

Automotive Manufacturing Solutions Field Guide 🔿



Process Map



The 3M[™] Automotive Manufacturing Solutions Field Guide details the materials and tools we make for the world's most competitive production lines. Solutions engineered to pull the biggest opportunities out of the smallest details. Helping to improve efficiency, optimize costs, increase quality and drive output each step of the way.

Every car, van or truck built to perfection – one step, one solution at a time.

This is advantage in the making.

As you read this guide, we list either the solutions recommended for each process step or, in the case where only one product is needed, a selection of that product type with the recommended order to try from left to right.

For more in-depth knowledge and answers to questions about the contents of this Field Guide, reach out to your 3M sales professional who will be happy to assist.





Press Shop ()

Introduction

The Press Shop marks the beginning of the process for most (but not all) plants. Metal sheets are supplied in large rolls called coils and then pressed into shape to form both internal and external panels. Some manufacturers centralize this part of the process at standalone facilities and, with an increase in the use of exotic substrates, some also outsource to specialist Tier suppliers. In some geographies, this area is known as **Stamping**.

- Panel Highlighting*
- Panel Repair*
- Die Maintenance



Press Shop

Application	Objective				
Panel Highlighting	To make it easier to locate and identify defects. Objective is not to remove material.				
	Featured Produc	cts	0		
	3M Xtract [™] Cubitron [™] II Net Disc 710W	3M™ Wetordry [™] Cloth Disc 281W	3M [™] Hookit [™] Disc Hand Pad		
Panel Repair	To remove defects prior to panel passing down process. Defect size determines if 1, 2 or 3 steps are needed.				
	Featured Products				
		and sector for and sector form and sector form	S?		
	3M Xtract [™] Cubitron [™] II Film Disc 775L	Scotch-Brite™ Hookit™ 7447 Pro Disc	3M Xtract [™] Random Orbital Sander		
Die Maintenance	Panel defects ca These are often	in often be trace repaired by welc	d back to cracks i ling.	n the die.	
	Featured Products				
	60+ 80+ 0+ 50+ 60+ 70+ 300 00+ 10+ 50+ 300 10+ 10+ 50+ 300 10+ 10+ 50+ 300 10+ 10+ 50+ 300 10+ 10+ 50+ 300 300 300 300 300 300 300 300	Scotch-Brite [™]	Scotch-Brite [™] Poloc [™]	STATES	
	3M [™] Cubitron [™] II Roloc [™] Disc 984F	Roloc [™] Surface Conditioning	Clean and Strip XT Pro Disc	3M [™] Disc Sander	

Press Shop Panel Highlighting

Manual Process

Using light pressure, move the abrasive disc across the panel surface to highlight and denib small imperfections.



3M Xtract[™] Cubitron[™] II Net Disc 710W

Stamping operations frequently leave imperfections on car panels. 3M Xtract[™] products are used to sand lightly on white metal, causing high spots to shine a little brighter. The open mesh works well because the oily surface does not load.

• Used with 3M[™] Hookit[™] Disc Hand Pads



Scotch-Brite[™] EXL Unitized Block

Heavy duty for aggressive blending and finishing.

• 6A Fine



3M[™] Flexible Diamond Hand Lap 6200J

Ideal for finishing applications that require aggressive sanding. Flexible enough for contoured surfaces.

• Alternative option: 3M[™] abrasive grade 220 or finer

Other Options



3M[™] Trizact[™] Hookit[™] Film Disc 268XA



3M[™] Wetordry[™] Cloth Disc 281W



3M[™] Hookit[™] Disc Hand Pad



3M[™] Flexible Diamond QRS Cloth Disc 6002J



3M[™] Interface Pad



3M[™] Brushlon[™] 320B

Press Shop Panel Repair

Step 1: Body Filing

Automotive body files are used in a straight motion to remove or shave down small imperfections from both steel and aluminum panels.



- Keep the repair size as small as possible
- Deep file scratches will be difficult to remove at step 2
- Do not file more than necessary and take care on detail lines
- We recommend a crossed tooth bow file

Step 2: Blending (for steel end at this step)

Once the imperfections have been filed, any file marks that are left should be removed and left below an 8µm RZ rating, to prevent costly rework and repairs.



