

# **JUNIOR AGRICULTURAL MECHANICS SHOW**



## **Tractor Restoration Documentation & Research Package**

Format shown is an example you may follow in developing your Tractor, Division 6 Documentation Package. This format is slightly different from that shown in *Tractor Check Sheets*. There is a different Documentation Package Template for JAM Projects in Divisions 1 - 5

## **OBJECTIVE of DOCUMENTATION PACKAGE**

**Documentation & Research:** Documentation Packages is considered a research portfolio and should not be constructed as a scrapbook. Documents should be easy to read and arranged neatly in a tabbed notebook with table of contents and pages numbered. Additional explanation for Tractor Restoration Documentation Package is found on [www.sarodeo.com](http://www.sarodeo.com) and <http://jamshow.org> and in the JAM Premium List. The JAMSHOW WEB site has information and links to Tractor Check Sheets used by the tractor judges. JAMSHOW also has information on, how to obtain Titan Tires, correct paint colors, sources of tractor parts, measuring horsepower, and information on the National Tractor Restoration Competition sponsored by Chevron Delo and conducted in conjunction with the Annual National FFA convention. Links to and information on how to obtain ASABE standards is also provided on the jamshow web site.

Tractor Documentation & Research Package must include the following : (See *Tractor Check Sheet 2*)

**Three Ring Notebook with Table of Contents with page numbers or named Tabs. Contents should be placed and identified in tabbed sections** – Can be in sequenced as shown with page numbers or Names indicating where different sections are located. All pages in the Documentation should have page numbers. Note: Sequence of materials shown on example Table of Contents is recommended and may be rearranged to fit the procedures you used. Examples of some of the sections are shown below.

**1. Tractor History** – History to be of maximum of one page not including pictures page. May have additional pages with pictures. It should contain information on Tractor Make, Model and year with Tractor Serial Number. Other information might include where tractor came from – how did you find out about tractor, former owner/s and what had the tractor been used for. Did you have to remove equipment that had been attached – for example dozer blade – cultivators etc.? Factors that may have influenced you to select the tractor to be restored, such as family connections – belonged to grandfather for example, age or uniqueness of tractor. Overall condition of tractor when you got it. Did you start the tractor prior to disassembly? What pre-evaluations (prior to disassembly) did you do on systems. You may want to do some research from the Nebraska Tractor Test Data to identify what the PTO Horsepower was when the tractor was new. See the Nebraska Tractor Test Laboratory link on JAMSHOW. Any other interesting information about the tractor could be included here. What did the tractor costs new, how many of this model were built, what years was this model sold? Amount you paid for tractor may be included here. Pictures of tractor as you found it should be included in this section.

**2. Restoration Summary (including CF).** This section is to be completed after you finished restoration of tractor. You may include the Completed Tractor Pictures here instead of in the section identified below. You may summarize the process you went through in the Restoration Process, identifying the sequence of events? It may include for example expanding on the general condition of tractors components and what you did in respect to pre disassembly. In addition to general overall condition you may want to identify conditions of major parts or components – engine, transmission, hydraulics, fuel systems and etc. you found as you removed and evaluated them.

This is where you identify Complexity Factors (CF) for possible bonus points. This includes things that exceed normal repair and restoration. For example – hard surfacing a part, lath work – turning down to proper size, pre and post heating to weld cast iron, replacing valve seats, repairing sophisticated electrical, hydraulic, and air conditioning systems found on the more modern tractors. On the older antique tractors it may include building or construction of parts that could not be found. What parts were missing and which were not repairable?

Testing tractor on PTO dynamometer is a good procedure for CF points. Identify where you had to go to get some hard to find parts. This section should be no longer than two pages, not including pictures. It is always a good practice to put a tractor that has been completely overhauled on a dynamometer to break it in slowly while checking for leaks, sounds, oil pressure, water temperature, and other operating conditions. This is a good opportunity to make adjustments to timing, throttle adjustments and other checks. You may want to remove tappet cover after test to recheck tappet adjustments?

After breaking in the engine on the dynamotor you will want to test its horsepower at rated RPM to see how it compares in horsepower to when it was new. PTO testing is recommended but not required. If tractor is tested pictures of tractor on PTO dynamotor could be in this section.

