

BOMBARDIER® ATV

2004

SHOP MANUAL

DS 650™
DS 650™ BAJA
DS 650™ BAJA X



Shop Manual 2004

DS 650™

DS 650™ BAJA

DS 650™ BAJA X

BOMBARDIER
RECREATIONAL PRODUCTS



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SAFETY NOTICE

This manual has been prepared as a guide to correctly service and repair 2004 ATVs.

This edition was primarily published to be used by ATV mechanic technicians who are already familiar with all service procedures relating to Bombardier made vehicles. Mechanic technicians should attend continuous training courses given by Bombardier Training Department.

Please note that the instructions will apply only if proper hand tools and special service tools are used.

This *Shop Manual* uses technical terms which may be slightly different from the ones used in *Parts Catalog*.

It is understood that this manual may be translated into another language. In the event of any discrepancy, the english version shall prevail.

The content depicts parts and/or procedures applicable to the particular product at its time of writing. *Service and Warranty Bulletins* may be published to update the content of this manual. Make sure to read and understand these. It does not include dealer modifications, whether authorized or not by Bombardier, after manufacturing the product.

In addition, the sole purpose of the illustrations throughout the manual, is to assist identification of the general configuration of the parts. They are not to be interpreted as technical drawings or exact replicas of the parts.

The use of Bombardier parts is most strongly recommended when considering replacement of any component. Dealer and/or distributor assistance should be sought in case of doubt.

The engines and the corresponding components identified in this document should not be utilized on product(s) other than those mentioned in this document.

This manual emphasizes particular information denoted by the wording and symbols:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

CAUTION: Denotes an instruction which, if not followed, may damage the ATV and/or components.

NOTE: Indicates supplementary information needed to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use. Always use common shop safety practice.

However, Bombardier disclaims liability for all damages and/or injuries resulting from the improper use of the contents. We strongly recommend that any services be carried out and/or verified by a highly skilled professional mechanic. It is understood that certain modifications may render use of the vehicle illegal under existing federal, provincial and state regulations.

WARNING

Torque wrench tightening specifications must be strictly adhered to. Locking devices (ex.: locking tab, elastic stop nut, self-locking fasteners, etc.) must be installed or replaced with new ones, where specified. If the efficiency of a locking device is impaired, it must be renewed.

INTRODUCTION

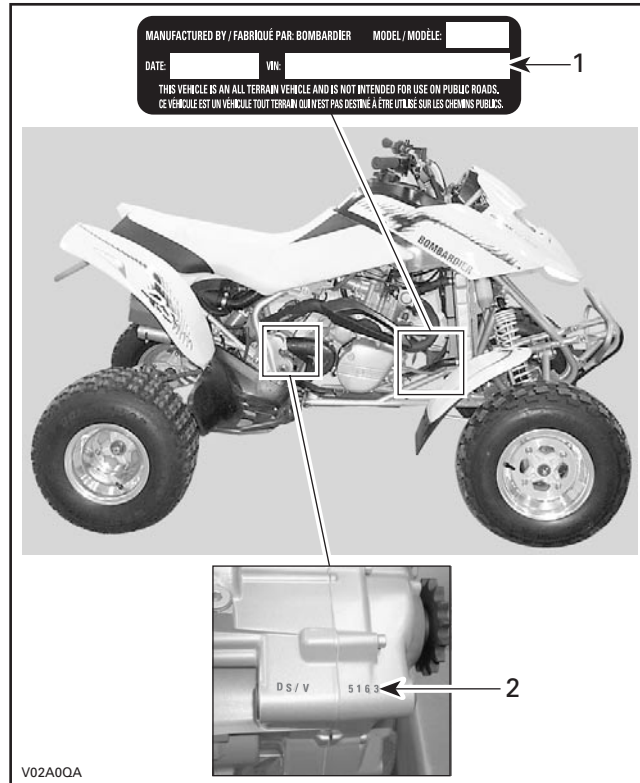
INTRODUCTION

This *Shop Manual* covers the following Bombardier made 2004 ATVs:

