

## Operating Instructions for:

PE55TWP-E110  
PE55TWP-E220  
PE55TWP  
PE55TWP-220  
PE55TWP-4-E110

PE55TWP-4-E220  
PE55TWP-4  
PE55TWP-4-220  
PE55TWP-CF

## ELECTRIC HYDRAULIC PUMP 10,000 PSI



### NOTE:

- Carefully inspect the pump upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.
- Read and carefully follow these instructions. Most problems with new equipment are caused by improper operation or installation.
- The hydraulic power unit can be ordered with "building block" flexibility. The customer can choose from a variety of motors, controls, reservoirs, and other options. Because of the many options available, these instructions will include directions for options that your particular pump may not have.
- Do not change motors without consulting the pump manufacturer's Technical Services Department.

## SAFETY PRECAUTIONS

 **WARNING: To help prevent personal injury,**

### HYDRAULIC HOSE

- Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Always shut off the electric motor before breaking any connections in the system.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not let the hose kink, twist, curl or bend so tightly that oil flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose.
- Do not use the hose to move attached equipment. Stress can damage the hose, causing personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials can result in personal injury.

### PUMP

- Do not exceed the PSI hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities can result in personal injury.
- Before replenishing the oil level, retract the system to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure created when the wrenches are retracted.

### POWER SUPPLY

- Never use an ungrounded power supply with this unit.
- The pump must be compatible with existing line voltage.
- Disconnect the pump from the power supply when performing maintenance or repair on the unit.
- If the unit's power supply is damaged or the inner wiring is exposed in any way, replace immediately.
- Any electrical work must be done by a qualified electrician.
- If the power cord is damaged or wiring is exposed, replace or repair immediately.
- Changing the voltage on the jet motor (single, or three phase) is a complicated and, if not done correctly, dangerous procedure. Consult the pump manufacturer's Technical Services Department for specific information before attempting any rewiring. Rewiring voids CSA approval.
- All voltages must be wired for CW rotation when viewed from the lead end (top) of the motor.
- Check the total amperage draw for the electrical circuit you will be using. (For example: Do not plug a motor or motors that may draw 25 amps into a 20 amp fused electrical circuit.)
- Do not attempt to increase the powerline capacity by replacing a fuse with another fuse of higher value. Overheating of the powerline and the possibility of a fire will result.
- To rewire a motor from one voltage to another or when a flow control valve is changed between manual and solenoid, consult the electrical schematic in the pump's parts list.

**Circuit Breakers:** If motor stops due to an overload or power outage,

Universal Motor: Move motor switch to OFF and control valve to neutral. Let motor cool or wait until power is restored. Reset circuit breaker switch in power panel. (The pump motor doesn't have a circuit breaker.)

Single-phase Motor: Thermal overload switch will break circuit to the motor. Move motor switch to OFF and control valve to neutral. Allow motor to cool before switching on again, or wait until power is restored.

Three-phase Motor: A magnetic starter switch breaks circuit to the motor. Move the motor switch to OFF and control valve to neutral. Remove the cover on motor control box. Let the motor cool or wait until power is restored. One of three reset buttons must be pushed in to reset motor. Replace cover.

## HYDRAULIC PUMP SET-UP PROCEDURE

### Motor Hook-up and Operation

**Universal Motor:** The universal motor is wired for 115 or 230 volts, 50/60 cycles according to the customer's request. **This motor cannot be rewired.**

## SET-UP AND OPERATION

### Filling The Reservoir

**NOTE: The pump has been shipped without oil in the reservoir. High-grade hydraulic oil has been shipped with the pump in a separate container. If additional oil is required, use a high-grade, approved hydraulic oil.**

1. Clean the area around the filler cap to remove all dust and grit. Any dirt or dust in the oil can damage the polished surfaces and precision-fit components of the pump.
2. Retract all cylinders to the return position.
3. Remove the filler cap, and insert a clean funnel and filter. Fill with hydraulic oil to 1/2" from the top of the filler hole. Replace filler cap with the breather-hole in the filler cap open.
4. Cycle the pump (with wrench attached) several times. Retract the wrench, and check the oil level in the pump reservoir again.

