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Fast Compliant System

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ALLOY WHEEL RE-MANUFACTURING SYSTEM USER GUIDE TO SUCCESSFUL USE OF:

JAYTEES "FAST COMPLIANT SYSTEM"

The following is a detailed guide for the use of Jaytees wet and powder paints as part of a process to successfully re-manufacture alloy wheels to a very high quality of durability, finish and colour reproduction that closely replicates the paint system/layers on OEM wheels.

Very few OEM wheels are powder coat colour only and the vast majority have a "3 coat paint system" of powder primer, wet colour (basecoat) & powder or wet lacquer.

Acrylic powder is currently the preferred lacquer for diamond cut wheels as its chemistry allows improved flow and clarity over Polyester powders.

The major difference with re-manufacturing is the wheels are not new but used and have damage and road dirt to remove. This generally involves cleaning and prepping wheels in various processes back to metal and cleaning. This process soaks the wheels (cast wheels are very porous) and they then need "de-gassing" which is simply drying out as any moisture left after pre-paint prep causes issues with powder primers and the paints use.

This system user guide (SUG-PP1) is for Jaytees "Fast Compliant System" and involves the following paints & process & requires a powder cure oven and vertical hanging of wheels through valve hole application process.

This system can be used to very closely replicate colour and quality finish and durability of OEM wheels avoiding the need to paint a set as individual wheels can replicate the finish on the vehicles wheels that are not damaged.

Powder primer - Jaytees PCP-2 High Build Grey Primer, Jaytees PCPB-2 High Build Black Primer.

Wet Base-coats - Jaytees "BWA" coded water-based colour matched to OEM wheels as required

Powder Lacquers – APEQ Acrylic powder (ACGP-1) or

- **Jaytees Polyester powder lacquer YD50Z**

1: Remove tyre and balancing weights/valves and jet blast road dirt off wheel ideally using hot water and non-silicone detergent - *Jaytees have products supplied for use with jet wash process.*

2. note colour after cleaning plus also note powder primer colour required to replicate match economically.

(or take reference picture we can use to identify colour match and note basecoat paint code if using Jaytees Whatsapp colour id service)

Colour choice of powder primer is based on OEM powder colour (check back of wheel before strip) as darker coloured basecoats and chrome finishes more often go over Black and Silvers and light colours over Grey. Technically both work and this is to enable easier faster processing by using less basecoat by having to spray inside wheels hiding colour contrast seen through spokes.

3. **ideally strip back damaged paint or all paint as preferred using either chemical process or high pressure wet blasting or dry blasting. Once stripped ensure that the wheel is clean, dry and doesn't have any cracks or buckles.** *(If damage is found on the wheel then these areas should be suitably repaired if safely possible and area prepared before moving to painting process).*

Ideally apply temperature resistant plugs/tape to protect critical faces getting powder coat on them that can then be removed at end of process ensuring close fit of wheel to hub "metal to metal" & fit of bolts to hub.

4: Preheat powder Oven to a temperature setting of 200 degrees Celsius. (this is a typical setting for a box oven based on typical position of control thermostats) & is lowest advised - highest advised is 230 deg C.

5: Place fully stripped/prepared wheel into pre-heated oven when at temperature in 4:, jigged through bolt hole with metal jig that is strong enough and won't deform at 200 Deg.C. temperature/time and de-gas for 30-40 minutes depending upon size of wheel. *This will remove any moisture from the substrate left over from the stripping process (de-gas).*

6: Remove wheel from oven by jig (using high temperature resistant gloves) and hang in booth ready to Coat using HV Electrostatic Powder Spray gun.

7: Apply powder primer PCP-2 or PCPB-2 *(as determined in 2:)* **immediately onto hot wheel at metal temperatures of up to 190 degrees Celsius ensuring first that the rear hub of wheel and bolt holes are masked using appropriate crepe or green high temp discs and silicone plugs to prevent overspray in these areas. Application should begin on back and sides of the wheel moving to the front ensuring full coverage is achieved to a level of between 150 and 350 microns (depending upon condition of substrate).** ***Avoid over application as this can lead to sagging and imperfections in finish.***

Jaytees powder primers are formulated for this application and will melt and flow to cover shot-blast and other defects giving a smooth even coating on vertically jigged wheels which then need baking to cross-link (cure). By spraying the powder onto a hot wheel avoids "Faraday cage effect" issues allowing the powder to penetrate between spokes and visually check powder is coating the wheel all over. This also reduces difficulty determining film builds and avoids variations in "orange peel" and dusting spoiling finish. There are many manufacturers of powder spray equipment and settings vary across all types of guns and models such that it is impossible to cover all the variants.

