A/GA/ULT Framing and Reinforcing Angles

Our line of angles provides a way to make a wide range of 90° connections.

- The A35 anchor's exclusive bending slot allows instant, accurate field bends for all two- and three-way ties. Balanced, completely reversible design permits the A35 to secure a great variety of connections.
- The GA Gusset Angles' embossed bend section provides added strength.
- The ULT's pre-bent angle speeds up onsite installation.

Material: See table on next page.

Finish: Galvanised, Some products available in stainless steel. See Corrosion Information.

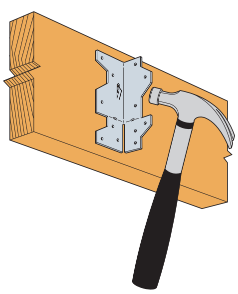
Installation

- Use all specified fasteners. See General Notes.

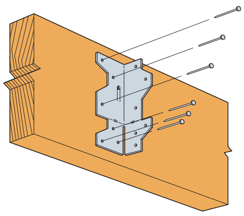
A35 Typical Installation

TWO-WAY CONNECTION

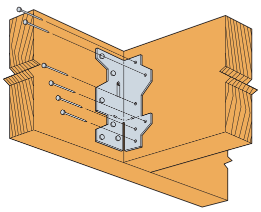
STEP 1: Use speed prong to temporarily hold A35 in place.



STEP 2: Install nails as shown.

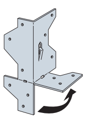


STEP 3: Install nails as shown.

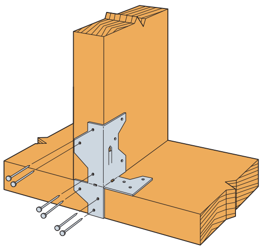


THREE-WAY CONNECTION

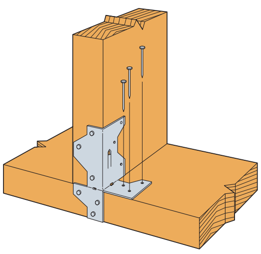
STEP 1: Field bend tab to match framing configuration.



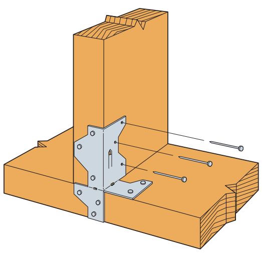
STEP 2: Use speed prong to temporarily hold A35 in place. Install nails as shown.

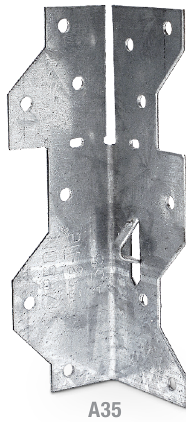


STEP 3: Install nails as shown.



STEP 4: Install nails as shown.



