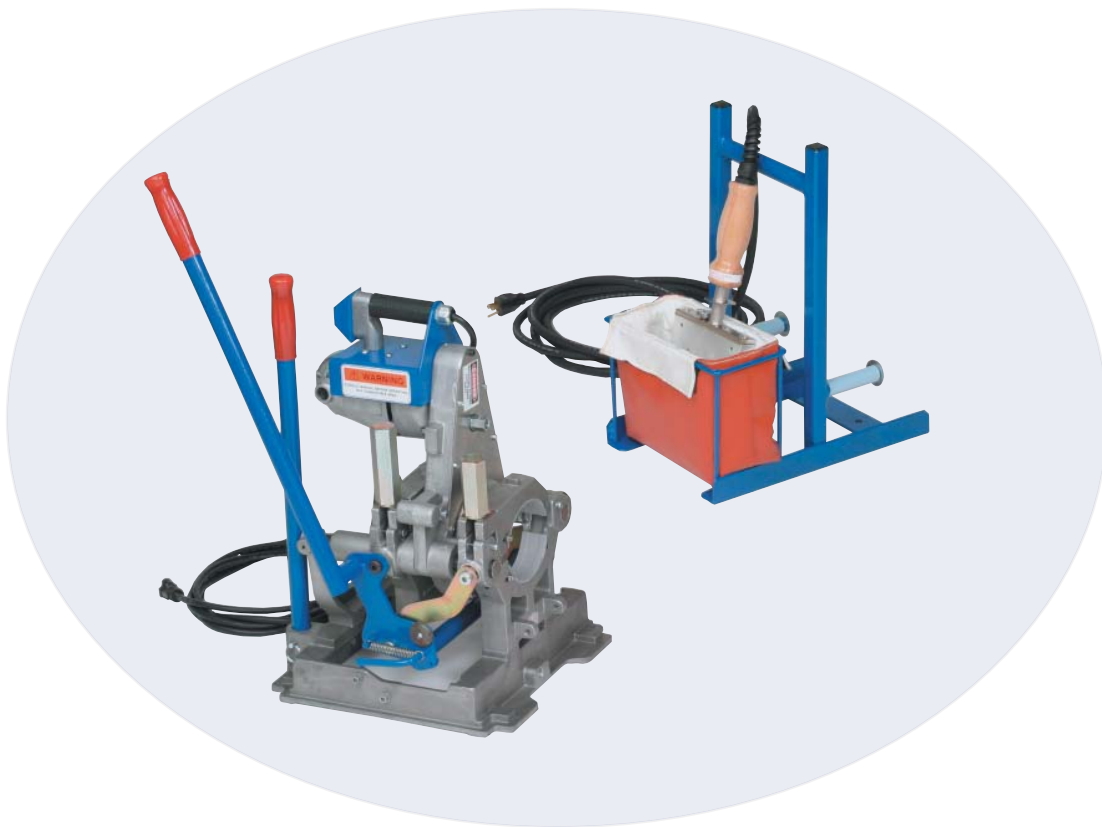


14M Butt Fusion System

Operator's Manual



CONNECTRA[®]
simply fusion
A Central Plastics Company

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Copy information listed on your Warranty Card for your records:

Model No. _____

Serial No. _____

Date Received _____

Distributor _____

Description

The purpose of this manual is to provide operating and maintenance instructions for the 14M Butt Fusion System.

The 14M Butt Fusion System is designed for quick and accurate joining of 3/4" CTS through 4" DIPS polyethylene pipe and valves and fittings, including 25-110mm, using the butt fusion process. Easy-to-use snap-in liners reduce the clamps to the smaller pipe sizes. The joining assembly, heater and facer can be used in the ditch, or above the ditch, either on or off the cart. The clamping assembly applies centerline fusion force and has a semi-automatic locking mechanism, which maintains fusion force without operator assistance. Outriggers are available for attachment to the joining assembly to facilitate easy installation, support and removal of pipe, both in and out of the ditch.



