Supplier Training: Fastener Torque

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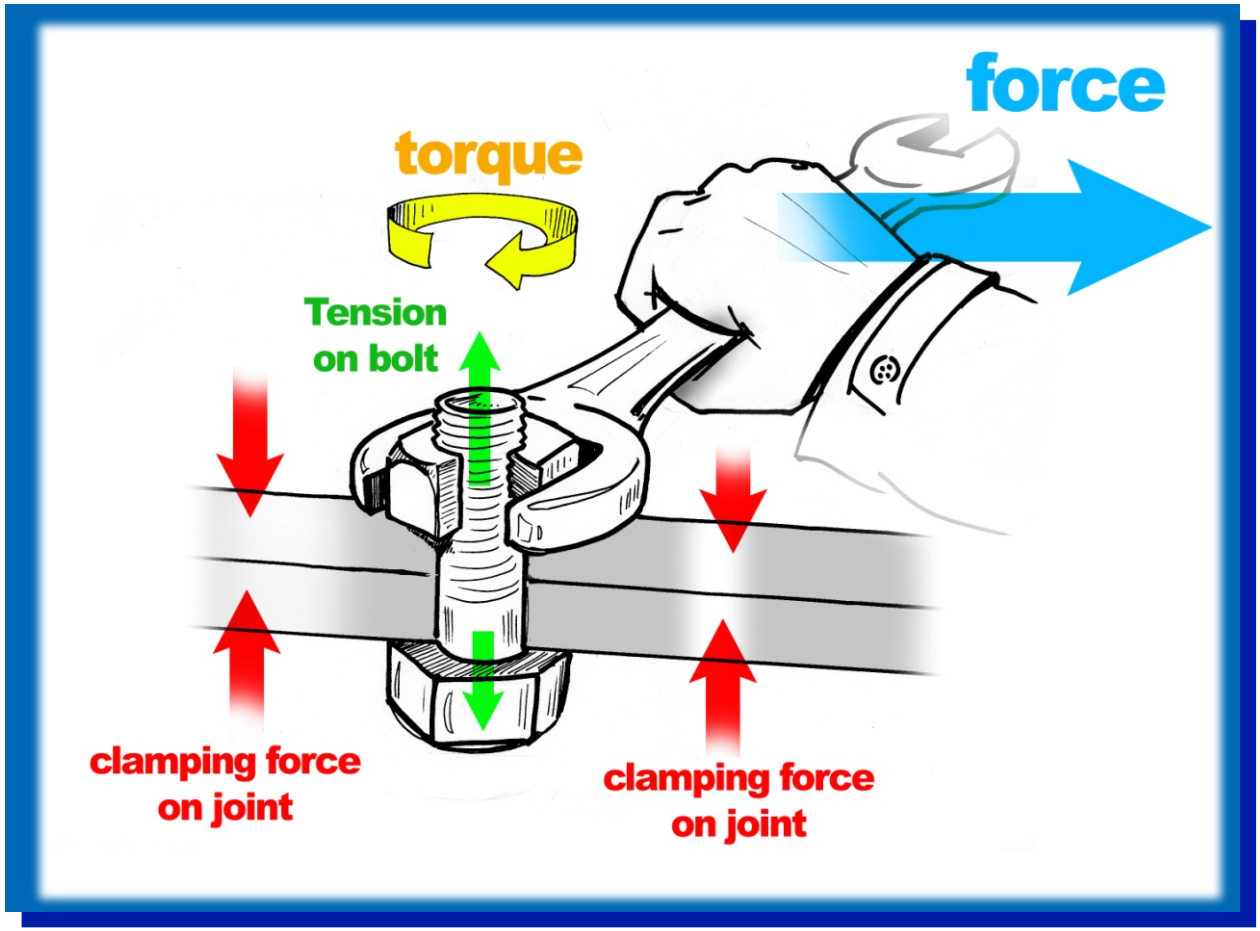
Main Topics:

- **Common definitions uses within Chrysler and Fiat**
- **Documentation and communication methods**
- **Assembly plant fastener related controls to aid process capability**

General Overview of Torque



Torque is the twisting (turning) force applied to a nut, which generates tension in the bolt and results in clamping force on the parts. Torque = Force x Length

Torque definitions within Chrysler and Fiat

Torque Equation:

The applied torque and resulting bolt tension are most often modeled as a linear function for the purpose of design. The equation is as follows:

T = kDF Where k = the friction factor (dimensionless)
D = the bolt nominal diameter (in., m)
F = the clamp load tension force (lb., N)
T = the torque (in.-lb., Nm)

Average k factors for various Chrysler Group fastener finishes are developed experimentally and can be determined by using the certification M10 screw and conical washer assemblies torque requirement found in our coatings specifications. Please be aware that some finishes have a large amount of variation so these values are intended to provide an approximation to aid fastener selection.

COMMON TERMINOLOGY	
Chrysler	**Fiat**
Dynamic Torque	Imposed Torque
	Tightening Torque
Residual Torque	Control Torque
	Inspection Torque
Snug Torque	Angle control initial Torque
Torque Control with Angle Monitor	Monitored Angle
	Imposed Angle with Torque Control
Angle Control with Torque Monitor	Monitored Dynamic
	Imposed Torque with Angle Control
Expected Clamp Load	Traction

CoDeP - This is the proper spelling and casing.

CoDeP stands for **Co**nfiguration and **De**scription of **P**roduct

CoDeP is Fiat's EBOM equivalent

PS-809 Torque Tightness –Inch Threaded Parts

Chrysler Group LLC
Process Standard
Category Code: X-1
EASL Requirement: No
Restricted: No

Document Number: PS-809
Date Published: 2012-09-03
Change Level: EF

TORQUE TIGHTNESS – INCH THREADED PARTS***

1.0 GENERAL

1.1 Purpose

This standard governs the torque-tightening requirements for inch-based threaded parts assembled by Chrysler Group LLC and its suppliers. Included are torque practices and procedures found within Fiat 01393/01 and 0.00010/01 for metric units of measurement. Fiat does not have active inch-based fastener torque specifications.

General torque-tightening tables for metric fasteners are contained in Process Standard PS-6239.

1.1.1 Purpose of the Process

- Torque definitions
- Power tool torque methods
- Torque inspection methods
- Min. length of thread engagements for tapped holes
- Stud seating torque, etc….

Dynamic Torque
(Fiat: Imposed & Tightening Torque)

Dynamic Torque is the torque measured by an electronic torque transducer contained within, or attached to, the tooling during the tightening process.

