



COMMITTEE D02 on PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS

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SEQUENCE IX SURVEILLANCE PANEL

Date: 26 Jan 2021

ATTENDANCE

SWRI	Christine Eickstead, Khaled Rais, Travis Kostan, Pat Lang
INTERTEK	Al Lopez, Jason Soto
LUBRIZOL	George Szappanos, Joseph Gleason
AFTON	Christian Porter, Ben Maddock
ORONITE	Robert Stockwell
INFINEUM	Doyle Boese, Charlie Leverett, Andy Ritchie
API	
TMC	Rich Grundza
FORD	Mike Deegan
EXXON	
GM	Khaled Zreik
SHELL	Jeff Hsu
VALVOLINE	
CALUMET SPECIALTY	
NESTE	
OHT	J H Bowden
TEI	Dan Lancot
APL	Christian Muller
VANDERBILT	
HALTERMANN	Prasad Tumati
F C A GROUP	
TOYOTA	
NOVVI	
KLEEN PERFORMANCE	
PHILIPS 66	

ATTACHMENTS:

- A: Meeting Agenda
 - B: Fuel specification voted on in Motions 1 and 2
 - C: IAR presentation on clutches
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1. Attendance, see table above

2. Chairman's Comments

3. Review and Acceptance of Minutes

- a. Minutes were approved during SP meeting, 25 Nov 20. No concerns with the minutes mentioned during this meeting.

4. Review Action Item List

- a. The Chairman advised that the January 26, 2020 Sequence IX Task Force Virtual Meeting Minutes were previously approved. There were no other minutes reviewed or approved during this meeting.

5. State-of-the-Test (Rich Grundza presents):

- a. Currently in control
- b. Tend to go into severity alarm when new engines is introduced at labs. Engines go from severe to mild as they age. This suggests there is not an Industry problem with this test, but rather a cyclical trend.
- c. Charts use data from tests run with BB grade pistons until about the past year. The past year contains tests run with BB pistons as well as dealer pistons.
- d. Andy Ritchie – Is there a trend in engine hour life related to the difference in pistons?
- e. Rich – not a lot of data on dealer pistons yet. Started out mild, 2 -3 refs later wouldn't calibrate.

6. Fuel

- o Haltermann – Prasad - Reported that there is 125,000 gallons of fuel on hand and that we are good for next couple of months before we need another batch.

7. Pat – TGC Task Force:

- i. Pat Lang presented the revised EEE fuel specification as recommended by the TGC Fuels Task Force. The specification can be found as attachment B.
- ii. Have been working to get fuel specs in order, verifying that the methods specified are still available, acceptance ranges consistent with historical data and that they capture any metrics that are important to the test type.
- iii. No major changes to the specifications, just some refinements
 - 1. The new procedure has been accepted by IIIH and X panels already. Need approval from this panel.
- iv. This spec will now reside in TMC; will not be included in each procedure, only referenced.

Motion 1: (Lang/Grundza)

To adopt the updated EEE fuel specification presented today as recommended by the TGC Task Force.

COMPANY	PERSON	PRESENT	VOTING MEMBER?	ACCEPT	REJECT	WAIVE
SwRI Motion	Khaled Rais (Chair)	✓	X	✓		
	Christine Eickstead	✓				
	Pat Lang	✓				
	Travis Kostan	✓				
Intertek	Al Lopez	✓				
	Jason Soto	✓	X	✓		
	Martin Chadwick					
Lubrizol	George Szappanos	✓	X	✓		
	Jerome Brys					
	Joe Gleason	✓				
Afton	Christian Porter	✓	X	✓		
	Ben Maddock	✓				
	Bob Campbell					
	Ed Altman					
Oronite	Robert Stockwell	✓	X	✓		
Infineum	Charlie Leverett	✓				
	Andrew Ritchie	✓	X	✓		
	Doyle Boese	✓				
APL	Timothy Hadaway		X	✓		
	Mark Hawthorne					
	Christian Muller	✓				
TMC	2 nd . Rich Grundza	✓	X	✓		
Ford	Mike Deegan	✓	X	✓		
Shell	Jeff Hsu	✓	X	✓		
Valvoline	A C Savant		X			
Neste	Chris Castanien		X			
OHT	J H Bowden	✓	X			X
TEI	C. Knight					
	D. Lanctot	✓	X			X
Chrysler	Haiyang Tang		X			
ExxonMobil	Paul J. Rubas		X			
GM	Tim Cushing		X			
	Khaled Zreik	✓				
BP	Nick Janssen		X			
	Tim Matthews					
Haltermann	Prasad Tumati	✓		✓		
TOTAL				11	0	2

Motion 2: (Grundza/Lang)

To remove annex A7 from the test procedure and reference the TMC website for the fuel specification.

