SEP282 – PROCESSOS PARA INDÚSTRIA AERONÁUTICA

- **AULA 8**
  - **PROJETO DE FERRAMENTAS DE CORTE E DOBRA**

Prof. Reginaldo T. Coelho - 2020

Exemplos de estampos progressivos

PROJETO DE FERRAMENTA CORTE-DOBRA

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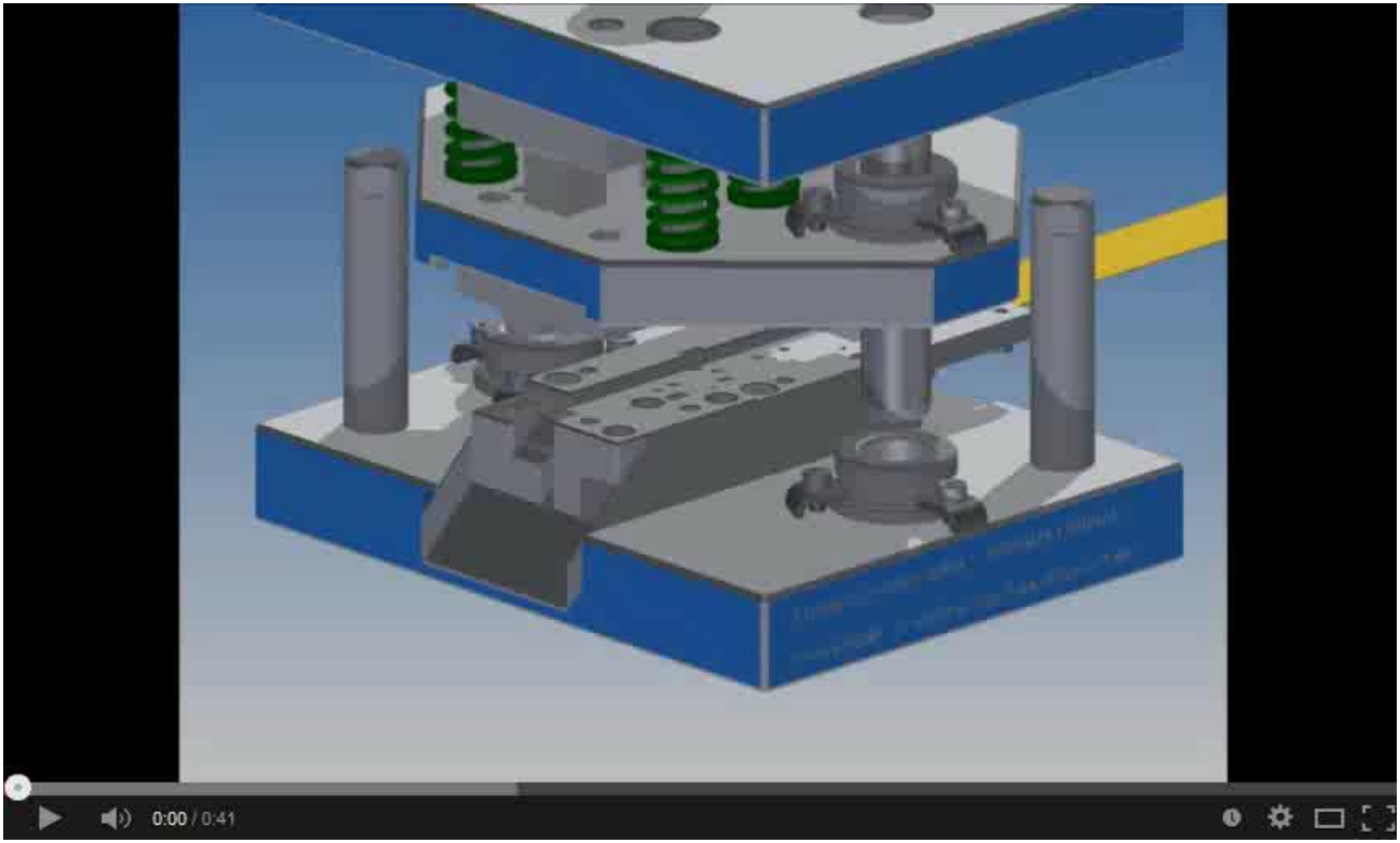
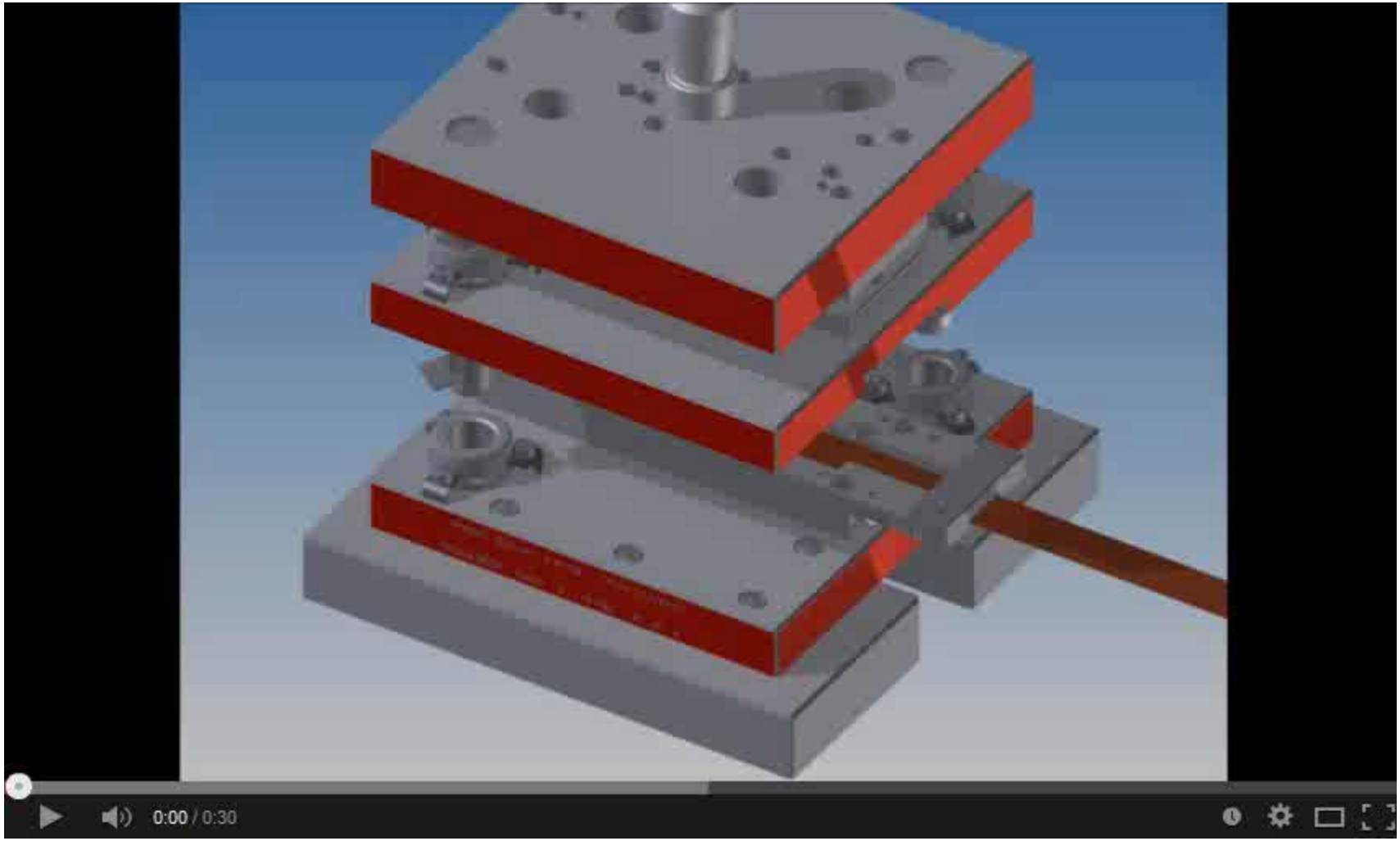


