
LARGE RECIPIENT

Revitalize Your Recip Compressor

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Built for rugged, versatile use, Reciprocating compressors can provide years of compressed air and nitrogen gas service. Whether you want to maintain your compressor's existing performance parameters or change to new conditions, Ingersoll Rand can offer a multitude of features and enhancements.

Submit the revitalization form at the end of this section to allow Ingersoll Rand quote a multitude of offerings for both your Ingersoll Rand Recip and your competitive Recip compressors!

Support for Large Recip Compressors

Ingersoll Rand supports these Large Reciprocating air and nitrogen compressors built during its many years of Large Reciprocating compressor production:

- XLE
- XVH
- TVH
- LLE
- XRE
- Type 40
- HHE
- PRE
- ER
- ES
- ESH/V
- PHE
- Pet Star 3
- Pet Star 4-Series 1 and
- Pet Star 4-Series 2.



We have original machine records on file from over 75 years of production. If field modifications are made, we retain copies of those changes with the machine's records. So, we have the most current machine information on hand.



Lubricant and Motor Greasing

Ingersoll Rand Reciprocating compressors (except Pet Star 4 – Series I) operate on XL-740HT Lubricant. Fill quantity of lubricant varies by machine size.

1 gallon (box of 4)	32248395
5 gallon pail	39163266
55 gallon drum	39163274

Pet*Star 4 – Series I - operates on Mineral Oil

5 gallon pail	38304465
55 gallon drum	38304473

Motor Greasing

Contact Customer Service for the directive on when and how to grease motors, the required quantities which vary by motor, and motor bearing application. The preferred grease is:

14 ounce tube	38034914
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Intellisys[®] SG Retrofit Kit Program

OVERVIEW

The Recip Intellisys SG (Second Generation) Retrofit Kit and System Controller Programs constitute one of the most significant growth opportunities in the Recip Services business. Practically any reciprocating compressor can be retrofitted with the Intellisys SG Controller which can offer the user these features:

- Minimal buttons with prompting, lead-through button functions
- Multiple, simultaneous displays
- Menu-style display presentations
- LCD display – easily readable in dark or bright light
- Set points that can be changed while the compressor is running
- Easy access to machine data for last 15 alarm conditions
- Real-time clock with time stamping of stored alarm histories

Global Services provides you with a range of products to help maximize this opportunity. We have attractive price and discount structures for the entire product line. Customers have the opportunity for savings in compressor operations.

ADVANTAGES OF OPERATION WITH AN INTELLISYS SG CONTROLLER:

- Precise pressure control (up to 20% energy savings)
- Increased turndown capability (up to 20% energy savings)
- Maintains plant air pressure during system demand instability (\$\$\$ Savings)
- Improved diagnostic capability virtually eliminating downtime (\$\$\$ Savings)
- Kits can be installed on the majority of IR Recip compressors as well as on competitive units. Retrofits can be achieved in as little as 16 hours of labor

Based on the installation information, including power consumption costs, your customer can achieve savings in these areas:

- Reduced power costs – arising from maximization of compressor efficiency through reduced pressure range.
 - Reduced parts usage and maintenance – the retrofit eliminates the need for most temperature switches, all pressure switches, thermometers, pressure gauges and traps which reduce parts costs and the appropriate maintenance requirements/improved power consumption – arising from the elimination of leaking traps – the retrofit kit includes state-of-the-art programmable solenoid drain traps.
 - Reduced maintenance costs – arising from improved operational predictability and scheduling.
- **Complete 2-year warranty!**
 - **Money Back Guarantee –you'll see savings in 6 months or it's free!**

Intellisys[®] SG Retrofit Kit Program

INTELLISYS SG CONVERSION KITS

The Recip SG Controller programming contains six types of reciprocating compressors:

- Single-stage atmospheric,
- Single-stage booster,
- Two-stage atmospheric,
- Two-stage booster,
- Two-cylinder single-stage booster, and
- Three-stage atmospheric.