### **3 Reports**

**a. Expense Report** – see example below

**b. Service Repair Report** – This report may be shown in a Table format. This report should include all those repairs conducted by someone other than the exhibitor/s. It will identify all repairs that were done by professional mechanics, friends or family members and are identified in the Expense Report as a Repair Cost (RC) - things such as – turning crankshaft, repair of starters, alternators, valves systems on the head, air conditioning, electrical regulators, sheet metal work including painting and etc. It is recommended that exhibitor be present when the part is being repaired to learn what and how it was done. Pictures should be taken with the exhibitor and mechanic in them when the item is being repaired. It is suggested that an evaluation be done on all parts professionally repaired including those purchased new prior to assembly – for example measuring the crank journals, checking rod bearing fit to crankpin journal, piston ring end gap measurement when inserted into repaired cylinder bores, checking parts on the engine head such as valve spring height, valve guide diameter and fit to valve stems, valve seat and valve angles including interference angles. In other words make sure all parts including the new parts are the correct kind and size before installing them. This insures that parts meet your specifications and restored tractor will perform as it came from the factory new. The observations and evaluations of parts repaired and purchased will increase your learning and understanding. Pictures can be inserted showing these inspection processes. This section can follow the Expense Report but cannot be completed until the tractor restoration is complete

**4. Photographs - Organized by Sections -See Example Table of Contents below.** All pictures should illustrate proper safety procedures including clothing, eye and face shields, etc. When painting proper clothing and breathing mask should be shown. Photographs should be sequenced in the sections they apply to and in the order of restoring tractor. **THEY SHOULD BE OF EXCELLENT QUALITY.** As shown in example Table of Contents photographs should be organized by sections. All pictures should be labeled – identify the task being performed and the people in the picture. CEA/AST teachers –leaders should be in some of the pictures. See examples below. Photographs should emphasize technical nature of evaluation and restoration, for example using precision instrument for measuring wear on parts. Within each section pictures should be in the order of disassembly, repair or evaluation and reassembly. It is suggested that there be two to four pictures per page. Pictures of Completed Tractor including different views can be included in the Completed Tractor Section –see example Table of Contents or Completed Tractor pictures may be shown in the Summary Section identified above.. In addition to those pictures in the Documentation Package you may have additional pictures on computer or in Power Point displayed on screen for the public. (Electrical pug - may not be available at your tractor.)

**5. General Specifications including Fluid Table**

**6. Completed Tractor – Pictures** This section can be included in **Summary Section**

**7. Research Materials:** (Items that make up this are identified below)

## Example Table of Contents

**I. Tractor History ----- pg-pg**

**II. Restoration Summary ----- pg-pg**

**III Reports** (Each of these could be identified with a Number)

**a. Expense Report ----- pg-pg**

**b. Service Repair Report ----- pg-pg**

Photographs are organized in Sections IV-XI. Each Section will have an Introduction prior to pictures. See example below.

**IV. Ancillary & External Components ----- pg-pg**

**V. Engine----- pg-pg**

**VI. Transmission ----- pg-pg**

**VII. Final Drive ----- pg-pg**

(Note: Transmission & Final Drive and could be combined in a Power Train Section)

**VIII. Sheet Metal and Finishing ----- pg-pg**

**IX. Rims and Tires----- pg-pg**

**X. Eye Appeal Items ----- pg-pg**

(Note: A Section Titled **Appearance** could combine IX,X & XI)

**XI. Completed Tractor ----- pg-pg**

(Note: This section could be deleted and Picture of Completed tractor placed in Summary)

**XII. General Specifications----- pg-pg**

**XIII. Research Materials----- pg-pg**

(Note: List of items to include in Research Materials are identified below)

**Note:** See both *Tractor Check Sheet 2* and *Tractor Summary Check Sheet 2* for more explanation on what to include in the Sections. Example Table varies slightly from Check Sheets. It is recommended that the pictures within each section be depicted in the following order – a) disassembly, b) assessment, repair and c) assembly. To keep documentation package from being so large it is recommended to place two to four pictures per page. Placing pictures in plastic sleeves is an option. There is a maximum number of pictures allowed in the three ring notebook.



### III Reports - Expense Report (a) and Service Report (b).

In the Expense Report all expenses are shown. It is recommended to use a computer spread sheet for showing expenses.

Those parts or part repairs that were provided at no costs (donated to you) should be identified as an (OC) Opportunity Costs with a dollar value. For example Titan Tires provide tires for tractors being restored for Tractor Restoration Contest at no costs. These would show on expense report with their value but with an OC identifying that they have a value but were donated to you. If friends, family members or others give or sponsor parts for your tractor they should have the OC in column next to value in the costs column. They are added in the sum of the total costs of Restoration.