### Hydraulic Connections

1. Clean all the areas around the oil ports of the pump and wrench.
2. Inspect all threads and fittings for signs of wear or damage, and replace as needed.
3. Clean all hose ends, couplers or union ends.
4. Remove the thread protectors from the hydraulic oil outlets. Connect the hose assembly to the hydraulic oil outlet, and couple the hose to the wrench. Although a high-grade, non-hardening thread sealant is preferred, PTFE tape may be used to seal hydraulic connections if only one layer of tape is used. Apply carefully to prevent the tape from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of oil.

### Adjusting The Hydraulic Gauge

Locate the adjustment screw on the gauge (see Figure 1) and make adjustments as needed with a screwdriver. The adjustment screw is located on the lower right back rim of the gauge. You must reach under the portion of the shroud that the gauge is mounted in.

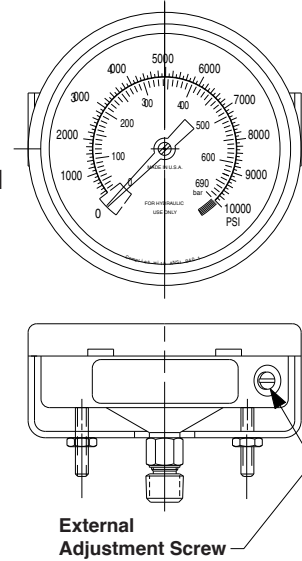


FIGURE 1

### Priming The Pump

When operating the pump for the first time:

1. Valve and hose connections must be tight, and the reservoir must be filled to the proper oil level. Start the motor.
2. Jog the pump several times to build pressure. If the pump doesn't build pressure, it may not be primed. Disconnect a hose from the system and route it back to the pump reservoir. Run the pump until a steady flow of oil is observed free of suspended air bubbles. Reconnect the hose to the system.
3. Run wrench several times to eliminate air from the system. For more complete instructions, refer to the section titled "Bleeding Air From The System."
4. The pump is ready to be put into regular operation.

**IMPORTANT:** After eliminating trapped air from a large work-holding system, retract the wrenches and refill the pump reservoir to 1/2" from the top of the filler hole.

### Adjusting The Pressure Regulating Valve

**NOTE:** For easy adjustment of the pressure regulating valve, always adjust the pressure by *increasing* to the desired pressure setting.

1. Loosen the locknut on the pressure regulating valve (C), and back the adjusting screw (B) out a few turns with a screwdriver by turning in a counterclockwise direction. This will *decrease* the setting to a lower than desired pressure.
2. The pump must be completely connected. Set the motor control toggle switch on "Run" and push the "Start" button.
3. With the screwdriver, slowly turn the adjusting screw (B) in a clockwise direction. This gradually *increases* the pressure setting. When the desired pressure is reached, lock the adjusting screw in position by tightening the locknut.

**IMPORTANT:**

- The pressure range is from 1,000 to 10,000 PSI depending on the pump model.

## PREVENTIVE MAINTENANCE



**WARNING:** To help prevent personal injury,

- Disconnect the pump from the power supply before performing maintenance or repair procedures.
- Repairs and maintenance are to be performed in a dust-free area by a qualified technician.

### Bleeding Air From The System

Air can accumulate in the hydraulic system if the reservoir oil level is too low. This air causes the wrench to respond in an unstable or slow manner. To remove the air:

1. The hydraulic wrench(s) must be positioned on their side(s) with the couplers located upward.
2. Remove any load from the wrench(s), and cycle the hydraulic system through several cycles (fully extend and retract the wrenches).

**Note: The wrench must be at a lower level than the pump to allow air to be released through the pump reservoir**

### Hydraulic Fluid Level

1. Check the oil level in the reservoir after each 10 hours of use. Proper oil level is 1/2" from the top of the fill hole when all wrenches are retracted.
2. Drain, flush, and refill the reservoir with an approved, high-grade hydraulic oil after approximately every 300 hours of use. The frequency of oil changes will depend upon the general working conditions, severity of use, and overall cleanliness and care given the pump.

### Maintenance Cleaning

1. Keep the pump's outer surface as free from dirt as possible.
2. Seal all unused couplers with thread protectors.
3. Keep all hose connections free of dirt and grime.
4. The breather-hole in the filler cap must be clean and unobstructed at all times.
5. Equipment connected to the pump must be kept clean.
6. Use only an approved, high-grade hydraulic oil in this pump. Change as recommended (every 300 hours).