Dynamic torque is inherently more repeatable and more closely related to controlling clamp load which affects the quality of the joint build. Unless specified, dynamic torque can vary from plant to plant that builds the same joint because of the tool type, speed, etc. Currently, this field is empty on many applications which allow manufacturing flexibility in tool selection. However, future releases will require more dynamic torque specifications to aid power tool commonization.

Where is Dynamic torque required? On all joints assembled at our plants.

Where to find Dynamic torque values and normal torque tolerances?

- Preliminary dynamic torque specification can be found in PS-6239.
- Carry over from other releases.
- Fastener Engineering experimentally develops the torque specification for all joints based on dynamic failure torque to optimize joint clamp load.

Residual Torque
(Fiat: Control & Inspection Torque)

Residual Torque is the torque required to slightly restart, in the tightening direction, a previously tightened torqueable component immediately after the fastening operation is completed. It is the value obtained when the secured fastener begins to rotate when measures by a mechanical or electronic **hand torque wrench**. The **residual torque variation is always greater than dynamic torque** variation due to joint relaxation, torque decay, friction and operator technique.

Why is residual torque needed?

- Residual torque is a process to verify that the joint was tightened and an indicator for part or process variations that may affect the joint clamp load.
- Common denominator for one vehicle built at multiple plants, joint inspection (PG, safety, etc.).

Where to find residual torque values and normal torque tolerances?

- Preliminary residual torque specification values can be found in PS-6239.
- Carry over from other releases.
- Developed in the Fastener lab, pilot build and/or the assembly plant.

Determining Dynamic Tolerance Range using Tightening Class for Metric Fasteners

TABLE 1: DYNAMIC TORQUE TIGHTENING CLASS TOLERANCE RANGES	
Tightening Class	**Dynamic Torque Tolerance** (1)
A	± 5 %
B	± 10 %
C	± 20 %
D	± 30 %

NOTE **1**: Below is a brief explanation of Tightening Class A, B, C and D, with corresponding Dynamic Torque Tolerance range based on joint types:

A. Used on clamp load sensitive and critical joints requiring a DC electric power tool using the "Standard Torque", "Torque Control with Angle Monitoring", "Angle Control with Torque Monitoring", and unique "Yield Control" strategies. The Snug torque is mandatory for strategies other than "Standard Torque" and requires Fastener Engineering review with possible development for Tightening Class A. Examples are hard joints like internal engine (cylinder head and connecting rod bolts), powertrain gears, and tapered ball joint applications.

B. Used on clamp load sensitive and critical joints assembled with a DC electric tool with "Standard Torque" and "Torque Control with Angle Monitoring" strategies. The Snug torque is mandatory for "Torque Control with Angle Monitoring" and "Angle Control with Torque Monitoring" strategies and requires Fastener Engineering review with possible development for Tightening Class B. Examples are hard and medium joints like electrical high current, chassis (steering gear and wheel lug nuts), brake systems, external engine and powertrain adaptation joint applications.

C. Used on joints with DC electric and pneumatic tools at assembly for the "Standard Torque" strategy. Examples are medium and soft joints exhaust hanger bracket attachments, heat shields, non-safety module attachment and hose/tube routing types of joint applications.

D. Used on non critical joints assembled using pneumatic and battery powered tools at assembly for the "Standard Torque" strategy. Examples are soft joints involving plastic in the joint and tapping screw attachments. At Chrysler, "**Class D" is not recommended without Fastener Engineering review**. Using this class for standard machine threaded nuts and bolts should be avoided because the high torque range could result in the bolt breaking.

PS-6239 Torque Tightness – Metric Threaded Parts

TABLE 2: ESTIMATED DYNAMIC & RESIDUAL TORQUE (FGA / Chrysler) (9)							
Fastener Size (7)	Target Torque **FGA 01391 Property Class 8.8 and 10.9**	Target Torque (Nm) **Chrysler Loose Washer Ass'y** (3, 6, 8) **Property Class 8.8 / 10.9**	Target Torque (Nm) **Chrysler Flange (4, 6, 8) Property Class 8.8 / 10.9**	Residual Torque Range Newton (Nm)	Dynamic Torque Range (Nm)	Expected Clamp Load (5) at Target Torque **FGA 01391**	Expected Clamp Load N at Target Torque **Chrysler Property Class 8.8 / 10.9**
M 5 x 0.8	See Note (2)	5 / 8	6 / 9	FGA See norm 01393/01, Chrysler see Table 3 Ranges different from 01393/01 must be reviewed by Fasteners Engineering and Manufacturing	See Dynamic Torque Tightening Class Tolerance Ranges Table 1	See Note (2)	6581 / 9417
M 6 x 1.0	See Note (2)	9 / 13	11 / 15			See Note (2)	9338 / 13362
M 8 x 1.25	See Note (2)	22 / 31	25 / 37			See Note (2)	16986 / 24308
M 10 x 1.25 (1)	See Note (2)	45 / 65	54 / 77			See Note (2)	28396 / 40636
M 10 x 1.5	See Note (2)	43 / 62	51 / 73			See Note (2)	26907 / 38505
M 12 x 1.25 (1)	See Note (2)	82 / 115	97 / 135			See Note (2)	42722 / 61136
M 12 x 1.5 (1)	----	79 / 110	93 / 130			----	40890 / 58516
M 12 x 1.75	See Note (2)	75 / 105	89 / 125			See Note (2)	39100 / 55953
M 14 x 1.5 (1)	See Note (2)	125 / 185	150 / 220			See Note (2)	57789 / 82698
M 14 x 2.0	See Note (2)	120 / 170	140 / 200			See Note (2)	53564 / 76652
M 16 x 2.0	----	Contact Fastener Engineering				----	72694 /104028
M 16 x 1.5 (1)	----	Contact Fastener Engineering				----	77603 /111053

NOTE 1: Indicates a fine thread pitch
NOTE 2: For FGA vehicles, the target dynamic torque and expected clamp load are in Fiat Norm 01391 section 1.1 table.
NOTE 3: Chrysler target torque values (i.e. nominal torque (Cnom)) for Screws and Nuts with captured loose conical washer based on strength class.
NOTE 4: Chrysler target torque values (i.e. nominal torque (Cnom)) for Screws and Nuts with flanged bearing surfaces based on strength class.
NOTE 5: Within Fiat Norm 01391 the word "Traction" is the same as "Expected Clamp Load".
NOTE 6: Grade 9.8 was omitted and grade 8.8 should be used as a default.
NOTE 7: Contact Fastener Engineering for sizes not shown.
NOTE 8: Chrysler torque values are based on a K-factor of 0.16 for loose washer assemblies and 0.19 for flange fasteners. The clamp force is 80% proof load for 8.8 and 10.9 strength level property classes. Using the equation: Torque = Nominal bolt diameter x K-factor x force. Example M8 x 1.25 washer assembly: torque = (8mm x 0.16 x 16986 N) / 1000, (Hint: Watch the units of measurement 10-3 mm = 1m), therefore torque = 21.7 Nm or 22 Nm. Some dynamic torque values have been rounded down to values found in Table 3.
NOTE 9: See Table 4 to compare Fiat and Chrysler torque terminology.