Exemplos de estampos progressivos



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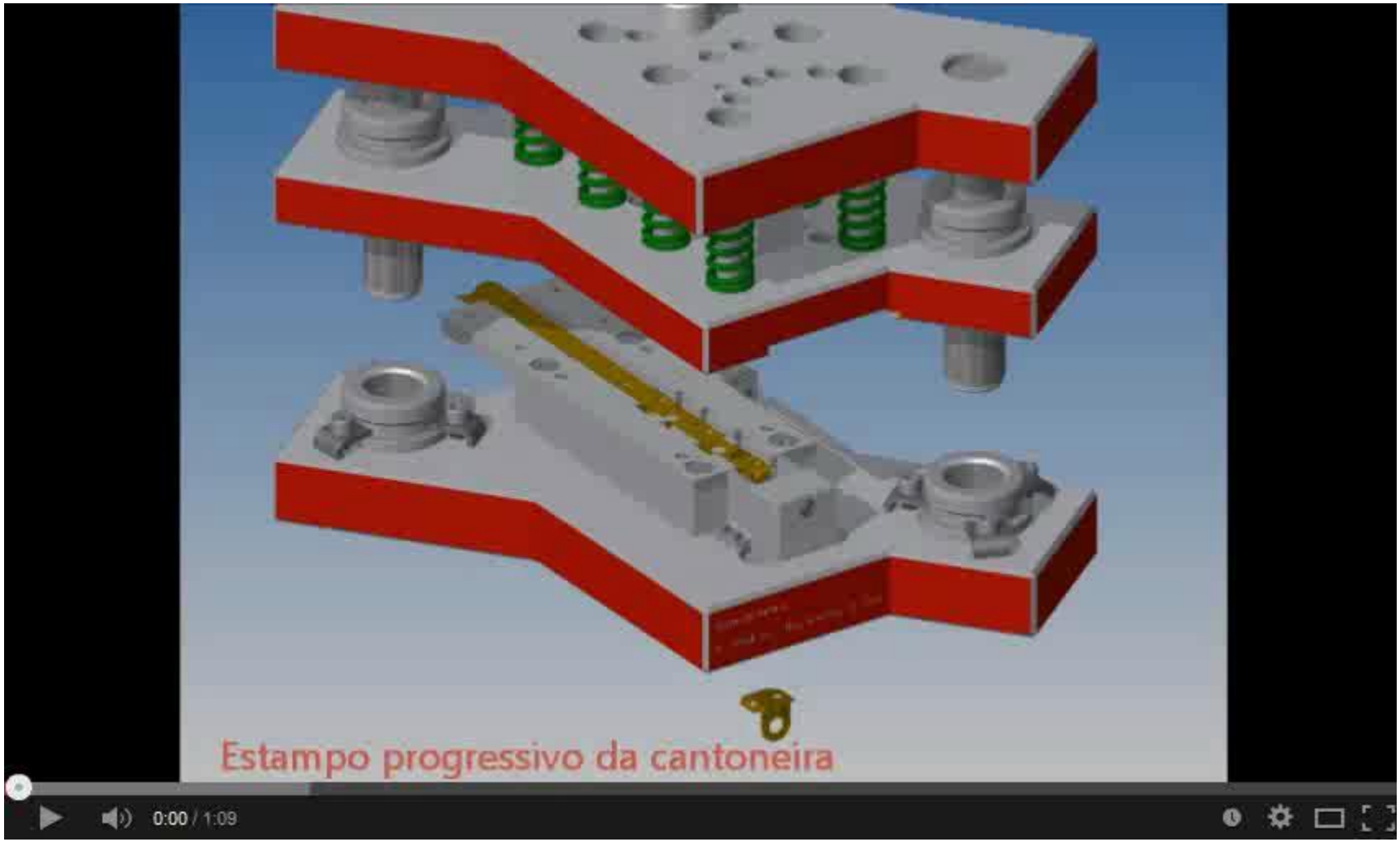
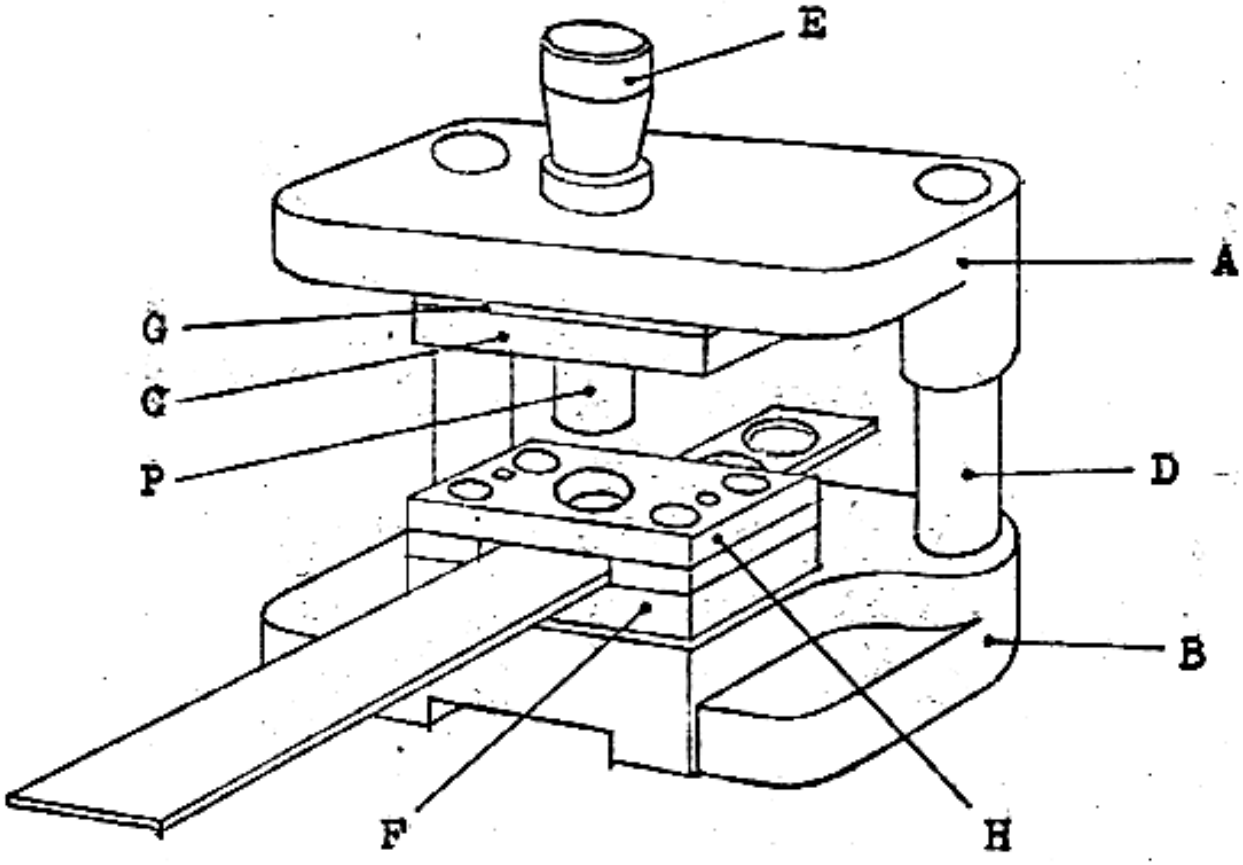