Features

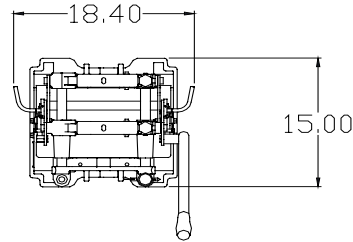
- * Applies centerline fusion force.
- * Fusion unit can be mounted on cart either parallel or perpendicular to the pipeline.
- * Outriggers, designed to facilitate movement and support of pipe through the joining unit, mount to the unit instead of the cart.
- * Symmetrical design allows facer to be inserted into the joining assembly from either side.
- * Facer can be operated manually while in hazardous areas.
- * When heater is at correct temperature, it can, when necessary, be unplugged from its power source and taken into the ditch to effect the fusion.



Specifications

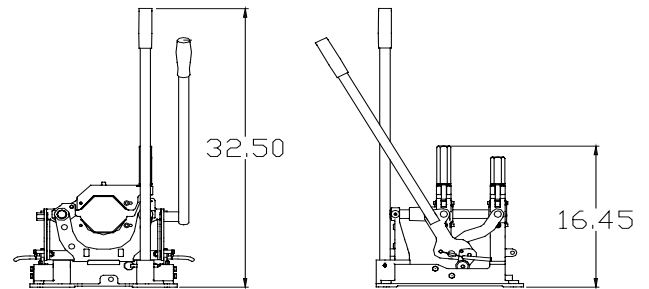
Carriage Unit Dimensions

Length	15.00 inches	381 mm
Width	18.40 inches	467 mm
Height	16.45 inches	418 mm
Weight	39 pounds	17.7 kg



Carriage Mounted on Frame

Length	41.34 inches	1,050 mm
Width	24.68 inches	627 mm
Height	41.92 inches	1,065 mm
Total Weight (all components)	149 pounds	67.6 kg



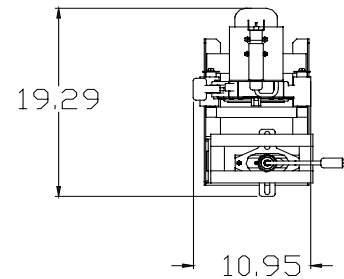
Capacities

Model 14M - 3/4" CTS thru 4" DIP5*

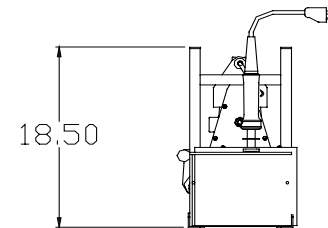
25 mm thru 110 mm*

Electrical data

120 VAC Single Phase	Watts	Amps
Facer Motor	660	5.5
Heater	1,500	12.5
Total Power Consumption	2,160	18



240 VAC Single Phase	Watts	Amps
Facer Motor	840	3.5
Heater	1,500	6.25
Total Power Consumption	2,340	9.75



* With the use of optional reducing liners.

Specifications are subject to change without notice.

Safety Precautions

Read this manual carefully before attempting to operate this machine. Working with extreme temperatures and sharp facer blades can be dangerous if proper procedures are not followed. Know proper fusion techniques. Recommendations of pipe manufacturers regarding fusion temperatures, pressure, and techniques must be known to ensure proper fusion joints.



Warnings and Cautions

The purpose of Warnings and Cautions in this manual is to call the operator's attention to the possible danger of injury to personnel and damage to equipment. The hazard alert sign above appears in this manual. When you see this sign, carefully read what it says, YOUR SAFETY IS AT STAKE.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and/or damage to equipment.

Caution: Indicates a potentially hazardous situation which, if not avoided, may result in personal injury and damage to equipment. It may also be used to alert against unsafe practices.



Electrical Safety Precautions

When using an extension cord, use only a 3 wire grounded cord. If outside, make sure it is suitable for outdoor use. Make sure cord is of sufficient gauge to accommodate power requirements. Replace or repair damaged cords. If the heater does not heat properly, it may be because of insufficient

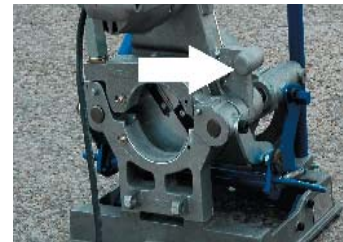
capacity of the extension cord. This could also damage the facer motor. Disconnect power cord when adjusting heater tool temperature, servicing, or changing accessories. The cord should be in good condition and examined at regular intervals. Heater and facer power cords should be kept off the ground when moving unit to prevent cord damage.