7: continued

Best practice is to set the gun to give a Charge setting of KV = 30 to 40 and set the guns powder volume output, velocity and atomisation settings to give a consistent powder cloud that allows the wheel to be sprayed in a controlled even way. Most applicators using our wheel powders have the width of "fan of powder" when spraying an alloy wheel typically between 15 and 40cms and distance from gun to wheel around 25 to 40cms. In a similar way to wet application different sprayers develop their own preferences and it is best to experiment and identify how best to achieve desired finishes on a range of wheel designs - those with close spoke designs will require tighter "fan" and lower KV to get the powder inside the spokes.

A fluidised bed feed is advantageous as this guarantees even feed to gun and is especially helpful with Acrylic lacquer which is ground to finer particle sizes. A standard vibratory box feeds work well and is commonly used with our primers. Always equip appropriate air fed breathing apparatus before commencing, in line with site and personal safety guidelines.

Nb. Jaytees powder wheel primers are glossy after cure unlike traditional wet primers and there is no need to flat or rough the surface to assist adhesion. Our powders are formulated to link with our wet wheel coatings to give enhanced adhesion necessary for lathe cutting process and extended life on the road. If a foreign body causes a defect in the powder primer this can be repaired prior to base-coating by allowing wheel to cool to below 60 degrees C. and then using traditional flatting pads/discs dry gradually going finer down to 800 grade (do not use wet cutting compounds) and then dust removed by compressed air or tac-rag.

8: Once wheel is visually acceptably coated all over, return to oven and cure for 30-35 mins at an oven temperature setting of 200 degrees Celsius.

9: Once cured, remove from oven and check for imperfections. Imperfections can be sanded at up to 100 deg C. using coarse to fine grade 400 to 1,000 discs/pads depending on defect.

PCP-2 and PCPB-2 contain in built adhesion promoters to enhance adhesion with Jaytees Water based paints so no sanding is required for adhesion purposes.

PCP-2 and PCPB-2 can be used to overcoat itself without the need to "key" for adhesion should there be a major issue (ie jig failure) up to this process and initial coat of powder was cured.

10: Wheel should be allowed to cool to between 50 and 70 degrees C. and then be sprayed with Jaytees "BWA coded" fast compliant system wet paints using a High Volume Low Pressure "HVLP" gun GTi type model.

"BWA" coded Paint is water based and formulated for use with Gti or Sri however latter will take too long to spray wheels at elevated process temperatures and use of these models is not advised.

Hand held Infra Red temperature guns are often used to determine temperature of wheel without having to touch it.

Gun settings advised are –

Model Gti HVLP (water based specific models are best as they maximise atomisation)

Fluid tip/air cap set 1.1 to 1.3 for "BWA codes starting BWA0, 1, 2 and 4" (eg BWA1007 Felgin)

Fluid tip/air cap set 1.3 to 1.6 for "BWA codes starting BWA3 (eg BWA3002 Glitter)

Jaytees first number in code serves as particle size indicator with chromes "0" to Coarse Sparkle "3" & solid non-metallic colours start with "4".

Air pressure at gun = 2 bar/29psi.

BWA formulated paints are designed to orientate and match OEM colours when applied to a wheel that is 50 to 70 Deg.C. and harden so they can be flatted or lathe cut without the need to bake again speeding up the re-manufacturing process.

10a: if lathe cutting is required take base-coated wheel to lathe once cooled to cool to touch & dry lathe cut as required then proceed to point 11: -

10b: if no lathe cut required proceed to point 11: -

11: Apply Acrylic or Polyester powder lacquer onto base-coated or lathe cut base-coated wheel using a separate powder gun… *Acrylic powder chemistry means they melt, flow and cure at different temperatures to the primers and Polyester lacquer and this makes Acrylics incompatible with other chemisty powder coatings causing potential for craters/cross contamination so wherever possible keep Acrylic powders away from standard powders and ideally on dedicated spray gun.*

Ideally use a dedicated fluidised bed as mentioned previously as application of lacquers evenly is critical to finish.

Lacquer powder spray guns are identical to primer guns but settings used are different.

Main principle is to get an even powder cloud as primer and spray rear of wheel first. Differences to primer are KV setting is higher at between 50 and 80 KV depending on amount of powder applied and design of wheel as the powder needs to electrostatically apply to wheel rather than impact melt as with primers.

The Acrylic will therefore look white on the wheel and stay as a "dust" as it won't melt at this stage and this is where experience will help determine how much Acrylic or Polyester powder lacquer to apply that gives smooth even finish after curing. Do not touch the dry powder lacquer as any marks will show in finished wheel.

12: Cure Acrylic powder at Oven setting 180 degrees C for 25 minutes or Polyester at 200 deg C. for 35 to 40 minutes and once cooled to 25 deg C. any high temp masking can be removed, tyre/valve can be re-fitted and then balanced etc.