NOMINAL DYNAMIC TORQUE & CORRESPONDING RESIDUAL TORQUE VALUES

Nominal Torque(3) (Nm)	Allowed limits, upper ($V_{MAX,A}$) and lower ($V_{min,A}$) limits for the value of C_A (Nm)							
	Class A		Class B		Class C		Class D	
	$V_{min,A}$	$V_{MAX,A}$	$V_{min,A}$	$V_{MAX,A}$	$V_{min,A}$	$V_{MAX,A}$	$V_{min,A}$	$V_{MAX,A}$
1	1	1.3	0.9	1.3	0.7	1.4	0.6	1.4
1.5	1.5	1.9	1.4	2	1.1	2	0.8	2.1
2	1.9	2.6	1.8	2.7	1.4	2.7	1.1	2.8
2.5	2.4	3.2	2.3	3.3	1.8	3.4	1.4	3.5
3	2.9	3.9	2.7	4	2.2	4.1	1.7	4.2
3.5	3.4	4.5	3.2	4.6	2.5	4.8	1.9	4.9
4	3.9	5.2	3.7	5.3	2.9	5.5	2.2	5.6
4.5	4.4	5.8	4.1	6	3.2	6.1	2.5	6.3
5	4.8	6.5	4.6	6.6	3.6	6.8	2.8	7
5.5	5.3	7.1	5	7.3	3.9	7.5	3.1	7.7
6	5.8	7.8	5.5	8	4.3	8.2	3.3	8.4
21	20	27	19	28	15	29	12	29
22	21	29	20	29	16	30	12	31
23	22	30	21	31	17	31	13	32
24	23	31	22	32	17	33	13	34
25	24	32	23	33	18	34	14	35

TABLE 3 NOTES:

NOTE **1:** Residual Torque values are found in Fiat norm 01393/01 Table A. When not specified on drawings or EBOM, the joint is intended to be a Class B. Pages from publication dated 05/11/2001 are attached for your reference and noted as Table 3.

NOTE **2:** Table A is based on a statistical combination of standard settings and measurement errors to determine Vmin, A and VMAX, A calculated as outlined in Fiat 01393/01. The minimum Residual Torque (Vmin, A) and maximum Residual Torque (VMAX, A) are for a given Nominal Torque (Cnom) from table 2. At Chrysler, the Nominal Torque (Cnom) is the same as CA defined in Fiat 0.00010/01.

NOTE **3**: When the exact Nominal Torque value is not found in Table 3, round up or down to the next significant value. Examples are 153 Nm would round up to 155 Nm and 152 Nm would round down to 150 Nm. The Nominal Torque is also considered the target Residual Torque value. For Nominal Torque values less than 1 Nm and greater than 275 Nm contact Fastener Engineering.

Snug Torque (Fiat: Angle control initial torque)

Snug Torque is a torque level that triggers a programmed event in the tooling, such as angle encoders, tool speed adjustments, tool synchronization, etc.

The torque that produces a little clamp load to pull the joint members together, flattens conical washers, surface discontinuities, etc. and establishes a predictable torque vs. angle relationship.

Not all joints are capable of having a predictable snug torque (i.e.. Soft joints).

Where is Snug torque required?

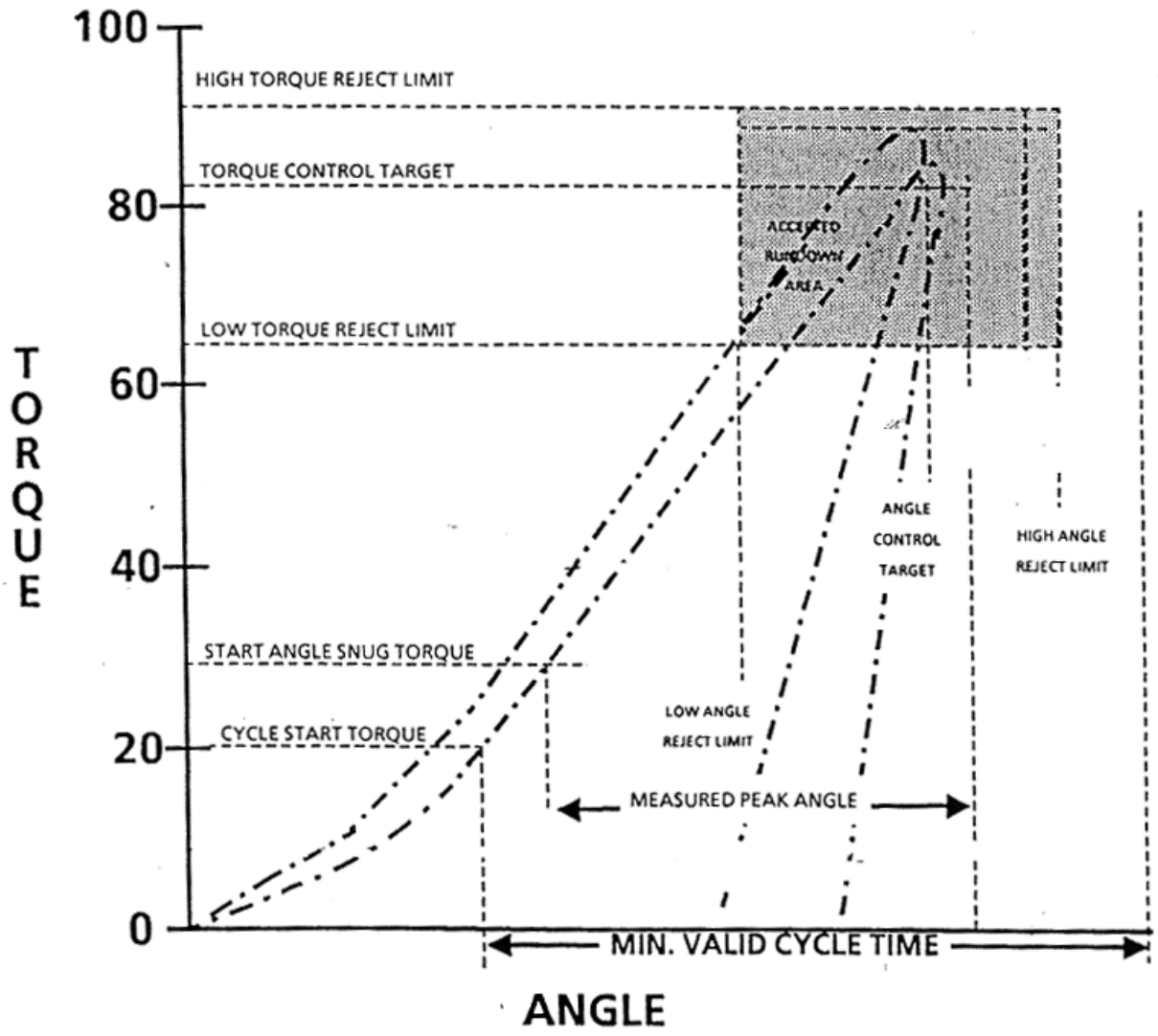
Angle control w/torque monitor or torque control w/angle monitor tightening strategies.