Items that were repaired by others – professional mechanics – should be identified as Repair Cost (RC) in your Expense Report and also in a Service Report. This RC may include parts and labor. It is recommended that pictures be taken when these parts are being repaired with the exhibitor and mechanic in the picture. These Pictures may be included in Service Report III b. or in the related section – for example Engine Section. The Service Report would include and expand on the RC items identified in the Expense Report III a.

The example Expense Report shown below was taken from a prior winners Documentation Package. You will note that it has seven columns including: Date, Name of Business, Description of Part, Quantity, Unit Costs, Total Costs and OC/RC. The description of some of the items shown could be expanded – for example Engine Kit could be more descriptive, perhaps include part number in the description? When naming parts such as bearings, seals and etc be sure to identify what part they are for. The Expense Report could be printed in Landscape Format to allow for more and wider columns. For example you may want to include a column for invoice or receipt numbers in addition to making a wider column to make room for more description on the Part. The Total Column has formula imbedded in it to take cost amount in Cost column and multiply it by number found in QTY column. This is a big advantage when using a spread sheet program. You will notice that expenses are in the order they were purchased and that lines are printed on the spreadsheet to make it easier to read.

Example Partial Expense Report							
Date	Source/Business	Part	QTY	Unit Costs	Tot Cost	OC / RC	
10/1/2010	Donald Haglund	Parts Tractor	1		\$500.00		
10/1/2010	Douglas Haass	1969 Case 1070	1		\$1,500.00	OC	
10/20/2010	City Auto Supply	Resurface Flywheel	1		\$50.00	RC	
10/20/2010	City Auto Supply	Clutch Disc & Pressure Plate	1		\$250.00		
10/20/2010	City Auto Supply	Throwout Bearing	1		\$15.00		
10/20/2010	City Auto Supply	Reline Brakes	2	\$35.70	\$71.40	RC	
10/21/2010	Medina Auto Parts	Tim 394A Bearing	2	\$17.92	\$35.84		
10/21/2010	Medina Auto Parts	Wheel Seal - Front	2	\$9.19	\$18.38		
10/21/2010	Nueces Farm Center	Gasket Set - Engine	1		\$97.05		
10/22/2010	Performance Machine Shop	Engine Kit	1		\$785.22		

## **Examples of Sections with Pictures** (Section Numbers may be different from those shown)

Each section IV – XI should have an Introduction that is no more than one page in length – see examples below. Pictures are to follow the Introduction on additional pages. As alluded to above all pictures should be labeled explaining what it is showing. Exhibitor/s should be identified in pictures with AST/CEA in some of them. If picture is of Service Repair being done by Professional mechanic or others, mechanic should also be in picture and identified along with Exhibitor/s. It is important that pictures be of excellent quality and technical in nature. They may have borders but it is not required. It is suggested they be on good quality paper such as photo paper

Most of the examples that follow were taken from Ryan Haass's, Devine FFA, Documentation Package. Ryan has shown in and won the major Tractor Restoration Shows in Texas and he also won the National FFA Tractor Contest sponsored by Chevron –Delo in two different years. Most of the pictures are of his 1970 Case 1070 tractor. Only a few of the pictures are shown here.

### **IV. Ancillary and External Components**

This section includes such things as steering, operator comfort, controls, fuel, air, turbo, electrical cooling, hydraulics, brakes, PTO, wheels, tires and etc. See *Tractor Check Sheet 2* and *Tractor Summary Check Sheet 2* for list of items to be included in Sections.