PROJETO DE FERRAMENTA CORTE-DOBRA

Elementos de um estampo de corte



A – Base superior ou cabeçote

B – Base do estampo

C – Porta- punções

D – Colunas

E - Espiga

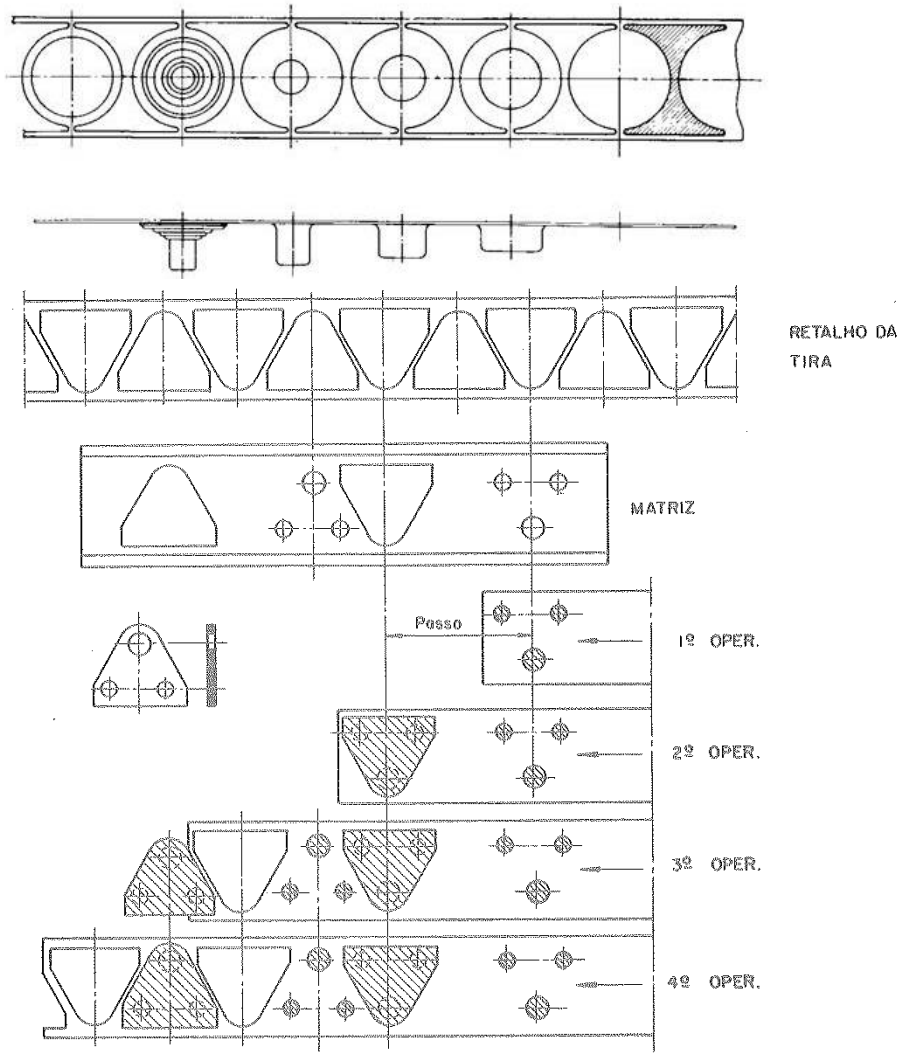
F – Placa porta-matriz

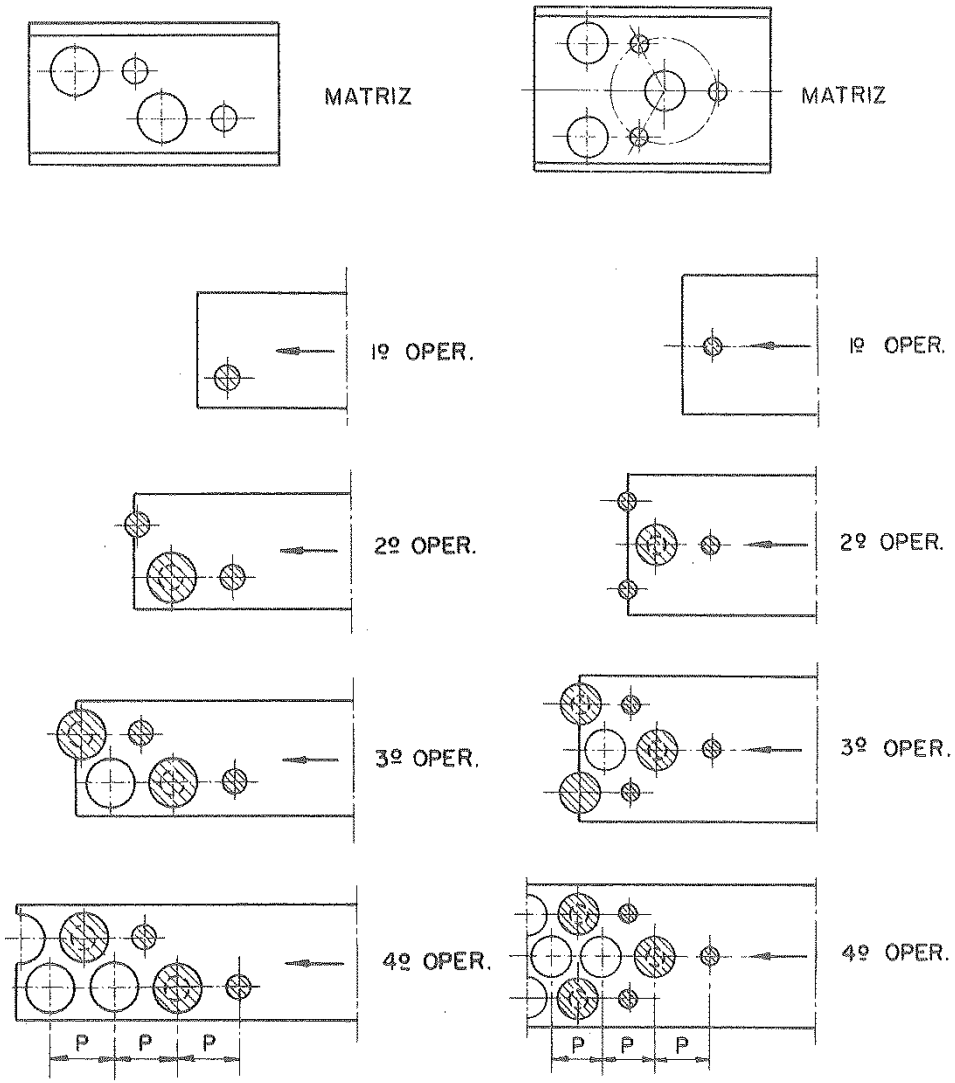
G – Placa de choque

H – Guia, ou prensa-chapas

PROJETO DE FERRAMENTA CORTE-DOBRA