Where to find a Snug torque value?

They are determined experimentally.

Finding a Dynamic Torque Value

Standard Machine Threaded Fasteners



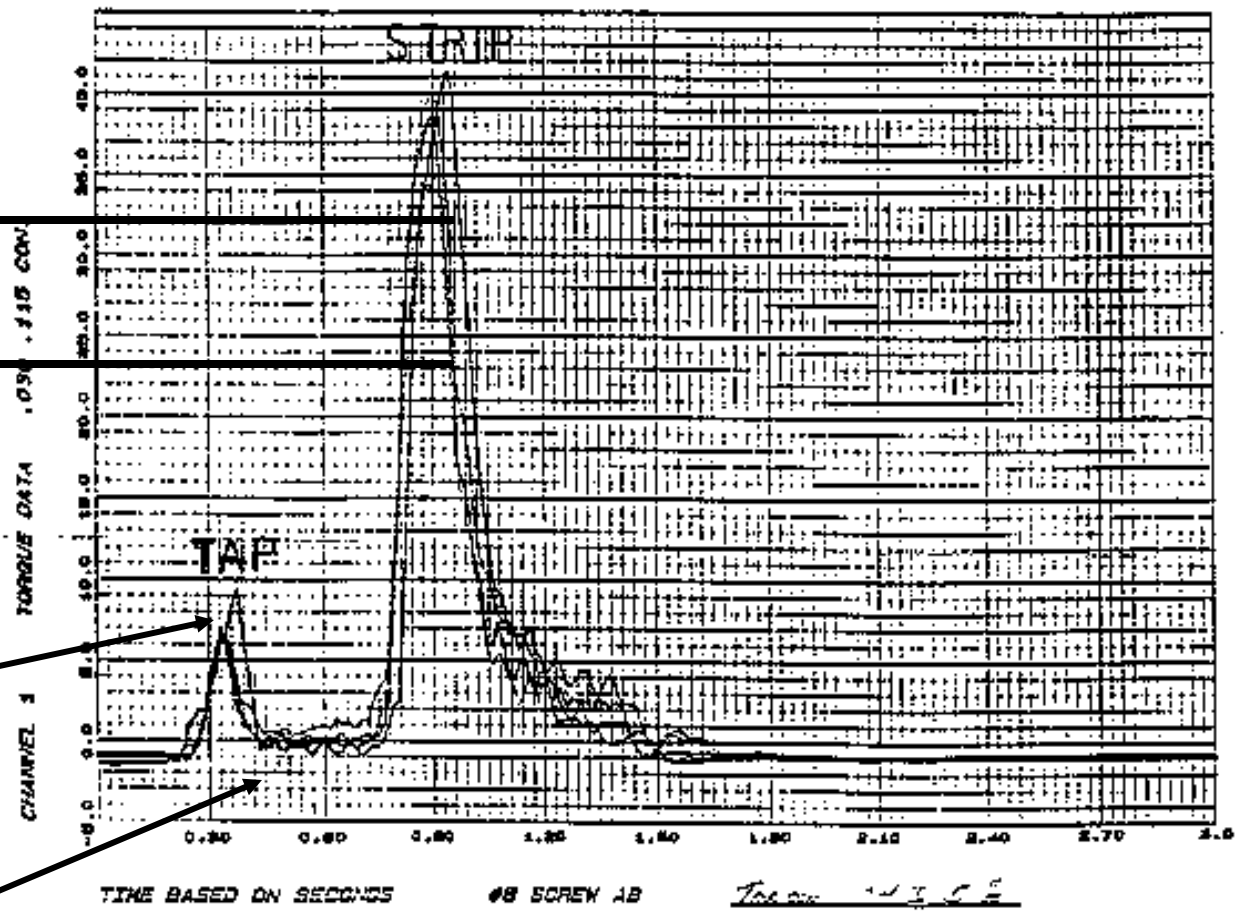
Finding a Dynamic Torque Value

Tapping Screw Dynamic Torque Graph

Strip Torque must be 4 x the tapping torque.

Dynamic Torque Spec.

0.025 inch thick CRS sheet metal PCI



Torque to Tap

Transition Stage

Torque Control w/Angle Monitoring (Fiat: Monitored Angle)

This is a strategy that can provide detection of joint defects such as cross threading, out of flatness, soft bolts, stripped threads, etc.

Where is it needed? Chassis and Powertrain applications like control arms and steering gears.

Where to find the angle and torque values? They are determined experimentally.

Angle Control w/Torque Monitoring (Fiat: Monitored Dynamic)

Angle Control with Torque Monitoring is often used if torque control fastening strategy does not result in acceptable joint clamp load. This strategy reduces the influence of friction as a variable in achieving a desired clamp load, commonly called “turn-of-the-nut”. This is a strategy that can provide detection of joint defects such as cross threading, out of flatness, soft bolts, stripped threads, etc.

Where is it needed? Unique applications like tapered ball joints and connecting rods.

