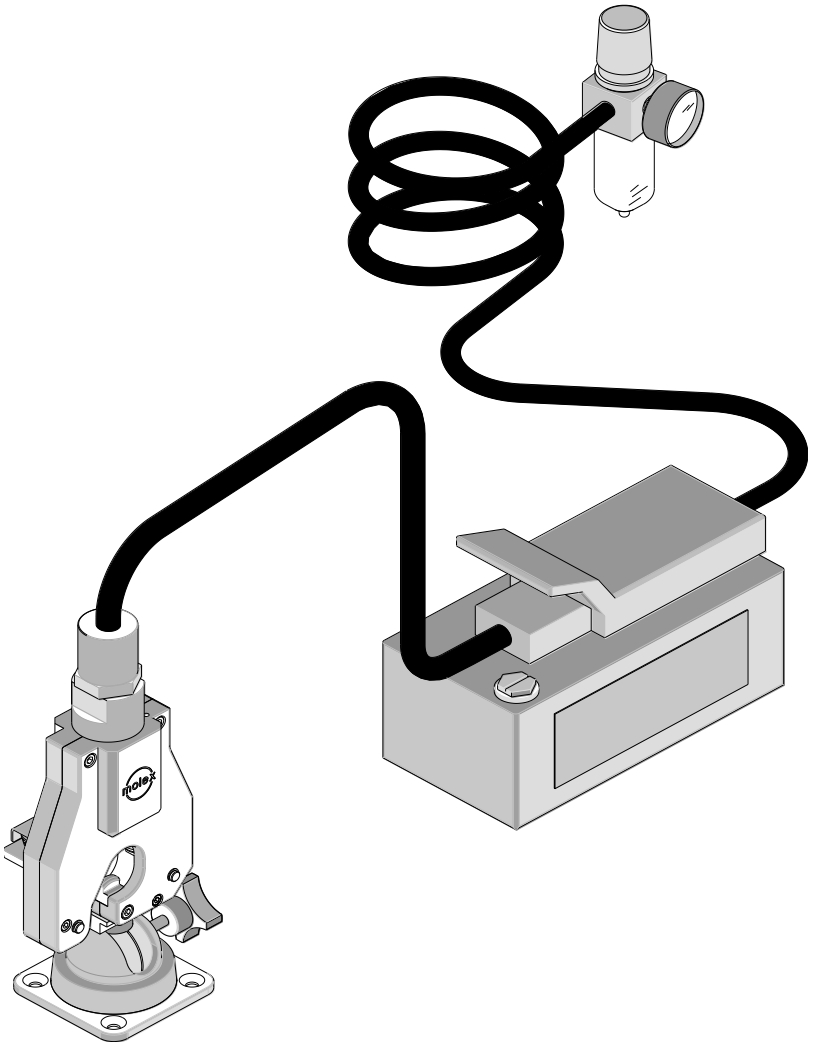


PUTT PUMP DIELESS HEAD CRIMPER
With Swivel Bench Adapter and Terminal Locator
Instruction Manual
Order No. 19286-0065
Engineering. No. PPDLHBA-CS
For Insulated and Non-Insulated Terminal and Splices

- Description
- Operation
- Maintenance

Safety Warnings and Information

	**Read** and **understand** all of the instructions and safety information in this manual before operating or servicing this tool. Keep this manual available when using this tool. Replacement manuals are available for download at no charge at www.molex.com.

SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

 **DANGER**	**DANGER:** Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.
 **WARNING**	**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 **CAUTION**	**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. **CAUTION** may also be used to alert against unsafe practices associated with events that could lead to personal injury.

	**WARNING** **Always** wear proper eye protection when Operating or servicing this equipment. Failure to wear eye protection could result in serious eye injury from flying debris.		**WARNING** **Heavy Object** To avoid muscle strain or back injury, use lifting aids and proper lifting techniques when removing or replacing. Failure to observe these precautions may result in injury or property damage.
	**WARNING** **Never** wear clothing or jewelery that is loose or That could potentially hang into the equipement and get caught. Failure to observe this warning could result in Severe Injury or death.		**WARNING** **Never** install or service this machine while connected to any electrical power source. Disconnect power by unplugging this tool from its power source. Failure to observe this warning could result In severe injury or death.
	**WARNING** **Never** operate, service, install, or adjust this machine without proper instruction and without first reading and understanding the instructions in this manual and all applicable tool and/or wire processing machine. manuals.		**WARNING** **Always** wear proper ear protection when Operating or servicing this applicator. Failure to observe these precautions may result in Injury or property damage.



WARNING

Never use this tool without guards or safety devices that are intended to prevent hands from remaining in the die space.

Failure to observe this warning could result In severe injury or death.



WARNING

Do not use compressed air to clean this equipment.
The forces created by compressed air can force debris into the tool.

Failure to observe these precautions may result in injury or property damage.

Air Hydraulic Pump

WARNING

Hand/Foot Operated
Maximum Capacity: 10,000 PSI

Before operating the hydraulic pump, all hose connections must be tightened with proper tools.

Do not over-tighten. Connections need only be tightened securely and leak-free. Over-tightening may cause premature thread failure or may cause high-pressure fittings to split at pressures lower than their rated capacities

Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and shift the control valve twice to release all pressure.

Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury.

Do not subject the hose to potential hazard such as fire, extreme heat or cold, sharp surfaces, or heavy impact.

Do not allow the hose to kink, twist, curl, or bend so tightly that the oil flow within the hose is blocked or reduced. Periodically inspect the hose for wear because any of these conditions can damage the hose and possibly result in personal injury.

Do not use the hose to move attached equipment. Stress may damage hose and possibly cause personal injury.

Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses must not encounter 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 may result in possible personal injury

Pump

WARNING

Do not exceed the PSI hydraulic rating noted on the pump nameplate or tamper with the internal high-pressure relief valve.

Creating pressure beyond rated capacities may result in personal injury.

Before replenishing the oil level, retract the system to prevent overfilling the pump reservoir.

An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted.

Cylinder

WARNING

Do not exceed rated capacities of the cylinders. Excess pressure may result in personal injury.

Do not set poorly balanced or off- center loads on a cylinder. The load may tip and cause personal injury.

Air Supply

WARNING

Shut off and disconnect the air supply when the pump is not in use or before breaking any connection in the system.

WARNING

MOLEX CANNOT BE RESPONSIBLE FOR DAMAGE OR INJURY RESULTING FROM UNSAFE PRODUCT USE, LACK OF MAINTENANCE, OR INCORRECT PRODUCT AND SYSTEM APPLICATION.

CAUTION

Failure to observe these precautions may result in injury or property damage.

CAUTION

Never perform any service or maintenance other than as described in this manual.
Never modify, alter or misuse the equipment
Molex crimp specifications are valid only when used with Molex terminals, applicators and tooling.
Failure to observe this precaution may result in injury and property damage.

Tooling Technical Assistance

Molex offers tooling technical assistance for customers who may need some guidance for tooling adjustments. This support can be obtained by calling either of the two numbers listed below and asking for the Molex Tooling Group.
Call Toll Free 1-800-786-6539 (US) 1-630-969-4550 (Global).

This assistance is limited to the operation and set-up of a customer's Molex Press Assembly. Questions with regard to Molex connector products or how to identify the proper tooling and/ or tooling documentation should be directed to your local Molex personnel or Customer Service Representative.

When calling for service on the tool a copy of the *Tooling Manual* and Specific *Applicator Tooling Specification Sheet* should be present and a person that is familiar with the applicator should be present. Be sure the following information is supplied:

1. Customer name
2. Customer address
3. Person to contact such as (name, title, e-mail, and telephone number
4. Press order number (Lease number also if applicable)
5. Serial number (Lease number also if applicable)
6. Molex Connector product order number
7. Urgency of request
8. Nature of problem

Molex Application Tooling Group
2200 Wellington Court
Lisle, IL 60532, USA
Tel: +1 (630) 969-4550
Fax:+1 (630) 505-0049

Visit our Web site at http://www.molex.com

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Section 1

General Description

1.1 Description

1.2 Features

1.3 Technical Specifications

1.4 Delivery Check

1.5 Tools

General Description

1.1 Description (See Figure 2-1)

The Molex Putt Pump Dieless Head Crimper is a combination Air and Hydraulic crimping system which utilizes four crimp "nibs" (3 moving and one stationary). The three movable nibs close against the terminal, which nests on the fourth nib, creating crimp indentations from the top, bottom and both sides, resulting in a four sided (quad) crimp.

The operator adjusts the air pressure thru the air gauge to produce the proper crimp.

This tool is designed to crimp 8 AWG to 500MCM insulated and uninsulated terminals and splices.

This tool is also designed to crimp 8 AWG to 500MCM heavy duty compression terminals and connectors. These terminals are used for electrical and industrial applications such as generators, switch gear, transformers, motor controls, power distribution equipment, welding equipment, telcommunications and utilities.

1.2 Features

- Crimps a wide range of products and does not require die set changes, which reduce the overall cost and provides production flexibility.
- Swivel base and terminal locator included to provide the operator with a user-friendly tool to increase productivity.
- Complete lightweight system that allows tool to be moved and stored easily.

1.3 Technical Specification

Pneumatic:

Supply Pressure:	100 PSI (6.9 Bars)
Air Pressure:	125-PSI max. (8.6 Bars max.)
Cycle Time:	15 seconds

1.4 Delivery Check

Carefully remove the Putt Pump Dieless Head from its shipping container and determine that the following items are included in the package.

Description		Quantity
19286-0029	Swivel Base Mount	1
19286-0200	Steel Head Assembly	1
19286-0059	PuttPump Power Unit with hoses	
19286-0049	Filter regulator with gauge	1
TM-192860065	Instruction Manual	1

1.5 Tools

The following tools are recommended for setup and adjustments.