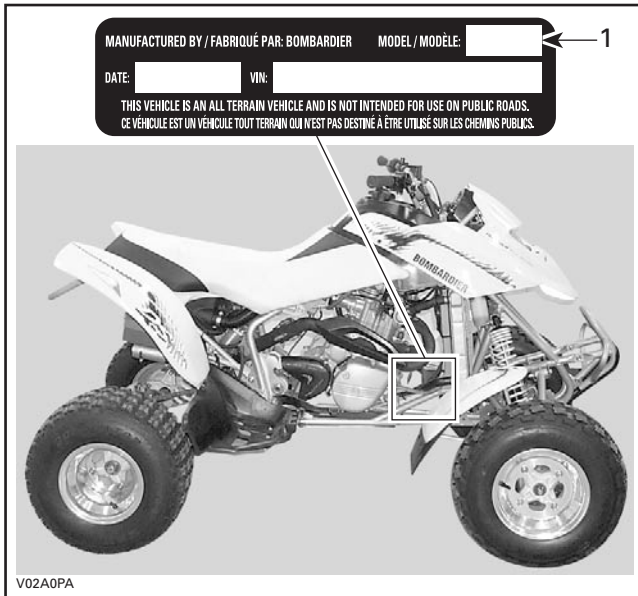
2004 Models

DS 650™	7717
DS 650™ Baja	7718
DS 650™ Baja X	7995
DS 650™ Intl	7719
DS 650™ Baja Intl	7720
DS 650™ Baja X Intl	7997

VEHICLE AND ENGINE SERIAL NUMBER LOCATION



TYPICAL
1. Vehicle
2. Engine



TYPICAL
1. Model number

ARRANGEMENT OF THE MANUAL

The manual is divided into 12 major sections:

- 01 SERVICE TOOLS AND SERVICE PRODUCTS
- 02 MAINTENANCE
- 03 ENGINE
- 04 FUEL SYSTEM
- 05 ELECTRICAL
- 06 DRIVE TRAIN
- 07 STEERING SYSTEM
- 08 SUSPENSION
- 09 BRAKES
- 10 BODY/FRAME
- 11 TECHNICAL DATA
- 12 WIRING DIAGRAMS

Each section is divided in various subsections, and again, each subsection has one or more divisions.

LIST OF ABBREVIATIONS USED IN THIS MANUAL

A	ampere
amp	ampere
Ah	ampere-hour
AC	alternate current
BDC	bottom dead center
BTDC	before top dead center
°C	degree Celsius
cm	centimeter
cm ²	square centimeter
cm ³	cubic centimeter
DC	direct current
°F	degree Fahrenheit
fl. oz	fluid ounce
ft	foot
GRD	ground
hal.	halogen
I.D.	inside diameter
IDI	induction discharge ignition
imp. oz	imperial ounce

in	inch
in ²	square inch
in ³	cubic inch
k	kilo (thousand)
kg	kilogram
km/h	kilometer per hour
kPa	kilo pascal
L	liter
lb	pound
lbf	pound (force)
LH	left hand
m	meter
MAG	magneto
Max.	maximum
Min.	minimum
mL	milliliter
mm	millimeter
MPH	mile per hour
N	newton
N.A.	not applicable
no.	number
00.0	continuity
O.L.	overload (open circuit)
O.D.	outside diameter
OPT	optional
oz	ounce
P/N	part number
PSI	pound per square inch
PTO	power take off
RPM	revolution per minute
Sp. Gr.	specific gravity
TDC	top dead center
U.S. oz	ounce (United States)
V	volt
Vac	volt (alternative current)

INTRODUCTION

This *Shop Manual* uses technical terms which may be slightly different from the ones in the parts catalog.

TYPICAL PAGE

Section 03 ENGINE
Subsection 05 (CYLINDER AND HEAD)

CYLINDER AND HEAD
CYLINDER AND HEAD

10 N·m (89 lbf·in)

10 N·m (89 lbf·in)

33 N·m (24 lbf·ft)

60 N·m (44 lbf·ft)

Loctite 243

10 N·m (89 lbf·in)

8

23 10 N·m (89 lbf·in)

27 10 N·m (89 lbf·in)

Drop represents a liquid product to be applied to a surface.

Tightening torque nearby fastener. In this case, nut must be torqued to 10 N·m or 89 lbf·in.

Illustration number for publishing process.

CAUTION: Pay attention to torque specifications. Some of these are in lbf·ft instead of lbf·in. Use appropriate torque wrench.

Document number for publishing process.

Page numbering system:
03: ENGINE section
05: CYLINDER AND HEAD subsection
1: First page of this subsection

Page heading indicates section and subsection detailed.

