

PART 8 MEMBERS SUBJECT TO COMBINED ACTIONS

8.1 General

The 8.1 series tables contain design capacities which are used to design members subject to combined actions in accordance with Section 8 of AS 4100. Tables 8.1-1 to 8.1-12 list design section capacities and references to other tables in this publication for checking interaction effects on member capacities.

The design capacities considered in the 8.1 Series Tables include:

Design Capacity	Definition	Described in Section No.
ϕN_s	design section capacity in axial compression	6.2
ϕN_t	design section capacity in axial tension	7.2
$\phi M_{sx}, \phi M_{sy}$	design section moment capacity about x-axis and y-axis	5.2.2.1
ϕM_{rx} (comp)	ϕM_{sx} reduced by axial compression force	8.3.1.1
ϕM_{rx} (tens)	ϕM_{sx} reduced by axial tension force	8.4.1.1
ϕM_{ry}	ϕM_{sy} reduced by axial force	8.3.2.1, 8.4.2.1
ϕV_v	design shear capacity of a web for shear in direction of y-axis	5.2.2.4

Section 8.7 presents methods for calculating maximum design loads for angles as beams. Tables 8.2-1 to 8.2-6 and 8.3-1 to 8.3-6 list these maximum design loads.

8.2 Design for Combined Actions

Sections 8.3 and 8.4 explain the relevant equations from AS 4100 for combined bending and axial compression and combined bending and axial tension respectively. Each of these sections consider uniaxial bending about the major principal x-axis, uniaxial bending about the minor principal y-axis and biaxial bending. Section 8.5 gives the interaction formulae for biaxial bending without axial forces. In every case both the section capacity and the member capacity must be checked.

For all cases of combined bending and axial force the designer should first ensure that the appropriate design axial capacity (compression or tension) is greater than the design axial force (i.e. $\phi N \geq N^*$) – see Part 6 or Part 7 as appropriate.