3M Xtract[™] Cubitron[™] II Film Disc 775L

These discs are recommended to remove the file marks and provide the correct surface finish.



3M Xtract[™] Random Orbital Sander

Maximum orbit used in this area should be 3/16" (5mm). Anything larger will be too aggressive and have increased vibration levels. Note: you may still find a rotary step being used prior to this Random Orbital step. In many cases, we can now eliminate the orbital step, but in the event you do still have the need, we recommend the 3M[™] Cubitron[™] II Hookit[™] Disc 950U.

Step 3: Burr Removal & Refining

After the file marks have been removed, burrs may appear from the sanding marks. When the substrate is aluminum, this is a vital process step to help prevent corrosion.



Scotch-Brite[™] Hookit[™] 7447 Pro Disc

Instead of using the hand pad form, using the disc on machine ensures that the necessary RZ finish is achieved and preparation marks are not visible after coating procedures.





7447 Pro on hand

Press Shop Die Maintenance

Step 1: Grind the defect on molds

Panel defects can be often traced back to cracks in the die. These are often repaired by welding.



3M[™] Cubitron[™] II Roloc[™] Durable Edge Disc 947A For flat areas



Scotch-Brite[™] Roloc[™] Bristle Disc RD-ZB For curved surfaces



Tools: 3M[™] Disc Sanders For small areas, attach an adapter to these tools



Accessories: 3M[™] Roloc[™] TR Disc Pads

Press Shop Die Maintenance

Step 2: Polish the defect



Scotch-Brite[™] Roloc[™] Surface Conditioning Disc Remove scratches



Scotch-Brite[™] Roloc[™] Surface Conditioning Disc Finer finish



Scotch-Brite[™] Roloc[™] Unitized Deburr and Finish Pro Wheel For final finish



Scotch-Brite[™] Roloc[™] Surface Conditioning Disc For final finish



Scotch-Brite[™] Hand Pad 7448PRO For curved shapes

Optional Step: Remove burned oil



Scotch-Brite[™] Roloc[™] Bristle Disc



Scotch-Brite[™] Roloc[™] Clean and Strip XT Pro Disc



Body Shop ()

Introduction

Often referred to as the Body-in-White (BiW), at this stage, all pressed panels are brought together to form the body of the vehicle. A complex mix of welding, fastening and bonding applications leads to the need to clean and repair the body before it is ready to be passed to the Paint Shop.

- Brazed Weld Removal
- Laser Weld Clean
- Flange Reduction
- Spot Weld Cleaning
- Weld Splatter Removal



Body Shop

Application	Objective			
Flange Reduction	To correct misalignment between two attached panels.			
	Featured Produ	ucts		
		- 36+ 	0	1000
	3M [™] Cubitron [™] II Fibre Disc 982CX Pro	3M [™] Cubitron [™] II Roloc [™] Disc 947A	3M [™] Cubitron [™] II Cloth Belt 784F	3M™ Cubitron™ II Cloth Belt 947A
Brazed Weld Finishing	To remove exce paintable surfac	ess braze and pro ce.	vide a smooth,	
	Featured Produ	ucts		
		Sac Sar The Constant of Constant The Constant of Const	Rapid Cut) Tite Contch (7C CRS+	0
	Scotch-Brite™ Laser Braze	Scotch-Brite [™] EXL PRO	Scotch-Brite [™] Rapid Cut	Scotch-Brite [™] Bristle
Spot Weld Cleaning	To refine finish	and avoid issues	down process.	
	Featured Products			
		0)	0	0
	3M [™] Cubitron [™] II Roloc [™] Durable Edge 947A	Scotch-Brite [™] Roloc [™] Surface Conditioning	3M [™] Cubitron [™] II Cloth Belt 784F	Scotch-Brite™ Durable Flex Low Stretch
Laser Weld Cleaning	To remove welc process. Many	l residue and avo OEMs will paint c	id contamination lirectly onto the v	issue down veld.
	Featured Produ	ucts		
	Scotch-Brite [™] Bristle	Scotch-Brite [™] Laser Braze		

Body Shop Flange Reduction

Procedure

The flange is created when parts, such as panels, doors, hoods, etc. are joined together, but turn out to be misaligned. Today, general process improvements mean this application is not as common, and so is less of an issue.

