DEXRON® Anti-Shudder Durability Test
Report Form
Form 1
Version

Formulation Code							
Formulation Code							
SID	SponsorCode	Modification	Blend	Method	Count	Lab	Instrument

Blended Sample Testing Information[A]			
Candidate Percentage		Other Percentage	
Other Fluid ID			

[A] If not a Blended Sample then report 100% Candidate Percentage, 0% Other Percentage, and "None" for Blend Fluid ID.

Test Identification			
Sponsor			
Sponsor In-House Number			
Lab In-House Number			
Alternate Code			
Test Number[B]			
Instrument		Run Number	
Start Date		Start Time	
EOT Date		EOT Time	

[B] Test Number = Instrument – Runs since last reference test – Total Runs on Instrument

Test Validity Statement	
This test has been conducted in a valid manner – YES or NO	
*Test	
Signature	
Typed Name	
Title	

DEXRON® Anti-Shudder Durability Test
Pass/Fail Results
Form 2

Formulation Code	
Test Number	

PASS/FAIL RESULTS	
PARAMETER	**RESULT**
First ASD Test Block with five consecutive points with negative dμ/dV results	
Temperature Setpoint at time of failure	

Test Operation & Hardware Information	
Total ASD Test Blocks	
Total Test Cycles	
Total Test Hours	
Friction Plate Batch	
Steel Plate Batch	
Assembled Clutch Pack Clearance, mm (0.7 ± 0.13mm)	

Test Comments

DEXRON® Anti-Shudder Durability Test
Clutch Plate Ratings & Thickness Measurements
Form 3

Formulation Code	
Test Number	

Friction Plate Condition Rating

Steel Plates Condition Rating

Clutch Plate Rating Information

Rater	
Rating Date	

Clutch Plate Thickness Measurements

All measurements taken at the mean diameter of the plate					
Plate		Location of Tooth (Clockwise)	Plate Thickness, mm		Thickness Change, mm
			Pre-Test	Post-Test	
Friction	2	Top			
		90			
		180			
		270			
		Average			
Steel	1	Top			
		90			
		180			
		270			
		Average			
Steel	3	Top			
		90			
		180			
		270			
		Average			

Clutch Plate Thickness Measurement Information

Test Condition	Measurement Date	Operator
Pre-Test		
Post-Test		

DEXRON® Anti-Shudder Durability Test
Steel Plate Roughness Measurements & Copper Coupon Rating
Form 4

Formulation Code	
Test Number	

Steel Plates Roughness Measurements

All measurements taken at the mean diameter of the plate, on the engaged face only							
Plate	Location	Roughness Average, Ra		Average Maximum Height of the Profile, Rz		Profile Bearing Length Ratio, tp	
		Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
1	Top						
	90						
	180						
	270						
	Average						
3	Top						
	90						
	180						
	270						
	Average						

Steel Plates Roughness Measurement Information

Test Condition	Measurement Date	Operator
Pre-Test		
Post-Test		

Copper Coupon[A] Rating

Rate using ASTM Test Method D130	

[A]*See Section 4.1.4.13 of GMW18620.*

DEXRON® Anti-Shudder Durability Test
Fluid Characteristics
Form 5

Formulation Code	
Test Number	

ICP Elemental Analysis (D5185), ppm[A]		
Element	New Fluid	End of Test
Aluminum (Al)		
Antimony (Sb)		
Barium (Ba)		
Boron (B)		
Cadmium (Cd)		
Calcium (Ca)		
Chromium (Cr)		
Copper (Cu)		
Iron (Fe)		
Lead (Pb)		
Magnesium (Mg)		
Manganese (Mn)		
Molybdenum (Mo)		
Nickel (Ni)		
Phosphorus (P)		
Potassium (K)		
Silicon (Si)		
Silver (Ag)		
Sodium (Na)		
Sulfur (S)		
Tin (Sn)		
Titanium (Ti)		
Vanadium (V)		
Zinc (Zn)		

[A]Report 0 for values below the measurement threshold of the instrument. Do not use less than ("<") symbol.

Test Fluid Water Content Measurements (Both Test Methods are Required)				
Test Method	**Measured Item**	**Unit**	**New Fluid[B]**	**End of Test[B]**
ASTM D6304	Water Content	mass %		
ASTM D6304	D6304 Procedure Used (A, B, C)			
ASTM D7546	Water Content	mass %		
ASTM D7546	D7546 Procedure Used (A, B)			

[B]Report 0 for values below the measurement threshold of the instrument. Do not use the less than ("<") symbol.

