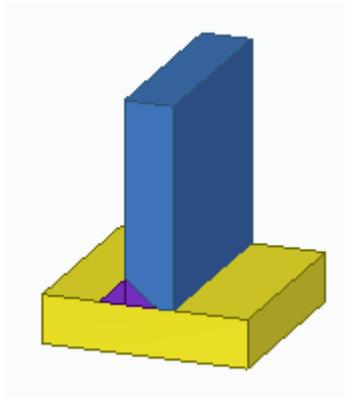
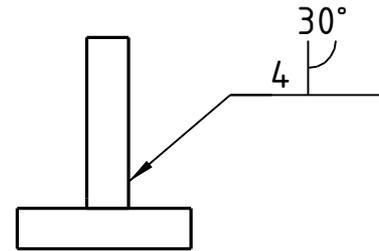
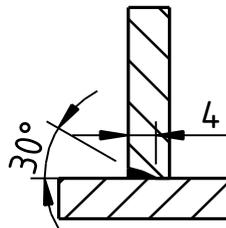
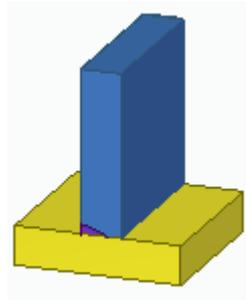
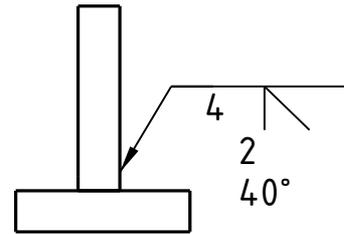
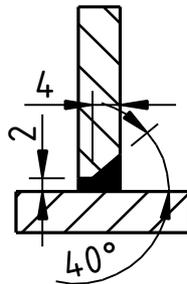
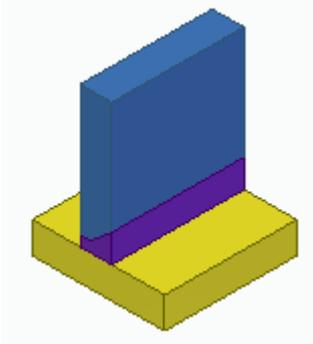
# EXEMPLO – Uniões em T: cordão intermitente defasado



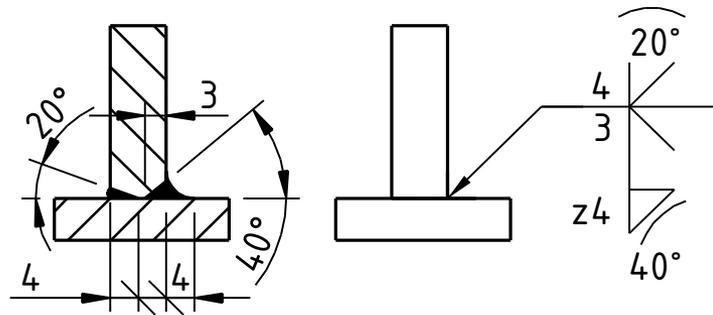
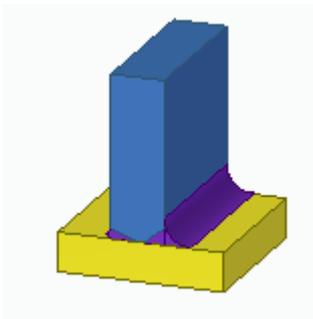
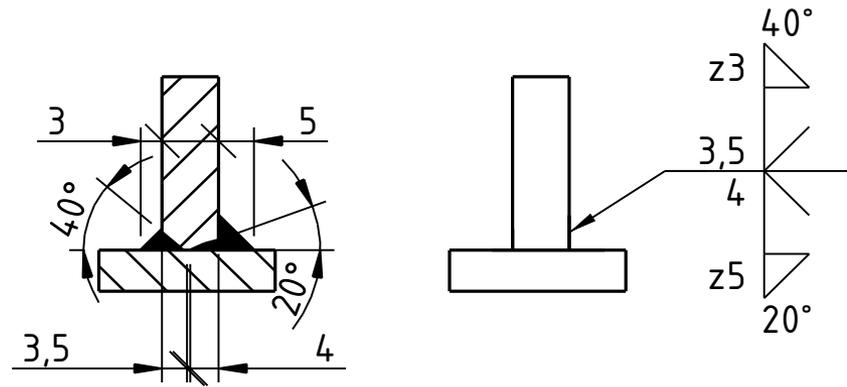
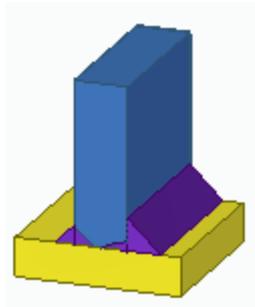
corte AA



# EXEMPLO – Uniões em T

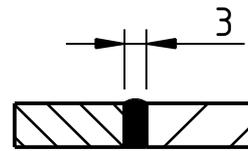
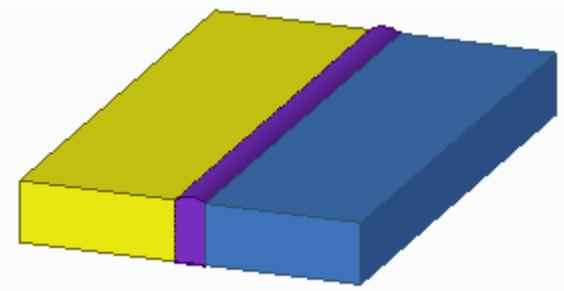