## Draining And Flushing The Reservoir

**IMPORTANT:** Clean the pump exterior before the pump interior is removed from the reservoir.

1. Remove the ten screws fastening the motor and pump assembly to the reservoir. **IMPORTANT: Do not damage the gasket or bump the filter or pressure regulating valves when lifting the pump and motor off the reservoir. See Figure 2.**
2. Clean the inside of the reservoir and fill with a suitable flushing oil. Rinse the filter clean.
3. Place the pump and motor assembly back onto the reservoir, and secure with two machine screws assembled on opposite corners of the housing.

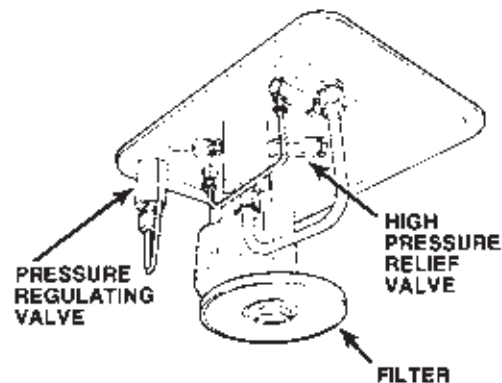


FIGURE 2

**IMPORTANT:** The hydraulic flow control valve must be in the neutral position for the following step. If the pump is equipped with a valve that has only an advance or retract position, place the valve in the advance position, and connect a hose to the advance port on the valve. Place the other end of the hose into the oil filler plug hole.

4. Run the pump for several minutes. Then disconnect the motor and pump assembly, and drain and clean the inside of the reservoir.
5. Fill the reservoir with an approved, high-grade hydraulic oil. Place the pump and motor assembly (with gasket) on the reservoir, and thread the ten screws. Tighten securely and evenly.

## Adding Oil To The Reservoir

1. Wrench must be fully retracted and the power supply disconnected when adding oil to the reservoir.
2. Clean the entire area around the filler plug before removing the filler plug.
3. Use a clean funnel with filter when adding oil.
4. Use an approved, high-grade hydraulic oil (215 SSU @ 100° F) only.

## Sound Reduction

The electrically-powered hydraulic pump operates in the 90-95 dBA range. If further sound reduction is desirable, any of the following options will help reduce the sound level.

1. Install a pressure switch. It shuts the motor off automatically when maximum pressure is reached (holding cycle).
2. Use a 3450 RPM, 1-1/2 horsepower, 115 VAC, 60 Hz, 1-phase pumping unit.
3. Use a 3450 RPM, 1-1/2 horsepower, 230 VAC, 60 Hz, 3-phase pumping unit.
4. Install casters (two gallon reservoir only) to reduce the noise level.

## Checking Brushes On Universal Motors

To help prevent premature failure of the armature, check the brushes periodically:

1. Remove the metal brush cover plates.
2. Remove the brush holder caps and brush assemblies
3. The brush assemblies must be replaced if they are 1/8" long or less. See Figure 3.
4. Install brush assemblies, brush holder caps, and metal brush cover plates.

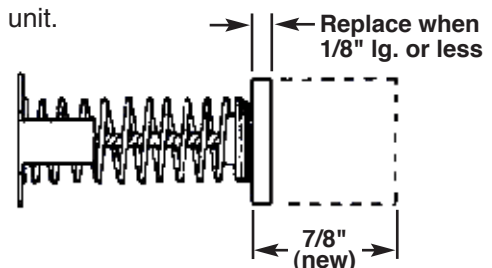
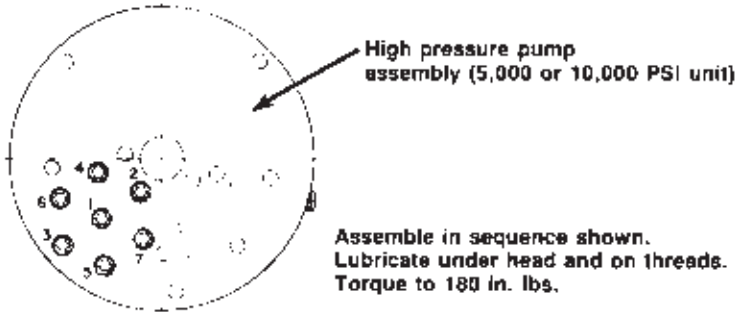