- ✓ Metric standard hex wrench set
- ✓ Adjustable wrench
- ✓ Wire stripper / cutter

Section 2

Set-Up and Adjustments

2.1 Setup

2.2 Adjustments

2.3 Alternative Pump Settings

Principal Mechanical Parts of the 19286-0065 (PPDLHBA-CS)

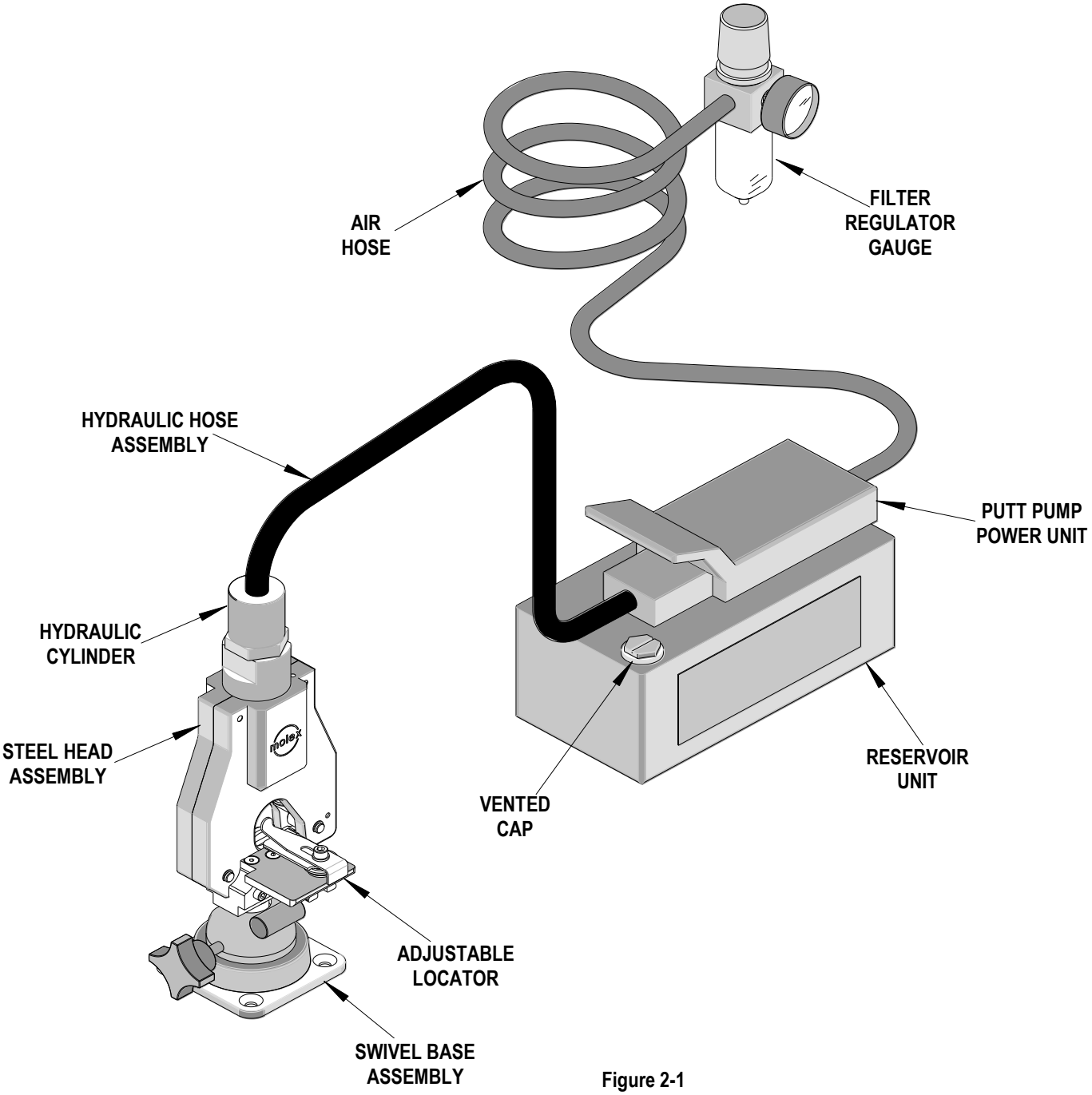


Figure 2-1

CAUTION: Always disconnect the air supply until the system is ready to operate.

2.1 Set-Up

The principal mechanical parts of the 19286-0065 are illustrated in Section 6 Assembly Drawings.

Air Supply Hook-Up

WARNING: Seal all external pipe connections with a high quality, non-hardening pipe sealant. Teflon tape may also be used to seal hydraulic connections if only one layer of tape is used.

1. Select the 1/4 NPT threaded fittings that are compatible with your air supply.
2. Next install the fittings to the filter, regulator, gauge unit. The air supply should be 20 CFM (550 L/M) and 100 PSI (6.9 Bars) to obtain the rated hydraulic output. Air pressure should be regulated to a maximum of 125 PSI (8.6 Bars). See Figure 3-1.

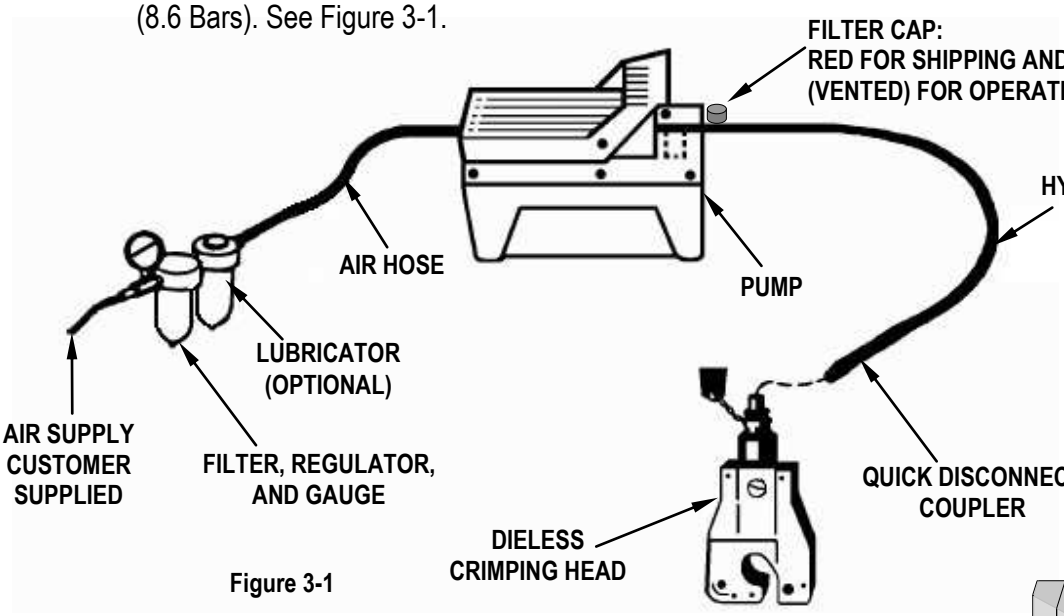


Figure 3-1

Hydraulic Connections and Bench Mounting

1. Remove the dust cap from the cylinder on the crimp head.
2. Connect the quick disconnect coupler onto the cylinder inlet on the crimp head. See figure 3-1.
3. Replace the red filler cap on the pump reservoir with the black vented cap that is supplied with the unit.
4. Before attempting to crimp any terminals, be sure the Swivel Base is securely fastened to a clean, study work bench or table in a well-lighted area. Fasten the base with four 5/16-18 flat head machine screws, nuts and washers of sufficient length for the table top. (Not supplied). See Figure 3-2.

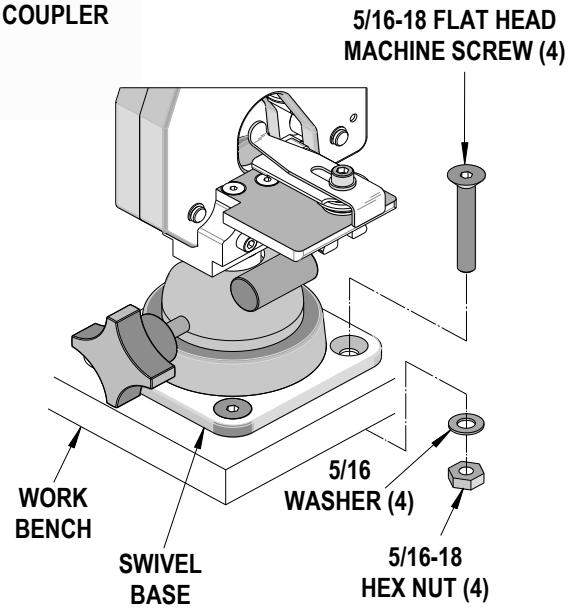


Figure 3-2

2.2. Adjustments

Recommended air pressure gauge settings to obtain proper crimp on noninsulated and insulated terminals and splices.

Wire Size (AWG)	*SPX Power Team Pump	Pump Output Hydraulic Pressure (Ref.)	DLH Head Crimp Pressure (Ref.)
8	40 PSI	4000 PSI	4960 PSI
6	45 PSI	4500 PSI	5580 PSI
4	50 PSI	5000 PSI	6200 PSI
2	55 PSI	5500 PSI	6820 PSI
1	65 PSI	6500 PSI	8060 PSI
1/0	65 PSI	6500 PSI	8060 PSI
2/0	70 PSI	7000 PSI	8680 PSI
3/0	75 PSI	7500 PSI	9300 PSI
4/0	75 PSI	7500 PSI	9300 PSI
250 MCM	85 PSI	8500 PSI	10,540 PSI
300 MCM	90 PSI	9000 PSI	11,160 PSI
350 MCM	90 PSI	9000 PSI	11,160 PSI
400 MCM	100 PSI	10,000 PSI	12,400 PSI
500 MCM	100 PSI	10,000 PSI	12,400 PSI

*The SPX Power Team pump is currently shipped with the 19286-0065 tool. This pump has a 100:1 oil / air pressure ratio at the outlet hose with a 10,000 max. safety, regardless of air input. The pressure ratio at the crimp dies is 124:1 (6.2 ton max.)

2.3. Alternative Pump Settings

The following chart shows the pressure settings for other equivalent pumps. (Ref. only)

Wire Size (AWG)	OTC Pump	Enerpac Turbo Pump
8	30 PSI	21 PSI
6	35 PSI	25 PSI
4	40 PSI	28 PSI
2	45 PSI	32 PSI
1	60 PSI	42 PSI
1/0	60 PSI	42 PSI
2/0	65 PSI	46 PSI
3/0	70 PSI	50 PSI
4/0	70 PSI	50 PSI
250 MCM		
300 MCM		
350 MCM		
400 MCM		
500 MCM		

Section 3

Terminal Specifications and Crimping Operation

3.1 Scope

3.2 Terminal Specifications Chart

3.3 Crimping Terminals

3.1 SCOPE

Heavy Duty Compression Terminals and Connectors 8 AWG to 500 MCM. Standard and Long Barrel with one to two holes for copper conductors only.

Testing

Mechanical

The tensile test, or pull test, is a means of evaluating the mechanical properties of the crimped connections. The following charts show the UL specifications for various wire sizes. The tensile strength is shown in pounds, which indicates the minimum acceptable force to break or separate the terminal from the conductor.

Wire Size (AWG)	Color Code	*UL – 486A
8	Red	90
6	Blue	100
4	Gray	140
2	Brown	180
1	Green	200
1/0	Pink	250
2/0	Black	300
3/0	Orange	350
4/0	Purple	450
250 MCM	Yellow	
300 MCM	White	
350 MCM	Red	
400 MCM	Blue	
500 MCM	Brown	

*UL – 486A – Terminals (Copper Conductors Only)

The following is a partial list of the product part numbers and their specifications that this tool is designed to run. We will be adding to this list and an up to date copy is available on www.molex.com.