#### **Example Introduction & Pictures for Ancillary and External Components Section**

##### Ancillary and External Components

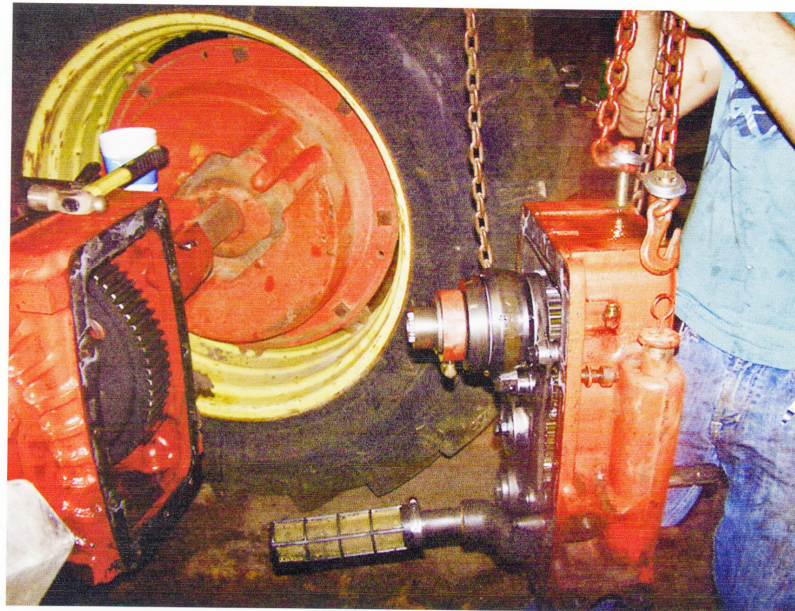
The external components were in varying stages of disrepair. The electrical system was in bad shape with the wiring nearly gone so I ordered a new wiring harness. The gauges in my tractor were either not functional or not original. Luckily Koch Farm Service had several 70 series salvage tractors with working gauges since they are not serviced by dealer or aftermarket suppliers. It had an incorrect alternator so I replaced it with a new one, and had to have the starter rebuilt. The hydraulic system was functional but had leaks that had to be addressed. To fix some of these leaks I had to rebuild and reseal the steering actuator, brake valve, brake slave cylinders, remote valve, breakaway couplers, three point valve, three point lift cylinder and the PTO valve.

The steering orbit motor functioned properly with no leaks so it was left alone to be reused. The steering wheel had to be replaced and I had to rebuild the telescoping steering column. The radiator was in bad shape the core was too rotten to fix so we had to replace the radiator. But the oil cooler was pressure tested well by Lone Star Radiator so it was cleaned and reused. The fan shroud was dry rotted and cracked so we ordered a new one. I replaced the front wheel bearings and seals. I cleaned the hubs and packed everything with grease. The axle pivots had excessive wear due to the use of a dozer blade and had to be built up and machined by Pearsall Machine. The air cleaner canister was damaged beyond repair so a used one was found and then equipped with new filter elements and pre-cleaner bowl. The seat had been replaced with an automotive seat and the suspension was beyond repair. I found a used seat pan and suspension that was in excellent shape. I only needed to replace the seat cushions which I installed. All the control cables were either seized or broken and had to be replaced. The control levers only needed new friction disc and to be readjusted.





Removing lift assembly



Removing PTO housing

Notes:

1. Pictures shown here were scanned from color pictures and their quality is not as good as originals. Ryan printed his pictures on Photo quality paper.
2. Labels of Pictures shown here **should** have been identified: **Ryan Removing Rocker Arm Assembly** and **Ryan Removing PTO housing**. All those in pictures should be identified.
3. Pictures may or may not have borders.
4. All pages should be numbered including introduction page. Pages do not have to be in plastic sleeves.
5. Ryan put pictures on front and back of each page.
6. Pictures in each section should be in order of disassembly, evaluation/repair and assembly.