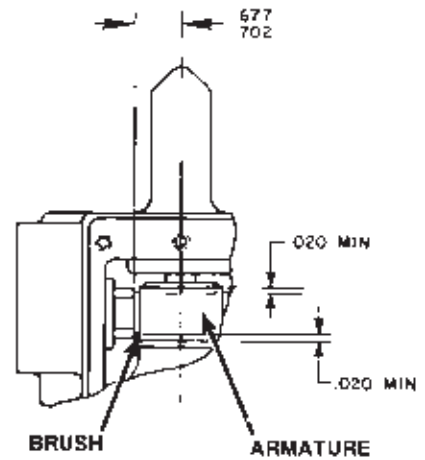
FIGURE 3

### REASSEMBLY SPECIFICATIONS

#### HIGH PRESSURE PUMP ASSEMBLY BOLT TIGHTENING SEQUENCE

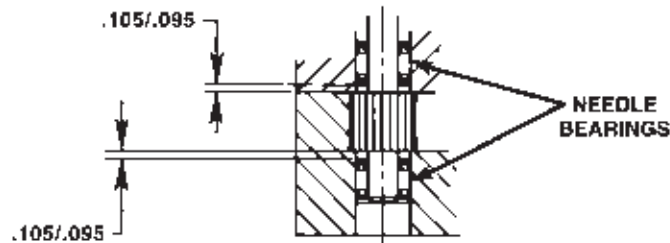


#### BRUSH HOLDER & ARMATURE INSTALLATION SPECIFICATIONS



When replacing brushes or the armature, the dimensions shown must be as specified.

#### NEEDLE BEARING INSTALLATION SPECIFICATIONS



When replacing the needle bearings on the drive gear of the basic pump, the dimensions shown must be as specified.

## TROUBLESHOOTING GUIDE


 **WARNING**

- To help prevent personal injury, any repair work or troubleshooting must be done by qualified personnel familiar with this equipment.
- Use the proper gauges and equipment when troubleshooting.

**NOTE:**

- Depending on the type of pump, it is often best to check for leaks by using a hand pump and applying pressure to the suspect area without the motor running. Watch for leaking oil and follow it back to its source.
- Plug the outlet ports of the pump when checking for leakage to determine if the leakage is in the pump or in the wrench or tool.
- Refer to the Parts List included with your particular pump when using this troubleshooting guide.

PROBLEM	CAUSE	SOLUTION
<p><b>Electric motor does not run</b></p>	<ol style="list-style-type: none"> <li>1. Pump not turned ON.</li> <li>2. Unit is not plugged in.</li> <li>3. No voltage supply.</li> <li>4. Broken lead wire or defective power cord plug.</li> <li>5. Defective switches.</li> <li>6. Defective motor.</li> <li>7. Defective starter relay.</li> <li>8. Defective remote switch.</li> <li>9. Worn brushes.</li> <li>10. Circuit breaker tripped because total amperage draw too high for existing circuit.</li> <li>11. Overheated motor (single-phase motor only). Magnetic starter disengaged (three-phase motor only). Thermal protector open.</li> <li>12. Faulty thermal protector (single-phase motor). Faulty magnetic starter (three-phase motor).</li> </ol>	<ol style="list-style-type: none"> <li>1. Flip toggle switch to "Run" position.</li> <li>2. Plug in unit.</li> <li>3. Check line voltage. Check reset button on power panel.</li> <li>4. Replace defective parts.</li> <li>5. Check switches.</li> <li>6. Repair or replace motor.</li> <li>7. Replace defective parts.</li> <li>8. Repair or replace remote switch.</li> <li>9. Replace brushes.</li> <li>10. Add an additional circuit or use alternate circuit.</li> <li>11. Wait for motor to cool before restarting. Reset thermal protector (Single-phase motor will reset automatically.)</li> <li>12. Replace.</li> </ol>

 **WARNING: To help prevent personal injury, disconnect power supply before removing cover. Any electrical work should be performed by a qualified electrician.**