3M [™] Fibre Discs	Steel: 3M [™] Cubitron [™] II Fibre Disc 982CX Pro	Aluminum: 3M [™] Fibre Disc 787C	
3M [™] Roloc [™] Discs	3M [™] Cubitron [™] II Balaa [™] Disa 9470		
3M [™] File Belts	Roloc Disc 947A		
	3M™ Cubitron™ II Cloth Belt 784F	3M™ Cubitron™ II Cloth Belt 947A	
3M [™] Power Tools	2M [™] Electric Bight		
	Angle Grinder	3M™ Disc Sanders	3M [™] File Sander

Body Shop Brazed Weld Finishing

together with silicon bronze

attached surfaces

• Laser brazing is a newer development in the auto industry, in which body panels are brazed

• The resulting brazed surface is then blended to create a more uniform surface segment

• The removal and finishing of excess metal make the brazed parts as clean and smooth as the

Application

AOEMs are designing their vehicles with a clean roof line resulting in the need for a laser braze weld along the length of the roof ditches.



Advantages of brazing over welding

- Lower total cost
- Smooth finish of weld
- Produces a paintable surface
- Line instead of spot joints
- Avoid degrading the zinc coating for better corrosion protection
- Less noise
- Better aesthetics



Scotch-Brite[™] Laser Braze Finishing Wheel, LB-UW

Designed for use with active force control systems; for smoother brazed joints, where less removal is needed.



Scotch-Brite[™] EXL PRO Unitized Wheel

Designed for higher pressure robotic and hand held leveling, finishing and cleaning of continuous brazed welds on roof/body joints (with more variability/deeper pits and ripples).



Scotch-Brite[™] Rapid Cut Unitized Wheel

Deburrs and smooths the edges of all types of metal at top speed, even where heat sensitivity is an issue.



Scotch-Brite[™] Bristle Disc

Quickly removes burrs and sharp edges in end-of-arm tooling operations, delivering consistent performance through the full life of the abrasive.



3M[™] Die Grinders

Excellent for big jobs such as weld or stock removal; reduces vibration and provides a more secure grip.

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Body Shop Brazed Weld Finishing

To achieve optimum results from a robotic brazed weld finishing line, it is important to balance the right levels of key process parameters such as wheel speed, force, robot arm speed and wheel rotation direction.

Automated Process: Performance Factors



Wheel Speed

- More speed = more cut
- If wheel is not cutting enough to finish roof ditch, the RPM can be increased within the Max RPM of the product
- High speed can cause wheel degradation and possible deposition on part

Force

- Force must be optimized to achieve desired finish, cut rate and wheel life
- Ideally, run the least force possible to achieve the desired results
- More force = more cut but increases wheel wear and risk of wheel flex which can inhibit proper ditch tracking

Robot Arm Traverse Speed

- More arm speed = less cut
- As robot arm speed increases, cut rate will decrease as wheel will have less time in contact with the roof ditch

Rotation of Wheel

- Climb Cut (wheel rotation with feed direction) will result in longer scratch, less cut, less wheel wear
- Conventional Cut (wheel rotation against feed direction) will result in shorter scratch, more cut, more wheel wear
- Ensure same cut direction is leveraged on both sides of vehicle body

Suggested Performance Settings				
Force target when customer has a finer braze and is focused on finish quality	Force target when customer has a rougher braze and is focused on productivity	Wheel Speed Target	Wheel Speed Range	Traverse Speed Target/Range
4-6 lbf (18-25 N) recommend LB-UW	6-9 lbf (25 - 40 N) recommend EXL PRO	6,200 SFPM/ 31.5 m/s (3000 RPM for an 8" wheel)	4,800-8,000 SFPM/m/s	200 mm/s target (150 - 250 mm/s range), dependent on the cycle time requirement of the system
lbf=pounds of force	1	SFPM=Surface feet p	er minute	mm=millimeter

N=Newtons (units of measure smaller than pound)

RPM=Rotation per minute

Disclaimer: Roof ditch always depends on thickness of wheel, shape of roof, curves and angles; all influence life of consumable.