COMPANY	PERSON	PRESENT	VOTING MEMBER?	ACCEPT	REJECT	WAIVE
SwRI 2nd	Khaled Rais (Chair)	✓	X	✓		
	Christine Eickstead	✓				
	Pat Lang	✓				
	Travis Kostan	✓				
Intertek	Al Lopez	✓				
	Jason Soto	✓	X	✓		
	Martin Chadwick					
Lubrizol	George Szappanos	✓	X	✓		
	Jerome Brys					
	Joe Gleason	✓				
Afton	Christian Porter	✓	X	✓		
	Ben Maddock	✓				
	Bob Campbell					
	Ed Altman					
Oronite	Robert Stockwell	✓	X	✓		
Infineum	Charlie Leverett	✓				
	Andrew Ritchie	✓	X	✓		
	Doyle Boese	✓				
APL	Timothy Hadaway		X	✓		
	Mark Hawthorne					
	Christian Muller	✓				
TMC Motion	Rich Grundza	✓	X	✓		
Ford	Mike Deegan	✓	X	✓		
Shell	Jeff Hsu	✓	X	✓		
Valvoline	A C Savant		X			
Neste	Chris Castanien		X			
OHT	J H Bowden	✓	X			X
TEI	C. Knight					
	D. Lanctot	✓	X			X
Chrysler	Haiyang Tang		X			
ExxonMobil	Paul J. Rubas		X			
GM	Tim Cushing		X			
	Khaled Zreik	✓				
BP	Nick Janssen		X			
	Tim Matthews					
Haltermann	Prasad Tumati	✓				X
TOTAL				10	0	3

7. Old Business: Hardware:

- a. Engine wiring harnesses
 - i. Jason asked Ron to look into them, trouble acquiring it. Ordered from dealership, long lead time but available. Need lifetime purchase? Will be discontinued in near future?
 - ii. Jason will send the part number to Mike Deegan.
 - iii. Mike – Does this go through OHT or directly bought by the labs?
 - iv. Pat – Normal process: Mike feeds us info about availability, advises group on price for lifetime purchase, minimum volume requirement, etc. Labs submit wish list and group buys all together.
 - v. Jason – received new ones that look identical, but couple months to receive. IAR uses one harness per engine, but have been reusing them lately due to long lead time for new parts.
 - vi. Jason – number given to dealership: DU5Z batch 12A581-U (matches procedure)
 1. The new supplier uses suffix “-BA” instead of “-U”
 2. Same connectors, different packaging
 - vii. Actions:
 1. Labs look at current inventory levels
 2. Labs vet out if there are any differences between old and new harnesses

8. New Business: Clutches (Jason presents history of recent failures, presentation given in Attachment C):

- a. Original Sachs 4-spring clutches – occasional spring failures
- b. New version of Sachs clutch – 6-spring clutches, many more failures, ~1 per test
- c. Alternate – Exedy clutch (originally was making the clutches for Sachs) – springs collapse
 - i. Engine over speeds – damages engines, effects severity of engines – extremely severe, lots of activity in 1 or 2 cylinders
- d. Alternate – ACT clutch - 4 duel springs, 500 hours on longest running at IAR
 - i. PN for disc only = ACT30000207, used with pressure plate from Sachs or Exedy
 - ii. Manufacturer does do custom orders, could have them make clutch and pressure plate combo that we need
 - iii. Clutches are made to order, 2-3 weeks lead time
 - iv. Jason has verbal approval from Ron to use the ACT clutch for standardized tests. Need to include the PN in the procedure as an alternate.
 - v. Jason will contact manufacturer and get price for disc and pressure plate combo we need
 - vi. Jason – does this go through OHT? Group - clutch orders do not typically go through OHT for IX.
 - vii. Al – We should provide ACT with an estimate of our order frequency and quantity needed so they can plan accordingly and possibly improve the lead time.
 - viii. Pat – So far we only have a verbal approval from Ron, is Mike Deegan okay with this? The PN needs to be in procedure if we’re going to use going forward.
 1. We need to work out the pressure plate details, but need approval to use disc right away.
 - ix. Mike Deegan – approves use of alternate disc, need to follow up on pressure plate details
 - x. Deegan – Are we using the same spacer? Jason – IX doesn’t use a spacer.
 - xi. Khaled – procedure says to purchase form OHT. Jason – this might have been inserted when the test used to use a motorcraft clutch.
 - xii. Jason - OHT does carry inventory of Sachs clutch for IX.
 - xiii. Deegan – no OHT designation in procedure for disc, only for spacer.
 - xiv. Jason Bowden – have we run references on new clutch? Jason Soto – yes. Used pressure plate from Sachs or Exedy, just used new disc.

