BMW Super Tech

R90s Restoration
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Restoration general:

- Determine scope
    - What needs to be done – full or fluff up?
    - Determine who is going to do what
    - "While you're in there" stuff
    - If outsourcing, what will take the longest?
- Process or "It's gonna get worse before it gets better"
    - Take photos of everything as it comes apart
    - Don't disassemble until you are ready to work on it
    - Make notes on disassembly
    - Keep lists of "to do's" and parts needed
    - String tag parts
    - Keep related components together in clear bags
    - Work on each area until completion
    - Automatically procure consumable and maintenance parts
- Cleaning
    - Begin with cleaning, which is much of the process
    - Start with the least invasive cleaners/process and progress upwards
    - WD-40 and paint thinner are least invasive cleaners
    - Use lacquer thinner only on metal parts
    - Never reinstall a dirty part

R90S Specifics:

- The paint job is the entire restoration – if you get it wrong, why bother?
- Be aware of new parts that supersede the originals – they fit, but are not correct
    - Petcocks
    - Grab handle
    - Handlebar hold downs
    - Mirrors
    - Fairing mounts
- Be aware of year differences
    - 1974 versus 1975/76
        - Taped striping
        - Unique seat stitching
        - Controls
        - Instrument details
        - Undrilled discs
    - 1975 and 76 have few differences between them

Refinishing

Refinishing components table:

Application	Schmutz	Part No	Comments
Bodywork	Glasurit primer	285-13	Secondary primer
Bodywork	Glasurit Polyester Basecoat	55	Basecoat color for clear
Bodywork	Glasurit Clearcoat	923	Catalyzed clear coat
Cylinders	Yamaha PJ1 satin finish black	PJH 16-SAT	Rattle spray paint
Bodywork	Southern Polyurethanes epoxy	6610/6700	Primary primer
Bodywork	Southern Polyurethanes wax/grease remover	700/710	Cleaning before paint/primer
Bodywork	3M wet/dry sandpaper 60-1000	Various	Refinishing
Bodywork	Motor Guard sanding blocks	SB-1	Refinishing
Bodywork	ZAP med and thin cyanoacrylate	PT-02/PT-08	Fiberglass repair
Bodywork	Fiberglast 1/16" glass strand	#29	Fiberglass repair
Bodywork	3M powder guide coat	05861	Refinishing problems
Bodywork	Evercoat glasing putty	100-400	Refinishing - filler
Bodywork	Bondo polyester resin	20122	Fiberglass repair – use with glass strand or cloth
Bodywork	3M green tape ¾ - 1.0"	Various	Refinishing -masking
Various	Klass Kote Black epoxy	#70	Catalyzed paint

There are seven pieces of bodywork on an R90S:

Fairing	Fiberglass
Fuel tank	Steel
Two side covers	Fiberglass
Two fenders	Fiberglass
Seat cowl	Steel

Preparation for paint:

Step	Steel	Fiberglass
Removal of original finish	Paint remover or sand blast (latter, fuel tank only)	Sanding only. Paint remover may be used only with parts having many layers of paint
Repair	Welding, re-bending, mechanical dent removal	Reshaping, repairing cosmetic or structural cracks, rebuilding. Use CA/glass or resin/glass
Filling and resurfacing	Small imperfections - use skim coats of filler, or filler primer	Small imperfections – use skim coats of filler, or filler primer, CA or resin filler
Priming – primary	Epoxy over bare metal – none showing after this step	Epoxy over fiberglass– none showing after this step

Final surface preparation	Secondary high build primer – sand using guide coat	Secondary high build primer – sand using guide coat

Comments on fiberglass:

- Removing the original finish on fiberglass must be done carefully and generally only with sandpaper (dry) and by hand
- Sandblasting will ruin a fiberglass part
- Paint remover may leech into porous fiberglass – use only in the case of multiple, heavy layers of paint

Risks of sanding fiberglass:

- Flat spotting the many compound curves and raised areas
- Rounding off of corners
- Deep sanding scratches or gouges
- Uneven sanding when using hand held paper
- Breakage from rough handling
- Corners of folded sandpaper can and will dig into fiberglass around raised areas

Recommendations:

- Paint removal: grits 100 to 400 dry
- Use foam blocks to back sandpaper for paint removal
- Use a light touch, especially when hand sanding fiberglass
- Remove the dashboard from the fairing before refinishing
- Sanding primered surfaces: grits 400 to 1000 – and use guide coat powder
- Sanding repaired and filled areas: grits 220 – 400 dry
- Clean bare fiberglass with lacquer thinner, never paint thinner
- Make sure there is enough primer on the part to facilitate sanding and leveling
- Handle primered parts only with latex gloves

Other comments:

- The seat cowl is particularly thin and flimsy and, as a result, not easy to mechanically repair
- Consideration should be given to the inside of the fuel tank prior to external refinishing
- Mask off the fuel tank's petcock threads before any refinishing
- Color paints do not hide imperfections
- The silver base coat will magnify every paint preparation defect

Painting:

- The TT black is more challenging to paint since the orange is translucent
- A spray gun that properly atomizes the paint is a key component
- A controlled overspray onto the silver areas should be used to blend in the black or orange to the silver. Use a wide pattern.
- The spraying approach is different for each part. The tank is the most difficult.
- Make fixturing from PVC pipe

- If you make a mistake, wipe the part off completely with lacquer thinner

Refinishing Cylinders:

- The cylinders are first inspected and signed off as being good for installation – don't do any painting until all machining has been done
- Blast with glass beads
- Clean with hot soapy water and then with lacquer thinner
- Use a rotisserie to paint the cylinders

Seat Pan:

- Blast with aluminum oxide
- Clean with lacquer thinner
- Paint with black epoxy from Klass Kote – no primer necessary

Hardware:

- All BMW's of the day had silver cadmium plated hardware, not zinc
    - Degrease in lacquer thinner bath
    - Use a rock tumbler with sand and abrasive stones to clean
    - Glass bead larger parts

Engine and aluminum cases:

- Vapor blasting only if completely disassembled
- Acid based wheel cleaner – will corrode ferrous parts
- Repeated brushed applications of WD 40 if still assembled