Body Shop Spot Weld Cleaning/Deburring

Manual Application



3M [™] Roloc [™] Discs		
3M [™] Roloc [™] Discs	3M [™] Cubitron [™] II Roloc [™] Durable Edge Disc 947A	Scotch-Brite [™] Roloc [™] Surface Conditioning Disc, SC-DR
3M [™] Belts	3M [™] Cubitron [™] II Cloth Belt 784F	Scotch-Brite [™] Durable Flex Low Stretch Belt
3M [™] Power Tools	3M [™] Disc Sander	3M [™] File Belt Sander

Body Shop Weld Spatter Removal



Weld spatter often consists of molten metal or non-metallic materials, such as oil, that are scattered, splashed or burned on during the welding process and can take the form of soot.

Scotch-Brite[™] Radial Bristle Brush

Quickly removes burrs and sharp edges in end-of-arm tooling operations, delivering consistent performance through the full life of the abrasive.

- High finish quality throughout the life of the brush
- Conformability creates uniform finishes on complex-shaped parts, protrusions, detail grooves, patterns and other hard-to-reach areas
- Minimal pressure and cool cleaning
- Configurable to desired width

Scotch-Brite[™] Laser Braze Finishing Wheel, LB-UW

Designed for use with active force control systems; for smoother brazed joints, where less removal is needed.







These small bits of hot material may fly and fall on the workbench or on the floor, while others may stick to the base material or any surrounding metallic material.

For more in-depth knowledge and answers to questions about process automation needs, reach out to your 3M sales professional or connect with one of our automation experts: 3m.com/ robotics





Paint Shop ()

Introduction

In this part of the process, the vehicle body is given its corrosion protection layer known as the electrocoat. It is sealed to prevent water leaks, painted the customer's choice of color and then a clearcoat is applied to give a high-gloss appearance that provides additional protection from UV, stone chips and bird lime.

- Electrocoat Preparation •
- Offline Repair
- Primer Preparation
- Contrast Roof
- Clearcoat Repair



Paint Shop

Application	Objective			
Electrocoat Preparation and Primer Preparation	To remove inclusions and runs prior to the application of the next paint layer. Note: Some OEMs also perform Highlighting in this area.			
	Featured Products			
			an a	ам Р600
	3M Xtract [™] Cubitron [™] II Net Disc 710W	3M Xtract [™] Cubitron [™] II Film Disc 775L	3M Xtract [™] Film Disc 360L	3M™ Hookit™ Flexible Abrasive Hand Sheet 270J
Basecoat and Clearcoat Application	To apply paint in areas that are not covered by an automated process.			
	Featured Products			
	M [™] Performance Sprav Gun	3M [™] PPS [™] Series 2.0 Lid and Liner Kits	3M [™] Performance Gravity HVLP Atomising Heads	
Clearcoat Repair	To remove inclusions in the final paint layer, leaving a defect-free, high-gloss finish.			ing
	Featured Products			
		Parasa at Parasa at Parasa		367 2012 10 10 10 10 10
	3M [™] Finesse-it [™] Trizact [™] 468LA Film Discs	3M™ Finesse-it™ Polish Premium Series 300	3M™ Finesse-it™ Mini-Random Orbital Nib Sander	3M [™] Finesse-it™ Foam Pads

Paint Shop Electrocoat/Primer Preparation



Electrocoat Preparation

Once the vehicle has been rinsed, the vehicle is:

- Dipped in the e-coat dip tank
- Moved into curing oven to be baked
- Sealed
- Sanded on the E-coat sanding deck
- Bonded (high-temp tape)



Note: Some plants may not perform primer preparation because they have adopted a primer-less system or a '3-Wet' system.