PROBLEM	CAUSE	SOLUTION
<p><b>Pump is not delivering oil or delivers only enough oil to advance wrench(s) partially or erratically (continued).</b></p>	<ol style="list-style-type: none"> <li>1. Oil level too low.</li> <li>2. Loose-fitting coupler to wrench.</li> <li>3. Air in system.</li> <li>4. Air leak in suction line.</li> <li>5. Dirt in pump or filter plugged.</li> <li>6. Oil is bypassing through the double-acting wrench.</li> <li>7. Cold oil or oil too heavy (Hydraulic oil is of a higher viscosity than necessary).</li> <li>8. Relief valve or low pressure unloading valve out of adjustment.</li> <li>9. Reservoir capacity is too small for the size of the wrench(s) used.</li> <li>10. Defective directional valve.</li> <li>11. Sheared drive shaft key(s)</li> <li>12. Motor rotating in wrong direction.</li> <li>13. Vacuum in reservoir.</li> <li>14. Low pressure pump worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill reservoir to 1/2" from top of filler hole with wrench retracted.</li> <li>2. Check quick-disconnect couplings to wrench. Inspect couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because the ball check does not stay open due to wear.</li> <li>3. Bleed the system.</li> <li>4. Check and tighten suction line.</li> <li>5. Pump filter should be cleaned and, if necessary, pump should be dismantled and all parts inspected and cleaned.</li> <li>6. By removing the wrench and capping the hoses, the pump and valve can be checked. Observe if pump holds pressure.</li> <li>7. Change to a lighter oil.</li> <li>8. Adjust as needed.</li> <li>9. Use smaller wrench(s) or larger reservoir.</li> <li>10. Inspect all parts carefully and replace if necessary.</li> <li>11. Replace.</li> <li>12. 3450 RPM motor: Refer to electrical schematic on motor. 12,000 RPM motor: Reverse lead wires to brush holders. Air motor: Air line connected into wrong port.</li> <li>13. Check for plugged vent in filler plug.</li> <li>14. Remove end cap from low pressure gear pump. Clean pump, and replace worn gears, shifting spool, body or end cap.</li> </ol>

PROBLEM	CAUSE	SOLUTION
<b>Pump builds pressure but cannot maintain pressure.</b>	<ol style="list-style-type: none"> <li>1. Check to see if there are any external leaks. If no oil leakage is visible, the problem is internal. If using a double-acting wrench, remove it from the system to ensure that the leak is not in the wrench.</li> <li>2. To test for a leaking control valve, lift the pump from the reservoir but keep the filter in the oil. Remove the drain line to see if the oil is leaking from the valve. If the valve is not leaking, the internal check valve could be leaking. Refer to the note concerning checking for oil leaks at the beginning of this troubleshooting Guide.</li> <li>3. Leaking pressure switch seal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Seal leaking pipe fittings with pipe sealant.</li> <li>2. Clean, reseal or replace flow control valve parts. If the internal check valve(s) are leaking, the pump must be dismantled and the seat areas repaired, poppets replaced, etc.</li> <li>3. Repair or replace seal.</li> </ol>
<b>Pump will not build full pressure.</b>	<ol style="list-style-type: none"> <li>1. Faulty pressure gauge.</li> <li>2. Check for external leakage.</li> <li>3. Check the external pressure regulator. Check the relief valve setting.</li> <li>4. Look for internal leakage in double-acting wrench.</li> <li>5. Check for leaks in the flow control valve.</li> <li>6. Inspect the pump for internal leakage. Check high pressure pump inlet or outlet ball checks.</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibrate gauge.</li> <li>2. Seal faulty pipe fitting with pipe sealant.</li> <li>3. Lift the pump from the reservoir, but keep the filter immersed in oil. Note the pressure reading when the relief valve begins to open. If functioning normally, it should start to leak off at relief valve pressure.</li> <li>4. Remove the wrench from the pump. If the pump builds full pressure, the wrench is defective.</li> <li>5. Clean and reseal or replace parts.</li> <li>6. Same procedure as above, but look for leaks around the entire inner mechanism. If there are no visible leaks, the high pressure pump subassembly may be leaking. Remove all parts. Check the valve head assembly body for any damage to the seat area. Clean and reseal if necessary. Inspect for damage and replace if necessary, then reassemble.</li> </ol>