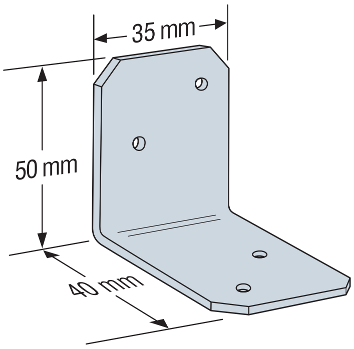


A35

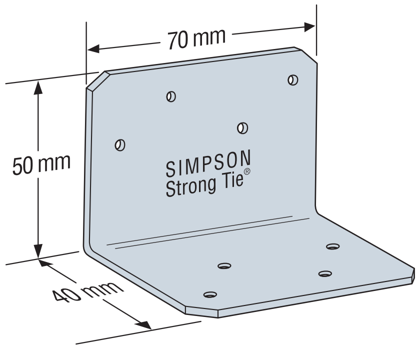
A21

GA1

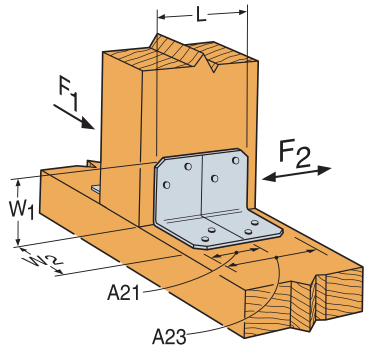
SIMPSON Strong-Tie



A21



A23

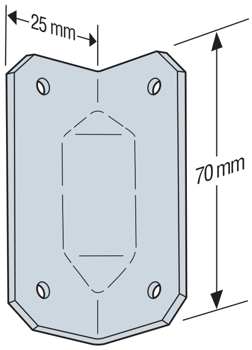


Typical A21/A23 installation

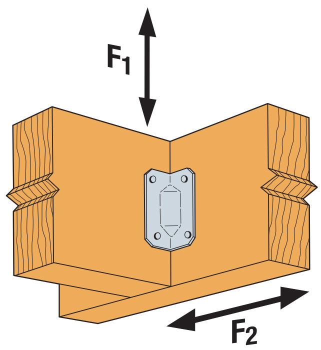
A21 and A23 Technical Data

Model No.	Dimensions (mm)		Fasteners (No. – Length x Dia., mm)		Country	Design Capacity (kN)	
	W1	W2	Base	Post		F1[5]	F2
A21	50	40	2 – 40 x 3.75	2 – 40 x 3.75	AU	k_1 = 1.14 1.03	k_1 = 1.14 0.43
					NZ	k_1 = 1.0 0.97	k_1 = 1.0 0.41
A23	50	40	4 – 40 x 3.75	4 – 40 x 3.75	AU	k_1 = 1.14 1.33	k_1 = 1.14 1.77
					NZ	k_1 = 1.0 1.33	k_1 = 1.0 1.66

1. Design Capacity is the lesser of (1) the Characteristic Capacity multiplied by the Australian Capacity Factor, or the NZ Strength Reduction Factor (ϕ), and applicable the k modification factors following AS 1720.1 and NZS 3603 and (2) the Serviceability Capacity which is the load at 3.2mm joint slip. Design Capacity is the minimum of test data and structural joint calculation.
2. For Australia, the Capacity Factor (ϕ) is 0.85 for nails and screws for structural joints in a Category 1 application. Reduce tabulated values where other Category applications govern. For NZ, the Strength Reduction Factor (ϕ) is 0.80 for nails in lateral loading.
3. Duration of Load Factor (k_1) is as shown. Reduce Duration of Load Factor where applicable. Capacities may not be increased.
4. Timber species for joint design is seasoned Radiata Pine, which is Australia Joint Group JD4 per AS 1720.1 Table H2.4 and New Zealand Joint Group J5 per NZS 3603 Table 4.1.
5. Connectors are required on both sides to achieve F1 loads in both directions.
6. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation. See General Note 'e' on page 15.



GA1

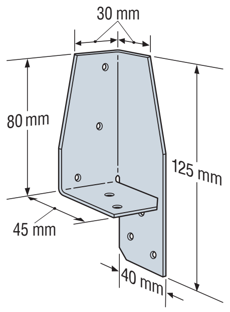


Typical GA1 installation

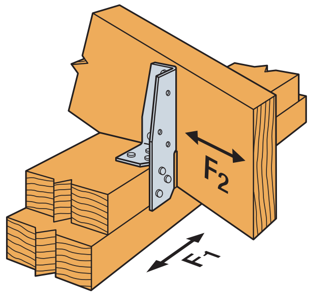
GA Technical Data

Model No.	Fasteners (No. – Length x Dia., mm)	Direction of Load	Country	Design Capacity (kN)		
				Floor	Roof	Wind/EQ
GA1	4 – 40 x 3.75	F1	AU	k_1 = 0.69 1.38	k_1 = 0.77 1.38	k_1 = 1.14 1.38
			NZ	k_1 = 0.80 1.38	k_1 = 0.80 1.38	k_1 = 1.0 1.38
		F2[5]	AU	k_1 = 0.69 1.30	k_1 = 0.77 1.30	k_1 = 1.14 1.30
			NZ	k_1 = 0.80 1.23	k_1 = 0.80 1.23	k_1 = 1.0 1.23