# EXEMPLO – Uniões em T

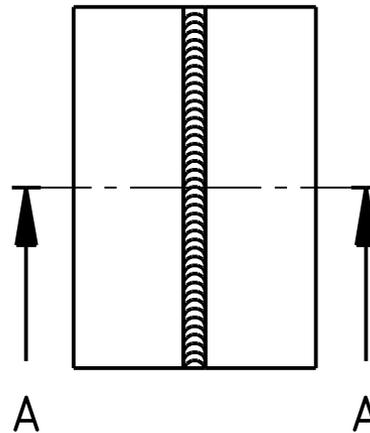
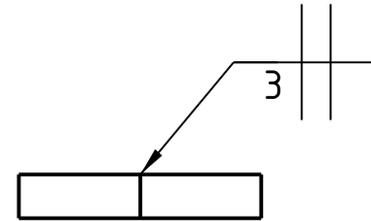


## EXEMPLO – Uniões de Topo

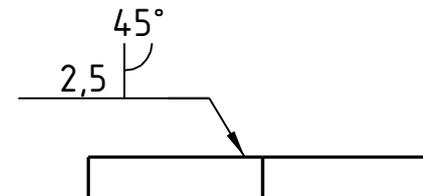
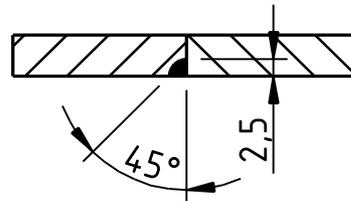
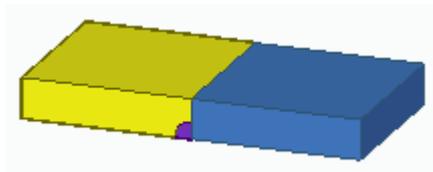
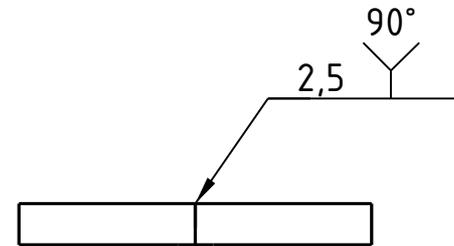
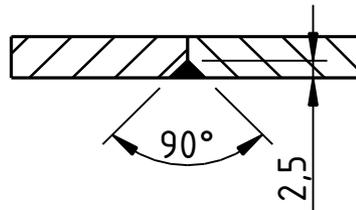
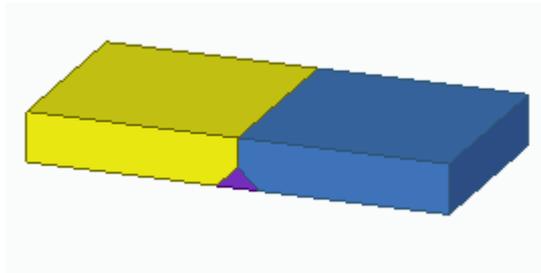
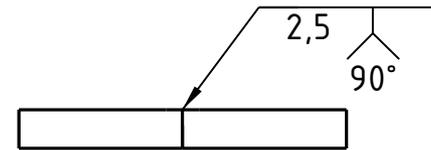
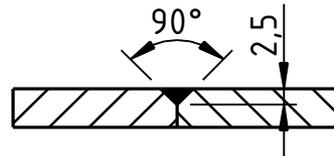
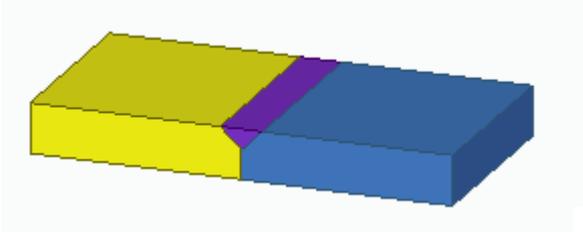
Cordão contínuo



corte AA

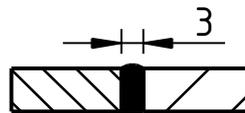
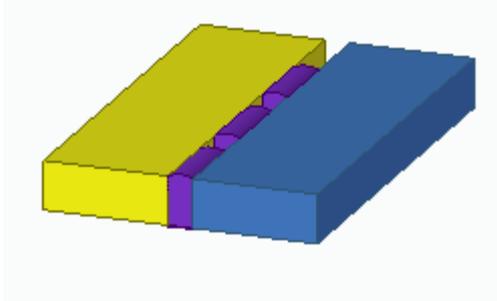


## EXEMPLO – Uniões de Topo

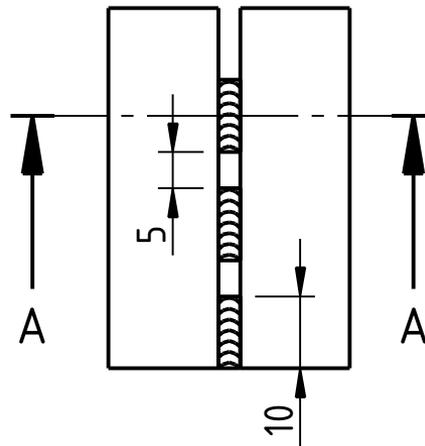
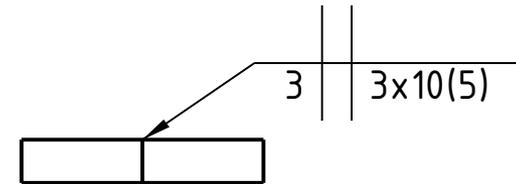