Where to find the angle and torque values? They are determined experimentally.

Chrysler Designations

- Safety shielded torque is identified as  on the torque AMPS sheet.
- Critical application torque is identified as  on the torque AMPS sheet.

Fiat Designations

•Safety shielded torque is identified as  on the Fiat vehicle specific torque standard and is equal to Chrysler Safety identification.

•Critical application torque is identified as  on the Fiat vehicle specific torque standard and is equal to Chrysler Diamond identification.

Minimum Audit Torque
(Fiat: Does not use min. audit)

Minimum Audit Torque is the torque applied in the tightening direction by a hand torque wrench on an installed torqueable component. The audit torque minimum must be achieved without the torqueable component rotating.

Audit torque values should allow for any “in plant” torque loss without regard to length of time since tightening. The **exception** is when Min. Audit replaces residual torque as an inspection method for special joints. Then min audit has to be conducted in the same amount of time as the residual torque inspection.

Where is Audit needed?

On a joint that is subject to relaxation after assembly and special joints as an inspection method to replace Residual Torque inspection.

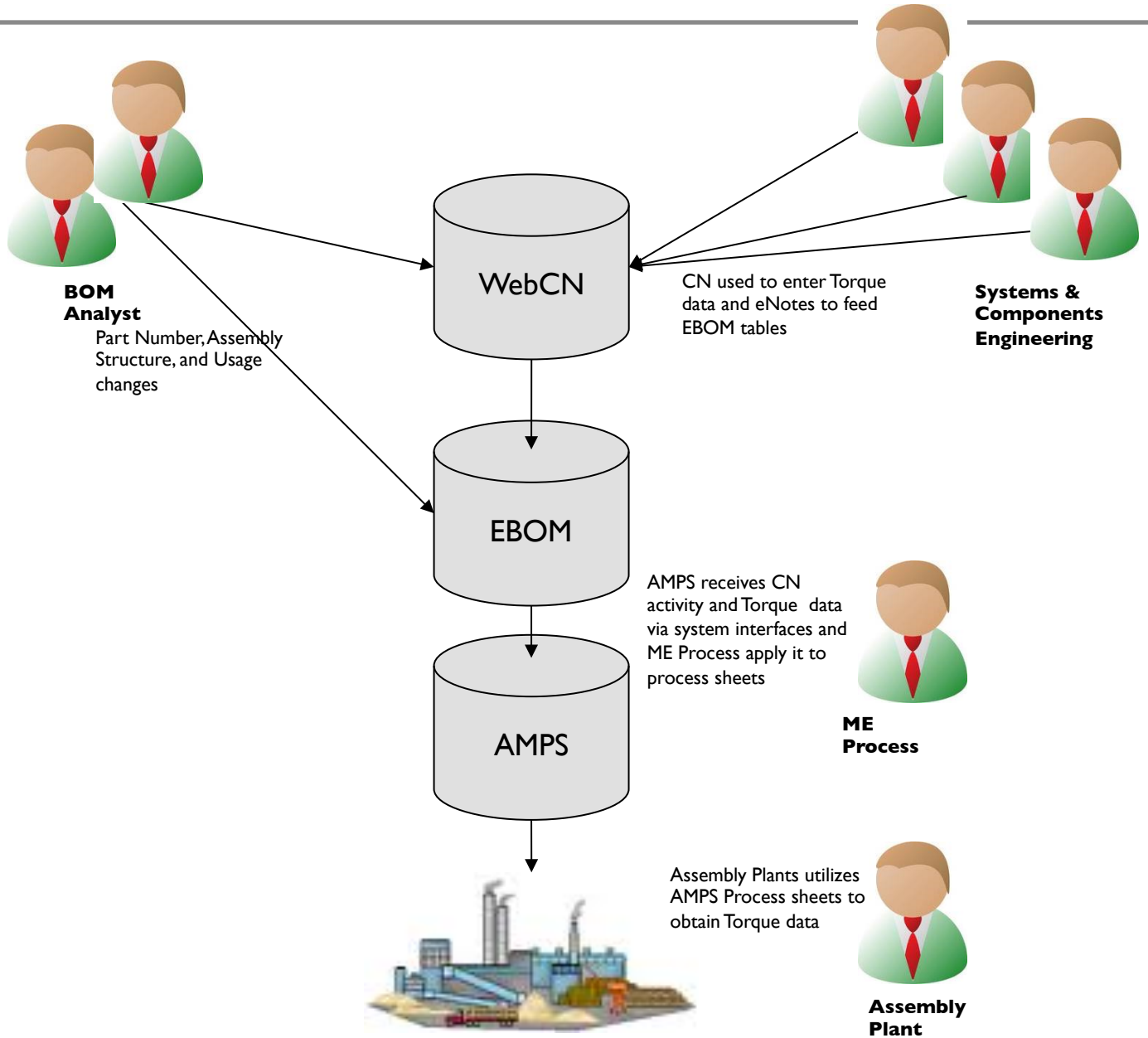
Where to find the Audit torque values?

They are determined experimentally to monitor joint relaxation.