3.2 Terminal Chart

Wire Size: 8 AWG 8.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0006	D-750-10	.438	11.11	.265	6.73
19063-0009	D-750-14	.438	11.11	.265	6.73
19063-0012	D-750-56	.438	11.11	.265	6.73
19063-0019	D-750-38	.438	11.11	.265	6.73
19063-0021	D-750-56	.438	11.11	.265	6.73
19063-0025	D-752-10	.438	11.11	.265	6.73
19063-0026	D-752-12	.438	11.11	.265	6.73
19063-0028	D-752-14	.438	11.11	.265	6.73
19063-0029	D-752-38	.438	11.11	.265	6.73
19063-0031	D-752-58	.438	11.11	.265	6.73
19063-0032	D-752-78	.438	11.11	.265	6.73
19063-0033	D-753-12	.438	11.11	.265	6.73
19063-0035	D-753-34	.438	11.11	.265	6.73
19063-0036	D-753-38	.438	11.11	.265	6.73
19063-0038	D-753-58	.438	11.11	.265	6.73
19063-0040	D-756-06	.438	11.11	.265	6.73
19063-0042	D-756-08	.438	11.11	.265	6.73
19063-0044	D-756-10	.438	11.11	.265	6.73

Wire Size: 8 AWG 8.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0046	D-756-14	.438	11.11	.265	6.73
19067-0001	D-950-06	.438	11.11	.350	8.89
19067-0003	D-950-08	.438	11.11	.350	8.89
19067-0006	D-950-10	.438	11.11	.350	8.89
19067-0008	D-950-14	.438	11.11	.350	8.89
19067-0012	D-950-56	.438	11.11	.350	8.89
19067-0016	D-951-10	.438	11.11	.350	8.89
19067-0018	D-951-14	.438	11.11	.350	8.89
19067-0022	D-951-38	.438	11.11	.350	8.89
19067-0025	D-951-56	.438	11.11	.350	8.89
19067-0028	D-952-12	.438	11.11	.350	8.89
19067-0030	D-952-38	.438	11.11	.350	8.89
19067-0031	D-952-76	.438	11.11	.350	8.89
19067-0032	D-953-12	.438	11.11	.350	8.89
19067-0033	D-953-34	.438	11.11	.350	8.89
19067-0034	D-953-58	.438	11.11	.350	8.89
19067-0035	D-956-06	.438	11.11	.350	8.89
19067-0037	D-956-08	.438	11.11	.350	8.89

Wire Size: 8 AWG 8.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19067-0039	D-956-10	.438	11.11	.350	8.89
19067-0041	D-956-14	.438	11.11	.350	8.89
19067-0128	D-951-76	.438	11.11	.350	8.89
19067-0129	D-952-58	.438	11.11	.350	8.89
19071-0132	D-650-06X	.438	11.11	.385	9.77
19071-0134	D-650-08X	.438	11.11	.385	9.77
19071-0136	D-650-10X	.438	11.11	.385	9.77
19071-0140	D-650-14X	.438	11.11	.385	9.77
19071-0144	D-650-56X	.438	11.11	.385	9.77
19071-0146	D-651-10X	.438	11.11	.385	9.77
19071-0148	D-651-14X	.438	11.11	.385	9.77
19071-0150	D-651-38X	.438	11.11	.385	9.77
19071-0153	D-651-56X	.438	11.11	.385	9.77
19071-0156	D-651-76X	.438	11.11	.385	9.77
19071-0158	D-652-10X	.438	11.11	.385	9.78
19071-0161	D-652-14X	.438	11.11	.385	9.78
19071-0162	D-652-38X	.438	11.11	.385	9.78
19071-0163	D-652-56X	.438	11.11	.385	9.78
19071-0164	D-652-58X	.438	11.11	.385	9.78
19071-0166	D-652-76X	.438	11.11	.385	9.78
19071-0168	D-653-12X	.438	11.11	.385	9.78
19071-0169	D-653-14X	.438	11.11	.385	9.78
19071-0170	D-653-34X	.438	11.11	.385	9.78
19071-0171	D-653-38X	.438	11.11	.385	9.78
19071-0172	D-653-56X	.438	11.11	.385	9.78
19071-0173	D-653-58X	.438	11.11	.385	9.78
19071-0174	D-653-76X	.438	11.11	.385	9.78
19071-0176	D-656-06X	.438	11.11	.385	9.78
19071-0178	D-656-08X	.438	11.11	.385	9.78
19071-0180	D-656-10X	.438	11.11	.385	9.78
19071-0182	D-656-14X	.438	11.11	.385	9.78
19071-0334	D-652-12X	.438	11.11	.385	9.78
19154-0041	D-654X	.375	9.53	.385	9.78
19193-0143	D-350-06	.438	11.11	N/A	N/A
19193-0146	D-350-08	.438	11.11	N/A	N/A
19193-0149	D-350-10	.438	11.11	N/A	N/A
19193-0152	D-350-14	.438	11.11	N/A	N/A
19193-0157	D-350-56	.438	11.11	N/A	N/A
19193-0159	D-351-10	.438	11.11	N/A	N/A
19193-0163	D-351-14	.438	11.11	N/A	N/A
19193-0167	D-351-38	.438	11.11	N/A	N/A
19193-0171	D-351-56	.438	11.11	N/A	N/A
19193-0175	D-351-76	.438	11.11	N/A	N/A
19193-0178	D-352-10	.438	11.11	N/A	N/A
19193-0179	D-352-12	.438	11.11	N/A	N/A
19193-0182	D-352-14	.438	11.11	N/A	N/A
19193-0184	D-352-38	.438	11.11	N/A	N/A
19193-0185	D-352-56	.438	11.11	N/A	N/A
19193-0186	D-352-58	.438	11.11	N/A	N/A
19193-0187	D-352-76	.438	11.11	N/A	N/A
19193-0190	D-353-12	.438	11.11	N/A	N/A
19193-0191	D-353-14	.438	11.11	N/A	N/A
19193-0192	D-353-34	.438	11.11	N/A	N/A
19193-0193	D-353-38	.438	11.11	N/A	N/A
19193-0194	D-353-56	.438	11.11	N/A	N/A
19193-0195	D-353-58	.438	11.11	N/A	N/A
19193-0196	D-353-76	.438	11.11	N/A	N/A
19193-0198	D-356-06	.438	11.11	N/A	N/A
19193-0200	D-356-08	.438	11.11	N/A	N/A
19193-0202	D-356-10	.438	11.11	N/A	N/A
19193-0204	D-356-14	.438	11.11	N/A	N/A
19202-0054	D-754	.375	9.53	.265	6.73
19205-0004	D-355	.312	7.92	N/A	N/A
19215-0034	D-354	.375	9.53	.170	4.32
19221-0167	HDC-8102-CC	.610	15.49	N/A	N/A

Wire Size: 8 AWG 8.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0212	HDC-810-CC	.516	13.11	N/A	N/A
19221-0223	BCL-810-PL	.438	11.11	N/A	N/A
19221-0224	BCL-814-PL	.438	11.11	N/A	N/A
19221-0225	BCL-8516-PL	.438	11.11	N/A	N/A
19221-0226	BCL-838-WP-PL	.438	11.11	N/A	N/A
19221-0290	HDCL-8102-CC	.915	23.24	N/A	N/A
19221-0315	HDCL-810-CC	.984	24.99	N/A	N/A

Wire Size: 6 AWG 16.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0048	E-757-08	.468	11.88	.350	8.89
19063-0050	E-757-10	.468	11.88	.350	8.89
19063-0052	E-757-14	.468	11.88	.350	8.89
19063-0054	E-757-38	.468	11.88	.350	8.89
19063-0056	E-757-56	.468	11.88	.350	8.89
19063-0059	E-757-76	.468	11.88	.350	8.89
19063-0061	E-758-10	.468	11.88	.350	8.89
19063-0062	E-758-12	.468	11.88	.350	8.89
19063-0063	E-758-14	.468	11.88	.350	8.89
19063-0064	E-758-38	.468	11.88	.350	8.89
19063-0065	E-758-56	.468	11.88	.350	8.89
19063-0066	E-758-58	.468	11.88	.350	8.89
19063-0067	E-758-76	.468	11.88	.350	8.89
19063-0069	E-760-08	.468	11.88	.350	8.89
19063-0071	E-760-10	.468	11.88	.350	8.89
19063-0073	E-760-14	.468	11.88	.350	8.89
19063-0076	E-760-56	.468	11.88	.350	8.89
19067-0043	E-957-08	.468	11.88	.428	10.87
19067-0045	E-957-10	.468	11.88	.428	10.87
19067-0047	E-957-14	.468	11.88	.428	10.87
19067-0052	E-957-38	.468	11.88	.428	10.87
19067-0055	E-957-56	.468	11.88	.428	10.87
19067-0059	E-957-76	.468	11.88	.428	10.87
19067-0061	E-958-12	.468	11.88	.428	10.87
19067-0062	E-958-14	.468	11.88	.428	10.87
19067-0063	E-958-38	.468	11.88	.428	10.87
19067-0064	E-958-58	.468	11.88	.428	10.87
19067-0065	E-958-76	.468	11.88	.428	10.87
19067-0067	E-960-08	.468	11.88	.428	10.87
19067-0069	E-960-10	.468	11.88	.428	10.87
19067-0071	E-960-14	.468	11.88	.428	10.87
19067-0073	E-960-56	.468	11.88	.428	10.87
19071-0185	E-657-08X	.468	11.88	.440	11.17
19071-0188	E-657-10X	.468	11.88	.440	11.17
19071-0190	E-657-14X	.468	11.88	.440	11.17
19071-0193	E-657-38X	.468	11.88	.440	11.17
19071-0196	E-657-56X	.468	11.88	.440	11.17
19071-0200	E-658-10X	.468	11.88	.440	11.17
19071-0201	E-658-12X	.468	11.88	.440	11.17
19071-0203	E-658-14X	.468	11.88	.440	11.17
19071-0204	E-658-38X	.468	11.88	.440	11.17
19071-0206	E-658-56X	.468	11.88	.440	11.17
19071-0207	E-658-58X	.468	11.88	.440	11.17
19071-0208	E-658-76X	.468	11.88	.440	11.17
19071-0218	E-660-08X	.468	11.88	.440	11.17
19071-0221	E-660-10X	.468	11.88	.440	11.17
19071-0225	E-660-14X	.468	11.88	.440	11.17
19071-0229	E-660-56X	.468	11.88	.440	11.17
19154-0045	E-662X	.438	11.11	.440	11.17
19193-0206	E-357-08	.468	11.88	N/A	N/A
19193-0209	E-357-10	.468	11.88	N/A	N/A
19193-0212	E-357-14	.468	11.88	N/A	N/A
19193-0216	E-357-38	.468	11.88	N/A	N/A

Wire Size: 6 AWG 16.50mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19193-0219	E-357-56	.468	11.88	N/A	N/A
19193-0225	E-358-10	.468	11.88	N/A	N/A
19193-0226	E-358-12	.468	11.88	N/A	N/A
19193-0229	E-358-14	.468	11.88	N/A	N/A
19193-0230	E-358-38	.468	11.88	N/A	N/A
19193-0232	E-358-56	.468	11.88	N/A	N/A
19193-0233	E-358-58	.468	11.88	N/A	N/A
19193-0234	E-358-76	.468	11.88	N/A	N/A
19193-0236	E-359-12	.468	11.88	N/A	N/A
19193-0237	E-359-14	.468	11.88	N/A	N/A
19193-0238	E-359-34	.468	11.88	N/A	N/A
19193-0239	E-359-34	.468	11.88	N/A	N/A
19193-0240	E-359-56	.468	11.88	N/A	N/A
19193-0241	E-359-58	.468	11.88	N/A	N/A
19193-0242	E-359-76	.468	11.88	N/A	N/A
19193-0243	E-360-08	.468	11.88	N/A	N/A
19193-0245	E-360-10	.468	11.88	N/A	N/A
19193-0248	E-360-14	.468	11.88	N/A	N/A
19193-0251	E-360-56	.468	11.88	N/A	N/A
19193-0252	E-360-56R90	.468	11.88	N/A	N/A
19202-0055	E-762	.438	11.11	.342	8.68
19205-0006	E-361	.375	9.52	N/A	N/A
19215-0040	E-362	.438	11.11	N/A	N/A
19221-0168	HDC-6142-CC	.540	13.71	N/A	N/A
19221-0213	HDC-614-CC	.547	13.90	N/A	N/A
19221-0215	HDC-610-CC	.547	13.90	N/A	N/A
19221-0227	BCL-614-WP-PL	.468	11.88	N/A	N/A
19221-0228	BCL-6516-WP-PL	.468	11.88	N/A	N/A
19221-0229	BCL-638-WP-PL	.468	11.88	N/A	N/A
19221-0291	HDCL-6142-CC	.670	17.02	N/A	N/A
19221-0316	HDCL-614-CC	1.047	26.59	N/A	N/A