The operator selects the program necessary for the type of compressor and outfits the compressor with the appropriate sensors and regulation devices supplied by Ingersoll Rand.

Types of kits:

Full service kits that include everything needed for an installation have been designed for LLE and XLE compressors and have established CCNs. For all other compressors, we offer custom modular-type kits, which can include the basic controller and instrumentation – all the way to a full service kit. We will supply the basic controller needs or the complete installation needs - from conduit and fittings and even the wire markers! In addition, we can supply parts and guidance to convert a First Generation (“Red-Eye”) Controller into a Second Generation for customers wanting to upgrade to the most current technology.

Kit Enclosures:

The enclosures for the LLE (NEMA 12) and the XLE (NEMA 4) mount directly onto the side of the compressor. All other types of compressors use a free-standing NEMA 4 enclosure that is 44” tall x 11” deep and either 17” or 26” wide. This free-standing enclosure can be used in a remote starter application or it can house up to a Size 5 star delta starter in the same enclosure!

Competitive Intellisys Retrofits:

The Intellisys SG Controllers can be retrofitted on competitor’s compressors.

Retrofit Conversion Form:

To assist in selecting your controller needs, we have prepared an Intellisys Request Form. Please refer to it and supply the information specified. By filling in the appropriate machine information, and returning the form to Davidson, we will investigate your request and determine what product we are able to offer for an installation retrofit. This service should help highlight the significant benefit of using the Intellisys Kit, which on average are showing ROI of less than 2 years.

TECHNICAL SUPPORT

We offer a leaflet highlighting the technical features and benefits of the product. It is available through Global Services, CCN 38343984. In addition, the Installation Manuals, which are incorporated in each kit, are also available on the IR ServiceNet and Passport using the following form numbers. For units other than XLE and LLE, separate documentation will be provided to guide the installation.

	<u>Second Generation</u>
XLE Installation Manual	AP-0822A
LLE Installation Manual	AP-0817A
XLE/LLE Operator Manual	AP-0783B

Intellisys[®] SG Retrofit Kit Program

RECIP INTELLISYS[®] SG STANDARD MONITORED FEATURES

Standard Features:	Single Stage Atmospheric	Single Stage Booster	Two Stage Atmospheric	Three Stage Atmospheric	Two Airend Booster	Two Stage Booster
1st Stage Discharge Pressure			X	X		X
2nd Stage Discharge Pressure				X		
Frame Oil Pressure	X	X	X	X	X	X
Inlet Water Pressure	X	X	X	X	X	X
Outlet Water Pressure	X	X	X	X	X	X
Package Discharge Pressure	X	X	X	X	X	X
Suction Pressure		X			X	X
1st Stage Discharge Temperature	X	X	X	X	Cyl #1	X
2nd Stage Discharge Temperature			X	X	Cyl #2	X
2nd Stage Inlet Temperature			X	X		X
3rd Stage Discharge Temperature				X		
3rd Stage Inlet Temperature				X		
Frame Oil Temperature	X	X	X	X	X	X
Package Discharge Temperature	X	X	X	X	X	X
Package Inlet Temperature		X			X	X
Package Inlet Water Temperature	X	X	X	X	X	X
Package Outlet Water Temperature	X	X	X	X	X	X
Remote Start / Stop						

Optional Monitored Features

- Frame Oil Level Switch
- Lube Line Alert Switch
- Lubricator Oil Level Switch
- Air Filter Pressure Drop (atmospheric)
- Cooler Condensate Level Switch
- High Vibration Switch
- Power Out Restart
- Power Out Restart w/ Remote S/S