Primer Preparation

After the vehicle is e-coated, it moves further along the production line where:

- Primer is applied to the surface of the vehicle
- Moves into curing oven to be baked
- Sanded on the primer sanding deck

Hand/Damp Sanding (preferred)

This method requires no compressed air, removes less coatings and will not break through to bare metal (causing corrosion). It can remove most defects in the e-coat and primer surface, including runs, dirt, inclusions, etc.



3M[™] Hookit[™] or Stikit[™] Discs 360L



Microfinishing Film 268L



3M[™] Hookit[™] **Flexible Abrasive** Hand Sheet 270J

3M Xtract[™]

Film Disc

360L



3M[™] Hookit[™] Disc Hand Pad

Machine/Random Orbital Sanding (for large areas)

Dust extraction discs can be used to reduce airborne dust and the high risk of contamination on the rest of the bodies as they travel to the base coat area.



3M Xtract[™] Cubitron[™] II Net Disc 710W



3M Xtract[™] Cubitron[™] II Film Disc 775L



3M Xtract[™] Paper Disc 236U



3M Xtract" Pneumatic Random **Orbital Sander**

Paint Shop Electrocoat/Primer Sanding

As more plants look to automate their electrocoat and primer sanding operations, one key consideration critical to success is force control.

Active Force Control (preferred)

Active force control systems automatically compensate for tool orientation and thereby the impact of gravity, to ensure that constant normal applied force is achieved during abrading.

This technology can minimize the more complex and time-consuming programming which can be required to leverage passive force control systems on parts with complex geometry. In addition, active systems are typically more accurate than passive systems due to their continuous compensation capability.

- Provides and maintains compliance level based on feedback of various parameters
- Offers more accuracy of applied force than passive

Passive Force Control

Passive force control systems do not automatically compensate for tool orientation and the impact that has on actual applied normal force.

One can use various tools such as programmable regulators to enable manual programming to compensate for tool orientation, but those systems do require time and expertise for the programming and will not typically be as accurate as active force control systems. Geometrical complexity of the part being abraded will be a critical factor in determining the type of force control technology chosen.

- Provides force based on level set in system but does not adapt to feedback
- Typically a lower-priced solution than active



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Paint Shop Basecoat/Clearcoat Application

Basecoat

Basecoat contains the visual properties of color and effects and is usually the coat referred to as "paint."

Clearcoat



Clearcoat is sprayed on top of a colored basecoat and is a glossy and transparent coating that forms the final interface with the environment.

Manual Application



3M[™] Performance Spray Gun

Spray a full range of high-performance automotive coatings from either a pressure-fed source or attached gravity cup with one of six available gravity HVLP atomising head sizes. Keep in mind that the recommended nozzle size may vary by paint manufacturer, coating type or depending on your specific application.

Impact-resistant composite body makes it one of the lightest spray guns available, yet it is durable enough for demanding industrial and automotive conditions.



3M[™] PPS[™] Series 2.0 System

World's first disposable paint cup system for cleaner, easier, faster painting:







3M[™] PPS[™] Series 3M[™] PPS[™] Series 2.0 Lid and Liner Kits 2.0 Cups

3M[™] PPS[™] Series 2.0 Adapters

3M[™] PPS[™] Series 2.0 Accessories



3M[™] Dirt Trap Protection Material

Protects and brightens paint booth walls and floors. Non-woven construction traps dust and overspray, and its bright white color creates better visibility. Low-tack adhesive backing keeps it secure, smooth and wrinkle free.



3M[™] Booth Coating

Protects paint booth walls and lights from paint overspray. Dries to a clear film across fittings, walls and windows. The non-tacky formula won't discolor from dust or dirt and removes cleanly with water.