Machine Operation Safety



Warning: MAKE SURE FACER IS LATCHED BEFORE TURNING MOTOR ON. If not, it may jump unexpectedly when turned on and could cause personal injury or damage to the equipment.

Always make certain that the facer is securely latched in the "down" position before turning the motor on. If facer is not properly latched, damage to machine and/or personal injury could result. Torque generated by the turning of the facer motor may cause it to move unexpectedly if not latched. Avoid contact with facer blades. Each side of the facer plate has two blades that are very sharp and can cut the operator severely.



Warning: Do not operate facer motor or heater in the presence of a combustible atmosphere or in damp or wet conditions. In this case, immobilize facer motor and operate manually.

Machine should be covered when used in inclement weather. Unit must be in a stable position before operating to prevent tip over.

Do not force machine. It will work better if operated within design limits. Apply only slight pressure when facing. Excessive pressure will damage facer motor and drive chain. Maintain machine in top condition.

Use sharp facer blades and keep machine clean for best and safest performance. Follow lubrication instructions contained in this manual.

Before moving unit, secure the clamps and place facer in its carrying rack. Avoid contact with heater body. Temperatures can reach 450°F quickly and can cause severe burns.


Operating Procedures

Preparation

If the 14M is to be used on the cart, it can be placed on the cart with the cart either parallel or perpendicular to the pipeline. Place on the cart in the orientation desired and secure with the two thumbscrews provided.




Connect heater to AC power source. Temperature was set at the factory to 450°F. Permit sufficient heating time to stabilize temperature reading on heater thermometer.

 Caution: Use on AC power source only. If used on direct current (DC) power, the thermostat in the heater tool will be damaged.

Proper heating temperature is important in making a good fusion joint. The thermometer built into the heater tool indicates internal temperature and should be used only for reference. To assure the pipe manufacturer's temperature specifications are met, it is recommended that the surface temperature of the heater be measured prior to initial use and at reasonable intervals thereafter.

A hand-held surface pyrometer, Connectra® part number 28-8554-1200-10, can be used for measuring this temperature. Several areas should be checked to ensure even heat distribution.




 Warning: DISCONNECT electrical power BEFORE adjusting heater temperature. If not, the thermostat could be shorted out, resulting in severe electrical shock. Heater is not explosion proof.



Use the pyrometer to check temperature in the center and at several points around the edges. (Do not use temperature crayons.) Each reading should be +/- 10° of each other.

Temperature adjustments can be made by inserting a flat blade screwdriver into the thermoswitch adjusting screw. Turning clockwise will lower temperature and counterclockwise will raise temperature. One revolution will adjust temperature about 100°F. Do not turn the screw more than a ¼ revolution at a time, letting heater come to the new temperature before additional adjustments.




 Caution: Do not adjust heater above 550°F. This may result in damage to heater components and cause deterioration of non-stick surface coating on face of the heater, which can result in contaminated fusion joints.


Install correct clamp liners when pipe smaller than 4" DIPS is to be fused. Snap liners into position.

If 1 ½", 50 mm, or smaller pipe is being fused, 2" IPS liners will have to be installed in the clamp shells first, before installing the desired smaller sized liners.

Inspect facer blades for sharpness. Replace if necessary.

 Caution: Make sure power to the facer motor is disconnected before replacing blades.

When replacing blades, make sure facer plates are free of dirt and foreign material so that the blades will seat properly.

 Caution: Facer blades are extremely sharp. Handle with care when replacing.



If outriggers are to be used, install on the joining assembly at this time. Place a piece of pipe in the machine and secure with the clamps. Lift end of outrigger to the point that roller wheels bracket the pipe. Tighten thumbscrew to hold outrigger in position. Make sure thumbscrew extends through slot in sliding adjustment plate.



Load Pipe or Fittings

Separate clamp assemblies to prepare for loading pipe.

Load pipe in stationary clamp assembly. If pipe is square-cut, extend end of pipe about 1" past inside edge of the clamp. Tighten clamp enough to hold pipe in place.

