

Service Tips from the Pros



Modern Bras / Paint Protection Film

Front-End Bras - According to wikipedia.org, the first Front-End Bra was invented in Burbank, California in 1961 at the request of several sports car enthusiasts. The development, availability & variety of applications of this protective mask grew quickly, with popularity peaking in the 1980s & 90s.



Paint Protection Film is sometimes referred to as the New Bra! PPF is a very durable thermoplastic urethane film that is applied to painted surfaces to protect the paint from stone chips, bug splatters, and minor abrasions. PPF film is used in applications ranging from aircraft to watercraft, automobiles, trucks, motorcycles & RVs, not to mention cell phones, PCs, notebook screens and more.

History of Paint Protection Film (PPF)

As with many consumer products, paint protection film was first developed to solve a military issue. During the Vietnam War, helicopter rotor blades and other sensitive parts on them were getting damaged by rotor-blast related shrapnel, sand and debris. Something needed to be done to protect these moving parts so the US military asked 3M for a solution that was both inconspicuous and low-weight. The efforts resulted in a low cost/replaceable film that proved to extend the service life of rotor blades and the adoption of PPF by the US military was uncharacteristically quick.

Paint Protection Film was first introduced by Winnebago Industries on select 2003 diesel models ordered with the full body paint (FBP) options. The initial source for PPF was direct from 3M/Scotch, but has varied between several manufacturers. Product names such as Diamond Shield® and Dura-Shield® may ring some bells.

Scotchgard™ PPF - manufactured/supplied by 3M Company solutions.3m.com/wps/portal/3M/en_US/3M-Automotive/Aftermarket/Our-Brands/Scotchgard-Pro-Series/Where-to-Buy/

Diamond Shield™ PPF - supplied by Sharpline Converting - Diamond Shield was manufactured by Avery Denison. Note: Avery Denison sold the exterior vinyl graphics & PPF division to CCL Design in 2013. CCL Design markets their PPF under the brand name of Nano-Fusion™

Dura-Shield™ PPF - manufactured by & supplied by Sharpline Converting, Inc.

PPF Technology continues to move forward as the manufacturers of protective film expand & improve their product offerings.

The premium films marketed today are nearly undetectable - i.e. the gloss/shine & nearly non-existent 'orange-peel' rivals the clear-coat paint finish; improved formulations to combat UV have resulted in less film shrinkage, cracking & yellowing... while making the film significantly more resistant to abrasion & scuffing. Some of the premium films have additional coatings applied to improve the surface hardness & the ability to be buffed. Worth noting, manufacturers offer films in several thicknesses - i.e. 6-mil & 8-mil. The 6-mil film is most common for automotive applications... largely because it's more flexible & much easier to install.

Service Life of PPF? - Although protective films are extremely durable, odds are the original PPF will live a shorter life than the vehicle! Obviously, the intended purpose of the film is to protect vulnerable surfaces so PPF needs to survive & thrive directly in *Harm's Way*.

Similar to the vehicles exterior paint/surfaces, there are choices owners have that can lengthen the service-life of a film such as inside storage or use of a vehicle cover - i.e. limit exposure to the elements while not in use. Avoid loitering behind those semi-trucks (i.e. tailgating, they stir-up plenty of debris) and perhaps most importantly, being proactive with timely washing & waxing of the protective film.

Tips For Do-It-Yourselfers

The majority of automobiles & light trucks being built today possess metal body panels & are painted using a multi-stage process commonly referred to as base-coat/clear-coat. The 'base-coat' contains all the color and flake & is applied first. Several finish-coats of a 'clear' containing all the protective properties are followed by a short baking cycle to hasten the curing time. The result is a very tough coating of acrylic urethane...i.e. plastic! The fiberglass reinforced plastic (FRP) used on the exteriors of RVs share some of the same characteristics of base/clears... i.e. a colored gel-coat layer containing all the protective properties overlying a combination of glass fiber & catalyzed resin...plastic! What's important to remember is both are susceptible to excessive heat & certain chemicals.

