

Hidráulica e Pneumática

SIMBOLOGIA

R. Sobral

DEPARTAMENTO DE ENGENHARIA MECÂNICA

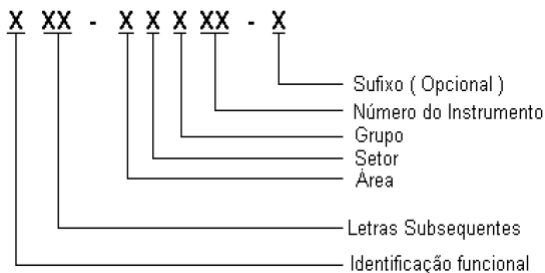
rodolfo.sobral@cefet-rj.br

ABNT: NBR 8190 - Simbologia de Instrumentação

ISA: ISA 5.1 - Instrumentation Symbols and Identification

Código alfanumérico para identificar equipamentos ou instrumentos.

Formato do TAG



TAG

TIC 103	Identificação do instrumento ou tag do instrumento
T 103	Identificação da malha (malha de temperatura, número 103)
103	Número da malha
TIC	Identificação funcional Controlador Indicador de Temperatura
T	Primeira letra (variável da malha)
IC	Letras subsequentes (função do instrumento na malha)

Identificação Funcional

- Primeira letra variável de processo
- Letras subsequentes funções instrumentais

TI = Indicador de Temperatura

LI = Indicador de Nível

SI = Indicador de Velocidade

RI = Indicador de Radioatividade

TIC = Indicador Controlador de Temperatura

LIC = Indicador Controlador de Nível

FIC = Indicador Controlador de Vazão

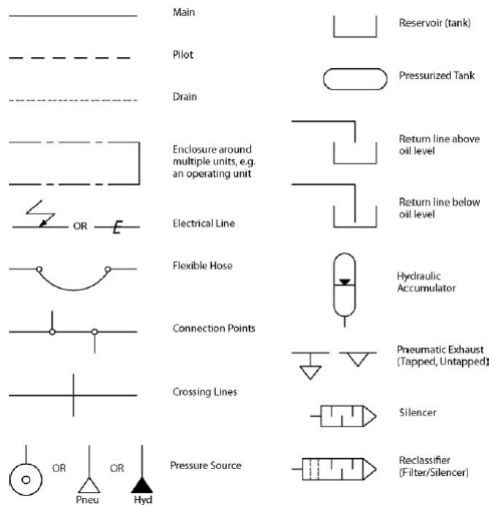
JIC = Indicador Controlador de Potência

TAH = Alarme de Temperatura Alta

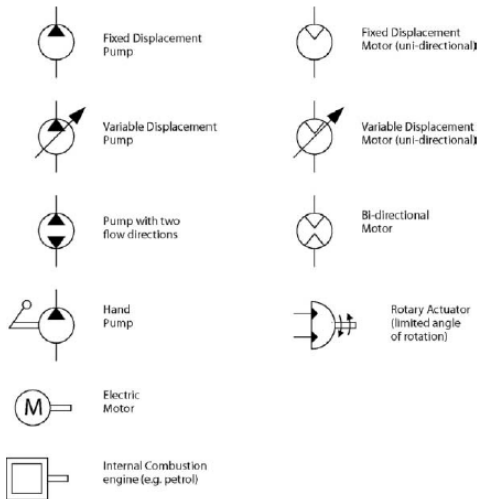
SAL = Alarme de Baixa Velocidade

WAL = Alarme de Peso Baixo

Simbologia



Simbologia



Simbologia



2 port, 2 position
Normally Open



2 port, 2 position
Normally Closed



3 port, two position
Normally Open



3 port, two position
Normally Closed



4 port, two position
Directional Control



5 port, two position
Directional Control



4 port, 2 position DCV^o
(all ports blocked)