Load pipe or fitting in movable clamp assembly. Extend end of pipe about 1" past inside edge of the clamp, leaving room for installation of the facer.


Try to align print on pipe with that of longest pipe section. This will aid in aligning the two pipe sections if the pipe is out of round. Tighten clamp enough to hold pipe in place.

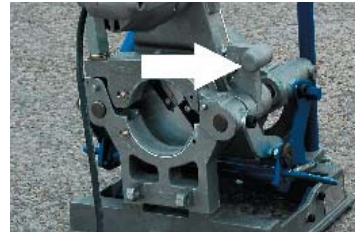
Install facer between pipe ends. Make sure it latches securely. Note that facer can be installed from either side of the machine. Note also that the operating and leverage handles can be switched from side to side to suit operating conditions or a left or right-handed operator.

Using operating handles, close clamp assemblies so that pipe contacts facer. Estimate amount required to be faced, and then tighten clamps tightly.

Use operating handles and open clamp assemblies so that pipe is not in contact with facer prior to starting the facer motor.


Facing the Pipe

 **Warning:** Always make certain facer locking handle is securely latched in the "down" position before turning the motor on. If facer is not latched in position securely, personal injury or damage to the machine could occur.



Turn facer motor switch to the "on" position.


Using the actuation handle, advance the movable clamp assembly with pipe toward facer. Apply slight pressure to permit facer blades to engage both sections of pipe and face end surfaces.

 **Caution:** Apply only slight pressure when facing. Excess pressure can cause damage to the facer and motor.

Continue to maintain slight pressure on facer until the facer stops are in contact with both clamps and until motor speeds up to normal speed and runs free. This indicates that the clamp assemblies have contacted the facer stops and facing has been completed.

Turn facer motor switch to the "off" position and allow blades to come to a complete stop

Separate clamp assemblies. Unlatch facer and remove it from the machine.

 **Warning:** Avoid contact with facer blades. They are very sharp and can cut severely.


Manual Facing with Standard Facer Model

When explosive gases are present and there is concern of creating an electric spark, the facer can be operated manually by removing the facer motor brushes.

Before going into a hazardous area, unplug the facer. Remove the brushes, which are located at the back of the motor.

Attach a 3/4" ratchet socket to the manual drive sprocket hex and rotate in a counter clockwise direction.



 **Warning:** Do not attempt to turn on the facer motor with the ratchet attached to the facer. Serious injury and/or damage to the equipment will occur.

Pipe/Fitting Alignment

Remove all loose shavings from around pipe and carefully inspect pipe ends to be sure they are completely faced and free of chips or shavings.

Note: Do not touch faced surface of the pipe or fittings. These surfaces must be kept free of dirt, water, body oil and other contaminants,

which may cause defects in the fusion.

It is important to remove all shavings from pipe ends and machine base. Accumulated shavings can cause difficulty in proper operations of the unit and result in a faulty fusion of pipe.

Inspect fusion area, making sure not to touch the pipe. If the facing appears unsatisfactory, repeat the facing process.

Check pipe alignment by closing the clamps to bring the pipe ends together. Carefully check pipe alignment and the fit of the faced surfaces. This can be done by running a straight edge across the seam to determine if one edge is raised above the other.

- If one pipe end is slightly higher than the other, lower it to the aligned position by tightening the hold-down clamp on that section of pipe. Do not loosen hold-down clamps to obtain alignment.
- If misalignment is side-to-side, slight rotation of the shorter section will help bring them into alignment.
- When joining coiled pipe, it may be necessary to rotate each end of pipe to make an "S" or "U" shape and re-clamp the pipe to provide acceptable alignment. Reface pipe ends.

If any of the above alignments are necessary, the facing operation must be repeated.

Bring pipe ends together, applying force equal to or greater than the fusion force to be used. Make sure the pipe does not slip.

When satisfactory alignment has been achieved, separate the clamp assemblies to make room for insertion of the heater.

Fusing the Pipe

Recheck heater for proper temperature recommended by pipe manufacturer. Use surface pyrometer to check temperature of heater face surface. If pyrometer indicates that temperature is not as recommended, refer to instructions for setting temperature before proceeding



Wipe both faces of the heater body with heater face towel or a soft clean cotton cloth to remove any contaminants. Do not use polyester material to clean heater faces. Place heater in position between two pipe ends.