### Example Engine Introduction

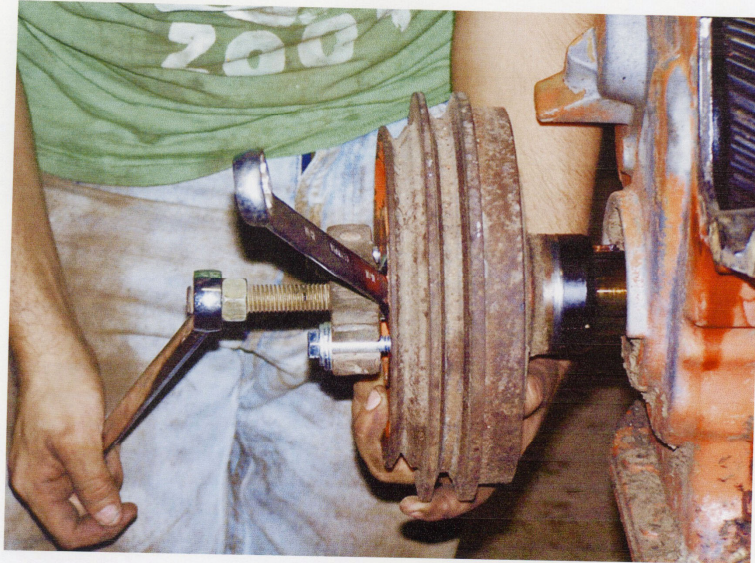
#### Engine

Before disassembly I had expected to find the cylinders worn excessively but this was not the case. The sleeves and pistons had been replaced not long before my disassembly of the engine the sleeves still showed a crosshatch pattern. I measured the crankshaft journals with a micrometer and compared the measurements with the service manual's specifications and determined that it only needed to be polished; the cam was also within specifications and only needed to be polished. The front cylinder head gasket had been leaking coolant into the #1 cylinder. The cylinder heads were pressure tested to check for any other leaks, and then they were resurfaced and had all new exhaust valves and valve guides. All the springs were replaced and the seats had to be ground. The intake valves only needed to be ground. The head work and polishing was done by Performance Machine, but I went in and helped while it was being done. The injection pump and injectors were sent to McDaniel Diesel because this work requires special equipment to be completed properly. Mr. McDaniel allowed me to observe some of this work and explained the operations of the internal parts of the injection pump. There was very little wrong with the injection pump, one plunger spring had been worn in two and the fuel rack had to be readjusted. The injectors only needed cleaning and adjusting. The engine had good oil pressure before I disassembled it so I just cleaned the oil pump and put it back in. The water pump was in good shape the seals and bearing were good but I decided to replace it anyway while I was in the engine.

When I assembled the engine I installed new rod, main and cam bearings along with all new gaskets. I set the valve clearance to .015 on the exhaust and .020 on the intake, the intake and exhausts settings were for cold or hot. The last part I installed on the engine was the injector pump. This was done by turning the engine to 30 degrees BTDC and then installing the pump drive gear while its timing marks are lined up. The only thing left to do was bleed the fuel lines to get the air out of them. To prime the system you push fuel to the injection pump with a primer pump. Then while cranking the engine I bled the lines to the injectors. When I had bled cylinder 1, 3 and cylinder 6 the engine started. After running for a couple of minute's cylinders 2, 4 and 5 cleared themselves. With the air purged from the fuel system, the engine ran very well and I only had to adjust the low and high idle speeds.