Intellisys[®] SG Retrofit Kit Program

STANDARD INTELLISYS[®] SG RETROFIT KITS

Retrofit Kits	CCN	Options	CCN
LLE with 3 step regulation	42458265	Frame Oil Level Switch	39669940
7" XLE with Free Air Unloader Regulation	42464313	Lube Line Alert Switch (one per feed)	42321653
20.5 & 12.5 x 8.5 XLE 24(26) & 14.5 x 10 XLE with Clearance Valve Regulation	42464578	Low Lubricator Oil Level Shutdown	39644547
23 & 13 x 8.5 XLE with Free Air Unloader and Outer Head Clearance Valve Regulation	42464586	Air Filter Pressure Drop (atmospheric units only)	42449181
28 & 16 x 10 XLE with Clearance Valve and High Pressure Free Air Unloader Regulation	42464594	Cooler Condensate Level Switch (up to 500 psig)	39669940
		Vibration Switch (non-port plate units)	39644554
		Remote Start/Stop	42449199
		Power Out Restart (PORO)	42449207
		Power Out Restart (PORO) with Remote Start Stop	42449215

Intellisys SG Kits for all other Large Recips:

Modular kits are custom engineered for compressors other than LLE and XLEs. These are customized to provide from the most basic equipment – all the way to a full service kit – depending on the customer's preference. Two different styles of enclosures are available to fill the customer's need. For compressors currently outfitted with the "Red Eye" or First Generation controller, upgrade kits are available to convert to a Second Generation controller. Submit the fully detailed Intellisys request form for all Ingersoll Rand and non-Ingersoll Rand recip compressors to obtain a quote.

For more controller options, see the Controls section.

Intellisys[®] SG Retrofit Kit Program

INTELLISYS[®] SG REQUEST FORM

Please complete one form for each compressor considered as a possible site for Intellisys[®] retrofit installation. Send the form to Global Services,

Attn: Gary Dings, fax number (704)-896-4898.

Requested by: _____ Date: _____

Company: _____

Address: _____

City / Country: _____ Email: _____

Phone: _____ Fax: _____

Compressor Manufacturer: _____

Compressor Model: _____ HP: _____ Serial Number: _____

Cylinder Size(s) _____ Inlet Pressure: _____ PSIG

Stroke: _____ Interstage Pressure(s): _____ PSIG

Discharge Pressure: _____ PSIG

Lubrication: Lubricated Non Lube Is a new starter needed? Yes No

Motor: Flange Mtd V-Belt Existing Starter: AAL Red. Volt Star Delta

Voltage: _____ Is the motor Synchronous? Yes No

Starter Location: Wall Compressor Distance from compressor: _____ Ft

Is 110/120V control voltage available from the starter? Yes No

Describe existing system controls: _____

Aftercooler location (distance in feet): _____

Intellisys to be mounted on: Compressor Wall

(RTD cables must be no longer than 34 feet from the sensing point to the panel; therefore the Intellisys[®] must be no further than 34 feet from the furthest RTD. Advise if this is an issue.)

Is there a 1/4" NPT with shut-off available from the system receiver for mounting main pressure sensing transducer? Yes No

If "No", Where will this signal come from? _____

Type of Regulation: _____

Does the compressor have Free Air Unloaders? No Yes 2 Step? 3 Step?

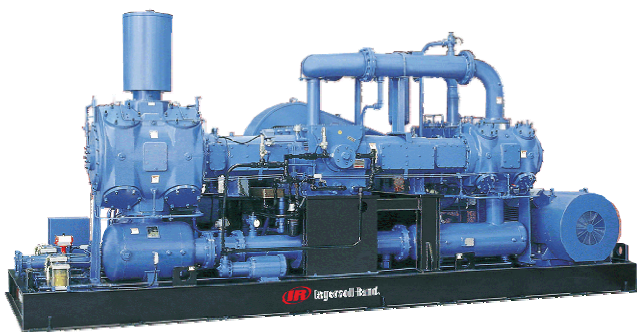
Does the compressor have clearance valves? No Yes 3 Step? 5 Step?

Are the unloaders or clearance valves controlled by electric solenoids? Yes No

Pet*Star

Pet*Star 3 and Pet*Star 4 (Series I and Series II) compressors are designed for the PET blowing molding industry. These units produce high pressure oil-free compressed air to insure no bottle rejection due to oil contamination.