# EXEMPLO – Uniões de Topo

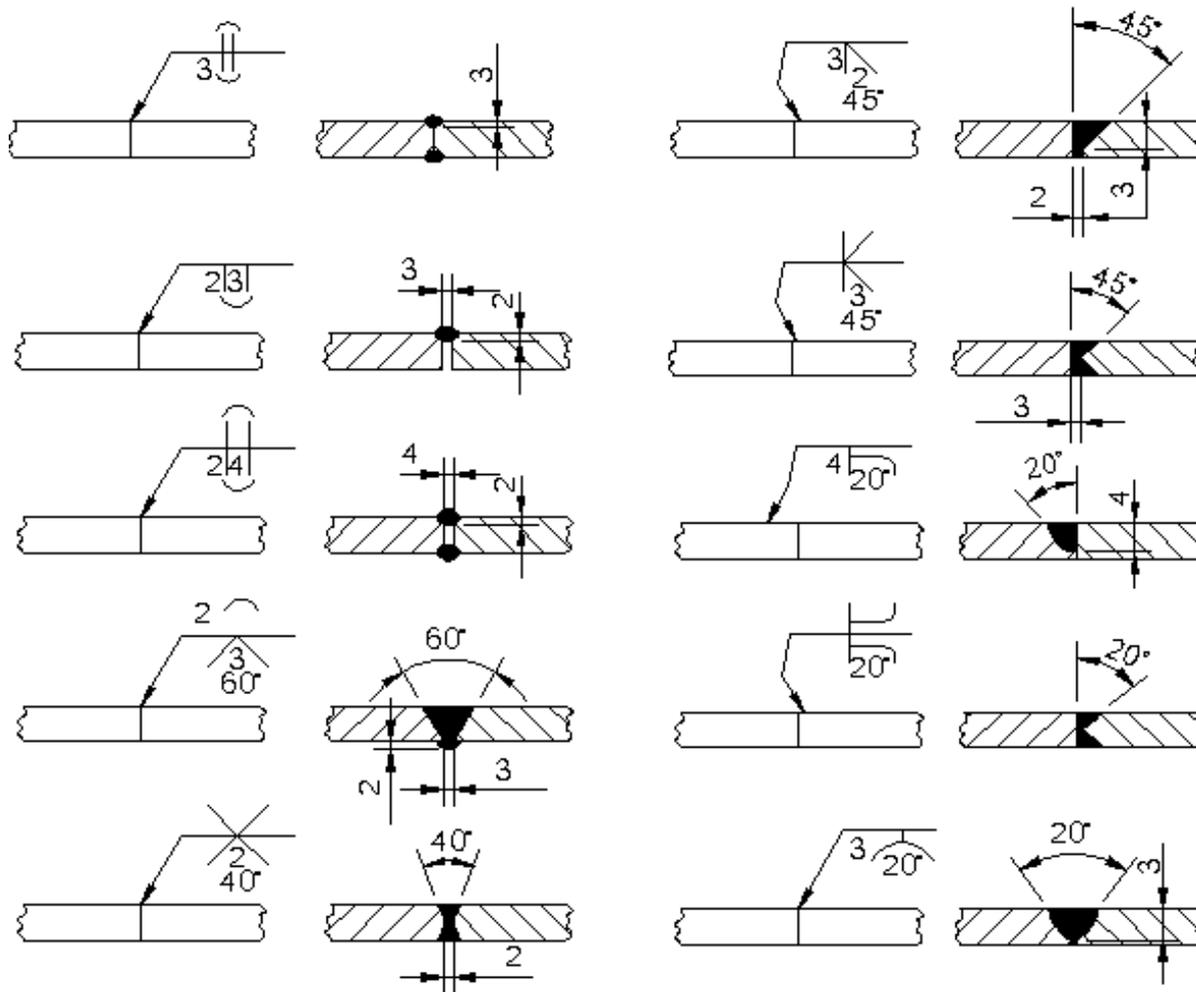
Cordão intermitente



corte A-A

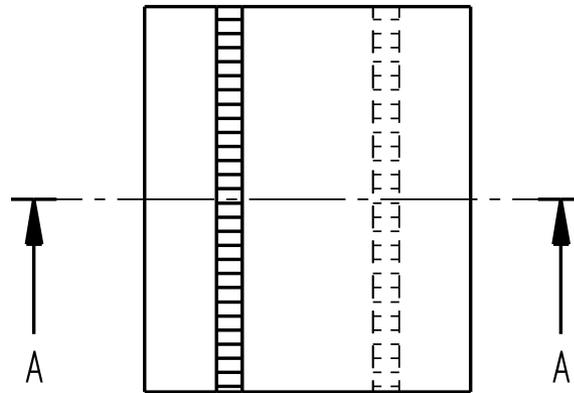
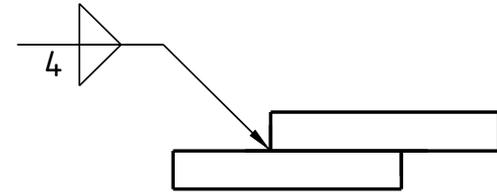
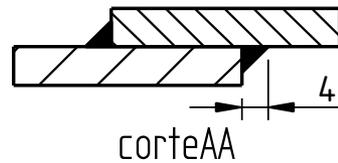
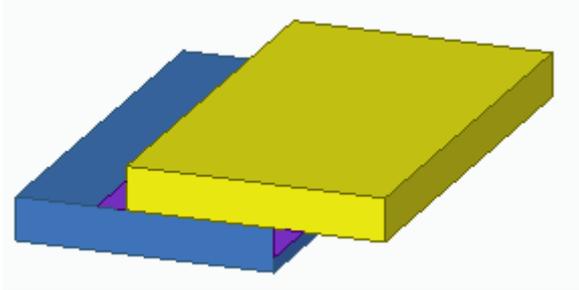


