

8.1 General

This part of the Tables contains parameters which are used to design members subject to combined actions in accordance with Section 8 of AS 4100. Tables 8-1 to 8-6 list design section capacities and references to other tables for checking interaction effects on member capacities.

The design capacities considered in the 8 Series Tables include:

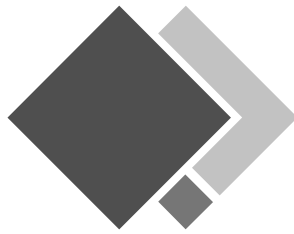
Design Capacity	Definition	Described in Section No.
ϕN_s	design section capacity in axial compression	6.2
ϕN_t	design section capacity in axial tension	7.2
ϕM_s	design section moment capacity (CHS/SHS)	5.2.2.1
$\phi M_{sx}, \phi M_{sy}$	ϕM_s about x- and y-axis (RHS)	5.2.2.1
ϕM_r	ϕM_s reduced by axial force (CHS)	8.3.1.1, 8.4.1.1
$\phi M_{rx} \text{ (comp)}$	ϕM_{sx} reduced by axial compression force (RHS)	8.3.1.1
$\phi M_{rx} \text{ (tens)}$	ϕM_{sx} reduced by axial tension force (RHS)	8.4.1.1
ϕM_{ry}	ϕM_{sy} reduced by axial force (RHS)	8.3.2.1, 8.4.2.1
$\phi M_r \text{ (comp)}$ $\phi M_r \text{ (tens)}$	ϕM_s about a principal axis reduced by axial compression and tension force (SHS)	8.3.1.1, 8.4.1.1
ϕV_v	design shear capacity of a web (CHS/SHS)	5.2.2.4
ϕV_{vx}	ϕV_v for bending about x-axis (RHS)	5.2.2.4
ϕV_{vy}	ϕV_v for bending about y-axis (RHS)	5.2.2.4
ϕM_z	design torsional section moment capacity	5.2.2.3

Note: The above description on direction of shear force on RHS is important - i.e. ϕV_{vx} and ϕV_{vy} .

8.2 Design for Combined Actions

Sections 8.3 and 8.4 give the formulae 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 is greater than the design axial force (i.e. $\phi N \geq N^*$).



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Volume 2: Hollow Sections second edition

CHS - Grade C250/C350 (to AS 1163)

RHS - Grade C350/C450 (to AS 1163)

SHS - Grade C350/C450 (to AS 1163)

**LIMIT STATES
EDITION TO
AS 4100-1998
 $S^* \leq \phi R_u$**

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**NOTE: SEE SECTION 2.1 FOR THE SPECIFIC MATERIAL
STANDARD (AS 1163) REFERRED TO BY THE SECTION TYPE AND
STEEL GRADE IN THESE TABLES**