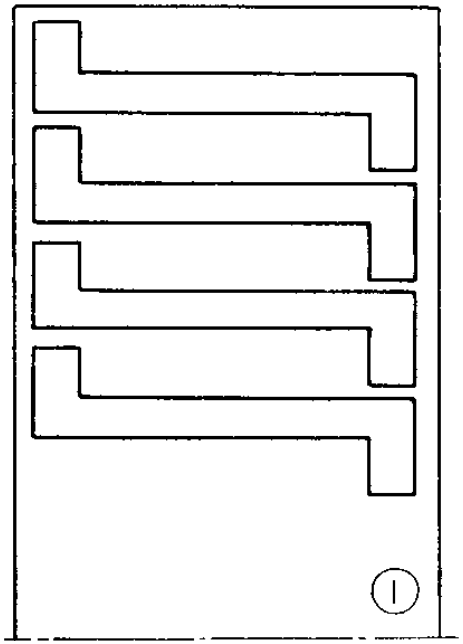
Projeto da fita

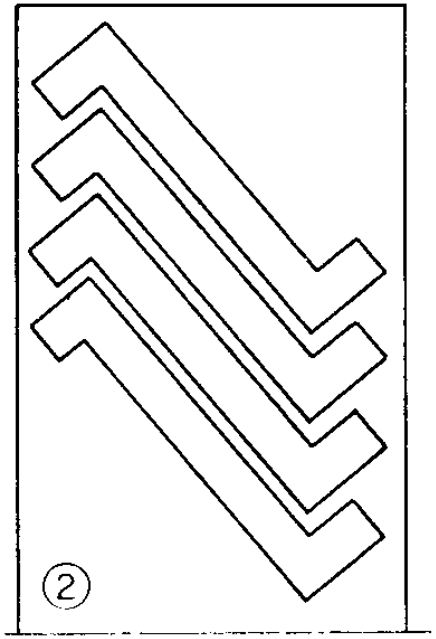


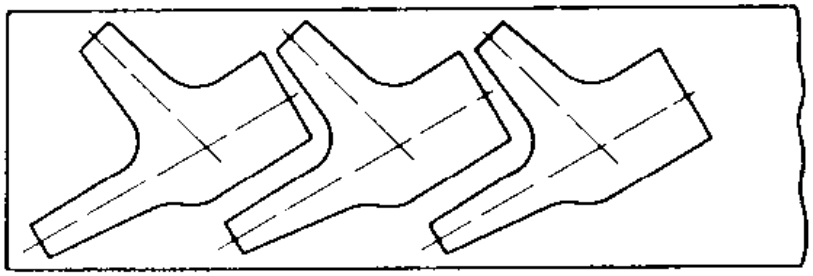


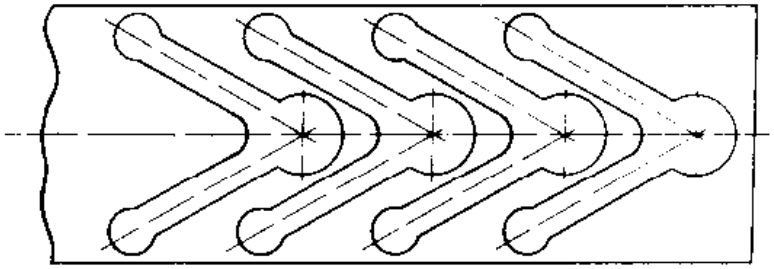
PROJETO DE FERRAMENTA CORTE-DOBRA

Projeto da fita - Utilização racional da chapa

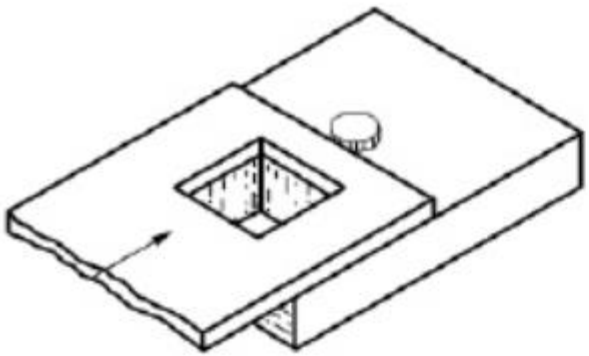


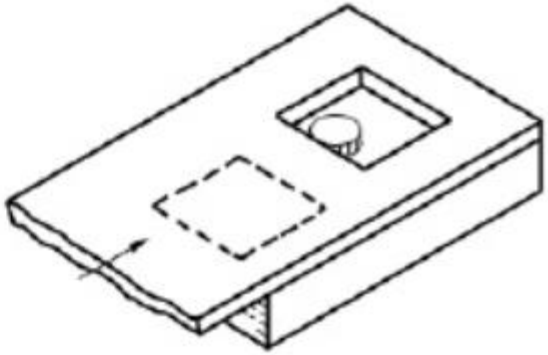