Paint Shop Clearcoat Repair

Step 1: Machine Sanding



- Level/remove the defect using a Mini Orbital Sander and film disc
- Spray the disc with water to prevent the abrasive from loading during sanding
- Sand the defect for 1-3 seconds, depending on its size
- Wipe the area clean



3M[™] Finesse-it[™] Mini-Random Orbital Nib Sander Small, easy-to-use sander for repairing small defects in paint and clearcoat surfaces



3M[™] Finesse-it[™] Trizact[™] 464LA, 466LA & 468LA Film Discs Ideal for the 3M two-step paint defect repair process for automotive finishes



Scotch-Brite[™] High Performance Cloth Microfiber cleaning cloth that effectively lifts dirt and grease instead of rolling over it

Step 2: Polishing



- Apply a small drop of polish on the sanded area
- Spread the polish evenly over the spot using the buffing pad, without running the buffer
- Polish for 8-12 seconds
- Wipe the area clean



3M[™] Finesse-it[™] Polish Premium Series 300

Fastest one-step polish process on today's premium 2k clearcoats; haze-free, high-gloss finish



3M[™] Finesse-it[™] Random Orbital Buffer

Use with 3M[™] Finesse-it[™] Polishes and Foam Buffing Pads for a uniform finish on today's paint finishes



3M[™] Finesse-it[™] Buffing Pads

Provides soft, smooth surface for applying 3M[™] Finesse-it[™] polishes

Paint Shop Clearcoat (Defect) Repair

Today, the vast majority of cars require clearcoat defect repair. Operators work in close quarters to identify, sand and polish 2-30 imperfections in the clearcoat as the vehicle moves down the line.

While some hard-to-reach areas or certain defect types must be done manually offline, many other defects like dirt, fibre, pops and scratches on flat, accessible locations can be automated.

Automated Process



Defects repaired by robots will be completed as competently and efficiently as they are with workers, with cycle times equal to or faster than current operations.

- Defects on or near vehicle feature lines can be more challenging due to specific limitations of the robot and/or the vision system
- Some defects may need to be repaired by an operator

3M[™] Finesse-it[™] Robotic Paint Repair System



3M[™] Finesse-it[™] Active Compliant Tool



3M[™] Finesse-it[™] Servo Random Orbital Sander



3M[™] Finesse-it[™] Servo Random Orbital Buffer



3M[™] Finesse-it[™] Paint Repair Controller



Accessories

Consumables



3M[™] Finesse-it[™] Trizact[™] 468LA Film Discs



3M™ Finesse-it™ Buffing Pads



3M[™] Finesse-it[™] Polish Premium Series 300

System Integration



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Paint Shop

Application	Objective			
Offline Repair	To remove defects that are too large to be taken out during the online process.			
	Featured Prod	ucts		Forme at the second sec
	3M Xtract [™] Cubitron [™] II Net Disc 710W	3M Xtract [™] Cubitron [™] II Film Disc 775L	3M [™] Finesse-it [™] Tri- zact [™] 468LA Film Discs	3M [™] Finesse-it™ Polish Premium Series 300
Two-Tone	Increasingly common process where part of the vehicle is prepared for an alternative paint color.			
	Featured Prod	ucts		
	an India Aray Bolds Jone - an Gauss Jone - an March Jone - an An			Q
	Scotch-Brite [™] Hand Pad 7447 Pro	3M Xtract [™] Cubitron [™] II Film Disc 775L	3M [™] High Temperature Industria Masking Tape 501E	Scotch® High Temperature Fine Line Tape 4737T
End-of-Line Repair	Last opportunity to repair defects before the car is subject to warranty.			
	Featured Prod	ucts	3M Xtract™	İİİ 3M [™] Perfect-it [™]
	3M [™] Performance Spray Gun	3M [™] PPS [™] Series 2.0 Lid and Liner Kits	Cubitron™ II Net Disc 710W	Fast Cut Plus Extreme Compound

Paint Shop Two-Tone

Two-Tone or "Contrast Roof" Describes an application where the roof and body of the car are painted different colors.

Step 1: Light scuffing				
Hand Sanding	att Sente Jose M. Sente Jose Sente Jose Sente Jose M. Sente Jose M. Sente Jose M. Sente Jose			
	Scotch-Brite [™] Hand Pad 7447 Pro	3M [™] Hookit [™] Flexible Foam Abrasive Disc*	3M [™] Hookit [™] Disc Hand Pad	
Machine Sanding				
	3M Xtract™ Cubitron™ II Net Disc 710W	3M Xtract™ Cubitron™ II Film Disc 775L	3M [™] Hookit [™] Flexible Foam Abrasive Disc	3M Xtract™ Pneumatic Random Orbital Sander









3M[™] Crepe Masking Tapes

Adhere well to most surfaces and remove cleanly without damaging the surface.