## Example Pictures in Engine Section – Disassembly



Pulling crankshaft pulley



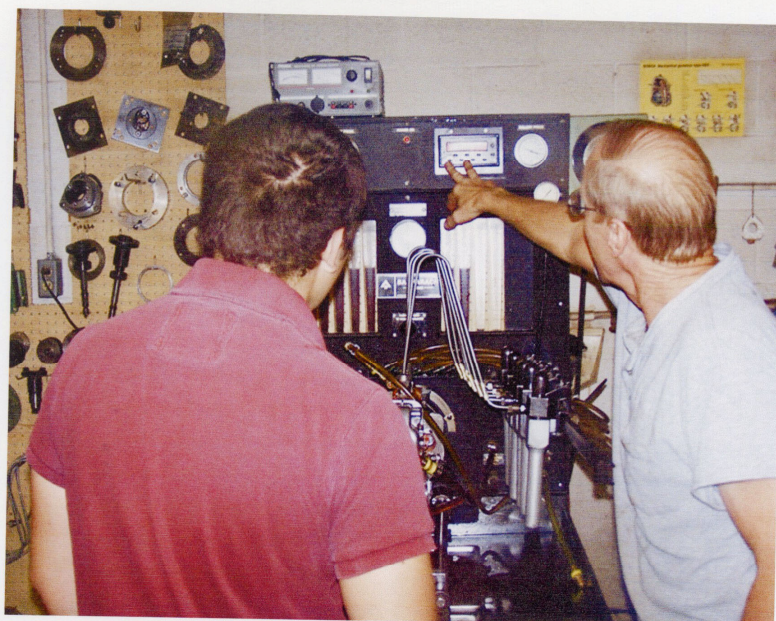
Removing engine from bell housing

### Note:

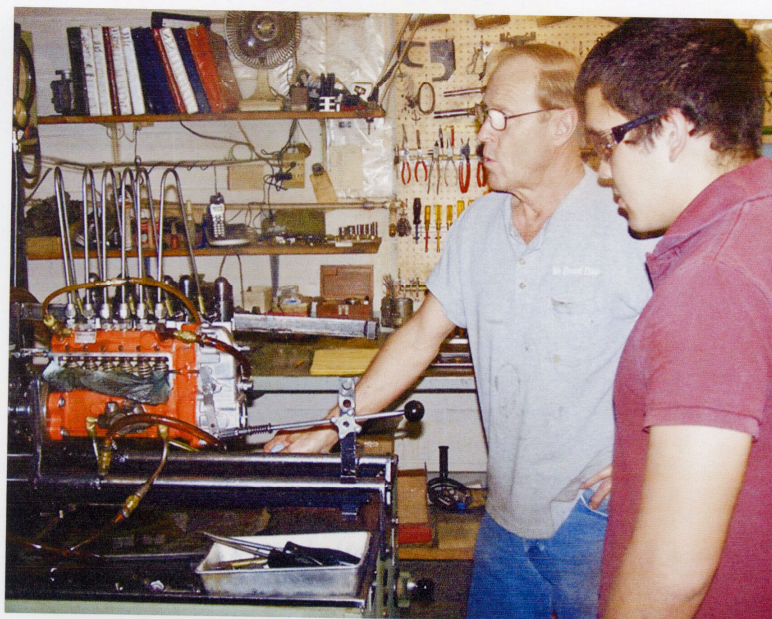
1. Ryan should be identified in picture labels.
2. He is shown with safety glasses on.
3. This picture shows him in removing and disassembly.
4. Tractor is steam cleaned prior to disassembly to keep grease and dirt out of internal parts. Also makes it easier to identify and work with parts.
5. Tractor or parts should never be sandblasted. Wheels and rims may be only exception if removed from tractor. Soda blasting or glass blasting cabinet may be used for small parts and on sheet metal parts such as instrument panel.



## Example of Pictures in Engine Section – Evaluation & Repair



Injection pump lessons



Testing injection pump

### Note:

1. This picture shows Ryan having a technician demonstrate to him testing his injector pump on pump stand. Picture label should identify Ryan and name of Technician.
2. Ryan is using this Repair as a lesson. It is identified in his Expense Record and Service Repair Report as a RC. These pictures may be in either SR or Engine section and would be in the analyzing and repair sequence of section.



## Example Pictures in Engine Section – Analyzing & Installation



Cleaning ring grooves



Compressing rings

### Note:

1. Ryan should be identified in both picture labels.
2. This top picture is analyzing and repairing. He is removing carbon & debris from Piston ring grooves.
3. The bottom picture is part of the reassembly sequence of Engines. He is compressing rings on the piston prior to inserting piston in cylinder bore/sleeve.



## Example Picture in Engine Section – Adjusting and Installation



Setting valve clearance



Torquing injector hold-downs

### Notes:

1. Ryan should be identified in labels. With one exhibitor as Ryan was the identification of him in each picture may not be necessary. This become more import where there are a group (2-6) exhibitors on the project..
2. Be as precise as possible in the labels. For example in the top picture Ryan is adjusting valve tappet clearance. He could have identified the torque in lbft in second picture.
3. Remember each page is numbered.
4. Ryan chose to have two pictures per page – front and back.
5. As alluded to previously it is an option to have borders around pictures.



## Example Picture in Engine Section – Installation



Installing intake manifold



Mounting water manifold

### Notes:

1. Ryan has painted the engine and external components prior to reassembly. He did not sand blast in preparation in that he did not want any sand remaining in parts. He used chemicals, wire brush and steam cleaning in preparing parts to be painted.
2. He has chased all internal and external threads – Threads on stud bolts are not painted. Studs were installed after painting.
3. These series of pictures are showing installing and mounting components in the engine section.



Final Drive Section (This section as all sections requires an introduction)  
**Example Pictures of Final Drive – Disassembly & Evaluation**