Pet*Star 4 Series II



Pet*Star 4 Series II compressors are four-stage compressors that discharge at 580 psig. Series II compressors provide innovative operating and service benefits over the original Pet*Star 4 compressors.

Pet*Star 4 Series II	HP	Pet*Star 4 Series II	HP
1500	325	2300	500
1700	375	2500	525
1900	425	2800	600
2100	475	3000	650
		3300	725



Pet*Star 4 Series I

Pet*Star 4 compressors are four-stage compressors that discharge at 580 psig. Models are:

Pet*Star 4 Model	HP
380	100
550	150
740	180
860	220
1040	270
1260	320
1540	380
1660	425
1880	480
2300	545
2840	680
3100	720



Pet*Star 3

Pet*Star 3 compressors are three-stage compressors that discharge at 650 psig.

Pet*Star 3 Model	HP
170	40
210	50
260	60
310	75

Start-Up Kits & 8000 Hour Kits-Pet*Star

OVERVIEW

Each Pet*Star Start-Up Kit contains all the parts needed to start up and maintain your compressor for the first 8000 hours of operation and gives the added protection of extended warranty coverage with the use of XL-740HT or Pet*Star 4 Mineral Oil, depending on the type of compressor.

The **8000-Hour Spares Kits** are also designed for the Pet*Star 3 and Pet*Star 4 compressors. This kit provides the components necessary to service your customer's compressor and includes replaceable items needed for **8000-hour interval maintenance per the recommended maintenance schedule.**

The Pet*Star 4 cylinder wear kits contain rings and gaskets for basic cylinder overhaul.

KITS AVAILABLE FOR THE FOLLOWING MODELS:

	CCN	
	Start-Up Kits	8000 Hours Kits
Pet*Star 3		
Pet*Star –170 (40 HP)	38001277	38001285
Pet*Star – 210 (50 HP)	38001277	38001285
Pet*Star – 260 (60 HP)	38001277	38001293
Pet*Star – 310 (75 HP)	38001277	38001301
Pet*Star 4 – Series I		
290-550 non ASME	38303798	
290-550 ASME	38317186	
740-860 non ASME	38301719	
740-860 ASME	38312625	
1040 non ASME	38304382	
1040 ASME	38317228	
1260 non ASME	38308052	
1260 ASME	38313391	
1540-1660 non ASME	38313490	
1880-2020 non ASME	38313532	
1880-2020 ASME	38313540	
2300-3100 non ASME	38312690	
2300-3100 ASME	38308078	

Pet*Star 4 – Additional Series I kits:

Note 1: Contact the Large Recip Services Product Co-ordinator for additional details on 8000 hour kits, cylinder wear kits and valve rebuilds.

Pet*Star 4 – Series II kits:

Note 2: Contact your Customer Service Representative at 1-800-247-8640 for details on all spares for Series II compressors.

Pet*Star 4 – Series I

These Pet*Star 4 Series I kits are available for rebuilding individual cylinders. Each kit includes all cylinder gaskets and all rings.

Pet Star 4 – Series I Kit CCN	Cylinder Wear Kit
38317970	75 mm Cylinder
38317988	95 mm Cylinder
38317996	105 mm Cylinder
38318002	125 mm Cylinder
38318010	125 mm Cylinder – 6 cylinder
38318028	140 mm Cylinder
38318036	140 mm Cylinder – 6 cylinder
38318044	145 mm Cylinder
38318051	160 mm Cylinder
38318069	185 mm Cylinder
38318077	230 mm Cylinder
38318085	250 mm Cylinder
38318093	280 mm Cylinder
38318101	310 mm Cylinder
38318119	370 mm Cylinder
38318127	450 mm Cylinder
38318135	580 mm Cylinder

