

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/mm ²
Safety Factor	2.0

CALCULATED RESULTS

SELECTED BOLT SPECIFICATIONS



BOLT SIZE

M8

BOLT GRADE

12.9

BOLT DIAMETER

8 mm

TENSILE STRESS AREA (A'T)

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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Disclaimer: This report is generated by BoltCalculator and is intended for engineering reference only.

Final design decisions should be verified by a licensed professional engineer according to regional standards (ASME/ISO/Eurocode). Calculated safety factor is 2.0 (Yield basis).

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