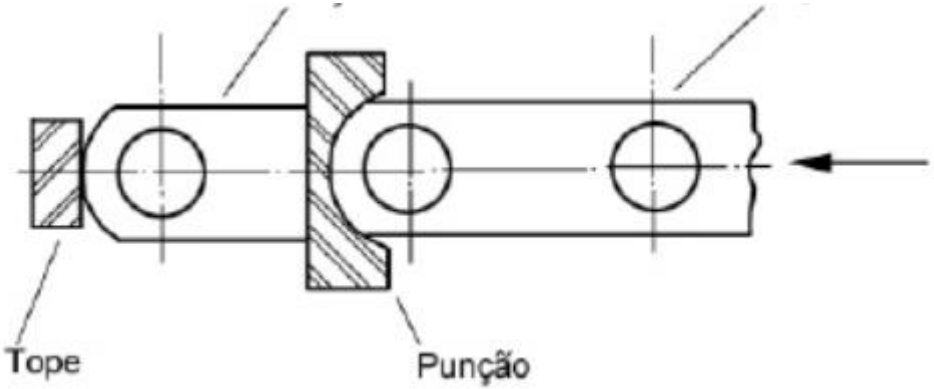




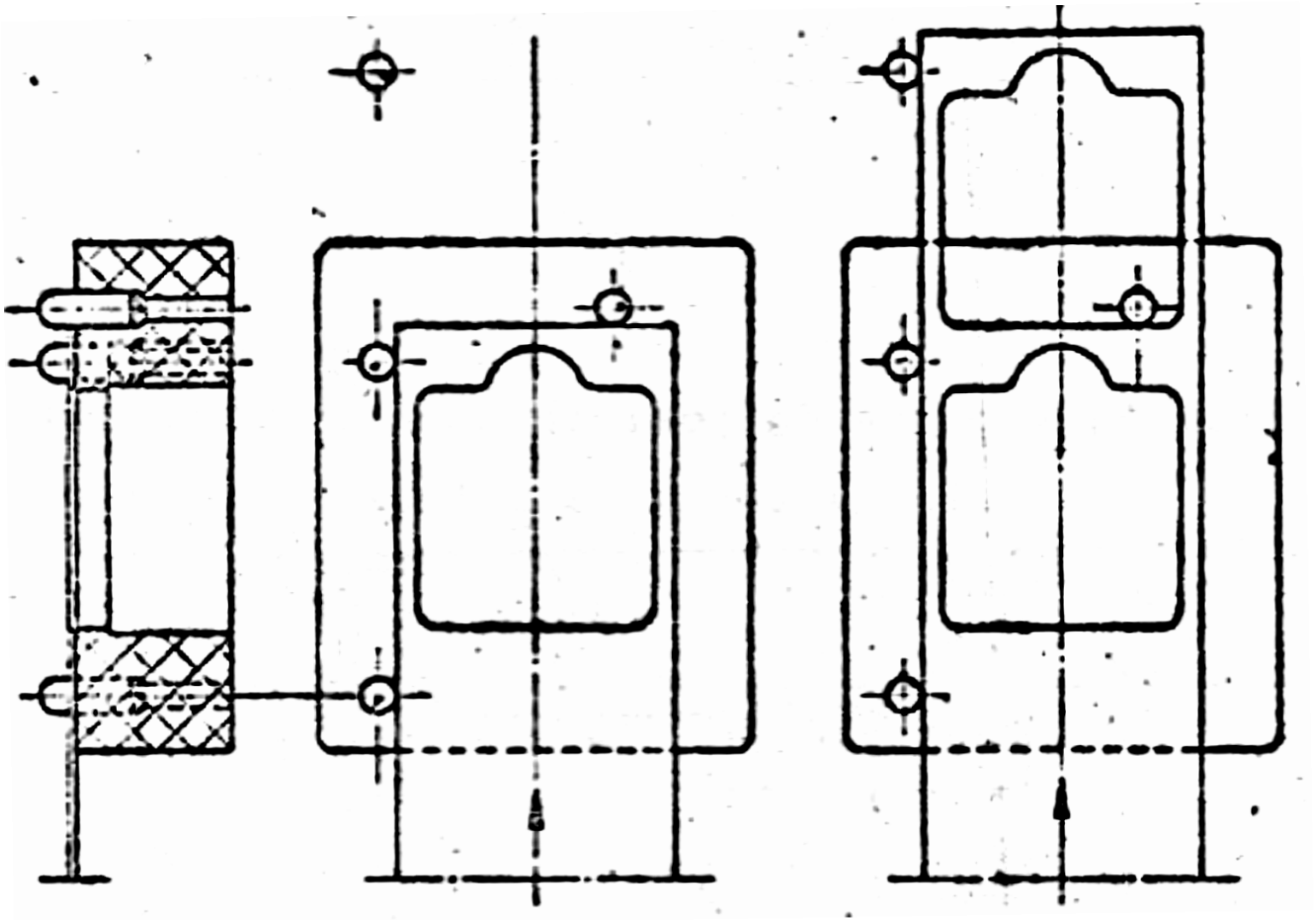
Projeto da fita – Marcador de passo



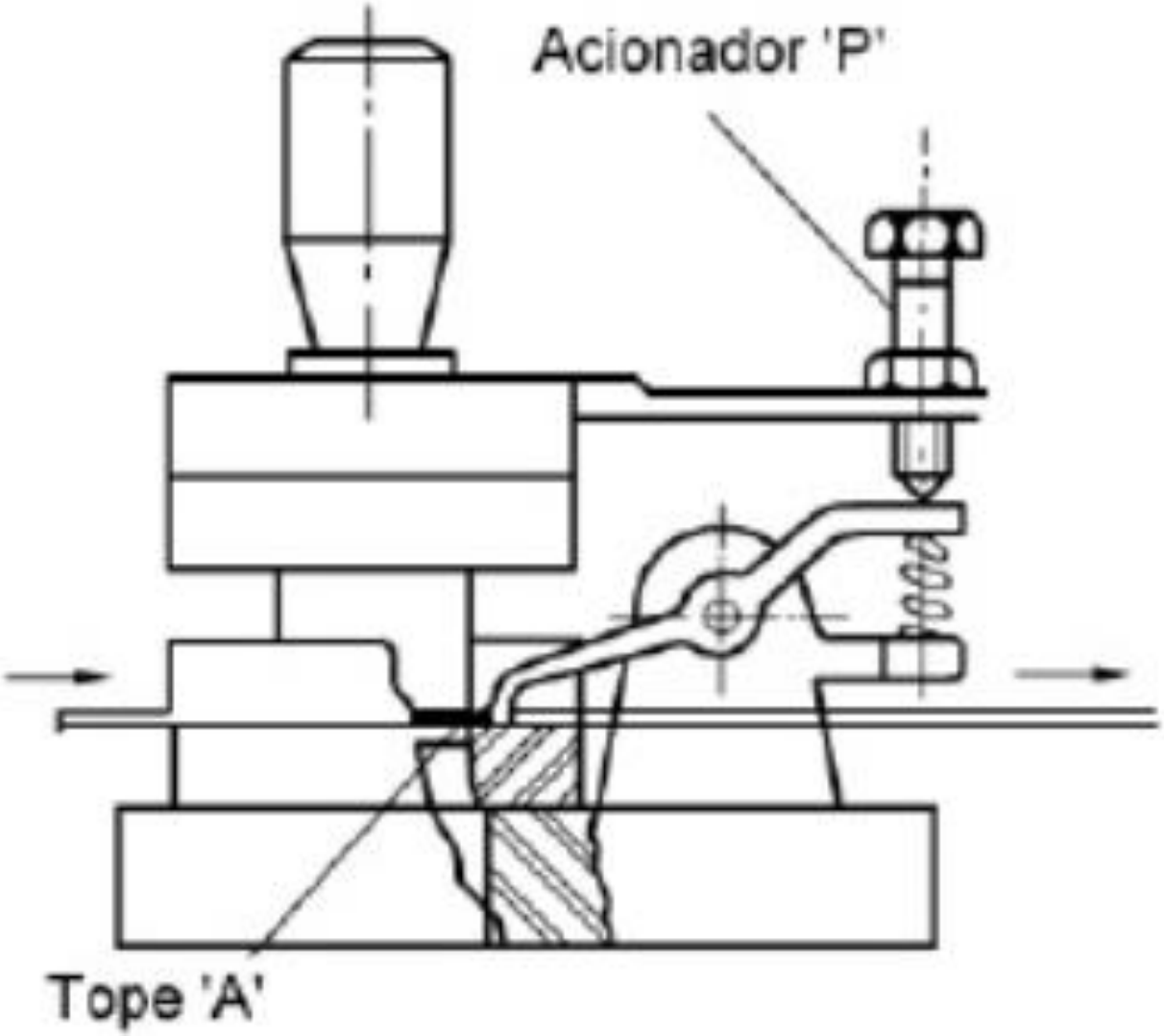




Projeto da fita – Marcador de passo



Projeto da fita – Marcador de passo



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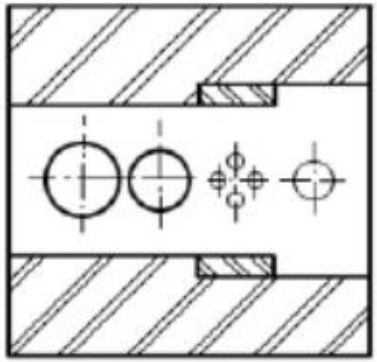
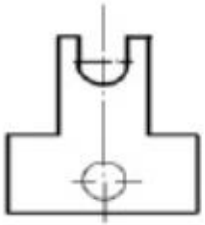