Subsection title indicates beginning of the subsection.

Exploded view assists you in identifying parts and related positions.

Bold face number indicates special procedure concerning this part.

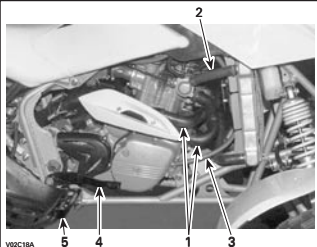
VMR2000_007_03-05A.FM

03-05-1

TYPICAL PAGE

Section 03 ENGINE
 Subsection 02 (REMOVAL AND INSTALLATION)

– footrest (refer to BODY)
 – engine pinion **no. 2** (refer to Engine Pinion section)




V02C18A

RH SIDE OF ENGINE
 1. Exhaust pipes
 2. Radiator inlet hose
 3. Oil line
 4. Brake pedal
 5. Footrest

– carburetor and carburetor adaptor (refer to CARBURETOR AND AIR INTAKE SILENCER)
 – gearshift pedal **no. 9**.
 Unscrew neutral switch connector.

Removal
 Remove the upper support bracket **no. 10** completely.



V02C18A

Install engine lifting tool (P/N 529 035 610) then, install a hoist.

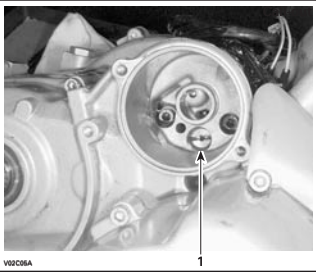
Remove:

- upper engine support bolt **no. 11**
- lower bolts **no. 12** retaining the engine support **no. 13** on either side, then, remove supports
- front lower mounting bolt **no. 14**
- rear lower mounting bolt **no. 15**
- rear upper mounting bolt **no. 16**.

Remove engine from vehicle.

Installation

For installation, reverse the removal procedure, paying attention to the following details.
 Reattach cables, hoses, wiring harness, etc.
 Adjust clutch cable.
 Bleed rear brake.
 Before to start the engine, remove oil filter.
 Unfasten pressure bleeding screw.



V02C18A

BEHIND OIL FILTER
 1. Bleeding screw

Unscrew and remove one spark plug.
 Turn engine using starter until oil emerges in filter chamber.
 Tighten pressure bleeding screw.
 Install oil filter.
 This operation activated the oil pump. Check if vehicle runs correctly.

VMR2000_004_03_02.FM 03-02-3

Bold face number following part name refers to exploded view at beginning of subsection.

Subtitle indicates main procedure to be carried-out.

Call-outs for above illustration.

Reference to look up a certain section and subsection. In this case it concerns carburetor and air intake silencer.

INTRODUCTION

GENERAL INFORMATION

The information and component/system descriptions contained in this manual are correct at time of publication. Bombardier Inc. however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.

Due to late changes, there may be some differences between the manufactured product and the description and/or specifications in this document.

Bombardier Inc. reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring obligation.

ILLUSTRATIONS AND PROCEDURES

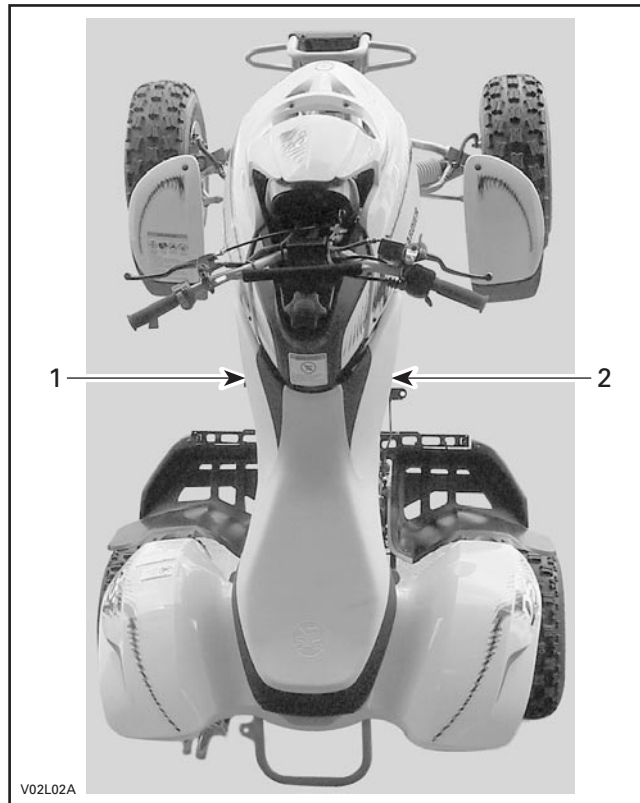
Illustrations and photos show the typical construction of the different assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts shown, however, they represent parts that have the same or a similar function.