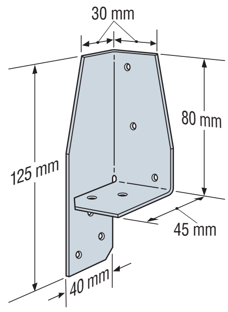
1. Design Capacity is the lesser of (1) the Characteristic Capacity multiplied by the Australian Capacity Factor, or the NZ Strength Reduction Factor (ϕ), and applicable the k modification factors following AS 1720.1 and NZS 3603 and (2) the Serviceability Capacity which is the load at 3.2mm joint slip. Design Capacity is the minimum of test data and structural joint calculation.
2. For Australia, the Capacity Factor (ϕ) is 0.85 for nails and screws for structural joints in a Category 1 application. Reduce tabulated values where other Category applications govern. For NZ, the Strength Reduction Factor (ϕ) is 0.80 for nails in lateral loading.
3. Duration of Load Factor (k_1) is as shown. Reduce Duration of Load Factor where applicable. Capacities may not be increased.
4. Timber species for joint design is seasoned Radiata Pine, which is Australia Joint Group JD4 per AS 1720.1 Table H2.4 and New Zealand Joint Group J5 per NZS 3603 Table 4.1.
5. Connectors are required on both sides to achieve F2 loads in both directions.
6. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation. See General Note 'e' on page 15.



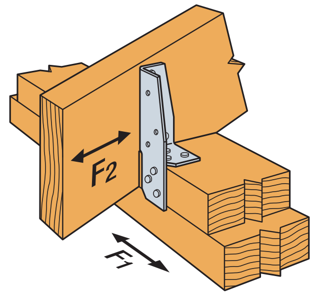
ULT-L (Left)



Typical ULT-L installation



ULT-R (Right)

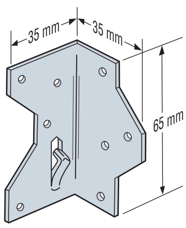


ULT-R (Right)

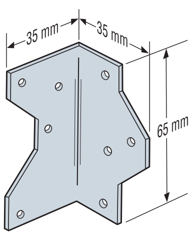
ULT Technical Data

Model No.	Thickness (mm)	Fasteners (No. – Length x Dia., mm)		Country	Design Capacity (kN)		
		To Rafter/Truss	To Plates		Uplift	Lateral F1	Lateral F2
ULT	1.3	3 – 40 x 3.75	5 – 40 x 3.75	AU	k_1 = 1.14	k_1 = 1.14	k_1 = 1.14
					2.87	0.55	0.68
				NZ	k_1 = 1.0	k_1 = 1.0	k_1 = 1.0
					2.60	0.52	0.64

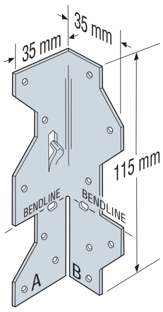
1. Design Capacity is the lesser of (1) the Characteristic Capacity multiplied by the Australian Capacity Factor, or the NZ Strength Reduction Factor (ϕ), and applicable the k modification factors following AS 1720.1 and NZS 3603 and (2) the Serviceability Capacity which is the load at 3.2mm joint slip. Design Capacity is the minimum of test data and structural joint calculation.
2. For Australia, the Capacity Factor (ϕ) is 0.85 for nails and screws for structural joints in a Category 1 application. Reduce tabulated values where other Category applications govern. For NZ, the Strength Reduction Factor (ϕ) is 0.80 for nails in lateral loading.
3. Duration of Load Factor (k_1) is as shown. Reduce Duration of Load Factor where applicable. Capacities may not be increased.
4. Timber species for joint design is seasoned Radiata Pine, which is Australia Joint Group JD4 per AS 1720.1 Table H2.4 and New Zealand Joint Group J5 per NZS 3603 Table 4.1.
5. Design capacities are for one cyclone tie.
6. Design capacities in the F1 direction are not intended to replace diaphragm boundry members or resist cross-grain bending of the truss or rafter members.
7. When cross-grain bending or cross-grain tension cannot be avoided in the members, mechanical reinforcement to resist such forces may be considered.8
8. Cyclone ties installed on the outside of the wall assume a minimum 90mm overhang of the rafter/truss member.