Move clamps to bring pipe and/or fitting to the heater. Maintain the pipe ends in contact with the heater. **DO NOT APPLY FORCE.**

Set the locking mechanism by moving the locking mechanism lever forward. The locking mechanism on either side operates independently of each other, but both sides will lock.

Maintain pipe-to-heater contact for recommended length of time or size of melt bead specified by the pipe manufacturer.

Note: As pipe ends reach proper temperature, a melt bead will form where the pipe ends contact the heater. The "size of the bead" is often referred to by pipe manufacturers to determine if proper melt has been reached.

When heating of pipe ends has been completed, open clamp assemblies all the way to separate pipe ends from the heater. Quickly remove heater from between pipe ends.



Caution: Heater tool is extremely hot and will burn exposed skin and damage clothing.

Quickly inspect pipe ends to ensure melt is uniform. If melt is not uniform and does not meet pipe manufacturer's recommendations, replace the heater in its holder. The pipe must be refaced, repeating at the facing operation.



Caution: Let heater cool in atmosphere. Do not submerge into water for cooling. Internal components will be damaged.

As pressure is applied, the locking mechanism will maintain force. Leave the locking mechanism set while fusion cools.



Note: The exact amount of pressure to apply during fusion is determined by following pipe manufacturer's recommended procedures. Check pipe manufacturer's literature to determine how the bead should appear.

- Over-pressuring the fusion joint will cause the bead to be too large and could result in an inferior fusion. The melt can be pushed to the OD and into the ID of the fusion bead, creating a possible "cold joint" in the center section of the fusion.
- Under-pressuring the fusion joint could result in an inferior fusion due to insufficient interfacial contact in the melt area.
- Extreme care should be exercised to maintain pressure during the fusion operation even if bead exceeds desired width. Reversing pressure can cause porosity in the fused area.

When specified fusion time for cooling under pressure has been reached, release the locking mechanism pressure and loosen hold-down clamp.

Remove Pipe

Note: It is best not to test, stress, pull, or rough-handle newly fused pipe until the minimum cooling time specified by the manufacturer has been reached.

Open clamps. Lift outriggers slightly and slide bar underneath outrigger adjustment thumbscrew. This will raise the pipe in the clamps, permitting it

to be pulled through to the next fusion point.

Fusing of Valves/Elbows

Full bore valves or elbows can be fused to pipe with the 14M with no modifications to the machine.

Valves or elbows can be installed in either the movable or stationary clamp.

Maintenance

General

Keeping the 14M clean and lubricated is the most important part of field maintenance. Mechanical linkages must operate freely for the unit to work properly.

Joining Assembly

Keep mechanical linkages lightly lubricated. Keep guide rods clean and free from contaminants.

Locking Mechanism

As the locking mechanism pads wear smooth, they will have to be replaced. After the first wear, they can be turned over and reattached, leaving a new braking surface. The friction wheel, which engages the locking mechanism pad, will also have to be checked for wear and replaced as necessary.

Facer Assembly

A rough face on pipe end usually indicates facer blades are dull and should be replaced.

MAKE SURE POWER IS DISCONNECTED WHEN REPLACING FACER BLADES. When changing blades, make sure facer plates are free of dirt and foreign materials to ensure proper blade seating. Should other problems occur with the facer, consult the factory for repair.

Heater Assembly

Read these instructions before performing any maintenance on the 14M heater assembly. Only a qualified technician should perform tool repair to assure work is done in accordance with approved electrical standards.

Should the heater fail to heat properly, it must be returned to the factory for repairs.

Routine Maintenance

14M heaters are normally set at 450°F at the factory. An information card accompanies the heater and specifies exactly what temperature is set. The temperature can be adjusted with a screwdriver. Clockwise rotation lowers the temperature and counterclockwise rotation raises it. One complete revolution will adjust temperature about 100°F. Temperature should not be changed more than ¼ of a revolution at a time.



Should the heater plates become scratched or otherwise marred, remove them and return them to the factory for re-coating. Always disconnect power cord from power source before adjusting the temperature. This will eliminate the possibility of injury due to electric shock.