## EXEMPLO – Uniões de Topo



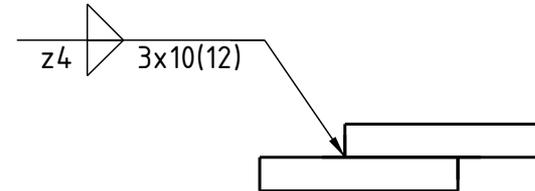
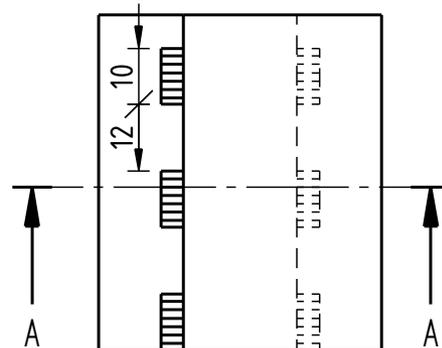
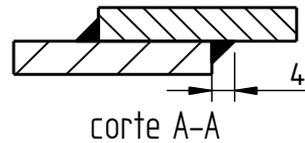
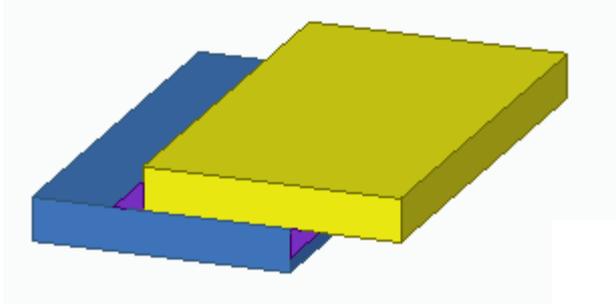
# EXEMPLO – Uniões Sobrepostas

Cordão contínuo



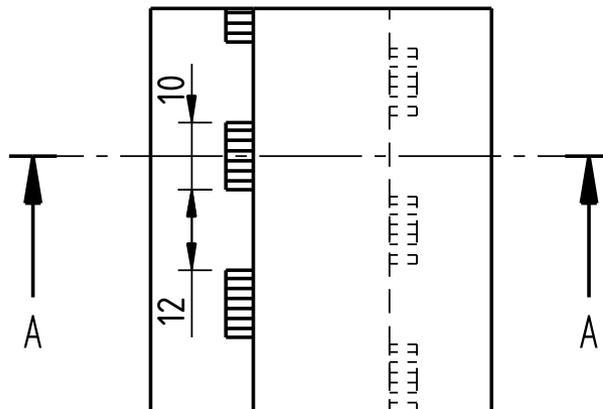
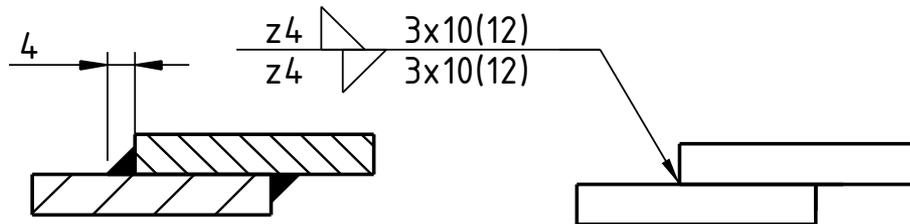
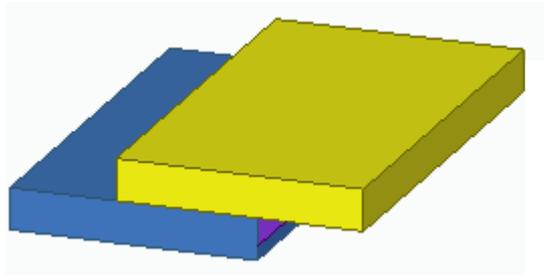
# EXEMPLO – Uniões Sobrepostas

Cordão intermitente

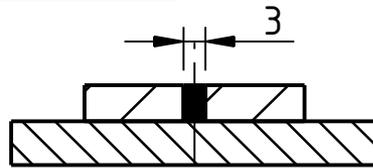
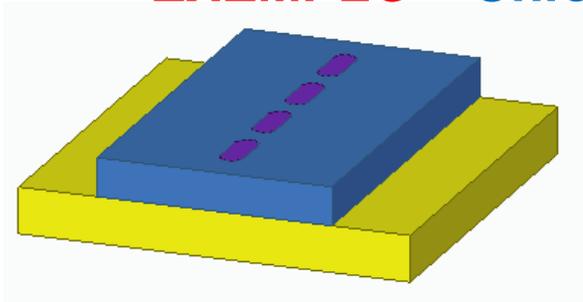


