Engineering Analysis Report

BoltCalculator
ENGINEERING SUITE

DATE: February 14, 2026
REFERENCE ID: BCP-20260214-AUTO
PROJECT: Bolt Design Analysis

DESIGN INPUT PARAMETERS

GEOMETRY & LOAD

PARAMETER	VALUE
Plate Thickness	18.00 mm
Engaged Thread Length	5.00 mm
External Load	12,000 N
Preload	20,010 N
Lateral Load	550 N

MATERIAL SPECIFICATION

PROPERTY	STANDARD
Young's Modulus (E)	21000 N/mm²
Safety Factor	2.0

CALCULATED RESULTS

SELECTED BOLT SPECIFICATIONS

BOLT SIZE	BOLT GRADE	BOLT DIAMETER	TENSILE STRESS AREA (A'T)
M8	12.9	8 mm	36.6 mm²

STRESS AND LOAD VERIFICATION

PARAMETER/CALCULATION DESCRIPTION	NOMINAL VALUE	ALLOWABLE LIMIT	STATUS
Tensile Stress	566.39 MPa	600.00 MPa	PASS
Shear Stress	238.73 MPa	324.00 MPa	PASS
Bearing Stress	83.33 MPa	1,080.00 MPa	PASS
Thread Shear Stress	193.32 MPa	324.00 MPa	PASS

PARAMETER/CALCULATION DESCRIPTION	NOMINAL VALUE	ALLOWABLE LIMIT	STATUS
Preload Stress	20,010.00 MPa	27,669.60 MPa	PASS
Separation Load	21,334.54 kN	12,000.00 kN (Min)	PASS

RECALCULATE

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