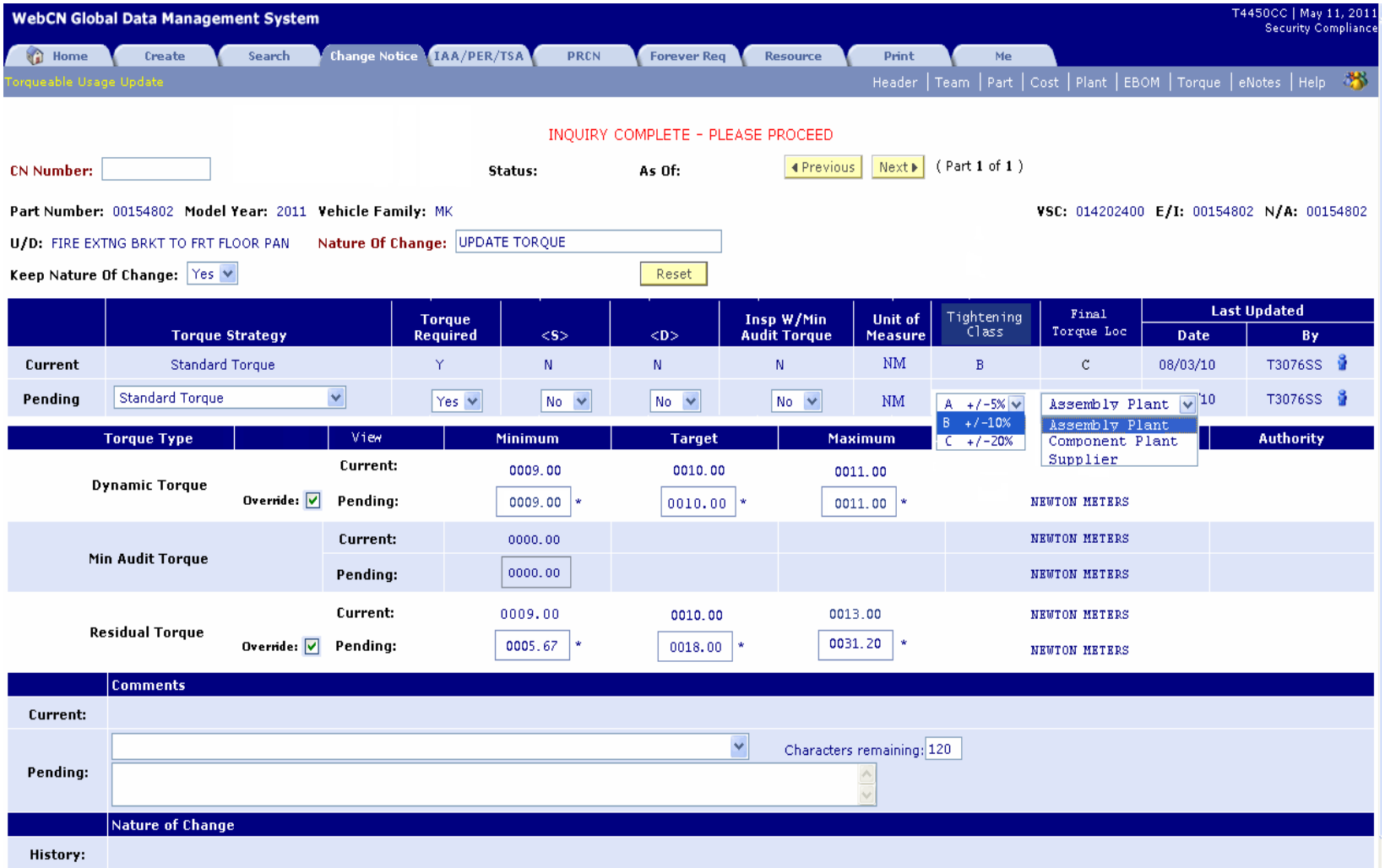
Carry over from other releases.

Developed in the Fastener lab, pilot build and/or the assembly plant.

Chrysler Current Process for EBOM-AMPS



Torque WebCN



Typical EBOM Torque Screen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ENRT            ELECTRONIC BILL OF MATERIAL            11/15/11  15:18:47  C3H
              RELEASED TORQUED USAGE INQUIRY          PG:  1 OF  1   VW: 1 OF

MY: 2008 VF: DR    VSC: 00030410 PART: 06506600AA END ITEM: 5KN38TRMAA
NEXT ASSY: 5KN38TRMAA USAGE DESC: REAR SEAT BUCKLE
COMMENT:

TORQUE REQD: Y TORQUE PROCESS SAFETY FLAG: Y DIAMOND ITEM FLAG: N
                                    MIN   TARGET  MAX  UM TEXT
                RESIDUAL TORQUE:    140    350    500  INCH*POUNDS
                AUDIT TORQUE:                ---    ---  INCH*POUNDS
                DYNAMIC TORQUE:     300    450    600  INCH*POUNDS
                SNUG TORQUE         ---           ---  INCH*POUNDS
               ANGLE CONTROL
                ANGLE:                                  DEGREES
                MONITORED DYNAMIC:          ---         INCH*POUNDS
               TORQUE CONTROL
                DYNAMIC:                                INCH*POUNDS
                MONITORED ANGLE:            ---         DEGREES
AUTH: 60803T14  EFF CD: A-1     CDS PILOT: S1A   STRTGY:   INSPCT:   TRQCSA:
RELEASE DATE: 09-14-2006        NOC: INITIAL COLOR RELEASE
PF:  13=         14=        15=        16=SUMMARY     17=DETAIL    18=
     19=         20=        21=        22=            23=          24=
```

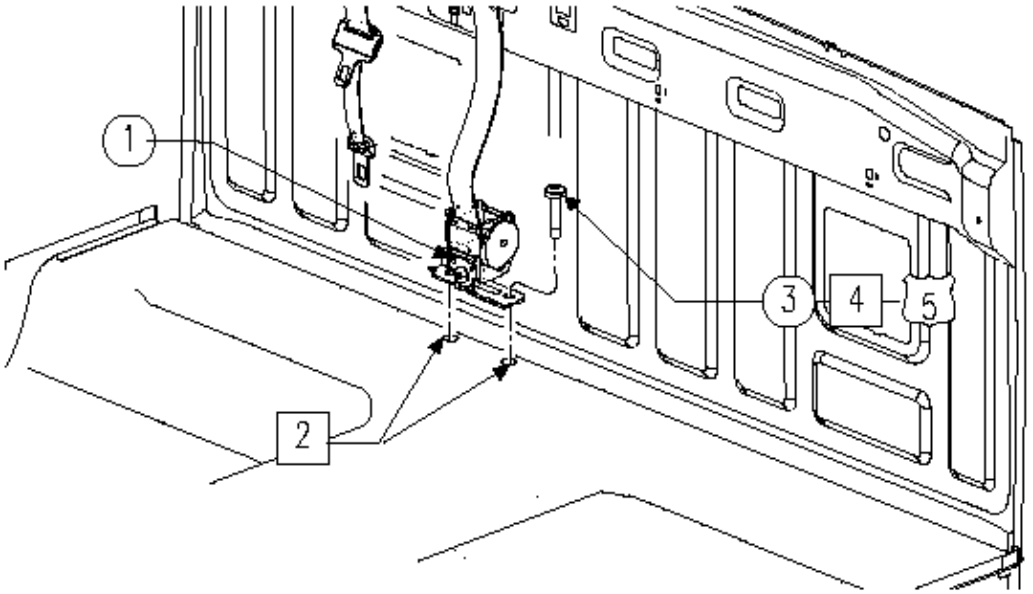
Manufacturing AMPS Process Sheet with Torque

CHRYSLER

IR # 02FK0532_22
IR Source #: 02FK0532

RELEASED
AMPS PROCESS SHEET

Report Created: 10-16-2007 2:01 pm
Last Modified By: BAZZY, SHERIFA



□=Process ○=Part △=Note ⬡=Shield Torque ⬡=Shield Non-Torque ◇=Diamond Torque ◇=Diamond Non-Torque ▭=Component Traceability

Item	D/N	Part No.	VF	Qty UM	Part Name	T	Carline / Bodystyles / Engine / Transmission	Units / Audit / TQ-S/D	Res-Min / Res-Tar / Res-Max	Dyn-Min / Dyn-Tar / Dyn-Max	ACAql-Min / ACAql-Tar / ACAql-Max	Snug / ACMD-Min / ACMD-Max	TCDyn-Min / TCDyn-Tar / TCDyn-Max	TCNA-Min / TCNA-Max
		VSC	Mrkt	Ser	Sales Codes			Additional Torque Information						
1		1CG67TRMAB	DR	1 EA	SEAT BELT ASSY PRT CTR STD CAB		16 6162							
		30320	A	A	CBE									
3		06506600AA	DR	2 EA	SC/PAN.HD.LK LOCK.PATCH.PILOT.PT.6-LOBE.REC CTR SHOULDER BELT TO FLOOR ASSY		16 6162	IN 0 I N	140 350 500	300 450 600	0 0 0	0 0 0	0 0 0	0 0
		30320	A	A	CBE									

Program: 2008DR
Division: ASSEMBLY
Plant: GC
Center: T/C/F
Platform: BODY ON FRAME

SPECIAL REQUIREMENTS

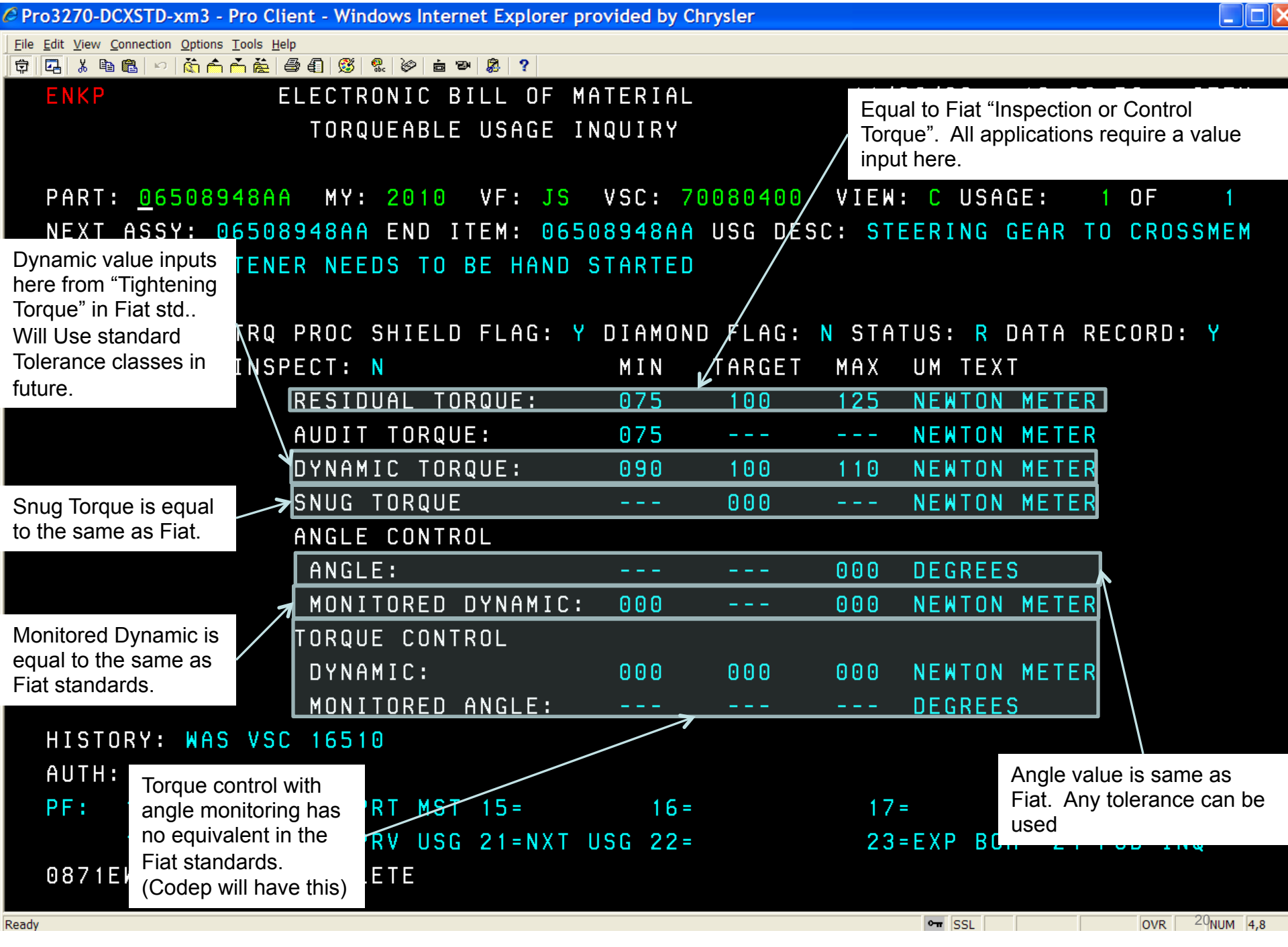
	Component Traceability
	Shield - Non-Torque
	Diamond - Non-Torque
x	Shield - Torque
	Diamond - Torque

Status: RELEASED 10/3/2006

Carlines: 1, 6
Body Styles: 61, 62
SEATS & RESTRAINTS
INSTALL FRONT CENTER RETRACTOR BRACKET (STANDARD CAB ONLY)
2008-9114-DR-12

Prev. year sheet: 2007-9114-DR-12

Page: 1 of 2



Equal to Fiat "Inspection or Control Torque". All applications require a value input here.

Dynamic value inputs here from "Tightening Torque" in Fiat std.. Will Use standard Tolerance classes in future.

Snug Torque is equal to the same as Fiat.

Monitored Dynamic is equal to the same as Fiat standards.

Torque control with angle monitoring has no equivalent in the Fiat standards. (Codep will have this)

Angle value is same as Fiat. Any tolerance can be used

This is the “Snug” torque plus angle specification .

FIAT GROUP

FPT1.00101/76

Pagina: 3/37

Data: 13 May 2009

FPT POWERTRAIN TECHNOLOGIES

	DETAIL	QUALIFIED SUPPLIER	TABLE - STANDARD or SERIAL No. / DRAWING	THREAD	MATERIAL AND COATING	TIGHTENING CLASS Std. 01390/01	TIGHTENING Nominal TORQUE (Nm)	CONTROL TORQUE NP 0.00010/01 Method A T' min. (Nm)	CONTROL TORQUE NP 0.00010/01 Method A T' max. (Nm)
CLAMPINGS OF COMMON GENERAL PARTS									
1	Screw to fix lower block to engine block	I.B.S.	Dwg. 465399[illegible]		[illegible] F.FAG6	A	20Nm+80° Assembly	▶1	
							20Nm+90° Processing	▶2	
		I.B.S.	Tab. 10366 - 1/62875/347	M8x1,25x40	10.9 RIV/EC5		**30**	29	39
	[illegible]er head to engine	I.B.S.	Dwg. 7795992	M9x1,25x87	10.9 F.FAG6	A	**30Nm+90°+90° (P.S. 1.00102)**	▶3	
	[illegible]rew	I.B.S.	Dwg. 46747070	M8x1x38,5	12.9 F.FAG6	A	**20Nm+40° [illegible]rocessing and assembly**	▶4	
4	Screw to fix flywheel to crankshaft	I.B.S. / LOBO	Dwg. 55211902	M8x1,25x22	12.9 bare (pre-treated with sealing agent)	A	**15Nm+40°**	▶5	