Motion 3:

Change section 7.6.4 of the procedure to read “Obtain the clutch (4-spring Sachs P/N K0047-07 or ACT P/N 30000207), the pressure plate from Sachs P/N K0047-07. Torque the pressure plate bolts to 25 N·m to 33 N·m. Replace the clutch and pressure plate with every new engine.”

COMPANY	PERSON	PRESENT	VOTING MEMBER?	ACCEPT	REJECT	WAIVE
SwRI Motion	Khaled Rais (Chair)	✓	X	✓		
	Christine Eickstead	✓				
	Pat Lang	✓				
	Travis Kostan	✓				
Intertek 2nd	Al Lopez	✓				
	Jason Soto	✓	X	✓		
	Martin Chadwick					
Lubrizol	George Szappanos	✓	X	✓		
	Jerome Brys					
	Joe Gleason	✓				
Afton	Christian Porter	✓	X	✓		
	Ben Maddock	✓				
	Bob Campbell					
	Ed Altman					
Oronite	Robert Stockwell	✓	X	✓		
Infineum	Charlie Leverett	✓				
	Andrew Ritchie	✓	X	✓		
	Doyle Boese	✓				
APL	Timothy Hadaway		X	✓		
	Mark Hawthorne					
	Christian Muller	✓				
TMC	Rich Grundza	✓	X	✓		
Ford	Mike Deegan	✓	X	✓		
Shell	Jeff Hsu	✓	X	✓		
Valvoline	A C Savant		X			
Neste	Chris Castanien		X			
OHT	J H Bowden	✓	X	✓		
TEI	C. Knight					
	D. Lanctot	✓	X	✓		
Chrysler	Haiyang Tang		X			
ExxonMobil	Paul J. Rubas		X			
GM	Tim Cushing		X			
	Khaled Zreik	✓				
BP	Nick Janssen		X			
	Tim Matthews					
Haltermann	Prasad Tumati	✓		✓		
TOTAL				13	0	0

9. Next Meeting: TBD

10. Meeting adjourned at 10:30 CST.

AGENDA

ASTM D8291 Sequence IX Surveillance Panel (WebEx)

Khaled Rais – Chairman

Tuesday, January 26, 2021– 9:00 AM to 10:30 PM (CST)

Link to meeting:

<https://swri.webex.com/swri/j.php?MTID=m248d3edc9d06b6ee0647ef977bc9f248>

1. Attendance
2. Chairman's Comments
3. Review & Acceptance of Minutes
 - 3.1. Acceptance of the January 27th, 2020 WebEx meeting minutes.
4. Review Action Item List (Khaled Rais)
5. TMC Report (Rich Grundza)
 - 5.1. Review of current LTMS charts
6. Fuel
 - 6.1. Fuel supplier report (Prasad)
 - 6.2. Review of the EEE Fuel Specification Sheet as recommended by the TGC Fuels Task Force.
7. Old Business
 - 7.1. Hardware status of the Sequence IX
8. New Business
 - 8.1. Alternative Clutch Proposal
 - 8.1.1.1. History of current clutches and their failures
 - 8.1.1.2. Recommendation for alternate clutch