Keep the heater face clean with a cotton cloth. Do not use polyester material, it will stick to the surface.

Replacment/Accessory Parts

Facer Assembly - 120V	28-8204-7240-30
Cart Assembly	28-8204-5000-30
Outrigger Assembly - (set of 2)	28-8204-4400-30
Heater/Facer Carrier (w/bag)	28-8204-3500-30
Heater Assembly - 120V	28-8204-7951-30
Facer Blade Set	28-0204-4560-40
Heater Butt Plate Set	28-8153-3230-30
Heater Bag	28-8204-3550-10
Handle, Actuation	28-8204-7110-20
Handle, Reaction	28-8204-4150-20
Thermoswitch	V00169
Heater Cartridges	28-8401-0550-10
Thermometer	28-8559-0300-10

Statement of Warranty

Warranty/Disclaimers – Connectra Fusion Technologies, LLC (“Seller”) warrants for a period of three (3) years from the date of invoice that the products sold under the order invoiced (the “Products”) will be free from defects in materials and workmanship, except for items supplied to Seller by other vendors in connection with the order. The items to which the warranty does not extend (the “Excluded Items”) include, without limitation, electrical devices, pumps, controls, and similar items. Seller assigns to the buyer of the Products, without recourse, any warranty on the Excluded Items which is provided by manufacturer thereof.

The warranty provided hereby does not apply to any product or component that has been repaired or altered by anyone other than Seller, and does not cover any failure of the Products which Seller determines to have been caused due to abuse, misuse, negligence or normal wear and tear.

As a condition to the buyer’s exercise of its rights under this warranty, the Products must be returned to Seller’s dock, freight prepaid, in Gainesville, Texas, within ten (10) days of the date of failure, accompanied by a Return Goods Authorization (available from Seller) and information related to the claim. Buyer’s REMEDIES UNDER THIS WARRANTY ARE LIMITED to, at Seller’s sole option, the replacement or repair of the Products determined by Seller to be defective, or a refund of the purchase price, less an allowance for services rendered by the Product prior to the warranty claim. IN NO EVENT SHALL SELLER BE LIABLE FOR LOSS OF USE, DAMAGE TO OR LOSS OF PRODUCTS OR SERVICES, FAILURE TO REALIZE EXPECTED SAVINGS, FRUSTRATION OF ECONOMIC OR BUSINESS EXPECTATIONS, LOST REVENUE OR PROFITS, OR FOR ANY OTHER SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, EVEN IF THEY WERE FORESEEABLE OR SELLER WAS INFORMED OF THEIR POTENTIAL. Products repaired or replaced pursuant to this warranty will be delivered to buyer FOB Seller’s dock in Gainesville, Texas.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, WHICH ARE EXPRESSLY DIS-

CLAIMED. SELLER NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO MODIFY THESE TERMS AND CONDITIONS, WARRANT SPECIFIC APPLICATIONS, OR ASSUME FOR SELLER ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ANY SELLER’S PRODUCT OTHER THAN AS PROVIDED IN THIS WARRANTY.

Recommendations - Any recommendations and suggestions provided by Seller concerning its products and the use thereof are based on tests and data believed to be reliable but are not intended to be complete or exhaustive. The user is responsible for determining the applicability of governmental regulations relating to the use of the products and for all other aspects of the use of Seller’s products.

Actual use of the products by others is beyond the control of Seller and Seller makes no warranty or other agreement, expressed or implied, regarding any aspect of such use. Seller shall have no liability arising from the use of Seller’s products by a third party.

Modifications – Seller may improve or otherwise modify its products without any obligation to improve or otherwise modify in any way any products (including any parts or accessories) previously sold by Seller.

Distributors – Seller’s products are sold through authorized distributors, who determine the price, terms and conditions of sale.

Other – No partial invalidity of this agreement shall affect the remainder. This agreement shall be governed and construed in accordance with the laws of Texas, excluding its laws relating to conflicts-of-law.

The sole purpose of the exclusive remedy contained in the limited Warranty shall be to provide repair or replacement of failed products, or to refund the purchase price of the failed product as explained above. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as Seller agrees to repair or replace the failed product or to refund the purchase price as explained above.

