

Troubleshooting Mold Flash

For Uniloy IBS Models Flat Tank 54-3, 70-3, 88-3, 122-3, 135-3S, 189-3S

Mold Flash is Caused by One of Two Factors:

- 1.) Not enough clamp tonnage which is a result of either low hydraulic pressure or mechanical failure (broken tie bar, etc.).
- 2.) Too much injection pressure which is a result of either a faulty hydraulic or linear sensor, marginal injection pressure / position settings.

Mold damage can also be a factor, but usually it's in an isolated area of the mold and easily recognized.

If Not Enough Clamp Tonnage From a Hydraulic Issue is the Problem

With the machine running, check for 3,000 psi on pump #4 and that it climbs up quickly (in about 2 seconds) and remains steady throughout the injection phase. It should also be known what the estimated tonnage requirement is for the mold and that it is no more than 90% of the rated tonnage of the machine.

If the machine does not develop 3,000 psi then perform the followings steps:

- 1.) Try adjusting the relief valve mounted directly on pump #4 (SV-27).
- 2.) If 3,000 psi is not achieved, then the problem is either the pump, relief valve (SV-27), or downstream.
Note: A reading of around 500 psi clearly indicates one or both of the poppets on the outboard prefill cylinders are not closed (see starting at step #10 below).
- 3.) Shut off hydraulic system and follow lockout/tag out procedures.
- 4.) There are two ¾" hoses coming off the pump. Facing the pump from the back of the machine, one hose goes towards the left and directly into the tank. The other goes towards the right and connects to a small (2") cubed block. Disconnect the hose from the block and cap off both the hose and block.
- 5.) Turn the adjustment screw on the relief valve all the way out, then start the pump.
- 6.) Looking at the pump gauge, manually energize the relief valve and turn the adjustment in until 3,000 psi is set.
- 7.) If 3,000 psi cannot be achieved, then it is either a bad pump or relief valve. A clear indicator of a bad pump is the amount of noise coming from it as more pressure is applied. Otherwise it is a flip of the coin between the pump or relief valve. After replacement(s) are made, set and lock at 3,000 psi or at least 10% higher than the estimated tonnage requirement of the mold.
- 8.) If 3,000 psi is achieved, then the problem is downstream. Reconnect the ¾" hose and back out the relief valve adjustment about 4 turns.
- 9.) On machines with 3 cylinders in the injection clamp, most likely it is one of the two outboard prefill cylinders. They need to be isolated for the next test (steps 10 thru 13). Otherwise, skip to step 14.
- 10.) Locate the 3/8" hose that feeds the rear outboard cylinder on the index unit side. Disconnect the hose and cap both ends.
- 11.) Turn on the hydraulics. **Make sure that the clamps are closed or serious personal injury and/or machine damage may occur!**
- 12.) Manually energize the relief valve for pump #4 (SV-27) and using the adjusting screw, increase to achieve 3,000 psi.
- 13.) If 3,000 psi can be achieved, then it is one (unlikely both) of the outboard prefill cylinders. To identify which one, the 3/8" hose must be connected individually to each cylinder and:

- a.) With the 3/8" hose connected to only one cylinder turn on the hydraulics. Again, **make sure that the clamps are closed!**
 - b.) Manually energize both SV-27 and SV-21 (prefill valve located on top of the auxiliary manifold). If 3,000 psi cannot be achieved then the cylinder that is connected is the bad cylinder.
 - c.) If 3,000 psi is achieved then repeat steps a and b above.
- 14.) If 3,000 psi cannot be achieved, then it could be either the blow clamp cylinder or the center injection clamp cylinder. Usually this is indicated by a bad drifting problem of the clamps after the hydraulics are turned off. Again it is a matter of a flip of the coin as to which component it is.
- 15.) Though extremely rare, it could also be an internal crack in the clamp open/close directional valve (SV-5 & 6).

If Not Enough Clamp Tonnage From a Mechanical Issue is the Problem

The structural integrity as well as the parallelism and stack height of the injection clamp assembly could be suspect. Usually if a tie bar breaks, it is inside the cross arm area and not seen. Symptoms are flash on one side, the side that is broken will raise enough to detect after tonnage is applied. A cracked cross arm does not always break in two, therefore it is less noticeable. A bright light and a sharp eye is usually all that is needed. On older machines if proper protective lubricant is not applied under the molds, then corrosion can be excessive and the surface is no longer flat. Finally clamp parallelism and stack height should be checked. Refer to "Clamp Parallelism" procedures found under separate cover.

If Too Much Injection Pressure is the Problem

Tonnage requirements for molds are calculated based on the packing pressure (typically 300 - 400 psi hydraulic pressure or 3,000 - 4,000 psi plastic pressure). Inconsistent shot size and transfer position could cause the mold to be full while still in the "Fill" phase. A hydraulic transducer out of calibration could also over pack. Note the transfer position and the cushion or minimum position over a dozen or so cycles. The difference should be no less than .250". Also, the cushion position should not vary more than .060". Excessive fill speed without ramping down will cause a spike that may not be seen on the hydraulic gauge. Look for a "Bounce" of the injection unit at transfer. Finally, poor nozzle balance can cause some cavities to be full before others. The result is the full cavities will see the high fill pressure resulting in flash usually in the neck area or gate if the seat is worn.