These Pet*Star 4 Series I kits are available for compressor maintenance. Each kit includes tools for specific maintenance needs:

- Tool for manual turning
- Piston rod guide
- Piston rod thread protector
- Cross head nut wrench
- Belt tension meter
- Piston wrenches
- Impact wrenches
- Valve holders packing gland tool
- Mandrels

Compressor Sizes	Tool Kit CCN
290, 380, 470, 550	38312245
590, 680	38312294
740, 860	38304457
1040	38312310
1260	38312336
1540, 1660	38313474
1880	38313482
2020, 2070, 2300, 2840, 3100	38312096

Compressor Valves: Inlet, Unloaders and Discharge

Ingersoll Rand compressors can operate with a variety of valve choices. For many years, all Ingersoll Rand Recip compressors operated with channel and spring style valves. Today, that valve design is still widely used; however, a number of options are available for consideration:

- **Magnum Valves**
- **Plate Valves**
- **Channel and Spring Valves**

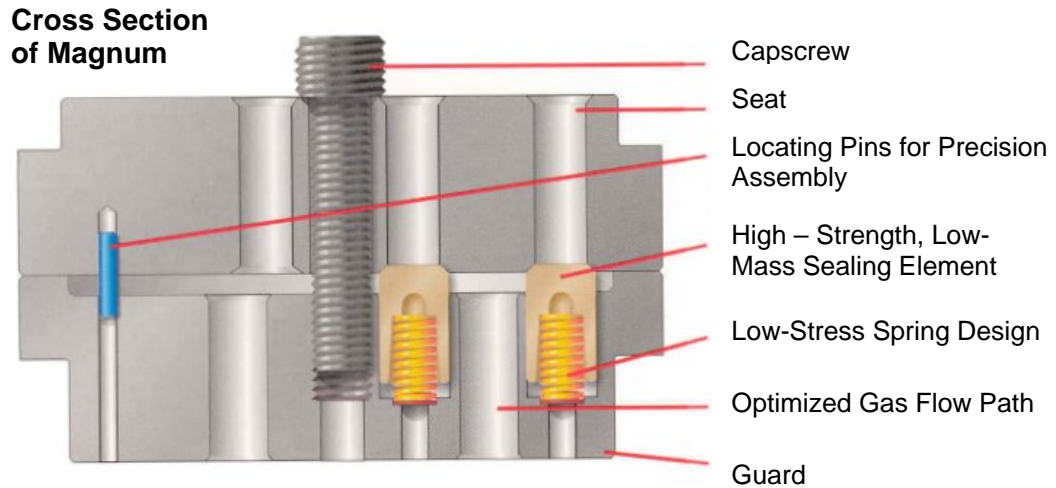
Provide a completed field conversion request form (an application sheet is also required for Magnum Valves) to obtain an alternate style valve quotation.

Note: Each type of inlet valve will require its own specialized unloader, which will be quoted along with the valve.

Magnum Valves

Low maintenance costs, operates at high speeds and pressures

Magnum valves are suitable for all brands of reciprocating compressors. It can be configured for a wide range of operating conditions and virtually any gas process.



Features	Benefits
High-strength valve element	Operates at high compressor speeds and pressure differentials
Applies to all brands of reciprocating compressors	Commonality of internal components and reconditioning practices
Advanced valve element geometry	Reduces fatigue stresses for extended life
Common element for all valves	Reduces parts inventory Increases interchangeability/availability of replacement parts Minimizes replacement costs
Nonmetallic valve element	Covers full spectrum of gas application Absorbs high impact velocities Can be used for lube or non-lube
Precision-guided valve element and springs	Increases reliability of moving parts for long-term operation
Streamlined flow path with balanced seat area, guard area, and lift area	Optimizes effective flow area (EFA) and is more tolerant of particles and liquids in the gas
Custom valve selection using proprietary Dynamic Valve Analysis software	Optimizes valve performance and reliability

Submit a field conversion request and valve inquiry to obtain Magnum valves for your specific application.