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<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
<b>Pump will not build full pressure. (Continued)</b>	<ol style="list-style-type: none"> <li>7. Sheared key(s).</li> <li>8. Inadequate air pressure (air motor only).</li> <li>9. Shifting spool seat and/or shifting spool poppet (located under high pressure pump assembly) worn.</li> <li>10. Shifting spool o-ring (located within shifting spool bore) worn or broken.</li> </ol>	<ol style="list-style-type: none"> <li>7. Replace.</li> <li>8. Increase air pressure.</li> <li>9. Clean and reseal or replace.</li> <li>10. With an o-ring pick, remove o-ring and backup washer through low pressure pump assembly end. Replace.</li> </ol>
<b>Wrench will not retract.</b>	<ol style="list-style-type: none"> <li>1. Check the system pressure; if the pressure is zero, the control valve is releasing pressure and the problem may be in the wrench, mechanical linkage connected to wrench(s), or quick-disconnect couplings.</li> <li>2. Defective valve.</li> <li>3. Inadequate air pressure (air motor model only).</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the wrench for broken return springs, and check couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because one check does not stay open in the coupled position.</li> <li>2. Check valve operation and inspect parts. Replace if necessary.</li> <li>3. Increase air pressure.</li> </ol>
<b>Pump delivers excess oil pressure.</b>	<ol style="list-style-type: none"> <li>1. Faulty pressure gauge.</li> <li>2. Relief valve not properly set.</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibrate gauge.</li> <li>2. Adjust the relief valve.</li> </ol>

## Section 1. Identification

**Product name** Hyspin HVI 46  
**SDS no.** 460902  
**Code** 460902-VN02

### Relevant identified uses of the substance or mixture and uses advised against

**Product use** Hydraulic fluid.  
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

**Supplier** Castrol BP Petco  
9th Floor – Times Square building  
57-69F Dong Khoi Street  
District 1, Ho Chi Minh City  
Vietnam  
Tel: 84-8-38219596 / 38219153  
Fax: 84-8-38219603 / 38219152  
**EMERGENCY SPILL INFORMATION:** Carechem: +65 3158 1074 (24/7)

## Section 2. Composition, information on ingredients

**Substance/mixture** Mixture  
Highly refined base oil (IP 346 DMSO extract < 3%). Proprietary performance additives.

Ingredient name	CAS number	%
Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	≥25 - ≤50
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	≥25 - ≤50

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Section 3. Hazards identification

**Classification of the substance or mixture** Not classified.

### GHS label elements

**Signal word** No signal word.  
**Hazard statements** No known significant effects or critical hazards.  
**Precautionary statements**  
**Prevention** Not applicable.  
**Response** Not applicable.  
**Storage** Not applicable.

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<b>Version</b> 3	<b>(Vietnam)</b>	<b>(ENGLISH)</b>

## Section 3. Hazards identification

<b>Disposal</b>	Not applicable.
<b>Routes of entry</b>	Dermal contact. Eye contact. Inhalation.
<b>Other hazards which do not result in classification</b>	Defatting to the skin. Note: High Pressure Applications Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.

## Section 4. First aid measures

### Description of necessary first aid measures

<b>Eye contact</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
<b>Skin contact</b>	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
<b>Ingestion</b>	Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

### Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

### Indication of immediate medical attention and special treatment needed, if necessary

<b>Notes to physician</b>	Treatment should in general be symptomatic and directed to relieving any effects.  Note: High Pressure Applications Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis. Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.
<b>Specific treatments</b>	No specific treatment.
<b>Protection of first-aiders</b>	No action shall be taken involving any personal risk or without suitable training.

## Section 5. Firefighting measures

### Extinguishing media

<b>Suitable extinguishing media</b>	In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.
<b>Unsuitable extinguishing media</b>	Do not use water jet.

### Specific hazards arising from the chemical

<b>Hazardous thermal decomposition products</b>	In a fire or if heated, a pressure increase will occur and the container may burst.  Combustion products may include the following: carbon oxides (CO, CO <sub>2</sub> ) (carbon monoxide, carbon dioxide)
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## Section 5. Firefighting measures

<b>Special protective actions for fire-fighters</b>	No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.
<b>Special protective equipment for fire-fighters</b>	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling.
<b>For emergency responders</b>	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>Environmental precautions</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and material for containment and cleaning up

<b>Small spill</b>	Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
<b>Large spill</b>	Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### Precautions for safe handling

<b>Protective measures</b>	Put on appropriate personal protective equipment (see Section 8).
<b>Advice on general occupational hygiene</b>	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
<b>Not suitable</b>	Prolonged exposure to elevated temperature

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## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
Distillates (petroleum), hydrotreated heavy paraffinic	<b>Ministry of Health (Viet Nam).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Issued/Revised: 10/2002 Form: Mist STEL: 10 mg/m <sup>3</sup> 15 minutes. Issued/Revised: 10/2002 Form: Mist
Distillates (petroleum), solvent-dewaxed heavy paraffinic	<b>Ministry of Health (Viet Nam).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Issued/Revised: 10/2002 Form: Mist STEL: 10 mg/m <sup>3</sup> 15 minutes. Issued/Revised: 10/2002 Form: Mist

#### **Recommended monitoring procedures**

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

#### **Appropriate engineering controls**

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

#### **Environmental exposure controls**

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

#### **Hygiene measures**

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### **Eye/face protection**

Safety glasses with side shields.