Wire Size: 4 AWG 25.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0078	F-766-10	.531	13.48	.432	10.97
19063-0079	F-766-12	.531	13.48	.432	10.97
19063-0080	F-766-14	.531	13.48	.432	10.97
19063-0081	F-766-38	.531	13.48	.432	10.97
19063-0082	F-766-56	.531	13.48	.432	10.97
19063-0083	F-766-76	.531	13.48	.432	10.97
19063-0084	F-767-10	.531	13.48	.432	10.97
19063-0085	F-767-14	.531	13.48	.432	10.97
19063-0086	F-767-56	.531	13.48	.432	10.97
19063-0087	F-770-12	.531	13.48	.432	10.97
19063-0088	F-770-14	.531	13.48	.432	10.97
19063-0089	F-770-34	.531	13.48	.432	10.97
19063-0090	F-770-38	.531	13.48	.432	10.97
19063-0091	F-770-56	.531	13.48	.432	10.97
19063-0092	F-770-76	.531	13.48	.432	10.97
19067-0075	F-966-10	.531	13.48	.520	13.20
19067-0076	F-966-12	.531	13.48	.520	13.20
19067-0077	F-966-14	.531	13.48	.520	13.20
19067-0078	F-966-38	.531	13.48	.520	13.20
19067-0079	F-966-56	.531	13.48	.520	13.20
19067-0080	F-966-76	.531	13.48	.520	13.20
19067-0081	F-967-10	.531	13.48	.520	13.20
19067-0082	F-967-14	.531	13.48	.520	13.20
19067-0084	F-967-56	.531	13.48	.520	13.20
19067-0085	F-969-12	.531	13.48	.520	13.20
19067-0086	F-969-38	.531	13.48	.520	13.20
19067-0087	F-969-58	.531	13.48	.520	13.20
19067-0088	F-970-34	.531	13.48	.520	13.20
19067-0089	F-970-58	.531	13.48	.520	13.20

Wire Size: 4 AWG 25.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19071-0231	F-666-10X	.531	13.48	.515	13.08
19071-0234	F-666-12X	.531	13.48	.515	13.08
19071-0237	F-666-14X	.531	13.48	.515	13.08
19071-0240	F-666-38X	.531	13.48	.515	13.08
19071-0243	F-666-56X	.531	13.48	.515	13.08
19071-0247	F-666-76X	.531	13.48	.515	13.08
19071-0250	F-667-10X	.531	13.48	.515	13.08
19071-0253	F-667-14X	.531	13.48	.515	13.08
19071-0255	F-667-56X	.531	13.48	.515	13.08
19154-0082	F-664X	.453	11.50	.605	15.36
19193-0254	F-366-10	.531	13.48	N/A	N/A
19193-0258	F-366-12	.531	13.48	N/A	N/A
19193-0261	F-366-14	.531	13.48	N/A	N/A
19193-0264	F-366-38	.531	13.48	N/A	N/A
19193-0267	F-366-56	.531	13.48	N/A	N/A
19193-0270	F-366-76	.531	13.48	N/A	N/A
19193-0273	F-367-10	.531	13.48	N/A	N/A
19193-0275	F-367-14	.531	13.48	N/A	N/A
19193-0278	F-367-56	.531	13.48	N/A	N/A
19193-0281	F-369-12	.531	13.48	N/A	N/A
19193-0282	F-369-14	.531	13.48	N/A	N/A
19193-0283	F-369-38	.531	13.48	N/A	N/A
19193-0284	F-369-56	.531	13.48	N/A	N/A
19193-0285	F-369-58	.531	13.48	N/A	N/A
19193-0286	F-369-76	.531	13.48	N/A	N/A
19193-0287	F-370-12	.531	13.48	N/A	N/A
19193-0288	F-370-14	.531	13.48	N/A	N/A
19193-0289	F-370-34	.531	13.48	N/A	N/A
19193-0291	F-370-38	.531	13.48	N/A	N/A
19193-0292	F-370-56	.531	13.48	N/A	N/A
19193-0293	F-370-58	.531	13.48	N/A	N/A
19193-0294	F-370-76	.531	13.48	N/A	N/A
19202-0085	F-764	.531	13.48	.429	10.89
19205-0086	F-365	.531	13.48	N/A	N/A
19215-0089	F-364	.531	13.48	N/A	N/A
19221-0169	HDC-4142-CC	.610	15.49	N/A	N/A
19221-0170	HDC-45162-CC	.610	15.49	N/A	N/A
19221-0214	HDC-414-CC	.594	15.09	N/A	N/A
19221-0216	HDC-410-CC	.594	15.09	N/A	N/A
19221-0217	HDC-4516-CC	.610	15.49	N/A	N/A
19221-0230	BCL-414-PL	.500	12.70	N/A	N/A
19221-0231	BCL-4516-PL	.500	12.70	N/A	N/A
19221-0232	BCL-438-PL	.500	12.70	N/A	N/A
19221-0292	HDCL-4142-CC	1.047	26.58	N/A	N/A
19221-0317	HDCL-414-CC	1.047	26.59	N/A	N/A

Wire Size: 2 AWG 35.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0093	G-774-12	.578	14.68	.525	13.33
19063-0094	G-774-14	.578	14.68	.525	13.33
19063-0095	G-774-38	.578	14.68	.525	13.33
19063-0096	G-774-56	.578	14.68	.525	13.33
19063-0097	G-774-58	.578	14.68	.525	13.33
19063-0098	G-774-76	.578	14.68	.525	13.33
19063-0099	G-775-12	.578	14.68	.525	13.33
19063-0100	G-775-14	.578	14.68	.525	13.33
19063-0101	G-775-38	.578	14.68	.525	13.33
19063-0102	G-775-56	.578	14.68	.525	13.33
19063-0103	G-775-58	.578	14.68	.525	13.33
19063-0104	G-775-76	.578	14.68	.525	13.33
19063-0111	G-777-12	.578	14.68	.525	13.33
19063-0112	G-777-14	.578	14.68	.525	13.33
19063-0113	G-777-34	.578	14.68	.525	13.33

Wire Size: 2 AWG 35.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0114	G-777-38	.578	14.68	.525	13.33
19063-0115	G-777-56	.578	14.68	.525	13.33
19063-0116	G-777-58	.578	14.68	.525	13.33
19063-0117	G-777-76	.578	14.68	.525	13.33
19067-0090	G-974-12	.578	14.68	.600	15.24
19067-0091	G-974-14	.578	14.68	.600	15.24
19067-0092	G-974-38	.578	14.68	.600	15.24
19067-0093	G-974-56	.578	14.68	.600	15.24
19067-0094	G-974-76	.578	14.68	.600	15.24
19067-0095	G-975-10	.578	14.68	.600	15.24
19067-0096	G-975-14	.578	14.68	.600	15.24
19067-0097	G-975-38	.578	14.68	.600	15.24
19067-0098	G-975-56	.578	14.68	.600	15.24
19067-0099	G-977-34	.578	14.68		
19067-0100	G-977-58	.578	14.68		
19067-0105	G-776-12	.578	14.68	.525	13.33
19067-0106	G-776-14	.578	14.68	.525	13.33
19067-0107	G-776-38	.578	14.68	.525	13.33
19067-0108	G-776-56	.578	14.68	.525	13.33
19067-0109	G-776-58	.578	14.68	.525	13.33
19067-0110	G-776-76	.578	14.68	.525	13.33
19067-0130	G-974-58	.578	14.68	.600	15.24
19071-0272	G-674-12X	.578	14.68	.655	16.63
19071-0273	G-674-14X	.578	14.68	.655	16.63
19071-0275	G-674-38X	.578	14.68	.655	16.63
19071-0276	G-674-56X	.578	14.68	.655	16.63
19071-0277	G-674-58X	.578	14.68	.655	16.63
19071-0278	G-674-76X	.578	14.68	.655	16.63
19071-0279	G-675-10X	.578	14.68	.655	16.63
19071-0281	G-675-14X	.578	14.68	.655	16.63
19071-0283	G-675-38X	.578	14.68	.655	16.63
19071-0285	G-675-56X	.578	14.68	.655	16.63
19071-0287	G-675-76X	.578	14.68	.655	16.63
19071-0289	G-676-12X	.578	14.68	.655	16.63
19071-0290	G-676-14X	.578	14.68	.655	16.63
19071-0291	G-676-38X	.578	14.68	.655	16.63
19071-0292	G-676-56X	.578	14.68	.655	16.63
19071-0293	G-676-58X	.578	14.68	.655	16.63
19071-0294	G-676-76X	.578	14.68	.655	16.63
19071-0295	G-677-12X	.578	14.68	.655	16.63
19071-0296	G-677-14X	.578	14.68	.655	16.63
19071-0297	G-677-34X	.578	14.68	.655	16.63
19071-0298	G-677-38X	.578	14.68	.655	16.63
19071-0299	G-677-56X	.578	14.68	.655	16.63
19071-0300	G-677-58X	.578	14.68	.655	16.63
19071-0301	G-677-76X	.578	14.68	.655	16.63
19154-0049	G-672X	.531	13.48	.650	16.51
19193-0296	G-374-12	.578	14.68	N/A	N/A
19193-0297	G-374-14	.578	14.68	N/A	N/A
19193-0298	G-374-38	.578	14.68	N/A	N/A
19193-0299	G-374-56	.578	14.68	N/A	N/A
19193-0301	G-374-58	.578	14.68	N/A	N/A
19193-0302	G-374-76	.578	14.68	N/A	N/A
19193-0303	G-375-10	.578	14.68	N/A	N/A
19193-0305	G-375-14	.578	14.68	N/A	N/A
19193-0307	G-375-38	.578	14.68	N/A	N/A
19193-0309	G-375-56	.578	14.68	N/A	N/A
19193-0311	G-375-76	.578	14.68	N/A	N/A
19193-0318	G-377-12	.578	14.68	N/A	N/A
19193-0319	G-377-14	.578	14.68	N/A	N/A
19193-0320	G-377-34	.578	14.68	N/A	N/A
19193-0321	G-377-38	.578	14.68	N/A	N/A
19193-0322	G-377-56	.578	14.68	N/A	N/A
19193-0324	G-377-76	.578	14.68	N/A	N/A
19193-0611	G-377-76	.578	14.68	N/A	N/A