CAUTION: Most components in the vehicles are built with parts dimensioned in the metric system. Most fasteners are metric and must not be replaced by customary fasteners or vice-versa. Mismatched or incorrect fasteners could cause damage to the vehicle or possible personal injury.

As many of the procedures in this manual are interrelated, we suggest, that before undertaking any task, you read and thoroughly understand the entire section or subsection concerning the procedure.

A number of procedures throughout the book require the use of special tools. Before starting any procedure, be sure that you have on hand all required tools, or approved equivalents.

The use of RIGHT and LEFT indications in the text, always refers to driving position (sitting on the vehicle).



1. Left
2. Right

SELF-LOCKING FASTENERS PROCEDURE

The following describes the most common application procedures when working with self-locking fasteners.

Use a metal brush or a screwtap to clean the hole properly then use a solvent (Methyl-Chloride), let it sit during 30 minutes and wipe off. The solvent ensures the adhesive works properly.

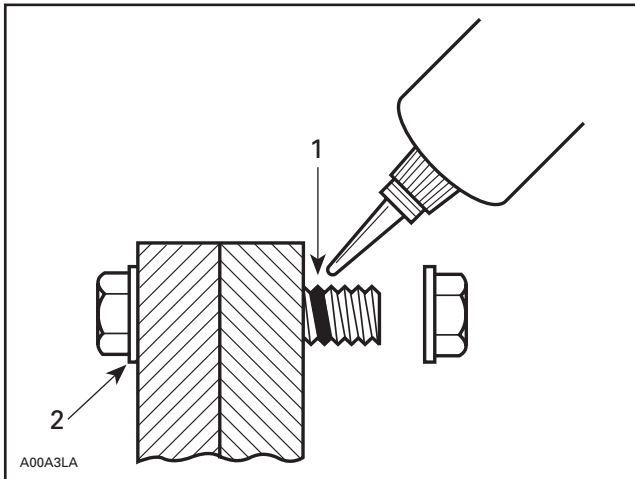
LOCTITE APPLICATION PROCEDURE

The following describes the most common application procedures when working with Loctite products.

NOTE: Always use proper strength Loctite product as recommended in this *Shop Manual*.

Threadlocker

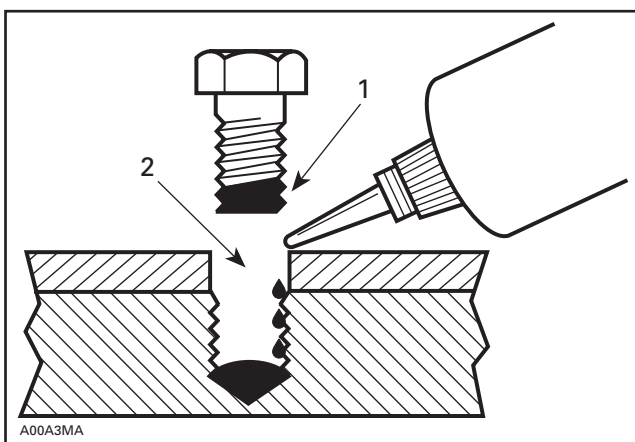
Uncovered Holes (bolts and nuts)



1. Apply here
2. Do not apply

1. Clean threads (bolt and nut) with solvent.
2. Apply Loctite Primer N (P/N 293 800 041) on threads and allow to dry.
3. Choose proper strength Loctite threadlocker.
4. Fit bolt in the hole.
5. Apply a few drops of threadlocker at proposed tightened nut engagement area.
6. Position nut and tighten as required.