#### **Skin protection**

##### **Hand protection**

Wear protective gloves if prolonged or repeated contact is likely. Wear chemical resistant gloves. Recommended: Nitrile gloves. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the

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## Section 8. Exposure controls/personal protection

working conditions.

### Skin protection

Use of protective clothing is good industrial practice. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

### Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

### Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

## Section 9. Physical and chemical properties

### Appearance

Physical state	Liquid.
Colour	Yellow. [Light]
Odour	Slight
Odour threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	Not available.
Flash point	Closed cup: >180°C (>356°F) [Pensky-Martens.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Lower and upper explosive (flammable) limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Density	<1000 kg/m <sup>3</sup> (<1 g/cm <sup>3</sup> ) at 15°C
Relative density	Not available.
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Kinematic: 46 mm <sup>2</sup> /s (46 cSt) at 40°C Kinematic: 8.1 mm <sup>2</sup> /s (8.1 cSt) at 100°C

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## Section 10. Stability and reactivity

<b>Reactivity</b>	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
<b>Chemical stability</b>	The product is stable.
<b>Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
<b>Conditions to avoid</b>	Avoid all possible sources of ignition (spark or flame).
<b>Incompatible materials</b>	Reactive or incompatible with the following materials: oxidising materials.
<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Aspiration hazard

Not available.

**Information on likely routes of exposure** Routes of entry anticipated: Dermal, Inhalation.

### Potential acute health effects

#### **Eye contact**

No known significant effects or critical hazards.

#### **Inhalation**

Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure.

#### **Skin contact**

Defatting to the skin. May cause skin dryness and irritation.

#### **Ingestion**

No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

#### **Eye contact**

No specific data.

#### **Inhalation**

No specific data.

#### **Skin contact**

Adverse symptoms may include the following:  
irritation  
dryness  
cracking

#### **Ingestion**

No specific data.

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure

##### **Potential immediate effects**

Not available.

##### **Potential delayed effects**

Not available.

#### Long term exposure

##### **Potential immediate effects**

Not available.

##### **Potential delayed effects**

Not available.

### Potential chronic health effects

#### **General**

No known significant effects or critical hazards.

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## Section 11. Toxicological information

<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.
<b>Teratogenicity</b>	No known significant effects or critical hazards.
<b>Developmental effects</b>	No known significant effects or critical hazards.
<b>Fertility effects</b>	No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

**Environmental effects** This material is harmful to aquatic life.

### Persistence and degradability

Expected to be biodegradable.

### Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

### Mobility in soil

**Soil/water partition coefficient ( $K_{oc}$ )** Not available.

**Mobility** Spillages may penetrate the soil causing ground water contamination.

**Other adverse effects** No known significant effects or critical hazards.

**Other ecological information** Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

## Section 13. Disposal considerations

### Disposal methods

The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

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## Section 14. Transport information

	IMDG	IATA
UN number	Not regulated.	Not regulated.
UN proper shipping name	-	-
Transport hazard class(es)	-	-
Packing group	-	-
Environmental hazards	No.	No.
Additional information	-	-

Special precautions for user Not available.

Transport in bulk according to Annex II of Marpol and the IBC Code Not available.

## Section 15. Regulatory information

Safety, health and environmental regulations specific for the product

No known specific national and/or regional regulations applicable to this product (including its ingredients).

Toxic classification (TCVN 3164-79)

Not classified as hazardous.

### International lists

Australia inventory (AICS)

All components are listed or exempted.

Canada inventory

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Japan inventory (ENCS)

All components are listed or exempted.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI)

All components are listed or exempted.

United States inventory (TSCA 8b)

All components are active or exempted.

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## Section 16. Other information

### History

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<b>Date of previous issue</b>	8/3/2018
<b>Prepared by</b>	Product Stewardship
<b>Key to abbreviations</b>	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

✔ Indicates information that has changed from previously issued version.

### Notice to reader

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The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

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