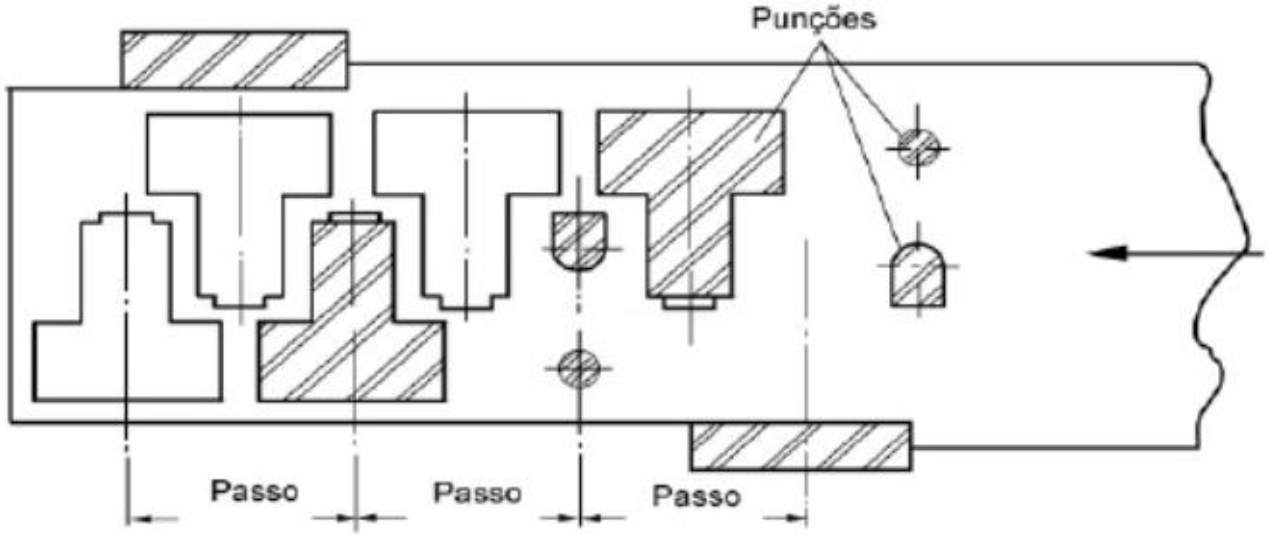
Projeto da fita – Marcador de passo

Uso de facas laterais

Utilizam-se, também, para conseguir total aproveitamento da tira.