Wire Size: 2 AWG 35.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19202-0057	G-772	.531	13.48	.509	12.92
19205-0008	G-373	.578	14.68	N/A	N/A
19215-0046	G-372	.531	13.48	N/A	N/A
19221-0171	HDC-2142-CC			N/A	N/A
19221-0172	HDC-25162-CC	.780	19.81	N/A	N/A
19221-0218	HDC-214-CC	.547	13.90	N/A	N/A
19221-0219	HDC-2516-CC	.547	13.90	N/A	N/A
19221-0220	HDC-238-CC	.657	16.69	N/A	N/A
19221-0233	BCL-2516-PL	.593	15.06	N/A	N/A
19221-0235	BCL-238-PL	.593	15.06	N/A	N/A
19221-0236	BCL-212-WP-PL	.593	15.06	N/A	N/A
19221-0293	HDCL-2142-CC	1.052	26.72	N/A	N/A
19221-0294	HDCL-25162-CC	1.052	26.72	N/A	N/A
19221-0323	HDCL-214-CC	1.266	32.16	N/A	N/A
19221-0324	HDCL-2516-CC	1.266	32.16	N/A	N/A

Wire Size: 1 AWG 42.5mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0173	HDC-1142-CC	.420	10.67	N/A	N/A
19221-0174	HDC-15162-CC	.770	19.56	N/A	N/A
19221-0221	HDC-114-CC	.750	19.05	N/A	N/A
19221-0237	BCL-1516-PL	.656	16.66	N/A	N/A
19221-0238	BCL-138-PL	.656	16.66	N/A	N/A
19221-0239	BCL-112-PL	.656	16.66	N/A	N/A
19221-0271	HDC-1516-CC	.750	19.05	N/A	N/A
19221-0272	HDC-138-CC	.750	19.05	N/A	N/A
19221-0273	HDC-112-CC	.750	19.05	N/A	N/A
19221-0295	HDCL-1142-CC	1.410	35.81	N/A	N/A
19221-0296	HDCL-15162-CC	1.410	35.81	N/A	N/A
19221-0334	HDCL-114-CC			N/A	N/A
19221-0335	HDCL-1516-CC			N/A	N/A

Wire Size: 1/0 AWG 50.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0118	H-780-12	.765	19.43	.595	15.11
19063-0119	H-780-14	.765	19.43	.595	15.11
19063-0120	H-780-38	.765	19.43	.595	15.11
19063-0121	H-780-56	.765	19.43	.595	15.11
19063-0122	H-780-76	.765	19.43	.595	15.11
19063-0123	H-781-14	.765	19.43	.595	15.11
19063-0124	H-781-38	.765	19.43	.595	15.11
19063-0125	H-781-56	.765	19.43	.595	15.11
19063-0126	H-782-14	.765	19.43	.595	15.11
19063-0127	H-782-38	.765	19.43	.595	15.11
19063-0128	H-782-56	.765	19.43	.595	15.11
19067-0101	H-980-38	.765	19.43	.680	17.27
19067-0102	H-980-76	.765	19.43	.680	17.27
19067-0315	H-980-12	.765	19.43	.680	17.27
19071-0302	H-680-76X	.765	19.43	.680	17.27
19071-0303	H-681-14X	.765	19.43	.680	17.27
19071-0305	H-681-38X	.765	19.43	.680	17.27
19071-0306	H-681-56X	.765	19.43	.680	17.27
19071-0308	H-682-12X	.765	19.43	.680	17.27
19071-0336	H-682-34X	.765	19.43	.680	17.27
19071-0337	H-682-38X	.765	19.43	.680	17.27
19071-0338	H-682-58X	.765	19.43	.680	17.27
19193-0325	H-380-12	.765	19.43	N/A	N/A
19193-0326	H-380-14	.765	19.43	N/A	N/A
19193-0327	H-380-38	.765	19.43	N/A	N/A
19193-0328	H-380-56	.765	19.43	N/A	N/A
19193-0329	H-380-76	.765	19.43	N/A	N/A

Wire Size: 1/0 AWG 50.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19193-0330	H-381-14	.765	19.43	N/A	N/A
19193-0331	H-381-38	.765	19.43	N/A	N/A
19193-0333	H-381-56	.765	19.43	N/A	N/A
19193-0556	H-381-12	.765	19.43	N/A	N/A
19202-0058	H-783	.578	14.68	.590	14.98
19205-0009	H-384	.718	18.23	N/A	N/A
19215-0047	H-383	.625	15.88	N/A	N/A
19221-0176	HDC-10382-CC	1.070	27.18	N/A	N/A
19221-0242	BCL-1012-PL	.703	17.85	N/A	N/A
19221-0240	BCL-10516-PL	.703	17.85	N/A	N/A
19221-0241	BCL-1038-PL	.703	17.85	N/A	N/A
19221-0274	HDC-1014-CC	.875	22.23	N/A	N/A
19221-0275	HDC-10516-CC	.875	22.23	N/A	N/A
19221-0276	HDC-1038-CC	.875	22.23	N/A	N/A
19221-0277	HDC-1012-CC	.875	22.23	N/A	N/A
19221-0297	HDCL-105162-CC	1.520	38.61	N/A	N/A
19221-0298	HDCL-10382-CC	1.520	38.61	N/A	N/A
19221-0336	HDCL-10516-CC	1.406	35.71	N/A	N/A
19221-0337	HDCL-1038-CC	1.406	35.71	N/A	N/A
19221-0353	HDCL-105162-CC	.860	21.84	N/A	N/A
19221-0377	BCL-1038	.703	17.85	N/A	N/A
19221-0393	BCL-1012	.703	17.85	N/A	N/A
19221-0394	BCL-10516	.703	17.85	N/A	N/A
19221-0422	BCL-1014-PL	.703	17.85	N/A	N/A
19221-0423	BCL-1014	.703	17.85	N/A	N/A
19221-0436	BCL-1012-WP-PL	.703	17.85	N/A	N/A
19221-0437	BCL-1012-PL	.703	17.85	N/A	N/A
19221-0440	BCL-1038-WP-PL	.703	17.85	N/A	N/A
19221-0441	BCL-1038-WP	.703	17.85	N/A	N/A
19221-0847	BCL-1010MM-PL	.703	17.85	N/A	N/A

Wire Size: 2/0 AWG 70.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19063-0129	J-785-12	.781	19.83	.675	17.14
19063-0130	J-785-14	.781	19.83	.675	17.14
19063-0131	J-785-38	.781	19.83	.675	17.14
19063-0132	J-785-56	.781	19.83	.675	17.14
19063-0133	J-785-76	.781	19.83	.675	17.14
19063-0134	J-787-12	.781	19.83	.675	17.14
19063-0135	J-787-34	.781	19.83	.675	17.14
19063-0136	J-787-58	.781	19.83	.675	17.14
19063-0137	J-787-78	.781	19.83	.675	17.14
19067-0109	J-985-12	.781	19.83	.765	19.43
19067-0110	J-985-14	.781	19.83	.765	19.43
19067-0111	J-985-38	.781	19.83	.765	19.43
19067-0112	J-985-56	.781	19.83	.765	19.43
19067-0113	J-985-76	.781	19.83	.765	19.43
19067-0114	J-987-12	.781	19.83	.765	19.43
19067-0115	J-987-34	.781	19.83	.765	19.43
19067-0116	J-987-58	.781	19.83	.765	19.43
19071-0309	J-685-12X	.781	19.83	.735	18.66
19071-0310	J-685-14X	.781	19.83	.735	18.66
19071-0311	J-685-38X	.781	19.83	.735	18.66
19071-0312	J-685-56X	.781	19.83	.735	18.66
19071-0313	J-685-76X	.781	19.83	.735	18.66
19071-0314	J-687-12X	.781	19.83	.675	17.14
19071-0339	J-687-34X	.781	19.83	.675	17.14
19071-0340	J-687-58X	.781	19.83	.675	17.14
19193-0341	J-385-12	.781	19.83	N/A	N/A
19193-0342	J-385-14	.781	19.83	N/A	N/A
19193-0345	J-385-38	.781	19.83	N/A	N/A
19193-0346	J-385-56	.781	19.83	N/A	N/A
19193-0348	J-385-76	.781	19.83	N/A	N/A

Wire Size: 2/0 AWG 70.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19193-0350	J-387-12	.781	19.83	N/A	N/A
19193-0351	J-387-34	.781	19.83	N/A	N/A
19193-0352	J-387-58	.781	19.83	N/A	N/A
19193-0353	J-387-78	.781	19.83	N/A	N/A
19202-0059	J-788	.688	17.47	.670	17.02
19205-0010	J-389	.718	18.23	N/A	N/A
19215-0048	J-388	.640	16.25	N/A	N/A
19221-0105	HDC-20516-CC	.985	25.02	N/A	N/A
19221-0106	HDC-2038-CC	.985	25.02	N/A	N/A
19221-0107	HDC-2012-CC	.985	25.02	N/A	N/A
19221-0178	HDC-20382-CC	.980	24.90	N/A	N/A
19221-0179	HDC-20122-CC	.980	24.90	N/A	N/A
19221-0195	HDC-205162-CC	.980	24.90	N/A	N/A
19221-0234	BCL-2014-PL	.750	19.05	N/A	N/A
19221-0243	BCL-20516-PL	.750	19.05	N/A	N/A
19221-0244	BCL-2038-PL	.750	19.05	N/A	N/A
19221-0245	BCL-2012-PL	.750	19.05	N/A	N/A
19221-0249	BCL-2014	.750	19.05	N/A	N/A
19221-0278	HDC-2014-CC	.985	25.02	N/A	N/A
19221-0299	HDCL-20382-CC	1.690	42.93	N/A	N/A
19221-0300	HDCL-20122-CC	1.690	42.93	N/A	N/A
19221-0338	HDCL-2038-CC	1.422	36.12	N/A	N/A
19221-0339	HDCL-2012-CC	1.422	36.12	N/A	N/A
19221-0379	BCL-2038	.750	19.05	N/A	N/A
19221-0397	BCL-2012	.750	19.05	N/A	N/A
19221-0398	BCL-20516	.750	19.05	N/A	N/A
19221-0597	BCL-2058	.750	19.05	N/A	N/A
19221-0598	BCL-2058-PL	.750	19.05	N/A	N/A
19221-0848	BCL-2010MM-PL	.750	19.05	N/A	N/A

Wire Size: 3/0 AWG 95.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19202-0060	K-793	.640	16.25	.731	18.56
19205-0012	K-393	.672	17.06	N/A	N/A
19215-0049	K-394	.672	17.06	N/A	N/A
19221-0108	HDC-3014-CC	1.110	28.19	N/A	N/A
19221-0109	HDC-30516-CC	1.110	28.19	N/A	N/A
19221-0110	HDC-3038-CC	1.110	28.19	N/A	N/A
19221-0180	HDC-305162-CC	1.100	27.94	N/A	N/A
19221-0181	HDC-30382-CC	1.100	27.94	N/A	N/A
19221-0182	HDC-30122-CC	1.100	27.94	N/A	N/A
19221-0246	BCL-30516-PL	.812	20.63	N/A	N/A
19221-0247	BCL-3038-PL	.812	20.63	N/A	N/A
19221-0248	BCL-3012-PL	.812	20.63	N/A	N/A
19221-0301	HDCL-30382-CC	1.650	41.91	N/A	N/A
19221-0302	HDCL-30122-CC	1.650	41.91	N/A	N/A
19221-0325	HDCL-3038-CC	1.547	39.29	N/A	N/A
19221-0326	HDCL-3012-CC	1.547	39.29	N/A	N/A
19221-0355	HDC-3012-CC	1.110	28.19	N/A	N/A
19221-0381	BCL-3038	.812	20.63	N/A	N/A
19221-0401	BCL-3012	.812	20.63	N/A	N/A
19221-0402	BCL-30516	.812	20.63	N/A	N/A
19221-0478	BCL-3014	.812	20.63	N/A	N/A
19221-0570	BCL-3014-PL	.812	20.63	N/A	N/A
19221-0862	BCL-3010MM-PL	.750	19.05	N/A	N/A