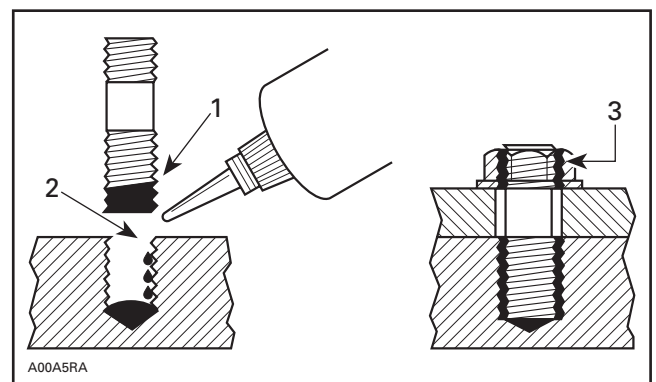
Blind Holes



1. On threads
2. On threads and at the bottom of hole

1. Clean threads (bolt and hole) with solvent.
2. Apply Loctite Primer N (P/N 293 800 041) on threads (bolt and nut) and allow to dry for 30 seconds.
3. Choose proper strength Loctite threadlocker.
4. Apply several drops along the threaded hole and at the bottom of the hole.
5. Apply several drops on bolt threads.
6. Tighten as required.

Stud in Blind Holes

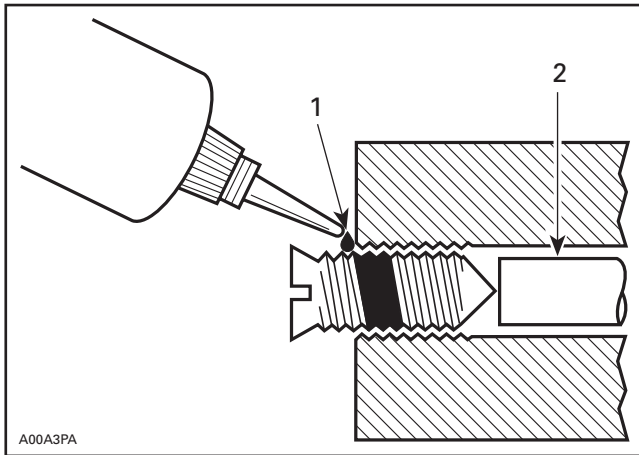


1. On threads
2. On threads and in the hole
3. Onto nut threads

1. Clean threads (stud and hole) with solvent.
2. Apply Loctite Primer N (P/N 293 800 041) on threads and allow to dry.
3. Put several drops of proper strength Loctite threadlocker on female threads and in hole.
4. Apply several drops of proper strength Loctite on stud threads.
5. Install stud.
6. Install cover, etc.
7. Apply drops of proper strength Loctite on uncovered threads.
8. Tighten nuts as required.

INTRODUCTION

Adjusting Screw



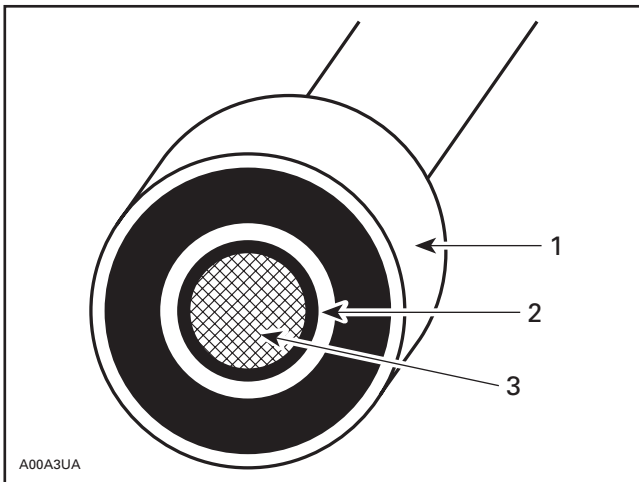
1. Apply here
2. Plunger

1. Adjust screw to proper setting.
2. Apply drops of proper strength Loctite thread-locker on screw/body contact surfaces.
3. Avoid touching metal with tip of flask.

NOTE: If it is difficult to readjust, heat screw with a soldering iron (232°C (450°F)).

Mounting on Shaft

Mounting with a Press



1. Bearing
2. Proper strength Loctite
3. Shaft

Standard

1. Clean shaft external part and element internal part.
2. Apply a strip of proper strength Loctite on shaft circumference at insert or engagement point.

NOTE: Retaining compound is always forced out when applied on shaft.