DEXRON® Anti-Shudder Durability Test
Test Downtime Summary
Form 6

Formulation Code	
Test Number	

Number of Downtime Occurrences			
Test Hours	**Airflow?[A]**	**Downtime**	**Notes**
			Total Downtime

[A]Was Airflow continued to the head during the downtime? (Y or N) *See Section 4.3.2 of GMW18620.*

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 60°C
Form 7

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				dμ/dV	
			Slip Speed	Torque	Pressure	μ	Slip Speed	Torque	Pressure	μ	Slip Speed	Torque	Pressure	μ		
			[1.20 m/s]	[Nm]	[kPa]		[0.35 m/s]	[Nm]	[kPa]		[1.20 m/s]	[Nm]	[kPa]		Dynamic	Static

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 60°C (cont.)
Form 7A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				dμ/dV	
			Slip Speed	Torque	Pressure	μ	Slip Speed	Torque	Pressure	μ	Slip Speed	Torque	Pressure	μ		
			[1.20 m/s]	[Nm]	[kPa]		[0.35 m/s]	[Nm]	[kPa]		[1.20 m/s]	[Nm]	[kPa]		Dynamic	Static

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 80°C
Form 8

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				$d\mu/dV$	
			Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [0.35 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Dynamic	Static

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 80°C (cont.)
Form 8A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				$d\mu/dV$	
			Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [0.35 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Dynamic	Static

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 118°C
Form 9

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				$d\mu/dV$	
			Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [0.35 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Dynamic	Static

DEXRON® Anti-Shudder Durability Test
ASD Average Ramp Data Summary - 118°C (cont.)
Form 9A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Time	High Speed				Middle Speed				Low Speed				dμ/dV	
			Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [0.35 m/s]	Torque [Nm]	Pressure [kPa]	μ	Slip Speed [1.20 m/s]	Torque [Nm]	Pressure [kPa]	μ	Dynamic	Static

DEXRON® Anti-Shudder Durability Test
Dynamic Cycle Summary
Form 10

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Mid-Point			Low-Speed		μ_0/μ_d	Stop Time [s]	Energy [kJ]
				Torque [Nm]	Pressure [kPa]	Dyn. Coef. μ_d	Torque [Nm]	Dyn. Coef. μ_0			

DEXRON® Anti-Shudder Durability Test
Dynamic Cycle Summary (cont.)
Form 10A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Mid-Point			Low-Speed		μ_0/μ_d	Stop Time [s]	Energy [kJ]
				Torque [Nm]	Pressure [kPa]	Dyn. Coef. μ_d	Torque [Nm]	Dyn. Coef. μ_0			

DEXRON® Anti-Shudder Durability Test
Static Cycle Summary
Form 11

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Static Apply Pressure [kPa]	Max Static Torque [Nm]	0.25 sec Static Torque [Nm]	0.25 sec Static Coefficient [μ_s]

DEXRON® Anti-Shudder Durability Test
Static Cycle Summary (cont.)
Form 11A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Static Apply Pressure [kPa]	Max Static Torque [Nm]	0.25 sec Static Torque [Nm]	0.25 sec Static Coefficient [μ_s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 60°C Ramp Cycles
Form 12

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 60°C Ramp Cycles (cont.)
Form 12A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 80°C Ramp Cycles
Form 13

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 80°C Ramp Cycles (cont.)
Form 13A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 118°C Ramp Cycles
Form 14

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
Plate Temperature Summary - 118°C Ramp Cycles (cont.)
Form 14A

Formulation Code	
Test Number	

ASD Block	Test Cycle	Test Hours [h]	Avg Head Temp [°C]	Front Plate Temp [°C] @ Slip Speed			Rear Plate Temp [°C] @ Slip Speed		
				[1.20 m/s]	[0.35 m/s]	[0.15 m/s]	[1.20 m/s]	[0.35 m/s]	[0.15 m/s]

DEXRON® Anti-Shudder Durability Test
dμ/dV Plot - 60°C Ramp Cycles
Form 15

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
dμ/dV Plot - 80°C Ramp Cycles
Form 16

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
dμ/dV Plot - 118°C Ramp Cycles
Form 17

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Dynamic dμ/dV Plot
Form 18

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Static dμ/dV Plot
Form 19

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
μ_0/μ_d, Stop Time, Mid Dynamic, & Low Speed Friction Coefficient Plot
Form 20

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
0.25 Second Static Coefficient Plot
Form 21

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Average Plate Temperature Plot - 60°C Ramp Cycles
Form 22

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Average Plate Temperature Plot - 80°C Ramp Cycles
Form 23

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Average Plate Temperature Plot - 118°C Ramp Cycles
Form 24

Formulation Code	
Test Number	

DEXRON® Anti-Shudder Durability Test
Continuous Slip Plot – Constant Cycles
Form 25

Formulation Code	
Test Number	