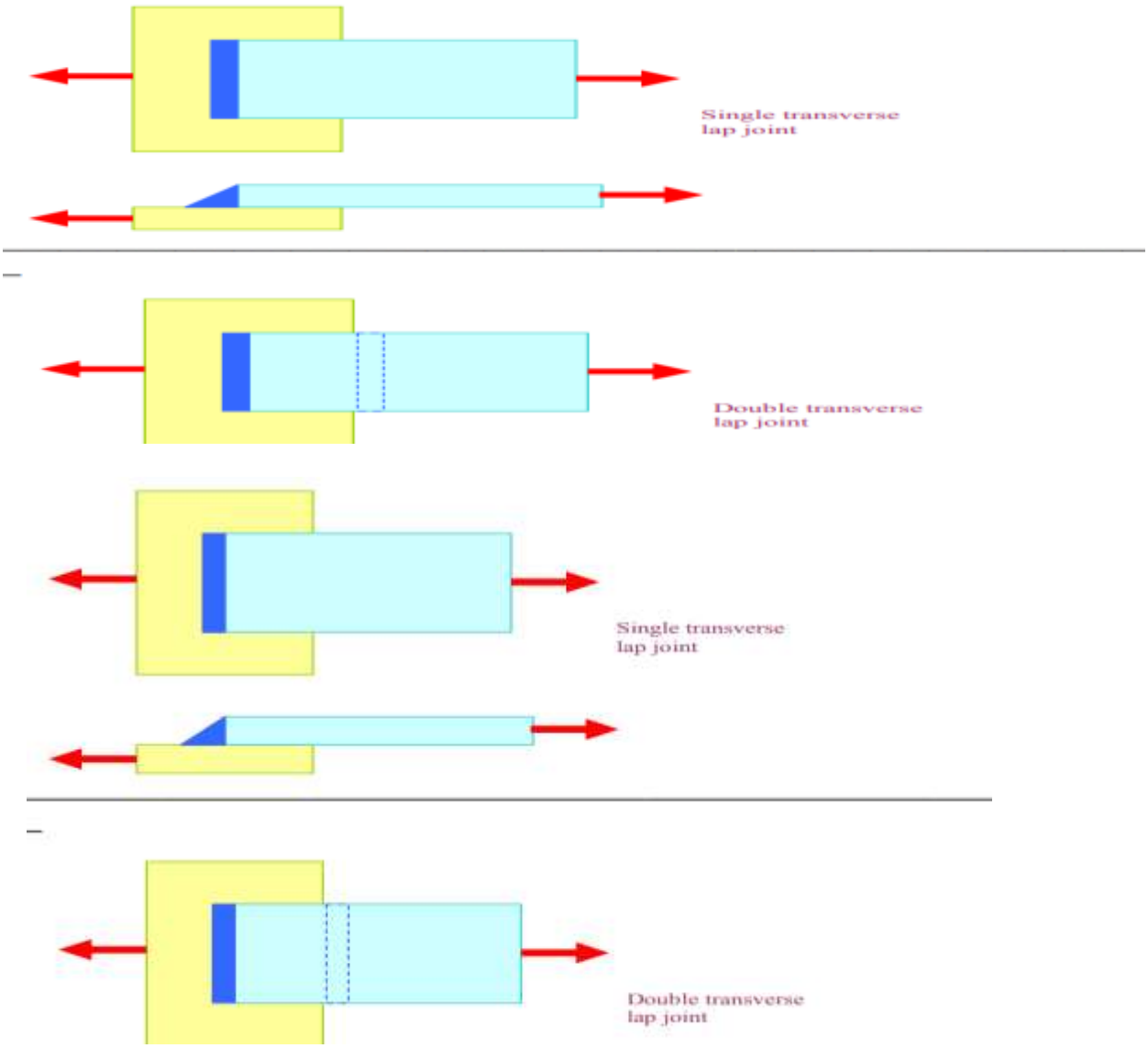
WELDING

Types of welded joints:

Lap or fillet joint:-

obtained by overlapping the plates and welding their edges. The fillet joints may be single transverse fillet, double transverse fillet or parallel fillet joints (see figure



Buttjoints:-

formed by placing the plates edge to edge and welding them. Grooves are sometimes cut (for thick plates) on the edg before welding. According to the shape of the grooves, the butt joints.

e are schematically shown in figure 10.3.2.