Magnum Valve Process

- **Quote Request**
 - Submit completed Field Conversion Request (FCR) on Page 109 and Magnum Valve Application Inquire Forms to Large Recip Services Coordinator.
- **Quote Receipt**
 - Quotation for following scope will be provided as required, generally within 7 working days:
 - Inlet Valves w/ Plunger
 - Unloader Conversions
 - Discharge Valves
 - Quotation provided in “Magnum Valve Sales Tool” spreadsheet which allows you to estimate Annual and 5 yr Savings to customer’s application.
- **Order Submittal**
 - Contact Large Recip Services Coordinator with intent to order
 - Coordinator forwards required CCN(s) to field so order can be loaded
 - Lead time generally 10 weeks from order submittal
- **Order Fulfillment**
 - Valve(s) and Components Engineered.
 - Parts List structured and emailed with User’s Manual

Magnum Valve Application Inquiry



Magnum Valve Application Inquiry

Issued By _____ Date _____

CUSTOMER

Customer Name _____ Location _____
 Contact _____ Facility Elevation _____

MANUFACTURER

Unit Mfr./Model _____ Speed (RPM) Normal _____
 Unit Serial No. _____

CYLINDER

Stage _____ Piston Rod Diameter _____
 Cylinder Serial No. _____ Fixed Clearance Vol. (%) H.E. _____
 Cylinder Bore _____ C.E. _____
 Cylinder Stroke _____ Lube or Non-Lube _____

OPERATING INFORMATION

Suction Pressure (PSIG/Pa) _____ Suction Temp (F/C) _____
 Discharge Pressure (PSIG/Pa) _____ Discharge Temp (F/C) _____

VALVES

Size & No. of Suct Vlvs per Cyl _____ Size & No. of Disch Vlvs per Cyl _____
 Suction Part # _____ Discharge Part # _____

UNLOADERS

Unloading Required for: Start-Up Only _____ Start-Up & Cap Control _____
 Preferred Method: Finger Unloaders _____ Port/Plug _____
 Normal Load Steps _____ Operator Air Pressure Min. _____ Max. _____

GAS COMPOSITION (Symbol and Molecular % Concentration)

Gas	%	Gas	%	Gas	%
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Molecular Weight _____
 Please note any liquids, moisture or corrosives that are present in the gas

PURPOSE OF INQUIRY

Reliability Problems _____ Performance Improvement _____ Corrosion Problems _____
 Please Comment _____

Plate Valves

Plate valves are suitable for lubricated and non-lubricated service as well as atmospheric or booster applications. This design uses frictionless guided plates. The spring load characteristics combine easy and efficient opening with smooth increase to maximum at full opening. Each valve is sized to the existing pocket dimensions and designed to attain the optimum valve lift, spring load, plate thickness and total valve height, based on the operational data of the individual compressor cylinder.

Valves are selected for individual applications dependent on these factors: cylinder size, compressor speed, pressure by stage, temperature by stage, and gas being compressed.

Note: Inlet plate valve are equipped with companion unloaders and actuators.



The following chart contains representative CCNs for plate valves. However, to ensure the properly sized valve for you compressor's operating conditions, submit a field conversion request for the optimal selection.

Plate Valves (Continued)

Plate Valve Selection (Submit a Field Conversion Request form for selection assistance):