Wire Size: 4/0 AWG 120.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19202-0061	L-778	.750	19.05	.831	21.10
19205-0013	L-378	.750	19.05	N/A	N/A

Wire Size: 4/0 AWG 120.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19215-0050	L-379	.750	19.05	N/A	N/A
19221-0183	HDC-40382-CC	1.210	30.73	N/A	N/A
19221-0184	HDC-40122-CC	1.210	30.73	N/A	N/A
19221-0250	BCL-4038-PL	1.159	29.44	N/A	N/A
19221-0251	BCL-4012-PL	1.159	29.44	N/A	N/A
19221-0303	HDCL-40382-CC	1.880	47.75	N/A	N/A
19221-0304	HDCL-40122-CC	1.880	47.75	N/A	N/A
19221-0327	HDCL-4038-CC	1.843	46.81	N/A	N/A
19221-0328	HDCL-4012-CC	1.843	46.81	N/A	N/A
19221-0356	HDC-4014-CC	1.220	30.99	N/A	N/A
19221-0357	HDC-40516-CC	1.220	30.99	N/A	N/A
19221-0358	HDC-4038-CC	1.220	30.99	N/A	N/A
19221-0359	HDC-4012-CC	1.220	30.99	N/A	N/A
19221-0371	BCL-4038-PL (.625)	.859	21.8	N/A	N/A
19221-0372	BCL-4012-PL (.625)	.859	21.8	N/A	N/A
19221-0373	BCL-4058-PL (.625)	.859	21.8	N/A	N/A
19221-0374	BCL-4038 (.625)	.859	21.8	N/A	N/A
19221-0375	BCL-4012 (.625)	.859	21.8	N/A	N/A
19221-0376	BCL-4058 (.625)	.859	21.8	N/A	N/A
19221-0382	BCL-4038	.859	21.8	N/A	N/A
19221-0403	BCL-4012	.859	21.8	N/A	N/A
19221-0412	BCL-40516-PL	.859	21.8	N/A	N/A
19221-0413	BCL-40516	.859	21.8	N/A	N/A
19221-0502	BCL-40516	.859	21.8	N/A	N/A
19221-0503	BCL-40516-PL	.859	21.8	N/A	N/A
19221-0648	BCL-4014-PL	.859	21.8	N/A	N/A
19221-0652	BCL-4014	.859	21.8	N/A	N/A

Wire Size: 250 MCM AWG 127.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0185	HDC-250382-CC	1.270	32.26	N/A	N/A
19221-0186	HDC-250122-CC	1.270	32.26	N/A	N/A
19221-0305	HDCL-250382-CC	1.870	47.50	N/A	N/A
19221-0306	HDCL-250122-CC	1.870	47.50	N/A	N/A
19221-0329	HDCL-25038-CC	2.093	53.16	N/A	N/A
19221-0330	HDCL-25012-CC	2.093	53.16	N/A	N/A
19221-0360	HDC-25038-CC	1.282	32.56	N/A	N/A
19221-0361	HDC-25012-CC	1.282	32.56	N/A	N/A
19221-0446	BCL-25038	.859	21.8	N/A	N/A
19221-0447	BCL-25038-PL	.859	21.8	N/A	N/A

Wire Size: 300 MCM AWG 152.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0187	HDC-300382-CC	1.330	33.78	N/A	N/A
19221-0188	HDC-300122-CC	1.330	33.78	N/A	N/A

Wire Size: 300 MCM AWG 152.00mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0307	HDCL-300382-CC	2.060	52.32	N/A	N/A
19221-0308	HDCL-300122-CC	2.060	52.32	N/A	N/A
19221-0331	HDCL-30038-CC	2.235	56.77	N/A	N/A
19221-0332	HDCL-30012-CC	2.235	56.77	N/A	N/A
19221-0362	HDC-30038-CC	1.407	35.74	N/A	N/A
19221-0363	HDC-30012-CC	1.407	35.74	N/A	N/A
19221-0364	HDC-30058-CC	1.407	35.74	N/A	N/A

Wire Size: 350 MCM AWG 177.30mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0189	HDC-350382-CC	1.540	39.12	N/A	N/A
19221-0190	HDC-350122-CC	1.540	39.12	N/A	N/A
19221-0309	HDCL-350382-CC	2.210	56.13	N/A	N/A
19221-0310	HDCL-350122-CC	2.210	56.13	N/A	N/A
19221-0333	HDCL-35038-CC	2.931	74.45	N/A	N/A
19221-0340	HDCL-35012-CC	2.931	47.45	N/A	N/A
19221-0365	HDC-35012-CC	1.531	38.89	N/A	N/A
19221-0366	HDC-35058-CC	1.531	38.89	N/A	N/A

Wire Size: 400 MCM AWG 202.70 mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0191	HDC-400382-CC	1.590	40.37	N/A	N/A
19221-0192	HDC-400122-CC	1.590	40.37	N/A	N/A
19221-0311	HDCL-400382-CC	2.280	57.91	N/A	N/A
19221-0312	HDCL-400122-CC	2.280	57.91	N/A	N/A
19221-0341	HDCL-40038-CC	2.469	62.71	N/A	N/A
19221-0342	HDCL-40012-CC	2.469	62.71	N/A	N/A
19221-0367	HDC-40012-CC	1.594	40.49	N/A	N/A
19221-0368	HDC-40058-CC	1.594	40.49	N/A	N/A

Wire Size: 500 MCM AWG 253.40 mm²					
Terminal No.	Terminal Eng No. (REF)	Wire Strip Length		Insulation Diameter Maximum	
		In	mm	In	mm
19221-0193	HDC-500382-CC	1.810	45.97	N/A	N/A
19221-0194	HDC-500122-CC	1.810	45.97	N/A	N/A
19221-0313	HDCL-500382-CC	2.860	72.64	N/A	N/A
19221-0314	HDCL-500122-CC	2.860	72.64	N/A	N/A
19221-0343	HDCL-50038-CC	3.063	77.80	N/A	N/A
19221-0344	HDCL-50012-CC	3.063	77.80	N/A	N/A
19221-0369	HDC-50012-CC	1.907	48.44	N/A	N/A
19221-0370	HDC-50058-CC	1.797	45.64	N/A	N/A

3.3 Crimping Terminals

Before crimping, set the recommended air pressure gauge to obtain the proper crimp . See Section 3.2 (Adjustments).

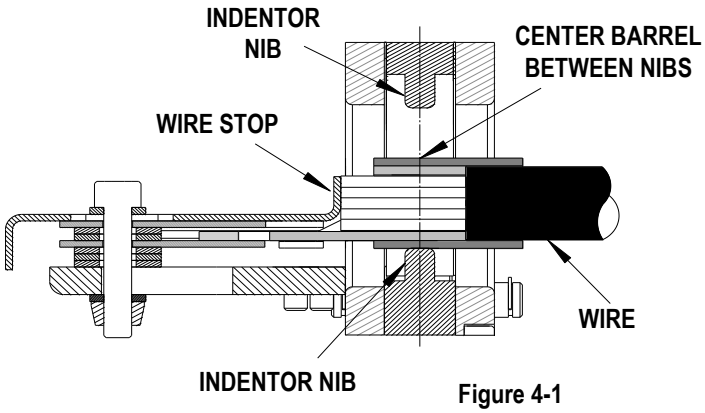


Figure 4-1

1. Adjust wire stop to position terminal barrel centered on the Indentor nibs. See figure 4-.1
2. Adjust wire stop so conductor is visible beyond terminal barrel but not so far that it effects use of terminal.
3. Position the terminal in the locator as shown in Figure 4-2 and 4-3. Insert the properly stripped wire into the terminal barrel. The wire ends should butt up against the wire stop of the locator.

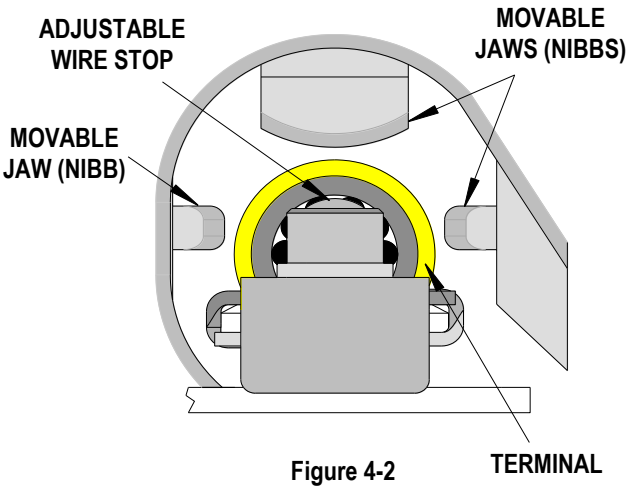


Figure 4-2

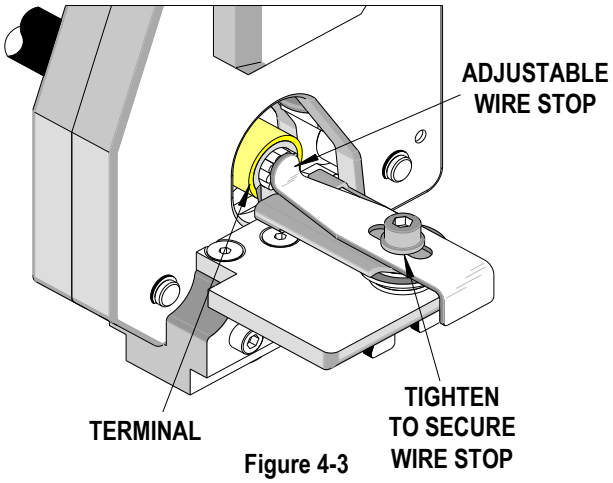


Figure 4-3

4. If the terminal is to big or the barrel of the terminal has a closed end, take off the locators and the wire stop. Position the terminal in the center of the jaws. Insert the properly stripped wire visually into the terminal barrel. as shown in Figure 4-4.
5. Depress the pedal on the putt pump to activate the jaws. The crimping process is done in small increments gradually allowing the press to fully crimp the terminal into the wire.
6. After the terminal is fully crimp, depress the elevated portion of the pedal to release the pump. This will allow the jaws to release.
7. Remove the crimp and inspect for proper crimp location.