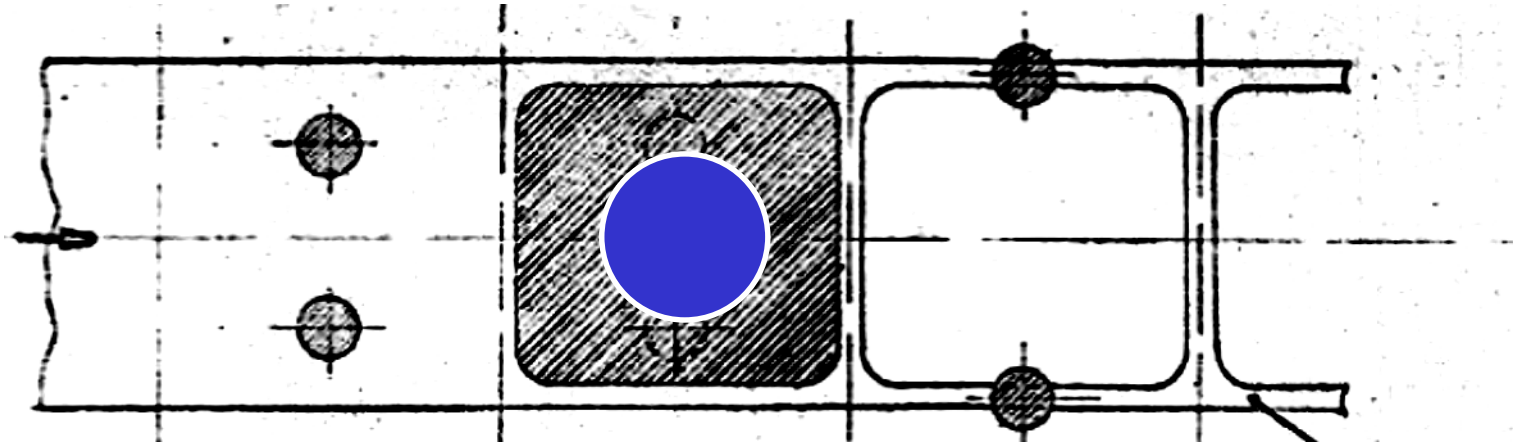


Peça cortada



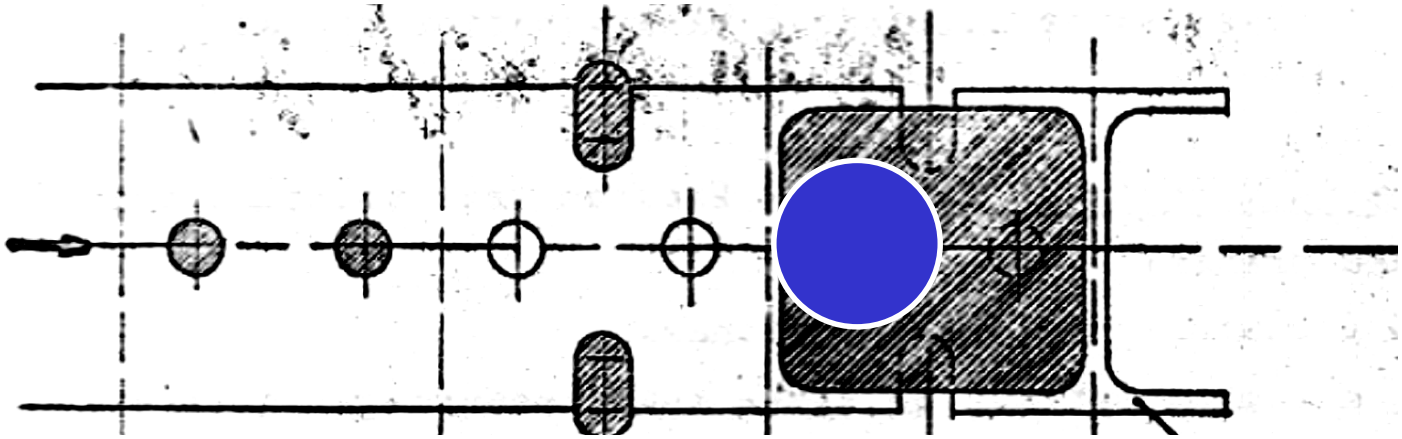
PROJETO DE FERRAMENTA CORTE-DOBRA

Posição da espiga



Certo

Errado



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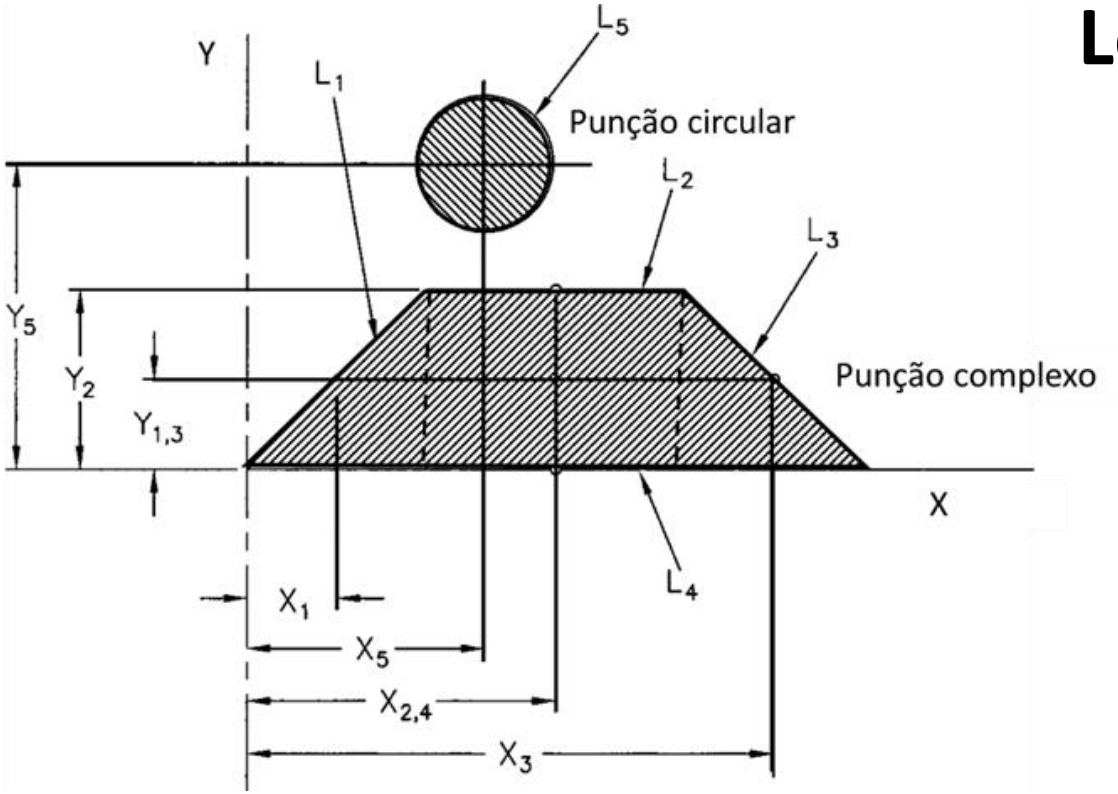


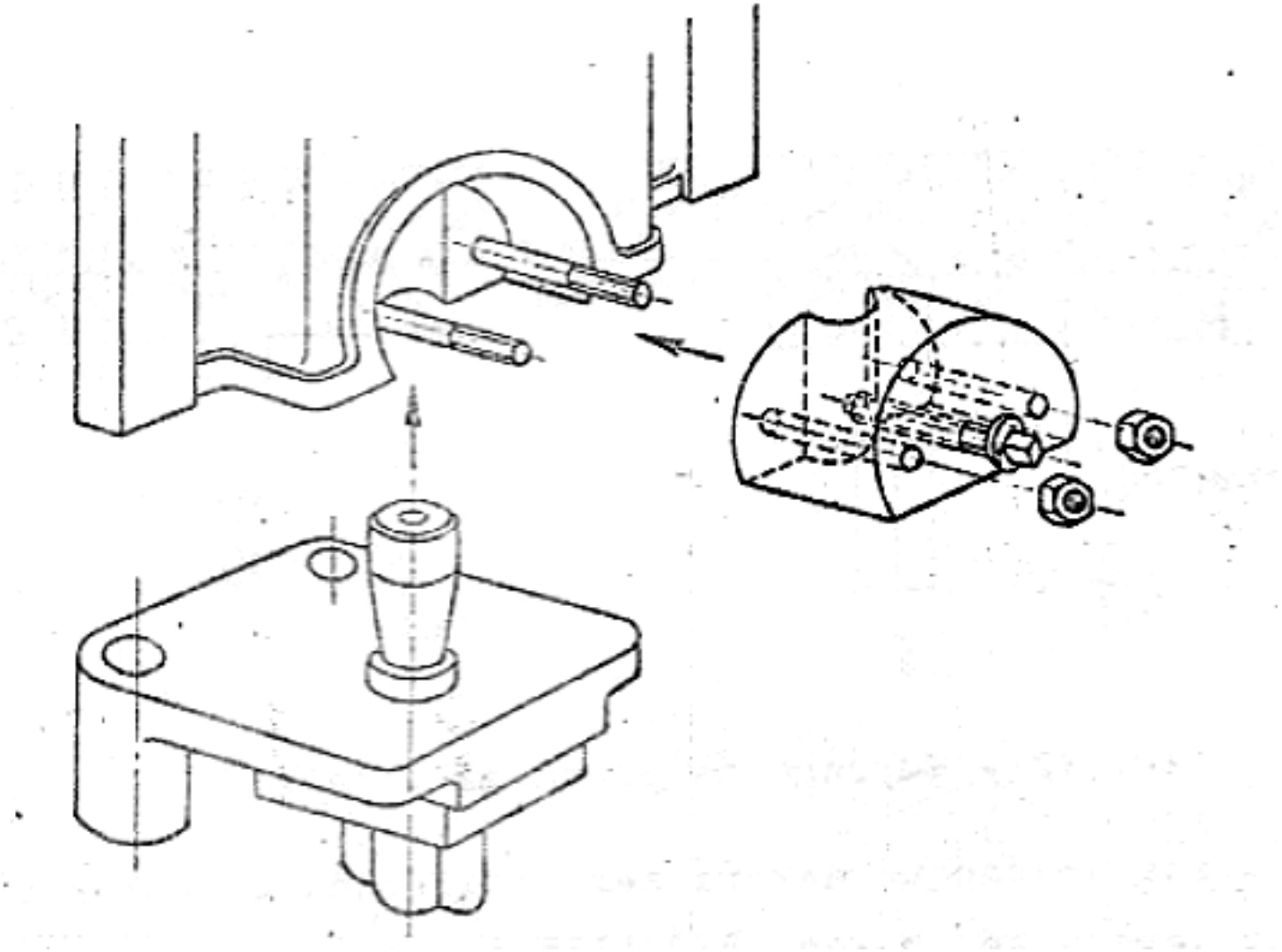
Localização da espiga no estampo

$$X_c = \frac{P_{c1}X_1 + P_{c2}X_2 + \cdots + P_nX_n}{P_{c1} + P_{c2} + \cdots + P_{cn}} \quad (3.2)$$

$$Y_c = \frac{P_{c1}Y_1 + P_{c2}Y_2 + \cdots + P_nY_n}{P_{c1} + P_{c2} + \cdots + P_{cn}} \quad (3.3)$$