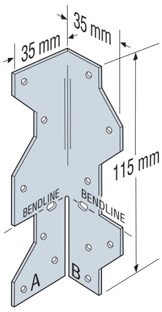
A34



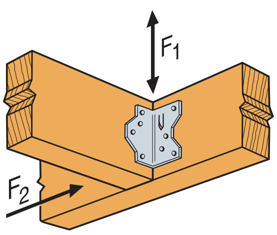
A34SS



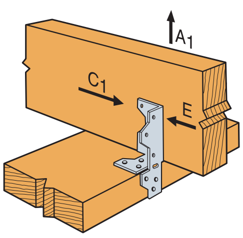
A35



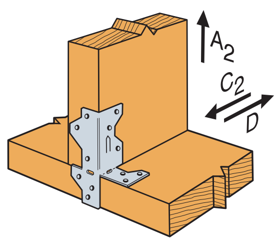
A35SS



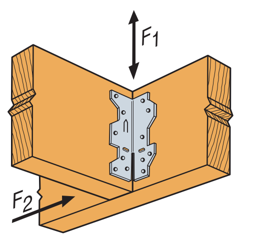
1 A34



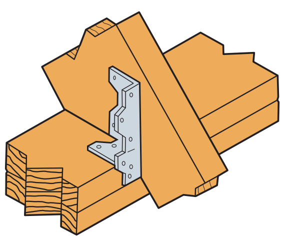
2 A35



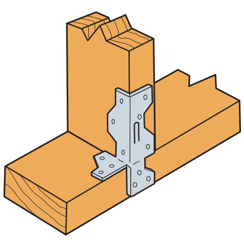
3 A35



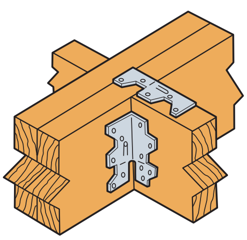
4 A35



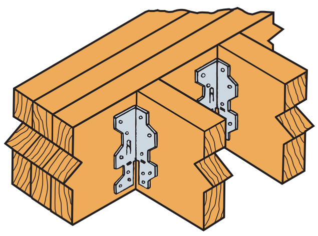
Joists to Plate with A Leg Inside



Studs to Plate with B Leg Outside



Joists to Beams



Ceiling Joists to Beam

SIMPSON Strong-Tie

A34 and A35 Technical Data

Model No.	Dimension (mm)		Type of Connection	Fasteners (No. – Length x Dia., mm)	Direction of Load	Country	Design Capacity (kN)		
	W1	W2					Floor	Roof	Wind/EQ
A34	35	35	1	8 – 30 x 2.8	F1	AU	$k_1 = 0.69$ 0.99	$k_1 = 0.77$ 0.99	$k_1 = 1.14$ 0.99
						NZ	$k_1 = 0.80$ 0.93	$k_1 = 0.80$ 0.93	$k_1 = 1.0$ 0.93
					F2[7]	AU	$k_1 = 0.69$ 0.95	$k_1 = 0.77$ 0.95	$k_1 = 1.14$ 0.95
						NZ	$k_1 = 0.80$ 0.90	$k_1 = 0.80$ 0.90	$k_1 = 1.0$ 0.90
A35	35	35	2	9 – 30 x 2.8	A1, E	AU	$k_1 = 0.69$ 1.40	$k_1 = 0.77$ 1.47	$k_1 = 1.14$ 1.47
						NZ	$k_1 = 0.80$ 1.21	$k_1 = 0.80$ 1.21	$k_1 = 1.0$ 1.38
					C1	AU	$k_1 = 0.69$ 0.44	$k_1 = 0.77$ 0.44	$k_1 = 1.14$ 0.44
						NZ	$k_1 = 0.80$ 0.42	$k_1 = 0.80$ 0.42	$k_1 = 1.0$ 0.42
			3	12 – 30 x 2.8	A2	AU	$k_1 = 0.69$ 1.40	$k_1 = 0.77$ 1.57	$k_1 = 1.14$ 1.68
						NZ	$k_1 = 0.80$ 1.21	$k_1 = 0.80$ 1.21	$k_1 = 1.0$ 1.51
					C2	AU	$k_1 = 0.69$ 0.86	$k_1 = 0.77$ 0.86	$k_1 = 1.14$ 0.86
						NZ	$k_1 = 0.80$ 0.81	$k_1 = 0.80$ 0.81	$k_1 = 1.0$ 0.81
					D	AU	$k_1 = 0.69$ 1.05	$k_1 = 0.77$ 1.05	$k_1 = 1.14$ 1.05
						NZ	$k_1 = 0.80$ 0.99	$k_1 = 0.80$ 0.99	$k_1 = 1.0$ 0.99
			4	12 – 30 x 2.8	F1	AU	$k_1 = 0.69$ 2.21	$k_1 = 0.77$ 2.21	$k_1 = 1.14$ 2.21
						NZ	$k_1 = 0.80$ 2.08	$k_1 = 0.80$ 2.08	$k_1 = 1.0$ 2.08
					F2[7]	AU	$k_1 = 0.69$ 1.43	$k_1 = 0.77$ 1.43	$k_1 = 1.14$ 1.43
						NZ	$k_1 = 0.80$ 1.34	$k_1 = 0.80$ 1.34	$k_1 = 1.0$ 1.34
A34SS	35	35	1	8 – 30 x 2.8	F1	AU	$k_1 = 0.69$ 0.67	$k_1 = 0.77$ 0.67	$k_1 = 1.14$ 0.67
						NZ	$k_1 = 0.80$ 0.63	$k_1 = 0.80$ 0.63	$k_1 = 1.0$ 0.63
					F2[7]	AU	$k_1 = 0.69$ 0.65	$k_1 = 0.77$ 0.65	$k_1 = 1.14$ 0.65
						NZ	$k_1 = 0.80$ 0.61	$k_1 = 0.80$ 0.61	$k_1 = 1.0$ 0.61
A35SS	35	35	2	9 – 30 x 2.8	A1, E	AU	$k_1 = 0.69$ 0.88	$k_1 = 0.77$ 0.88	$k_1 = 1.14$ 0.88