# EXEMPLO – Uniões Sobrepostas

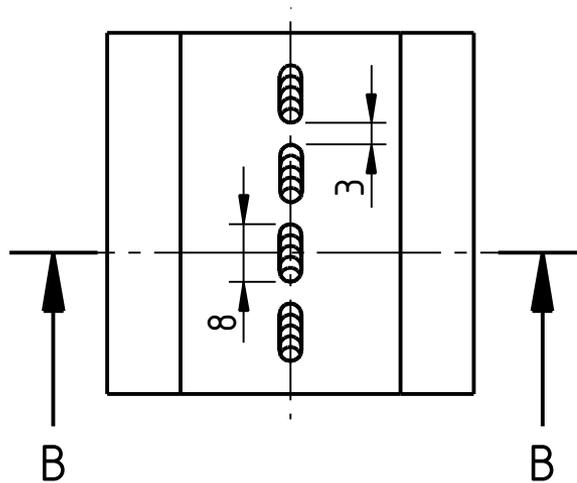
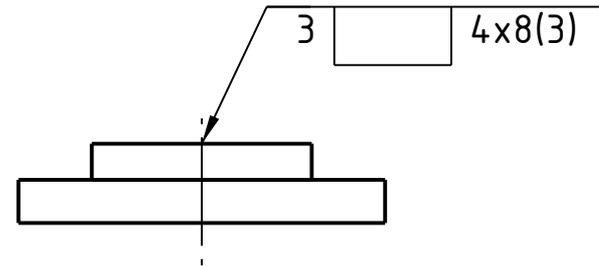
Cordão intermitente defasado



# EXEMPLO – Uniões sobrepostas: cordão intermitente

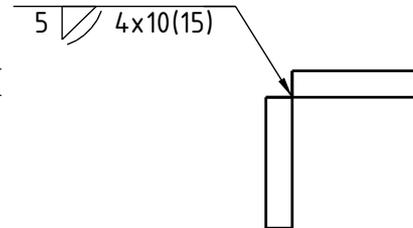
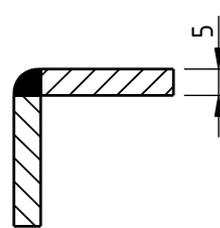
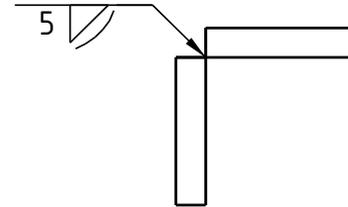
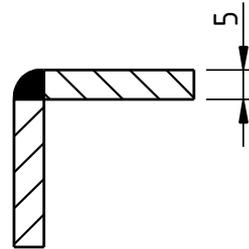
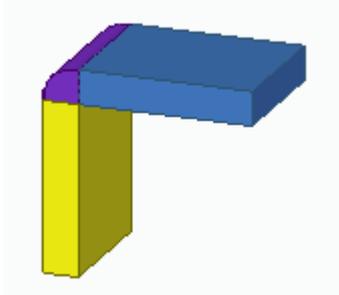


corde B-B

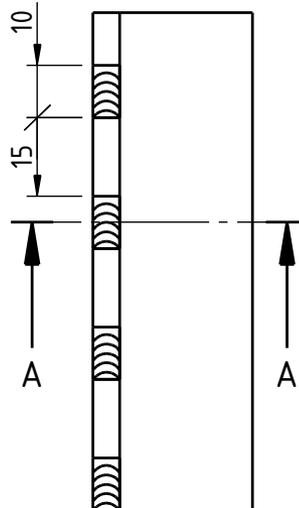
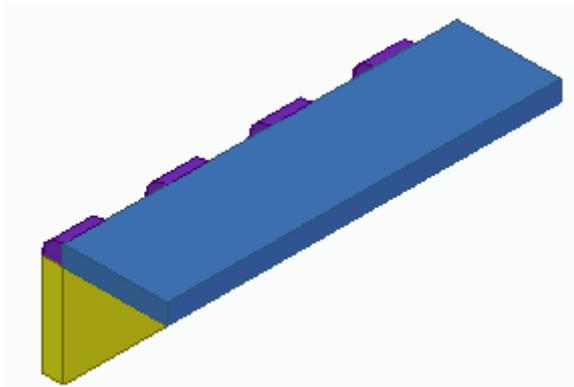