5	DELETED								

Checking parameters for “Torque + Angle” tightenings:

▶1 Angle tolerance: ± 3°	Final torque limits: from 50 Nm to 90 Nm
▶2 Angle tolerance: ± 3°	Final torque limits: from 50 Nm to 100 Nm
▶3 Angle tolerance: ± 4°	Final torque limits: from 45 Nm to 80 Nm
▶4 Angle tolerance: ± 2°	Final torque limits: from 35 Nm to 48 Nm
▶5 Angle tolerance: ± 2°	Final torque limits: from 35 Nm to 65 Nm

Tightening class tolerances per Fiat std 01390/01

These are know as “Monitored Dynamic” torque. Only to be used in angle control applications

Method A is understood as “Residual” torque. Except as noted per instructions.
This check according to Fiat specs allows up to 2 hours to be completed.

Angle tolerance for specifications above.

This is the “Snug” torque .

ITEM		TABLE - STANDARD or SERIAL NO./DRAWING	THREAD	MATERIAL	TIGHTENING				INSPECTION	
					CLASS Standard 01390/01	Nominal TORQUE (Nm)	Angle control initial torque (Nm)	Control angle (°)	TORQUE NP 0.00010/01 Method A C' min. (Nm)	TORQUE NP 0.00010/01 Method A C' max. (Nm)
1 **ENGINE EXHAUST**										
PETROL ENGINE EXHAUST										
1.1	Hexagonal friction nut with deformed flange and thread to fix cast-iron manifold to cylinders head	Tab. 10127/03 - 1/40600/11	M8	8 Fe/Zn 7 IV LUB	B ②	-	10	+60°	②	②
1.2	Lambd	73503248	M18x1.5	X12 Cr Ni 1812	B ★	45			38	58
1.3	Hexag to fix h (Fire 8	Tab. 10367/50 - 1/87700/11	M6	5.8 Fe/Zn 7 IV	C ★	8			5	13
1.4	Hexag protection to catalyst (Fire 8V)	Tab. 10127 - 1/40599/21	M6	10 Fe/Zn 7 IV LUB	C ★	8			5	13
1.5	Flanged hexagonal head screw to fix front stiff exhaust bearing bracket to couple to hexagon nut with flange (Tab. 10116 1/40594/11) to fix front stiff exhaust bearing bracket	Tab. 10366 - 1/62889/24	M10x1.25	8.8 RIV/EC 5	B ★	50			40	66

② Tolerance on angle ± 2° Final Torque Limit from 17 to 34 Nm (Alternatively it is possible to screw at 25 Nm class B with control limits Method I 20 - 37 Nm

★ Experimental Limits

Tightening class tolerances per Fiat std 01390/01

These are know as “Monitored Dynamic” torque. Only to be used in angle control applications.

Angle tolerance

This is understood as “Residual” torque. Method A means to check after the Dynamic has been applied.

These applications do not have any Residual torque specified.

ITEM		TABLE – STANDARD or SERIAL NO./DRAWING	THREAD	MATERIAL	TIGHTENING		Angle control initial torque (Nm)	Control angle (°)	INSPECTION TORQUE NP 0.00010/01 Method A	
					CLASS Standard 01390/01	Nominal TORQUE (Nm)			C' min. (Nm)	C' max. (Nm)
RH FRONT SILL BOARD LABEL										
18.51	Self-tapping screw with domed head and cross-slot with normal flange to fix label to retaining clip number 46550859	Tab. 10631/01 – 1/56898/07	8 (4.2)	R40 IND Fe/Zn 7 VII S DEIDR	D	1.5			-	-
LH FRONT SILL BOARD LABEL										
18.52	Self-tapping screw with domed head and cross-slot with normal flange to fix label to retaining clip number 46550859	Tab. 10631/01 – 1/56898/07	8 (4.2)	R40 IND Fe/Zn 7 VII S DEIDR	D	1.5			-	-
LOWER CENTRAL PILLAR COATING										
18.53	Self-tapping screw with domed head and cross-slot to fix rear sill board and lower central pillar coating	Tab. 10631/03 – 1/59037/07	8 (4.2)	R40 IND Fe/Zn 7 VII S DEIDR	D	2			-	-
UPPER CENTRAL PILLAR COATING										
18.54	Self-tapping screw with domed head and cross-slot to fix lower central pillar coating with upper central pillar coating	Tab. 10631/03 – 1/59037/07	8 (4.2)	R40 IND Fe/Zn 7 VII S DEIDR	D	2			-	-

This is understood as “Residual” torque. Notice for some applications such as tapping screws, there is no Residual torque check. In these cases, use the Dynamic Target from “Tightening” torque column and apply +/- 30% and input to the Residual field in EBOM. This will be a temporary measure.

On behalf of myself and Chrysler Group LLC, we appreciate the opportunity to share some fastener torque definitions and processes.

Are there any questions?