Pulling third member

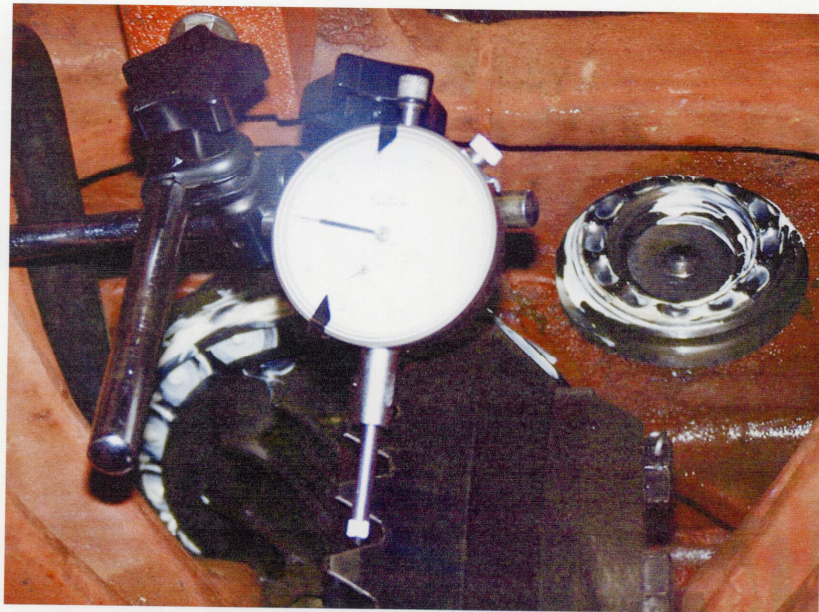


Empty transmission and rear end case

**Notes:**

1. Notice that Ryan has on gloves when handling sharp edges of gear.
2. Inside of Transmission case will be steamed cleaned in preparation for reassembly





Checking backlash

**Notes:**

1. Ryan using dial gauge to check the backlash on gears. Readings will be compared to specifications in determining adjustments and wear.
2. Pictures of using precision tools shown here should be included in each of the sections. Lubriplate is put on bearings prior to replacing.
3. The inside of all large castings, engine blocks, transmissions, final drives are painted on the inside at the factory when new. Why?



## Transmission - Example of Introduction

Transmission and Final Drive could be combined and identified as Power Train. When using only part of the page for Introduction, picture could be included at bottom of page as shown here.

### Transmission

The transmission was in very good condition. The power shift didn't make any unwanted noise and shifted smooth but I decided to completely disassemble it to make a visual inspection. While it was totally apart I was able to check all the gears, bearings, clutch packs and pistons. I then cleaned all the parts with solvent and a siphon gun and then installed all new seals and gaskets while reassembling the power shift. I also disassembled the power shift valve then cleaned and installed new seals during reassembly. The four speed gear transmission was in fair shape. I replaced third gear due to excessive flaking on the teeth. Other than that all that was needed was to clean the case and parts then reseal and reassemble the transmission.



Pulling Power Shift





Checking pre-load



Reinstalling shifting forks



**Example: External Appearance – Appearance** This section is different from External Components in that it includes most of those items dealing with the appearance of the tractor. It may include the following: Sheet Metal (hood - fenders) preparation and painting, Eye Appeal items such as decals and trim. Instrument Panel, Controls and Operators seat. Wheels and rims can be included in this section or in previous sections such as external components.

If the tractor has a cab you may want to add another section with the title **Cab** to include cab and all those items in it. Most Cab tractors will have extensive wiring harness and air conditioning. These items could have been explained in the External Components Section.

Appearance includes the finishing process and preparing for and painting. In the Introduction of this section you review the general condition of tractor sheet metal and other Appearance items as you found them. Explain how you repaired and prepared these parts for painting. Sandblasting is *discouraged* in that sand particles can get into the internal parts. Processes for cleaning and removing old paint and rust could include – Chemical, steam cleaning, glass or soda blasting cabinet, needle scaling, power brush and soap & hot water. The painting process includes what paints you used including color. Of course the SDS of all paints and chemicals including lubricants you used should be included in your Research Section. Perhaps identify the paint gun and pressures. How did you determine the viscosity of the paint when painting? Did you use reducers and hardeners?