# Exemplos uniões em ângulo

## • Uniões centro

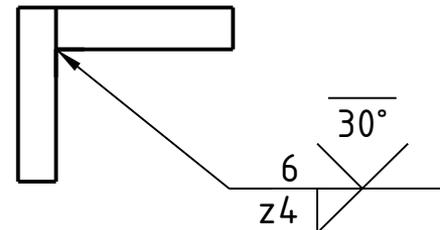
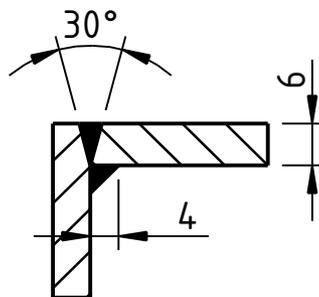
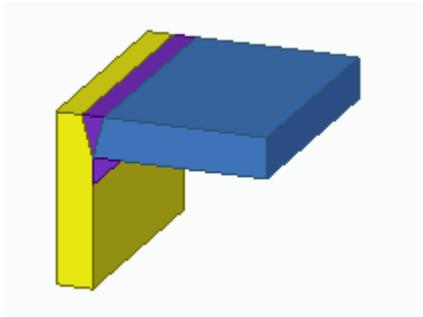
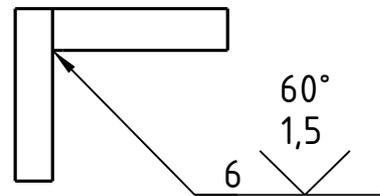
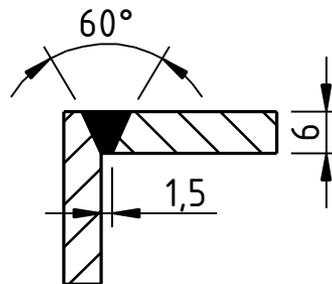
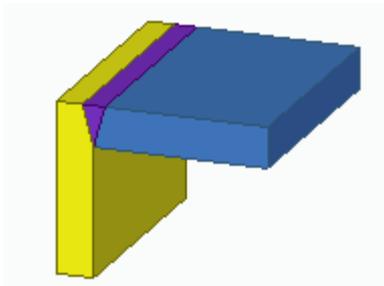
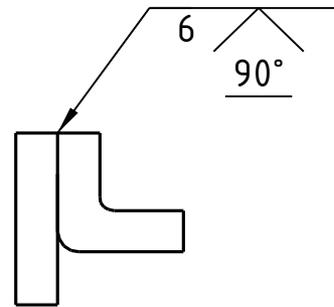
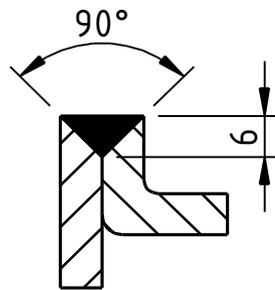
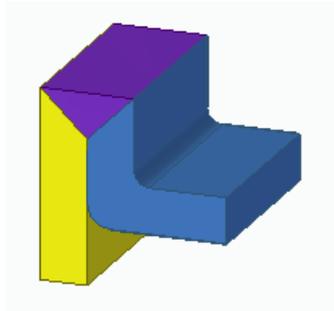


corte AA

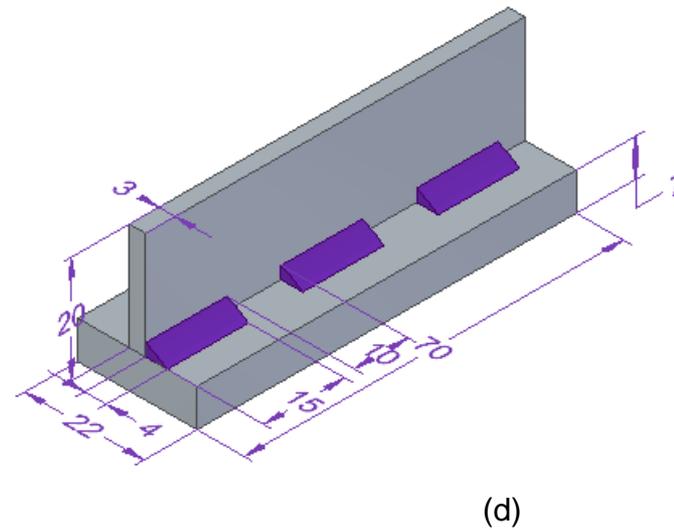
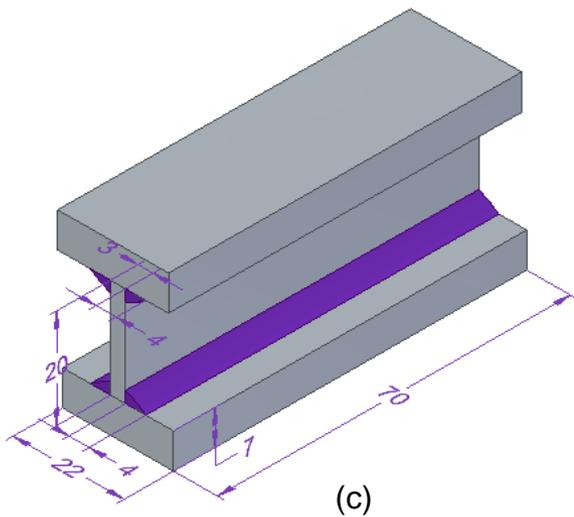
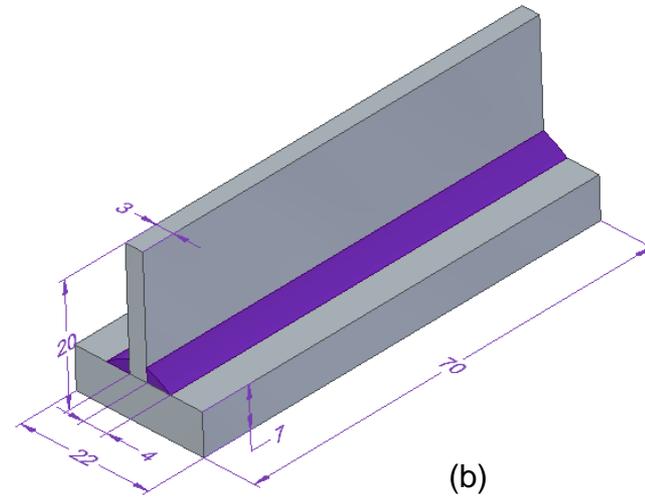
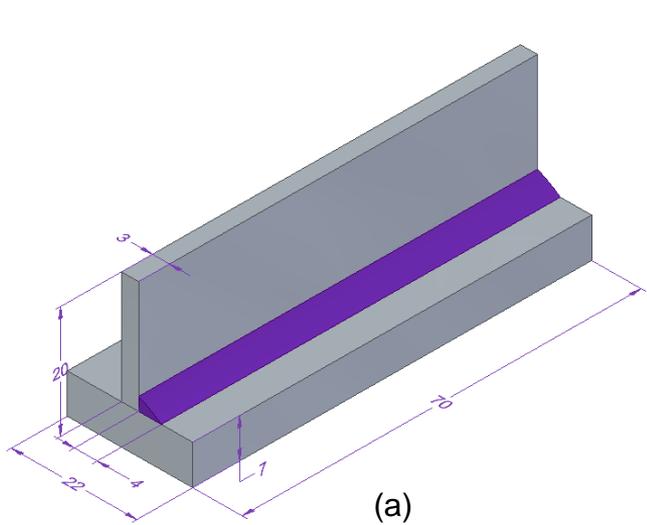