Attachment A: Meeting Agenda

9. Next Meeting: Will be at the call of the chairman.

10. Adjournment

Attachment B: Fuel Specification Voted on in Motions 1 and 2

Seq III, IX, and X Lube Cert Gasoline

29-Oct-20

TEST	METHOD	UNITS	Seq. III Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	°C	23.9		35.0
5%		°C			
10%		°C	48.9		57.2
20%		°C			
30%		°C			
40%		°C			
50%		°C	93.3		110.0
60%		°C			
70%		°C			
80%		°C			
90%		°C	151.7		162.8
95%	°C				
Distillation - EP		°C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
Gravity @ 60°F/60°F	ASTM D4052	°API	58.7		61.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744
Dry Vapor Pressure Equivalent	ASTM D5191	kPa	60.1		63.4
Carbon	ASTM D3343	wt %		Report	
Carbon	ASTM D5291	mass %		Report	
Hydrogen	ASTM D5291	mass %		Report	
Hydrogen/Carbon ratio	ASTM D5291	mole/mole		Report	
Oxygen ¹	ASTM D4815	wt %			0.2
Oxygenates Ethanol	ASTM D4815	%		Report	
MTBE		%		Report	
ETBE		%		Report	
Methanol		%		Report	
Sulfur	ASTM D5453	mg/kg	3		15
Composition, aromatics	ASTM D5769³	vol %	31.0		34.0
C6 aromatics (benzene)	ASTM D5769	vol %			1.0
C7 aromatics (toluene)	ASTM D5769	vol %		Report	
C8 aromatics	ASTM D5769	vol %		Report	
C9 aromatics	ASTM D5769	vol %		Report	
C10+ aromatics	ASTM D5769	vol %		Report	
Composition, olefins	ASTM D6550³	wt%			2.0
Lead ¹	ASTM D3237	mg/l			2.6
Manganese ¹	ASTM D3831	g/gal			0.01
Phosphorus ¹	ASTM D3231	mg/l			1.3
Silicon ¹	ICP method	mg/kg			4
Particulate matter	ASTM D5452	mg/l			1
Oxidation Stability	ASTM D525	minutes	1000		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mls			5.0
Gum content, unwashed	ASTM D381	mg/100mls			10.0
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2700			Report	
R+M/2	D2699/2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report	
Gross Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Water and Sediment	ASTM D2709	vol%			0.01
Color ²	VISUAL	1.75 ptb		Red	

¹no intentional addition of these elements permitted.

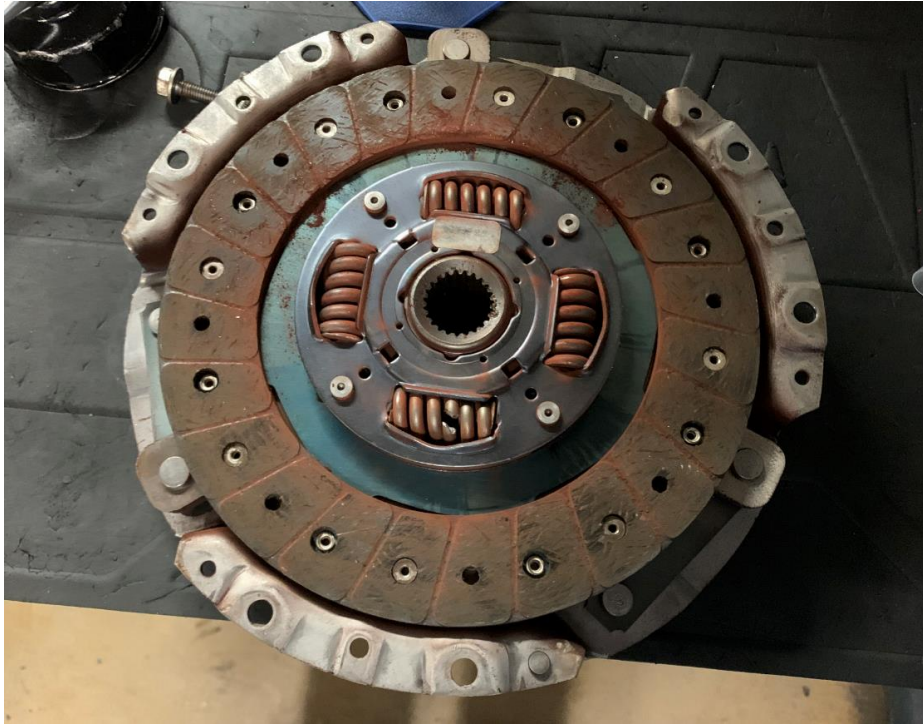
²Innospec Oil Red B4 Liquid Dye

³or use D6839 for everything measured by D5769 and D6550

for any conflict between supplier and customer measurement, refer to ASTM D3244 assigning risk 50/50 between supplier and customer

supplier should choose a lab to perform analysis and refrain from moving samples lab to lab in order to obtain "in spec" results