						NZ	$k_1 = 0.80$ 0.83	$k_1 = 0.80$ 0.83	$k_1 = 1.0$ 0.83
					C1	AU	$k_1 = 0.69$ 0.31	$k_1 = 0.77$ 0.31	$k_1 = 1.14$ 0.31
						NZ	$k_1 = 0.80$ 0.29	$k_1 = 0.80$ 0.29	$k_1 = 1.0$ 0.29
			3	12 – 30 x 2.8	A2	AU	$k_1 = 0.69$ 1.26	$k_1 = 0.77$ 1.26	$k_1 = 1.14$ 1.26
						NZ	$k_1 = 0.80$ 1.18	$k_1 = 0.80$ 1.18	$k_1 = 1.0$ 1.18
					C2	AU	$k_1 = 0.69$ 0.65	$k_1 = 0.77$ 0.65	$k_1 = 1.14$ 0.65
						NZ	$k_1 = 0.80$ 0.61	$k_1 = 0.80$ 0.61	$k_1 = 1.0$ 0.61
					D	AU	$k_1 = 0.69$ 0.84	$k_1 = 0.77$ 0.84	$k_1 = 1.14$ 0.84
						NZ	$k_1 = 0.80$ 0.79	$k_1 = 0.80$ 0.79	$k_1 = 1.0$ 0.79
			4	12 – 30 x 2.8	F1	AU	$k_1 = 0.69$ 1.76	$k_1 = 0.77$ 1.76	$k_1 = 1.14$ 1.76
						NZ	$k_1 = 0.80$ 1.66	$k_1 = 0.80$ 1.66	$k_1 = 1.0$ 1.66
					F2[7]	AU	$k_1 = 0.69$ 1.14	$k_1 = 0.77$ 1.14	$k_1 = 1.14$ 1.14
						NZ	$k_1 = 0.80$ 1.08	$k_1 = 0.80$ 1.08	$k_1 = 1.0$ 1.08

1. Design Capacity is the lesser of (1) the Characteristic Capacity multiplied by the Australian Capacity Factor, or the NZ Strength Reduction Factor (ϕ), and applicable the k modification factors following AS 1720.1 and NZS 3603 and (2) the Serviceability Capacity which is the load at 3.2mm joint slip. Design Capacity is the minimum of test data and structural joint calculation.
2. For Australia, the Capacity Factor (ϕ) is 0.85 for nails and screws for structural joints in a Category 1 application. Reduce tabulated values where other Category applications govern. For NZ, the Strength Reduction Factor (ϕ) is 0.80 for nails in lateral loading.
3. Duration of Load Factor (k_1) is as shown. Reduce Duration of Load Factor where applicable. Capacities may not be increased.
4. Timber species for joint design is seasoned Radiata Pine, which is Australia Joint Group JD4 per AS 1720.1 Table H2.4 and New Zealand Joint Group J5 per NZS 3603 Table 4.1.
5. Design capacities are for one part. When parts are installed on each side of the joist, the minimum joist beadth is 75mm.
6. Some illustrations show connections that could cause cross–grain tension or bending of the timber during loading if not reinforced sufficiently. In this case, mechanical reinforcement should be considered.
7. Connectors are required on both sides to achieve F2 load in both directions.
8. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation. See General Note 'e' on page 15.