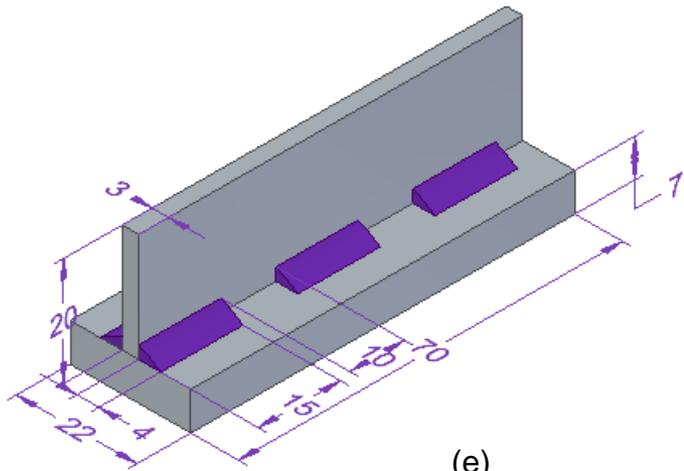
# Exemplos uniões em ângulo

## • Uniões em canto

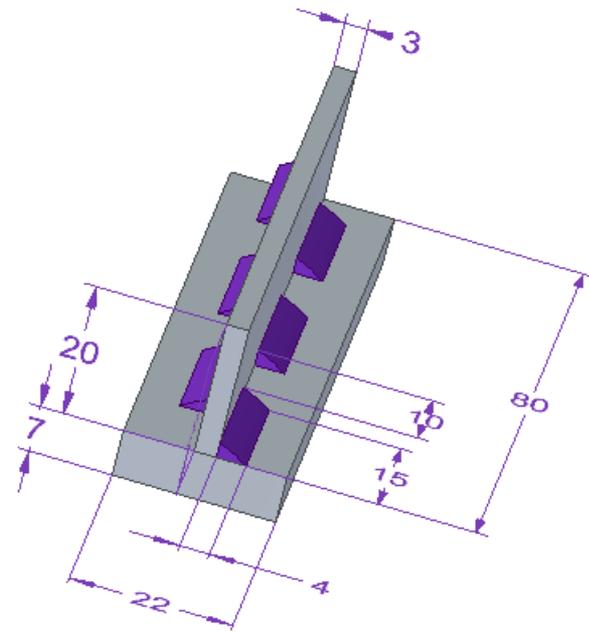


Exercício 1 - Faça o croqui das vista frontal e lateral esquerda com cotas. Faça a vista lateral em corte com a representação da simbologia de soldagem.

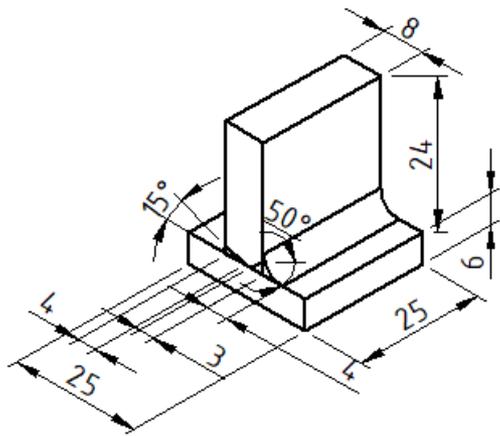




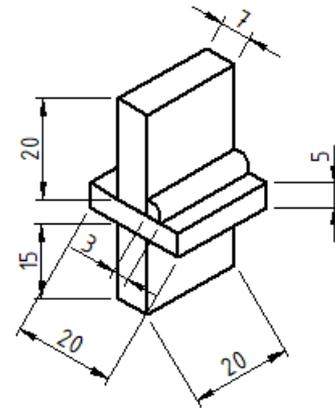
(e)