PLATE VALVE SELECTION

Bore Stroke	Valve Size	CCN Suction w/unloader	CCN Discharge	CCN Suction no unloader
3.5 x 7	H22	39914718	39591698	39594502
		39914726	39591706	39594510
		39914734	39591714	39594528
		39914742	39591722	39594536
3.5 x 7	A28	39914759	39591730	39594544
		39590286	39590237	39594551
		39590807	39590294	39594072
		39590682	39590690	39594056
4 x 7	A28	39914759	39591730	39594544
		39590286	39590237	39594551
		39590807	39590294	39594072
		39590682	39590690	39594056
5 x 7	A36	39590468	39590435	39594585
		39909502	39329313	39594080
		39914775	39590278	39594064
			39590674	
6 x 7	A36	39914783	39590435	39594585
		39914791	39329313	39594080
		39914809	39590278	39594064
		39590666	39590674	39594619
7 x 7	A36	39914783	39590435	39594585
		39914791	39329313	39594080
		39914809	39590278	39594064
		39590666	39590674	39594619
7 x 7 ALT.	A40	39916663	39592308	39594627
		39916671	39592316	39594635
		39916689	39592324	39594643
		39916697	39592332	39594650
10 x 7	A43	39915343	39591755	39595079
		39914825	39590955	39595087
		39914817	39591763	39595095
11 x 7	A43	39591672	39591755	39594791
		39914866	39590955	39594809
			39591763	

Plate Valves (Continued)

PLATE VALVE SELECTION

Bore Stroke	Valve Size	CCN Suction w/unloader	CCN Discharge	CCN Suction no unloader
12 x 7	A54	39914874	39591771	39594668
		39914882	39591789	39594676
14 x 7	A60	39914890	39591797	39594791
		39914908	39591805	39594809
			39591813	
16 x 7	A67	39914916	39591821	39595103
		39914924	39591839	39595111
4.5 x 9	A36	39918347	39592605	39594684
		39918354	39592613	39594692
		39918362	39592621	39594700
		39918370		39594718
6 x 9	A36	39918388	39592605	39594726
		39918399	39592613	39594734
		39918404	39592654	39593587
		39918412	39592662	39594742
7 x 9	A43	39918420	39592670	39594759
		39918438	39592688	39594767
		39918446	39592696	39594775
		39918453	39592704	39594783
9 x 9	A60	39918461	39591797	39594791
		39918479	39591805	39594809
		39918487	39591813	39594817
		39918495	39592746	39593579

Plate Valves (Continued)

INLET/DISCHARGE CHANNEL AND SPRING VALVES REFERENCE TABLE

XLE LUBRICATED

MODEL	VALVE	VALVE CCN	P/N
14.5 & 9 X 7	LP INLET	42135848	A48CN1
	LP DISCHARGE	42135913	A48CN2AB
	HP INLET	42313650	A36CN1
	HP DISCHARGE	42313742	A36CN2AB
16 & 10 X 7	LP INLET	34526053	A60CN1
	LP DISCHARGE	33815887	A60CN2AE
	HP INLET	42317214	A43CN1
	HP DISCHARGE	42317339	A43CN2AC
17 & 10 X 7	LP INLET	34526053	A60CN1
	LP DISCHARGE	33815887	A60CN2AE
	HP INLET	42317214	A43CN1
	HP DISCHARGE	42317339	A43CN2AC
19.5 & 11.5 X 7	LP INLET	34953158	A75CN1
	LP DISCHARGE	34953224	A75CN2C
	HP INLET	37856267	A54CN1
	HP DISCHARGE	37856358	A54CN2AB
18.5 & 11.5 X 8.5	LP INLET	34955385	A67CN1
	LP DISCHARGE	34955351	A67CN2B
	HP INLET	42135848	A48CN1
	HP DISCHARGE	42135913	A48CN2AB
19 & 11.5 X 8.5	LP INLET	34955385	A67CN1
	LP DISCHARGE	34955351	A67CN2B
	HP INLET	42135848	A48CN1
	HP DISCHARGE	42135913	A48CN2AB
20.5 & 12.5 X 8.5	LP INLET	34953158	A75CN1
	LP DISCHARGE	34953224	A75CN2C
	HP INLET	37856267	A54CN1
	HP DISCHARGE	37856358	A54CN2AB
21.5 & 12.5 X 8.5	LP INLET	34953158	A75CN1
	LP DISCHARGE	34953224	A75CN2C
	HP INLET	37856267	A54CN1
	HP DISCHARGE	37856358	A54CN2AB
23 & 13 X 8.5	LP INLET	34952184	A81CN1FBA
	LP DISCHARGE	34703645	A81CN2D
	HP INLET	34526053	A60CN1
	HP DISCHARGE	33815887	A60CN2AE
22 & 13.5 X 10	LP INLET	34953158	A75CN1
	LP DISCHARGE	34953224	A75CN2C
	HP INLET	34526053	A60CN1
	HP DISCHARGE	33815887	A60CN2AE
24.25 & 14.5 X 10	LP INLET	34952184	A81CN1FBA
	LP DISCHARGE	34703645	A81CN2D
	HP INLET	34526053	A60CN1
	HP DISCHARGE	33815887	A60CN2AE
25 & 14.5 X 10	LP INLET	34952184	A81CN1FBA
	LP DISCHARGE	34703645	A81CN2D
	HP INLET	34526053	A60CN1
	HP DISCHARGE	33815887	A60CN2AE
26 & 14.5 X 10	LP INLET	34955906	A92CN1
	LP DISCHARGE	34955864	A92CN2AB
	HP INLET	34526053	A60CN1
	HP DISCHARGE	33815887	A60CN2AE
28 & 16 X 10	LP INLET	34955906	A92CN1
	LP DISCHARGE	34955864	A92CN2AB
	HP INLET	34953158	A75CN1
	HP DISCHARGE	34953224	A75CN2C