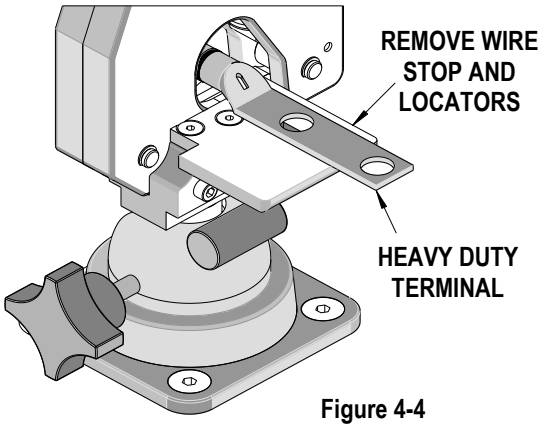


Figure 4-4

Section 4

Maintenance

4.1 Lubrication

4.2 Bleeding Air From the System

4.3 Inspecting the Hydraulic Fluid Level

4.4 Refilling the Reservoir

4.5 Periodic Cleaning

4.6 Spare Parts

4.7 Perishable Parts

4.8 Storage

4.1 Lubrication

WARNING: Any repair or servicing, which requires dismantling the pump must be performed in a dirt-free environment by a qualified technician.

CAUTION: Always disconnect air supply before all maintenance.

If the pump is operated on a continuous duty cycle for extended periods, the manufacturer recommends an automatic air line oiler be installed in the air inlet as close to the pumping unit as possible.

Set the unit to feed approximately 1 drop of oil per minute into the system. Use SAE No. 10 oil.

4.2 Bleeding Air From The System

During the initial moments of activation or after prolonged use, a significant amount of air may accummulate within the hydraulic system. This entrapped air may cause the cylinder to respond slowly or behave in an unstable manner.

To remove the air, run the system through several cycles (extending and retracting the ram) free of any load. The rams must be at a lower level than the pump to allow air to be released through the pump reservoir.

4.3 Inspecting The Hydraulic Fluid Level

CAUTION: Always disconnect air supply before all maintenance.

1. Check the oil level in the reservoir after every 10 hours of use.
2. The oil level should come to within 1/2" of the filler plug with all hoses attached.
3. Drain and replenish the reservoir with an approved, high-grade hydraulic oil such as OTC 16355 after every 300 hours of use.

Hoses: Hydraulic hoses on this unit carry a rating of 10,000 PSI.
Replacement hoses must carry the same rating.

4.4 Draining and Flushing the Reservoir

IMPORTANT: Wipe the pump exterior completely clean before attempting this procedure!

1. Loosen and remove the six screws that fasten the pump assembly to the reservoir. Remove the pump assembly from the reservoir. Do not damage the gasket, filter, or safety valve.
2. Clean the inside of the reservoir and refill with a suitable, non-flammable flushing oil. Rinse the filter clean.
3. Place the pump assembly back onto the reservoir and secure with two of the six screws. For best results, assemble the screws in opposite corners of the housing.
4. Run the unit for several minutes. Use the same method described in Section 3-7 (Priming the pump unit)
5. Drain and clean the reservoir once more.
6. Refill the reservoir with an approved, clean hydraulic oil and replace the pump assembly (with gasket) on the reservoir. Assemble the six machine screws and torque 25 to 30 in. lbs.

IMPORTANT: Drain and clean the other hydraulic system components (hoses, cylinders, etc.) before reconnecting them to the pump. This will prevent contaminated oil from re-entering the pump.

4.5 Refilling The Reservoir

CAUTION: Always disconnect air supply before all maintenance.

1. If additional oil must be added to the reservoir, use only an approved high grade hydraulic oil such as OTC 16355 (215 SSU @ 100° F).
2. Clean the entire area around the filler plug before adding oil to the reservoir.
3. Remove the filler plug and insert a clean funnel with filter.
4. The ram must be fully retracted and the air supply disconnected when adding the oil to the reservoir.

4.6 Venting the Reservoir

To improve oil delivery and increase useable oil capacity, vent the reservoir by removing the vent screw from the filler plug before using the pump. See Figure 5-1.

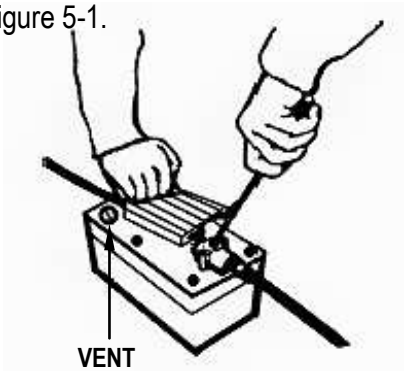


Figure 5-1

4.7 Priming the Pump Unit

If the pump unit must be primed, perform the following procedure:

1. Depress the release end of the pedal while holding down the air intake valve with a flathead screwdriver. See Figure 1-3. The air intake valve is located directly under the pedal in the area marked PUMP. This "button" is depressed simultaneously with the RELEASE area of the pedal during priming.
2. Allow the pump to cycle approximately 15 seconds.
3. Remove the screwdriver and depress the pump end of the pedal once more.
4. If the ram extends or pressure builds, the pump has been successfully primed.
5. If the pump does not respond, repeat the procedure, repeatedly jogging the air intake valve while holding the pedal in the RELEASE position.

4.8 Periodic Cleaning

CAUTION: Always disconnect air supply before all maintenance.

A routine should be established to keep the pump as free from dirt as possible.

1. All unused couplers should be sealed with thread protectors.
2. All hose connections must be free of grit and grime.
3. Any equipment hooked up to the pump should also be kept clean.
4. Use only an approved, clean hydraulic oil, such as OTC 16355, in this unit and change as recommended (every 300 hours).

   An example of a maintenance chart is shown below. Copy and use this chart to track the maintenance of your 19286-0065 or use this as a template to create you own schedule or use your company's standard chart, if applicable.

Preventive Maintenance Chart

Daily: Clean. See Section 3.5.
As Required: Lubricate. See Section 3.1.

CHECK SHEET MONTH _____ YEAR _____

Week	Daily Use	Days of the Week							Solution
		MON	TUE	WED	THU	FRI	SAT	SUN	
1									
2									
3									
4									
Lubrication	1 drop per minute into the system								Use SAE No. 10 Oil
Change Hydraulic oil	300 Hours								Use OTC 16355
Bleeding Air From the System	After prolong use								Run the system thru several cycles.
Refilling Reservoir	10 hours or when needed								Use 215 SSU@100°F (otc 16355)
Cleaning	Hose connections free of grit and dirt. Pump kept clean								Use soft cloth

Schedule should be adjusted up or down depending on usage. Molex recommends that a log of preventive maintenance be kept with the tool.

4.9 Spare Parts

Customers are responsible for maintaining the tool. Spare parts are available from Molex. Moving and functioning parts can be damaged or wear out over time and will require replacement. Molex recommends that the customer keep some or all of them in stock to reduce production down time. These parts are identified in the Parts List. See Section 6.

4.10 Perishable Parts

Customers are responsible for maintaining the 19286-0065. Perishable parts are those parts that come in contact with the product and will wear out over time. Molex recommends that all customers keep at least one set of the perishable tooling in stock at all times. This will reduce the amount of production down time.

4.11 Storage

When storing the 19286-0065 assembly, disconnect the air supply and store in a dry location. If the pump is disconnected from the dieless crimper, reinstall the dust cap on the cylinder inlet. When transporting, reinstall the red-vented cap on the pump reservoir.

Section 5

5.1 Parts Lists and Assembly Drawings

5.2 Troubleshooting

5.1 Main Parts List and Assembly Drawings

19286-0065 - Main Assembly Figure 6-1			
Item	**Order No.**	**Description**	**Qty**
1	19286-0041	Hydraulic Hose Assembly-6 Feet	1
2	19286-0049	Filter Regulator with Gauge	1
3	19286-0059	PuttPump Power Unit	1
4	19286-0103	Air Hose 1/4 NPT Male Fitting-10 Feet	1
5	19286-0106	Swivel Base Assembly	1 (Figure 6-2)
6	19286-0200	Steel Head Assembly	1 (Figure 6-3)
7	64016-0033	Hydraulic Cylinder	1
8	19078-0478	Steel head with Cylinder	Ref
-	63700-4979	Retract Spring for Item 7	Ref (Repair Part)

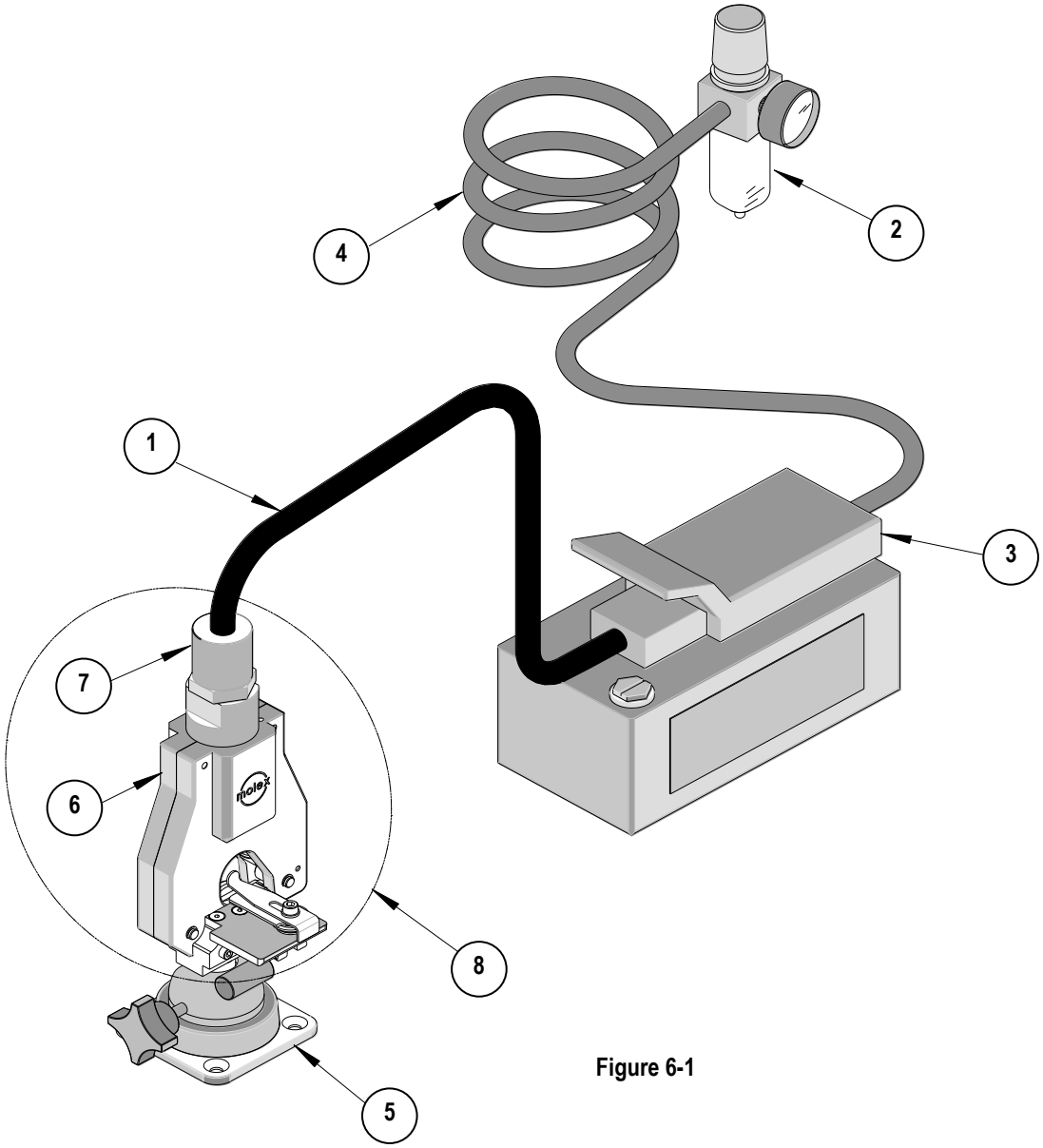


Figure 6-1

Swivel Base Parts List

19286-0106-Swivel Base Figure 6-2			
Item	**Order No.**	**Description**	**Qty**
1	19286-0016	Pivot Base	1
2	19286-0029	Base Adapter	1
3	19286-0030	Locator Mounting Base	1
4	19286-0037	Locator Half Adjustable	2
5	19286-0038	Adjustable Wire Stop	1
6	N/A	M5 by 20 Long SHCS	2**
7	N/A	M6 by 30 Long SHCS	1**
8	N/A	M6 by 55 Long SHCS	1**
9	N/A	M6 Nut	1**
10	N/A	M6 Wing Nut	1**
11	N/A	M6 Flat Washer	2**
12	N/A	M5 by 12 Long FHCS	2**
13	N/A	1/4 Flat Washer	5**
** Available from an industrial supply company such as MSC (1-800-645-7270).			