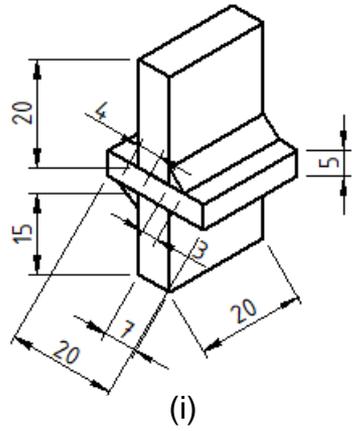
(f)



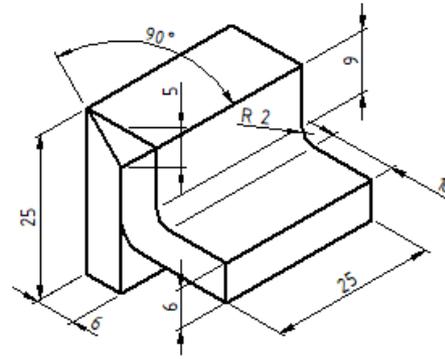
(g)



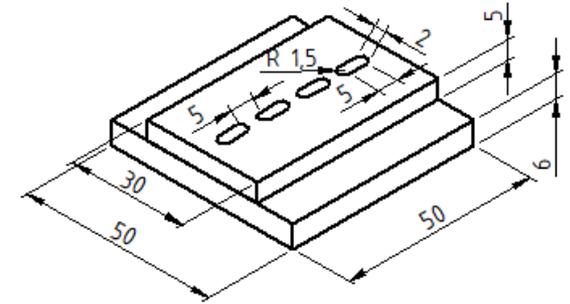
(h)



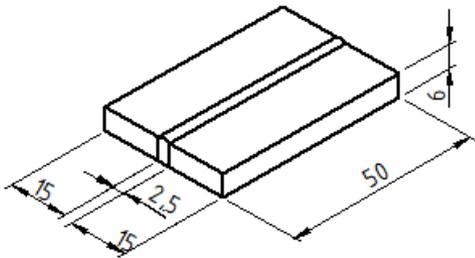
(i)



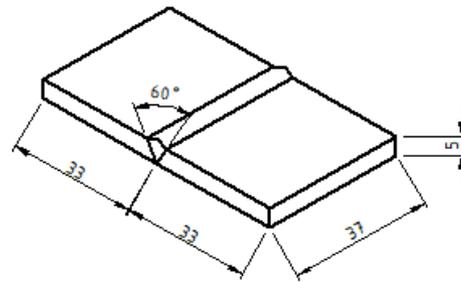
(j)



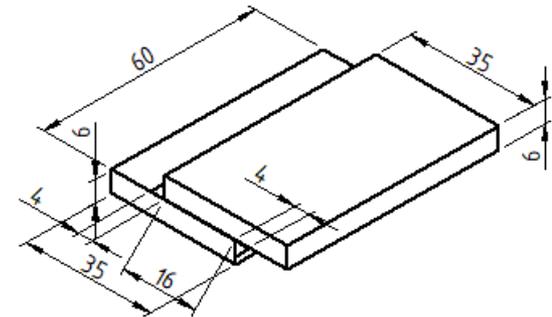
(k)



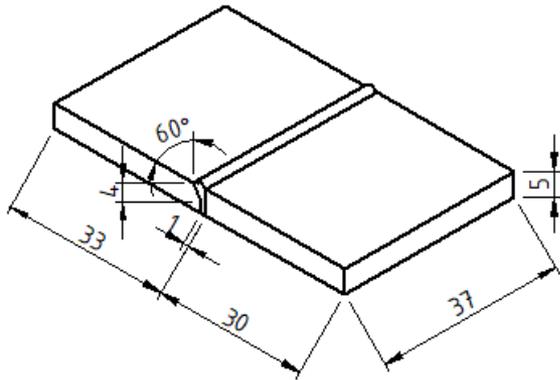
(l)



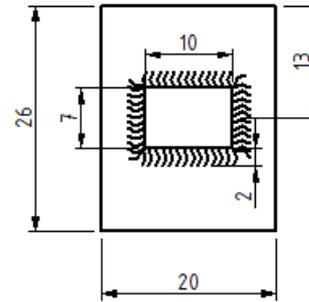
(m)



(n)

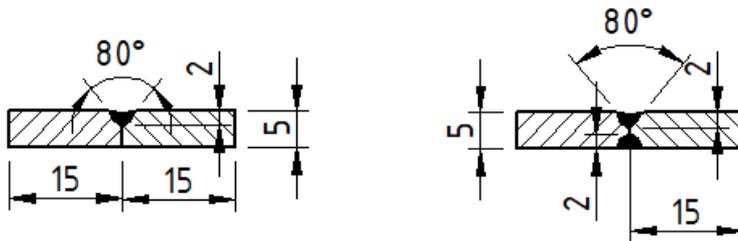


(o)



(p)

Faça a vista com simbologia:



---

## REFERÊNCIAS

Silva, A.; Ribeiro, C. T.; Dias, J.; Souza, L. **Desenho Técnico Moderno**, 4. ed., LTC Editora, 2006, 486 p.

Pauli, E. A.; Uliana, F. S. **Noções Básicas de Processos de Soldagem e Corte**, Escola SENAI-ES.