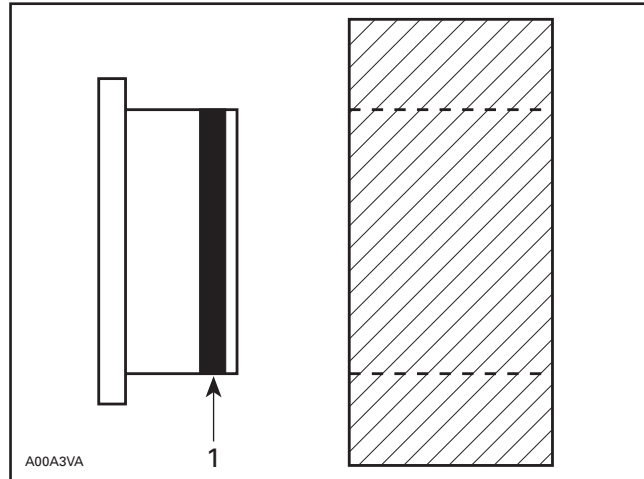
3. DO NOT use anti-seize Loctite or any similar product.
4. No curing period is required.

Mounting in Tandem

1. Apply retaining compound on internal element bore.
2. Continue to assemble as shown above.

Case-In Components

Metallic Gaskets



1. Proper strength Loctite

1. Clean inner housing diameter and outer gasket diameter.
2. Spray housing and gasket with Loctite Primer N (P/N 293 800 041).
3. Apply a strip of proper strength Loctite on leading edge of outer metallic gasket diameter.

NOTE: Any Loctite product can be used here. A low strength liquid is recommended as normal strength and gap are required.

4. Install according to standard procedure.
5. Wipe off surplus.
6. Allow it to cure for 30 minutes.

NOTE: Normally used on worn-out housings to prevent leaking or sliding.

It is generally not necessary to remove gasket compound applied on outer gasket diameter.

TIGHTENING TORQUES

Tighten fasteners to torque mentioned in exploded views and text. When they are not specified refer to following tables. The tables also give the metric conversion.

WARNING

Torque wrench tightening specifications must be strictly adhered to.

Locking devices (ex.: locking tab, elastic stop nut, self-locking fasteners, etc.) must be installed or replaced with new ones where specified. If the efficiency of a locking device is impaired, it must be renewed.

In order to avoid a poor assembling, tighten screws and bolts in accordance with the following procedure:

1. Manually screw all screws, bolts and/or nuts.
2. Apply the half of the recommended torque value.

CAUTION: Be sure to use the proper tightening torque for the proper strength grade.

NOTE: When possible, always apply torque on the nut.

3. Torque at the recommended torque value.

NOTE: Always torque screws, bolts and/or nuts in a criss-cross sequence.

TIGHTENING TORQUE		STRENGTH GRADE			
		GRADE 5.8	GRADE 8.8	GRADE 10.9	GRADE 12.9
DIMENSION	M4	1.5 to 2 N•m (13 to 18 lbf•in)	2.5 to 3 N•m (22 to 27 lbf•in)	3.5 to 4 N•m (31 to 35 lbf•in)	4 to 5 N•m (35 to 44 lbf•in)
	M5	3 to 3.5 N•m (27 to 31 lbf•in)	4.5 to 5.5 N•m (40 to 47 lbf•in)	7 to 8.5 N•m (62 to 75 lbf•in)	8 to 10 N•m (71 to 89 lbf•in)
	M6	6.5 to 8.5 N•m (58 to 75 lbf•in)	8 to 12 N•m (71 to 106 lbf•in)	10.5 to 15 N•m (93 to 133 lbf•in)	16 N•m (12 lbf•ft)
	M8	15 N•m (11 lbf•ft)	24.5 N•m (18 lbf•ft)	31.5 N•m (23 lbf•ft)	40 N•m (30 lbf•ft)
	M10	29 N•m (21 lbf•ft)	48 N•m (35 lbf•ft)	61 N•m (45 lbf•ft)	72.5 N•m (53 lbf•ft)
	M12	52 N•m (38 lbf•ft)	85 N•m (63 lbf•ft)	105 N•m (77 lbf•ft)	127.5 N•m (94 lbf•ft)
	M14	85 N•m (63 lbf•ft)	135 N•m (100 lbf•ft)	170 N•m (125 lbf•ft)	200 N•m (148 lbf•ft)

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