4 port, 3 position DCV^o
All ports blocked
in center



4 port, 3 position DCV^o
Pump unloads to tank
in center



5 port, 3 position DCV^o
all ports blocked
in center



4 port proportional
(throttling) DCV with
center off position

Simbologia

	Pushbutton		Direct Acting Solenoid
	Pull-button		Spring (usually for return)
	Manual Lever		Detent (holds position)
	Foot Pedal		Pneumatically Operated
	Plunger		Hydraulically Operated
	Cam or Limit Struck in rest state		Pneumatic Pilot
	Roller (Cam or Limit) Unstruck in rest state		Hydraulic Pilot
	One-Way Limit Arrow shows active direction		Solenoid with Hydraulic Pilot
	Representation of limit on layout drawing		Proportional Solenoid with Spool Position Feedback
	Representation of One-Way Limit on layout drawing		Combined Solenoid and Spring, e.g. spring return to center

Simbologia



Pressure
Relief Valve



Pilot Operated
Pressure
Relief Valve



Sequence
Valve



Check
Valve



Spring Assisted
Check Valve



Pilot Assisted
Check Valve



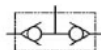
Throttle



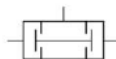
Adjustable
Throttle



One-Way
Adjustable
Throttle



Shuttle Valve
(OR Gate)

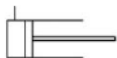


AND Gate



Shut-Off
Valve

Simbologia



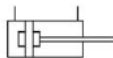
Single Acting
Cylinder, external
return (e.g. gravity)



Double Acting
Cylinder with
return cushioning



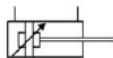
Single Acting
Cylinder
spring return



Double Acting
Cylinder with
cushioning on
both directions



Double Acting
Cylinder



Double Acting
Cylinder with
adjustable
cushioning



Double Acting
Cylinder with
dual rod

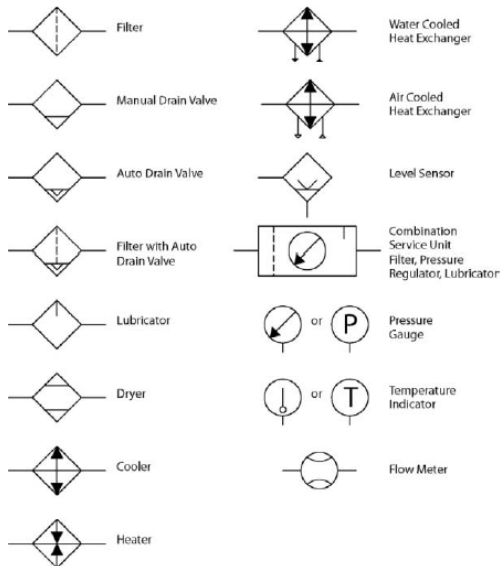


Double Acting
Telescopic
Cylinder

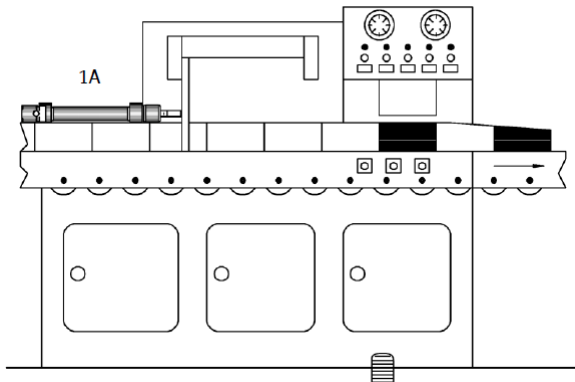


Rodless Cylinder
(e.g. magnetic
coupling)

Simbologia



Proposta



Num processo um alimentador de chapas, por meio de um botão aciona um atuador de dupla ação. Para o retorno, há como possibilidades, o acionamento por botão ou processo automático quando um terceiro botão-trava estiver habilitado.

Sendo este retorno realizado de forma rápida. Elaborar o circuito pneumático para tal dispositivo.

Someone's sitting in the shade today because someone planted a tree a long time ago

Warren Buffett