Original Sachs K0047-07 (broken spring)



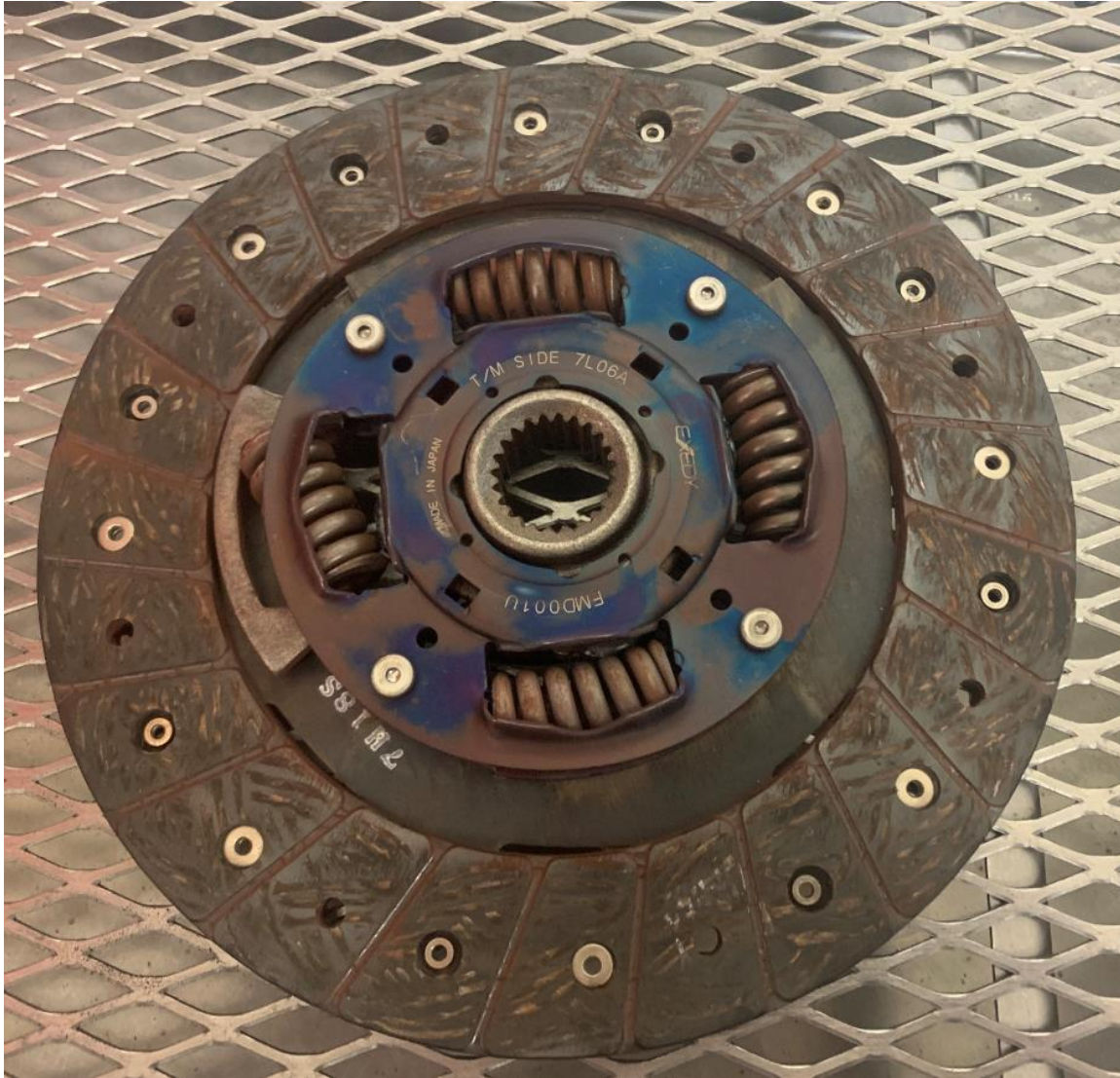
New Sachs K0047-07

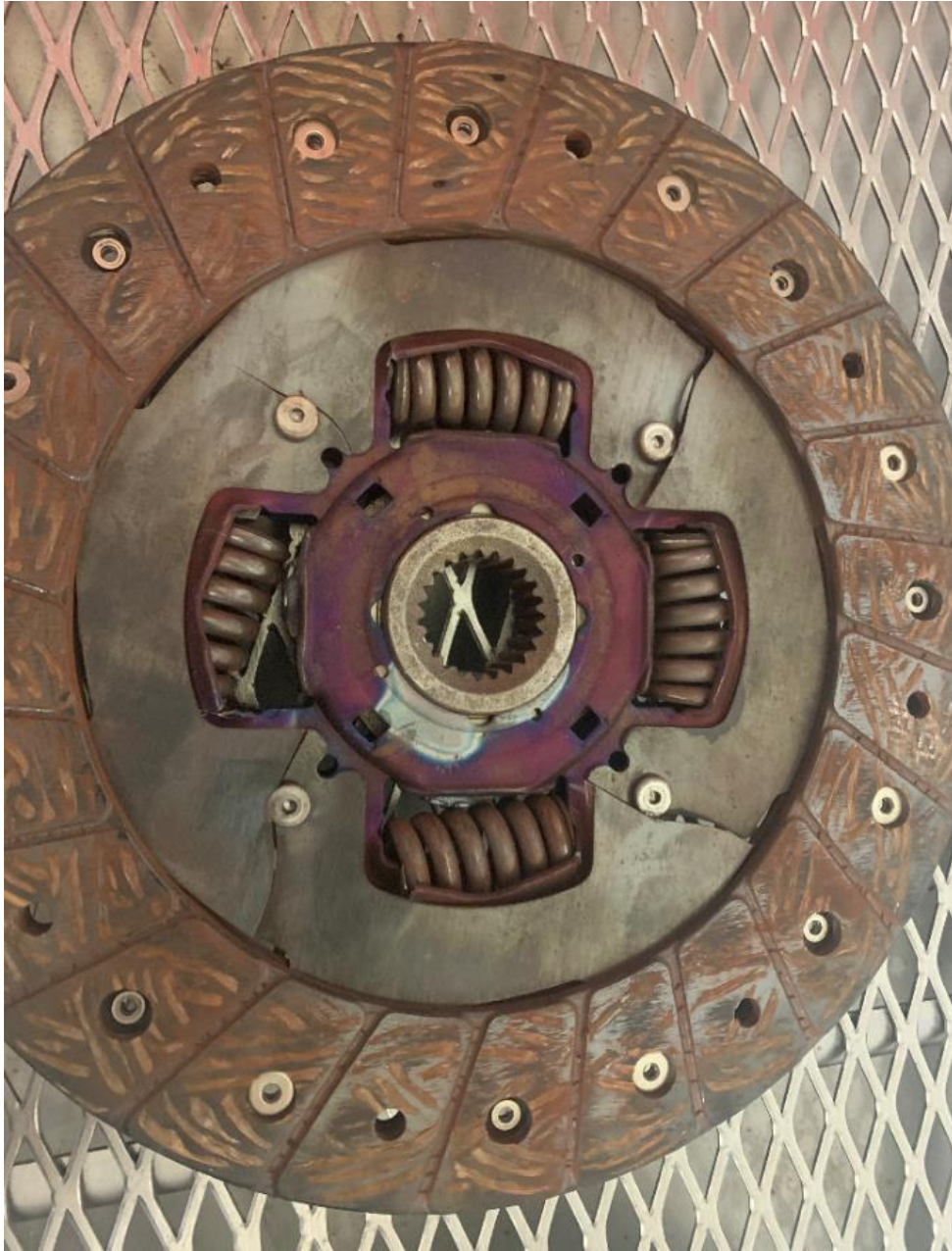


Exedy KFM07



Attachment C: IAR Psementation on Clutches





ACT 30000207

The part number is just for the clutch disk. Use the clutch disk with a Sachs pressure plate or Exedy pressure plate part number FMC902.