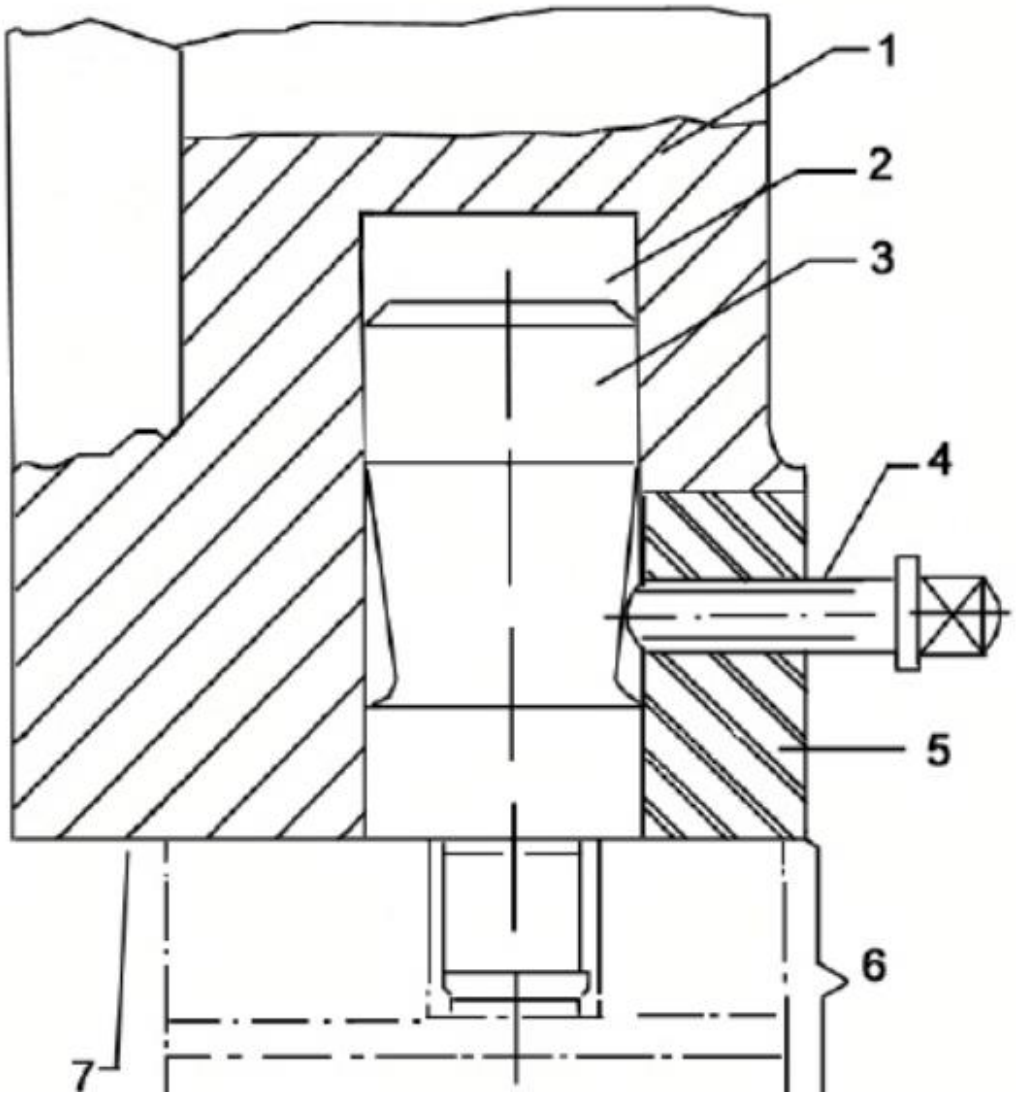
PROJETO DE FERRAMENTA CORTE-DOBRA

Fixação do estampo no cabeçote (martelo) da prensa



PROJETO DE FERRAMENTA CORTE-DOBRA

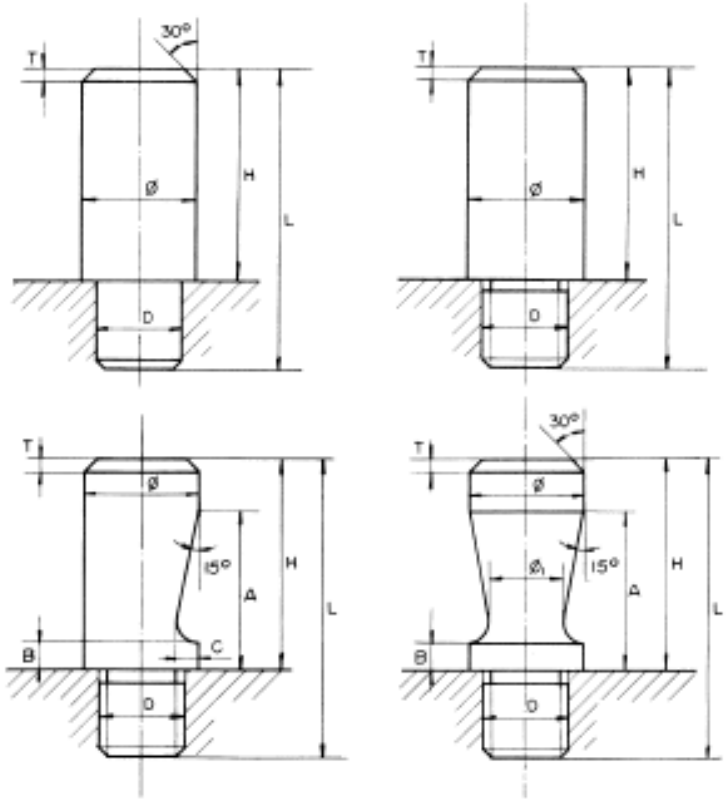
1 – cabeçote
2 – Alojamento da espiga
3 – Espiga
4 – Parafuso de fixação
5 – Mandril
6 – Conjunto Superior
7 – Base do cabeçote



Fixação da ferramenta à prensa

PROJETO DE FERRAMENTA CORTE-DOBRA

ø	ø1	D	A	B	C	T	H	L
20	13	M16	28	5	3,5	3	40	55
25	17	M20	35	7	4	3	45	65
32	24	M22	35	8	4	4	56	80
40	26	M27	55	10	7	4	72	100
50	36	M30	55	15	7	5	80	110
65	51	M45	55	15	7	5	100	140



Tipos de espigas