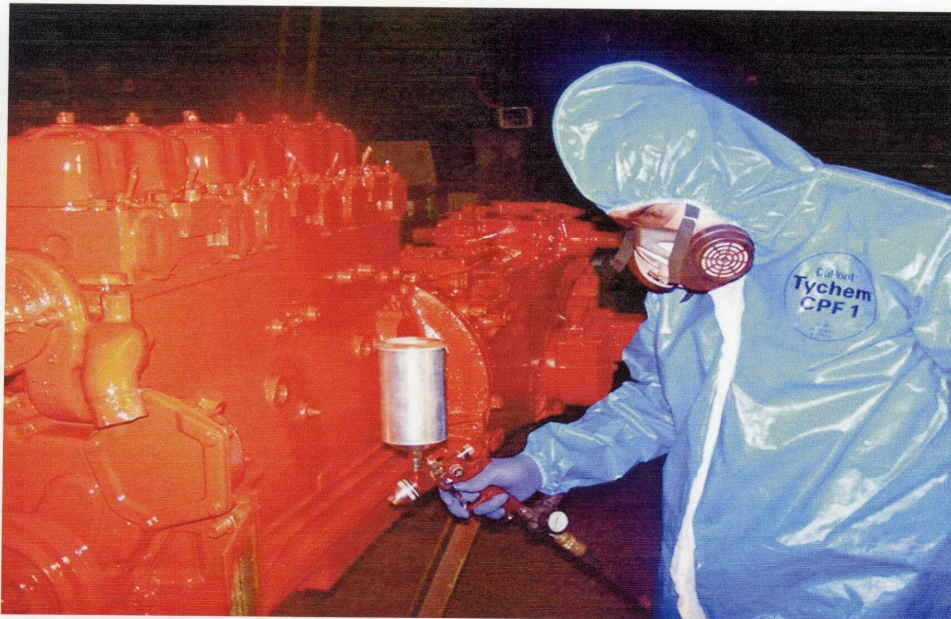
**Needle scaling**

**Note:** Notice the ear muffs used because of sound levels. Also eye protection, long sleeve shirt and gloves.





**Painting Flambeau Red**



**Note:**

1. Safety clothing
2. When painting engine transmission and final drive – very few external parts are installed – no belts, hoses, electrical harness injector lines and etc.
3. See *Tractor Check Sheets 1* for information on what parts may be left natural - unpainted.



## Completed Tractor



In the sunlight makes it really shine



This picture was taken when Ryan unloaded tractor at the San Antonio Tractor Show. Picture was used in his documentation for the National Tractor Restoration Chevron – Delo contest held as part of the National FFA contest. He won the National contest twice with different tractors.



The final two sections as identified in the Example Table of Contents of the Tractor Restoration Documentation Package for the San Antonio JAM Tractor Show include: **General Specifications** and **Research Materials**.

**General Specification Section.** (Example)

This section can be shown in a table format. It could include additional specifications

<u>General Specifications</u>	
Engine Make.....	Case
Fuel.....	Diesel
Number of Cylinders.....	6
Number of Main Bearings.....	7
Bore.....	4 3/8
Stroke.....	5
Displacement.....	.451cu.in
Firing Order.....	1-5-3-6-2-4
No load RPM.....	2140
Rated RPM.....	2000
Idle Speed.....	725
Tappet Clearance.....	Exhaust .025 Cold Intake .015
Overall Length.....	162"
Wheel Base.....	108"
Height to top of Exhaust.....	107"
Weight.....	10,600 lbs

<u>Capacities</u>	
Cooling System.....	38 qts.
Crankcase.....	13 qts.
Hydraulic.....	64 qts.
Fuel.....	50 gals

## Research Materials

This Section includes:

1. JAM Judges Tractor Check Sheets (There are four of these and they are found on the JAM WEB page <http://jamshow.org>)
2. Safety Data Sheets (SDS) Should be one for each major chemical used.
3. American Society Agricultural and Biological Engineering (ASABE) standards on PTO and 3 point hitch. You may want to identify what category the 3 Point Hitch is on your tractor. If the hitch linkage or PTO including shield are missing or modified they should be restored back to standards. There is a link on the JAM WEB site to get to the ASABE Library to get copies of these standards.
4. Nebraska Tractor Horsepower Test data for your tractor when it was tested at Nebraska new. After completing the restoration process it is recommended that you put your tractor on a PTO dynamometer to break it in. You may want to test its PTO horsepower and post the results in this section. It should produce close to what it did new. There is a link to the Nebraska Test Site WEB page on JAM WEB page. PTO tests is recommended but not required.
5. Other materials may be included in Research Section. For example if you found some original documents, sales receipts etc that came with the tractor when new you may want to include them here. Owners Manuals and Shop Manuals are too large to include in the Documentation Package but they could be referenced here.

## Closing

As identified in the Objectives at the front of this Guide the primary purpose of the Tractor Restoration Contest is to encourage and recognize the learning that takes place. A lot of the requirements are to enhance the learning you gain when restoring a tractor. The emphasis on the Research Sections also illustrates this.

Most of the suggestions and requirements identified here will not only help you learn but will also help you be competitive in the tractor shows you participate in including the other state and national shows. There is a link to the National Tractor Restoration Contest on the JAM WEB page. Titan Tires contacts which provides tires for restoration contest are also given on the JAM WEB site.

If you have suggestions and comments that will help to improve this documentation guide and process please contact one of the JAM, Junior Agricultural Mechanics Contest, San Antonio Stock Show and Rodeo Superintendents - Dr. Lon R Shell [tractor@lonshell.com](mailto:tractor@lonshell.com) or Mr. Patrick Real [realfarm@swbell.net](mailto:realfarm@swbell.net)