Figure 10.3.2: Different types of butt joints

There are other types of welded joints, for example,

- Corner joint (see figure 10.3.3a)
- Edge or seal joint (see figure 10.3.3b)
- T-joint (see figure 10.3.3c)

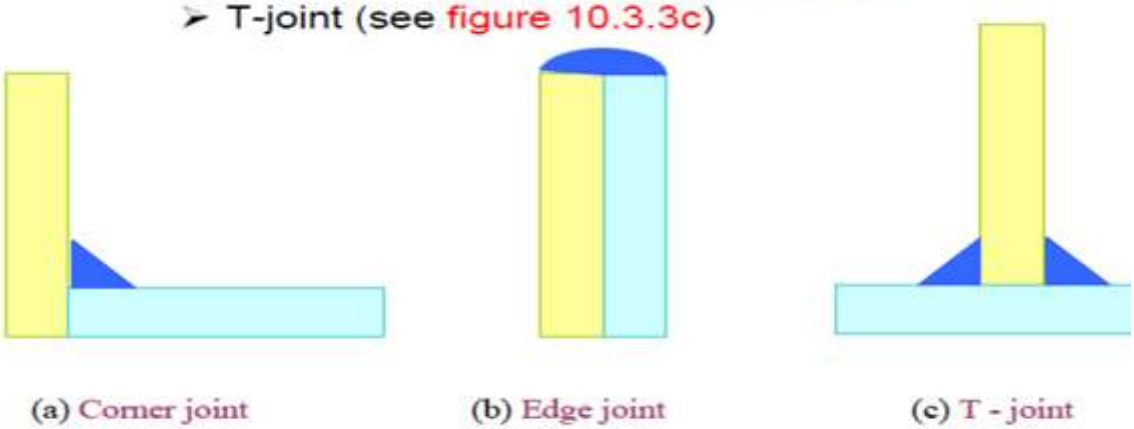


Figure 10.3.3: Other types of welded joints

Butt Welding;-

FT= $\frac{2L \quad X\ T}{\sqrt{l}} \quad \partial t$ ---------- (1)double welding

FT= $\frac{\boldsymbol{L} \quad \boldsymbol{X\ T}}{\sqrt{\boldsymbol{l}}} \quad \partial t$ ----------(2) single welding

Where:-

FT=strength of butt welding (kg/cm^2).

L=Length of welding (cm, mm, m).

∂t =tension stress.

t= thickness of (wp). (mm,cm,m).

Parallel transvers buy welding;-

FS =$\frac{2L \quad X\ T}{\sqrt{2}} \quad \partial S$----------(1)

∂S =shearing stress

$\frac{\text{FS=} \quad L \quad X\ T}{\sqrt{2}} \quad \partial S$ ----------(2)

∂S =shearing stress

EX 1:-

Two plate (6mm)thickness for each. welding by double transvers butt welding .FIND

1-Strenth of joint (FS=105KN).

Sol;-

t=6mm L=10cm (100mm) 2X 100=200mm

FS $=\frac{2L \ X\ t}{\sqrt{2}}$ ∂S------$=\frac{2\ x100\ \ X\ 6}{\sqrt{2}}$ $105 =$ $89.10 kg/cm^2$.

EX2;-

The length of welding .when the welding two steel plate (10mm) thickness of each welding By parallel transvers butt welding when (fs=400 Kg) (80 kg/cm^2).

SOL:-

FS=400 kg

∂S=80 kg/cm^2

t= 10mm-----0.1cm

Fs= $\frac{2L \ X\ t}{\sqrt{2}}$ ∂S $=\frac{2l \ X\ 0.1}{\sqrt{2}}$ 80 =

L= 226,2cm.

EX3:-Two plate (30cm) thickness each .Joint by(V) Lap welding joint(two side).Find the strength of lap Welding .When length of welding (40cm) and (t1=t2) (=10cm)(∂t=18000kg/cm^2).

SOL:-

FT = L .t ∂t

=L (t1 +t2) ∂t

=40(20+20) 1800 =14400kg/cm^2.