Swivel Base Assembly

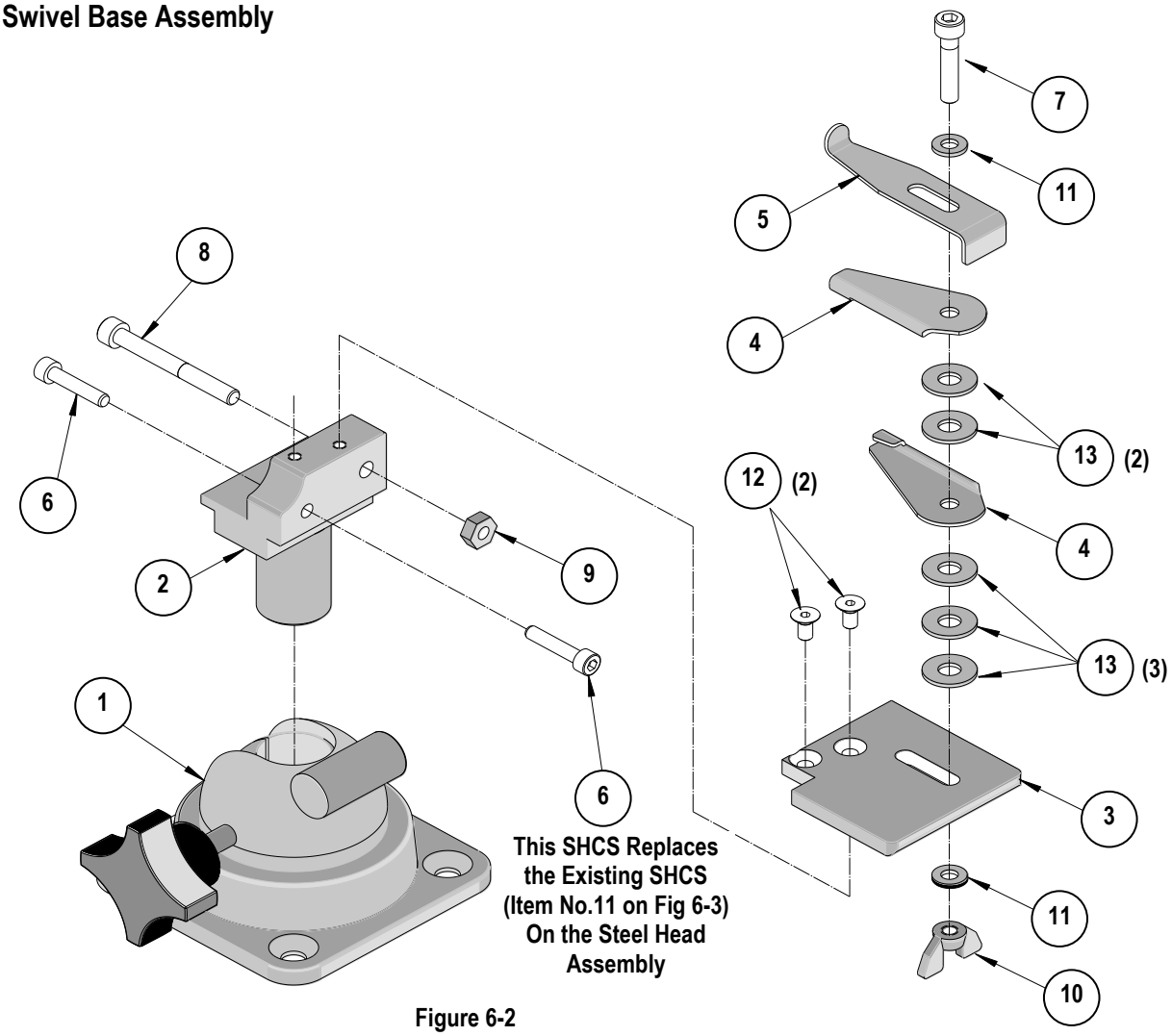


Figure 6-2

Steel Head Parts List

19286-0200-Steel Head Figure 6-3			
Item	**Order No.**	**Description**	**Qty**
1	19078-0754	Pivot Pin with Snap Rings	2 K
2	19078-0764	Fixed Jaw	1
3	19078-0765	Tool Cover “A” Steel	1
4	19078-0766	Tool Cover “B” Steel	1
5	19228-0386	Pivot Roller	2 K
6	19228-0387	Spring, Side Jaw (DHL UC-6)	2 K
7	19228-0390	Linear Bearing Assembly	2 K
8	19228-0391	Spring Guide Pin	2 K
9	19286-0023	Jaw Movable - Side	2
10	19286-0024	Jaw Movable - Top	1
11	N/A	M5 by 25 Long SHCS	2** K
12	N/A	M6 by 25 Long SHCS	3** K
13	N/A	2.5mm by 8 Long Roll Pin	2** K
REF	**64000-0095**	**Repair Kit all “K” Items**	
** The following purchased parts are available from an Industrial supply company such as MSC (1-800-645-7270).			

Steel Head Assembly

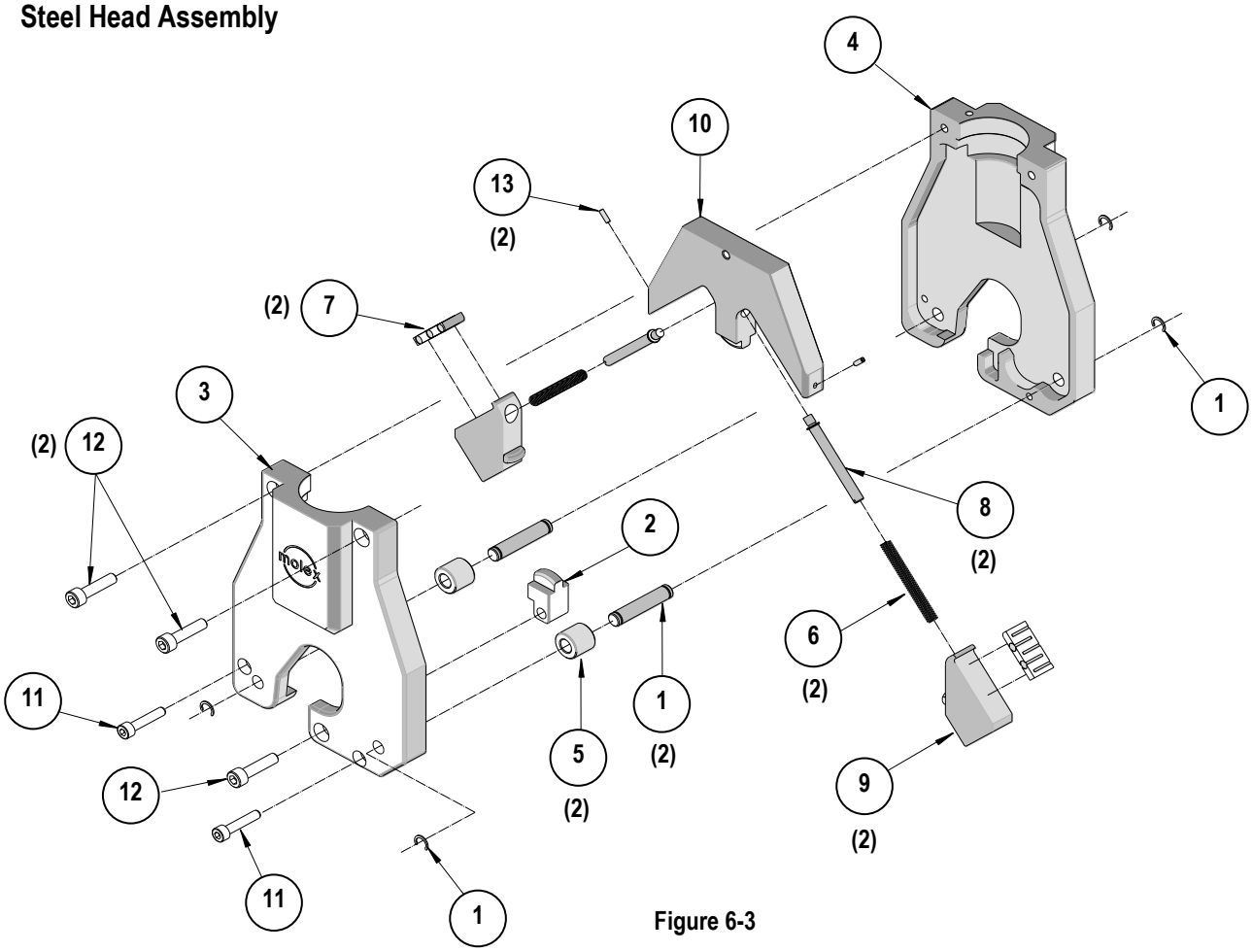


Figure 6-3

5.2 Troubleshooting

Symptom	▪ Cause	Solution
Pump reciprocates but no oil delivery. (Ram will not extend)	▪ Low oil level.	Replenish oil reservoir.
	▪ Pump not primed.	Depress air intake valve and hydraulic release valve simultaneously.
	▪ Check oil filter for contamination.	Invert pump. Fill intake filter with oil. Depress pedal end marked"pump.
Low oil delivery. (Ram extends slowly)	▪ Reservoir not vented	Remove filter and clean.
	▪ Inadequate air supply: 1. Check air input supply. 2. Contamination, check air side of pump. Thoroughly inspect the slot inthe air cylinder tub.	1. Should be 20 CFM mininum. 2. Clean and reassemble.
	▪ Hydraulic failure: 1. Check the oil filter forcontamination. 2. Air in hydraulic system.	1. Clean and reinstall. 2. Bleed the system as described in "PREVENTATIVE MAINTENANCE" Section.
Pump will not build to maximum pressure. (No visible leakage)	▪ Check the air supply.	100 PSI is required to obtain maximum pressure.
Pump builds pressure but will not hold system pressure.	▪ Check hydraulic connections.	Refit as needed.

Visit our Web site at http://www.molex.com

For more information use the Crimping Testing and Inspection Handbook for Industrial (Closed Barrel products).

There is no charge for this book, which can be found on the Molex Website (www.molex.com) or contact you local Molex sales engineer.