3M[™] High Temperature Industrial Masking Tape 501E T° resistance: 160°C for 1 hour

Scotch[®] High Performance Masking Tape 2693 T° resistance: 163°C for 30 min

Scotch[®] Fine Line Tapes

Scotch[®] Fine Line series masking tapes provide sharp paint lines, minimizing rework associated with paint bleed or poor paint line definition. Temperature resistance up to 149°C for one hour.





Scotch[®] High Temperature Fine Line Tape 4737T Scotch[®] High Temperature Fine Line Tape 4735

3M[™] Masking Film

3M[™] High Temperature Paint Masking Film 7300 is a high performance, high temperature (155°C for 1 hour) masking film. Its soft flexing design makes it easy for wrapping contoured and curved surfaces.



3M[™] High Temperature Masking Film 7300

Paint Shop Offline Repair

Small Medium Area Repair Technology (SMART)



Surface Preparation

- Sand out the defect starting with the finest grade possible
- Sand around the repair area
- Enlarge the area further with finishing disc



Masking

• Cover the surrounding area to protect from overspray but leave the repair area large enough to avoid creating sharp paint lines



Primer Application

- Apply the primer following paint company's recommendations
- Overspray must be kept to a minimum to keep the repair area as small as possible



Primer Sanding

• Sand the primer using an abrasive disc or flexible abrasive sheet







Paint Application

- Apply the paint following paint company's recommendations
- Use midi or mini PPS system depending on size of repair

Defect Touch-up

- Level/remove the defect using a Mini Orbital Sander and film disc
- Spray the disc with water to prevent the abrasive from loading during sanding
- Sand the defect for 1-3 seconds, depending on its size
- Wipe the area clean

Paint Rectification and Finish

The painted area should now be polished. A rotary polishing step followed by a Random Orbital De-Hologram step is commonly used here.

Paint Shop End-of-Line Repair*

Manual Application

There can be a large variety of repairs made at the end of the line, also called "Car Hospital"



3M[™] Performance Spray Gun

Capable of spraying a wide range of coatings from either a pressure-fed source or attached gravity cup.

Impact-resistant composite body makes it one of the lightest spray guns available, yet it is durable enough for demanding industrial and automotive conditions.

Spray a full range of high-performance automotive coatings with one of six available gravity HVLP atomising head sizes. Keep in mind that the recommended nozzle size may vary by paint manufacturer, coating type or depending on your specific application.



3M[™] Performance Gravity HVLP Atomising Heads

Maximum HVLP Operating Air Pressure: 1.38 bar [20 psi] Operating Pressure Range is between 0.5 bar to 2.4 bar [7 psi to 35 psi]

3M[™] PPS[™] Series 2.0 System

World's first disposable paint cup system for cleaner, easier, faster painting:









3M[™] PPS[™] Series 3M[™] PPS[™] 2.0 Lid and Liner Kits 2.0 Cups

3M[™] PPS[™] Series 3N 2.0 Cups 2.0

3M[™] PPS[™] Series 2.0 Adapters

3M[™] PPS[™] Series 2.0 Accessories

3M[™] Masking Solutions

Full systems for the finest finishes, as well as controlling dust and overspray:









Scotch® Fine Line Tape 218

3M[™] Purple Premium Plus Masking Film

Paint Shop End of Line Repair

3M Xtract[™] Clean Sanding Solutions

These discs are recommended to remove defects while providing optimum dust extraction:





3M Xtract[™] Cubitron[™] II Net Disc 710W

3M Xtract[™] Cubitron[™] II Film Disc 775L



3M Xtract[™] Film Disc 360L



3M Xtract[™] Net Disc 310W

3M[™] Hookit[™] Flexible Abrasive Hand Sheet 270J

Comes in a variety of grades for different substrates:



3M[™] Perfect-it[™] Paint Finishing System

Cover steps during large clearcoat repair processes to hologram/haze removal:





3M[™] Trizact[™] Hookit[™] Foam Abrasive Disc 443S

3M[™] Perfect-It[™] Fast Cut Plus Extreme Compound



3M[™] Perfect-It[™] Quick Connect Double Sided Foam Convoluted Green Compounding Pad

3M[™] Finesse-it[™] System

To remove inclusions in the final paint layer, leaving a defect-free, high-gloss finish:



3M[™] Finesse-it[™] Trizact[™] 468LA Film Discs



3M[™] Finesse-it[™] Polish Premium Series 300



3M[™] Finesse-it[™] Mini-Random Orbital Nib Sander



3M[™] Finesse-it[™] Foam Pads

Application Guide

The 3M recommendations below are starting points for the ideal system solutions. Be sure to conduct trials to find the right system for the application.

Application	Recommended Disc	Alternative Disc	Common Grades	Suggested Backup Pad	Suggested Tool Orbit	Process
Primer Sanding	775L	375L	180 – 400	Low Profile Finishing	5mm	Sanding workpiece for consistent scratch prior to paint
Coating Removal		310W	80 - 240	Red Low Profile	10mm	Removing coatings from workpiece prior to application of primers and paints
Surface Refining/ Flattening		310W	80 - 220	Red Low Profile	5mm	Smoothing and leveling workpiece prior to paint for consistent paint adhesion
Deflashing Plastic	784F	947A	60 - 120	Red Low Profile	5mm	Removing excessive plastic flash by knocking off sharp edges
Gelcoat Sanding	775L	360L	240 – 1000	Low Profile Finishing	5mm	Flattening or removing defects in gelcoat while refining for following buff and polish or paint step
Removing Parting Lines	775L	255P	180 - 320	Red Low Profile	5mm	Removing raised lines in manufacturing to blend surface geometry
Shaping	947A	784F	36 - 220	Yellow Standard	8mm	Incremental steps of cutting and shaping refinement for composite fabrication
Whitewood Sanding		310W	150 - 220	Red Low Profile	5mm	Leveling or smoothing wood surface and removing machining marks from saw cuts or routers
Sealer Sanding	775L	255P	320 – 400	Low Profile Finishing	2,5mm	Leveling orange peel and scuffing for adhesion of next layer of coatings or finish
Prep for Paint on Steel	947A	784F	80 - 120	Red Low Profile	5mm	Refining a fiber disc scratch used in stock removal for an even scratch prior to paint
Removing Handling Scratches	947A	310W	80 - 120	Red Low Profile	8mm	Identifying defects in metal parts caused by upstream handling
Edge Deburring	947A	784F	60 - 120	Yellow Standard	8mm	Removing sharp edges on sheared metal
For applica	tions needing	g a bright f	inal finis	h, follow up with a Scotch	-Brite™ no	n-woven finishing disc.

Random Orbital Sanders

3M[™] Random Orbital Sanders

Select the orbit that's right for your project					
2.5mm Diameter Orbit — Chrome Lever fine finish sanding		SOLU ZOX			
5mm Diameter Orbit — Silver Lever general purpose sanding	N N N N N N N N N N N N N N N N N N N				
8mm Diameter Orbit — Black Lever aggressive sanding					
10mm Diameter Orbit — Gold Lever most aggressive sanding					
Basic ROS Technic	ques				
	 Start the tool ON the sur Run the tool flat on work Light operator hand pres North, south, east, west 	face; stop the tool OFF the surface c piece (no tipping on edge) ssure (let the tool do the work) sanding pattern for a uniform, quality finish			
Troubleshooting C	checklist				
	 Check for correct PSI an Check airline length, lea Check tool lubrication so Look for worn bearings Look for damaged disc p Are the tool and disc pao Is the lever damaged or tool 	d RPM ks, fitting and inside diameter chedule ad d diameter the same? the muffler clogged? ster turned down?			



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Automotive Manufacturing Solutions

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