Whether it's collision damage or simply a cosmetic issue, removal & replacement of the protective film is an unpopular topic largely because removal can be labor intensive & therefore expensive. Similar to Scotch Tape™ & exterior vinyl graphics, manufacturers of PPF apply a thin layer of pressure sensitive/high performance acrylic adhesive to the film. Acrylic adhesives adhere easily to metal & plastic surfaces and the bond-strength increases with time & heat. Reflect on personal experience removing freshly applied Scotch Tape™ from a glass or plastic surface and the removal of tape that's had a few birthdays. The recipe for the later requires a fingernail or razorblade & some solvent to remove the tape & remaining adhesive. This parallels the removal of PPF but on a grand scale!

Removal of PPF

The ultimate goal is to remove both the film & the adhesive efficiently. PPF that has been damaged or degraded due to age/exposure can complicate the efforts. The internet is full of recommendations regarding film removal, some are good and some not so good! Fortunately, PPF has been around a while & there are some time-tested methods regarding film removal that work better than others.

The Cold-Pull Method: Removal of a freshly applied PPF can sometimes be as simple as lifting an edge and pulling the film. It's best to pull the film at a 30-degree angle & stretch the film to release the bond versus trying to peel the film over itself similar to peeling a banana. Envision the removal of a 3M™ Command Strip from a painted wall.

Use of Heat: The bonding strength of acrylic adhesives can be lessened using a heat source. Many of the online YouTube videos show professionals removing PPF with the aid of a 'heat gun' versus a hair dryer. Top-end temps from your plastic-bodied hair dryer peak at 130° to 140°F. The average heat guns have an adjustable output beginning at 100°F on the low-end and ceilings exceeding 1100°F. The best fully-cured 'base/clear' paint films have proven to survive short periods of

exposure at temperatures approaching 300°F. Very simply, miss-use of heat can be a game-changer that requires removal of more than the PPF.



Temp- Range of 100°F - 1100°F

Manufacturers of PPF recommend the use of a hand-held steamer versus a 'heat gun.' The consistent temperature of

steam is very effective in softening the adhesive & will not melt the PPF nor does steam reach temperatures that will damage the underlying paint or a gel-coated fiberglass. In many cases, the adhesive softens and comes along with the film leaving a clean painted surface behind.



Max-Temps of 130° - 140°F

Mechanical Removers: Damaged or aged film may require a combination of heat and a 'friendly scraper' in concert

with managed brute-force. Warming the PPF forward of the advancing scraper usually gets the film lifted from the surface, but will likely leave some of the adhesive behind. The SnapOn® plastic scraper shown below is the tool-of-choice for C.D.I. - the folks that partner with Winnebago Industries® and perform the full-body painting tasks...including the installation of the PPF. It fits the hand & stands-up to the task.



store.snapon.com/Non-Marring-Scrapers-C682729.aspx

Part-2 of the process is removal of the remaining acrylic adhesive. This requires use of a product capable of emulsifying the adhesive but friendly to both painted and fiberglass gel-coat surfaces. Body Shops have a variety of *commercial* products available that are very effective, but not readily available to the general public. The internet is full of products & testimonials some possibly very effective and worth pursuing. Here are several products that have proven effective & safe for painted & fiberglass surfaces and used by Winnebago Customer Service and C.D.I.'s shop:

- Right-Off™ Adhesive Remover - 32 oz. Spray Bottle (Contact Sharpeline Converting @ (800) 888-4888)
- Wipe-Out Cleaner / Adhesive Remover (Contact: www.wipeoutsystems.com)
- PPG / Ditzler DX 440 Wax & Grease Remover (check @ local Automotive Paint Store)
- AutoTech Adhesive Remover (www.autotechmfg.com/products.html) This product is untested here, but has great testimonials from recognized businesses.

Another tool worth consideration is a plastic razor. These are extremely effective on stubborn residue when used in tandem with the adhesive remover. These are readily available online and at some common auto parts retailers.



scrapelite.com