Plate Valves (Continued)

INLET/DISCHARGE CHANNEL AND SPRING VALVES REFERENCE TABLE XLE NON-LUBE

MODEL	VALVE	VALVE CCN	P/N
14.5 & 9 X 7	LP INLET	37021649	A48C1WSF
	LP DISCHARGE	37157872	A48CN2AB
	HP INLET	30386486	A36C1WSE
	HP DISCHARGE	37157799	A36C2WSFA
16 & 10 X 7	LP INLET	37022118	A60C1WSF
	LP DISCHARGE	37154275	A60C2WSNB
	HP INLET	37021110	A43C1WSE
	HP DISCHARGE	37157831	A43C2WSFB
17 & 10 X 7	LP INLET	37022118	A60C1WSF
	LP DISCHARGE	37154275	A60C2WSNB
	HP INLET	37021110	A43C1WSE
	HP DISCHARGE	37157831	A43C2WSFB
19.5 & 11.5 X 7	LP INLET	37036167	A75C1WSF
	LP DISCHARGE	37126612	A75C2WSMB
	HP INLET	30405237	A54C1WSE
	HP DISCHARGE	37157914	A54C2WSFA
18.5 & 11.5 X 8.5	LP INLET	37035953	A67C1WSS
	LP DISCHARGE	37157963	A67C2WSHA
	HP INLET	37021649	A48C1WSF
	HP DISCHARGE	37157872	A48C2WSHD
19 & 11.5 X 8.5	LP INLET	37035953	A67C1WSS
	LP DISCHARGE	37157963	A67C2WSHA
	HP INLET	37021649	A48C1WSF
	HP DISCHARGE	37157872	A48CN2AB
20.5 & 12.5 X 8.5	LP INLET	37036167	A75C1WSF
	LP DISCHARGE	37126612	A75C2WSMB
	HP INLET	30405237	A54C1WSE
	HP DISCHARGE	37157914	A54C2WSFA
21.5 & 12.5 X 8.5	LP INLET	37036167	A75C1WSF
	LP DISCHARGE	37126612	A75C2WSMB
	HP INLET	30405237	A54C1WSE
	HP DISCHARGE	37157914	A54C2WSFA
23 & 13 X 8.5	LP INLET	37022712	A81C1WSS
	LP DISCHARGE	37157997	A81C2WSKB
	HP INLET	37022118	A60C1WSF
	HP DISCHARGE	37154275	A60C2WSNB
22 & 13.5 X 10	LP INLET	37036167	A75C1WSF
	LP DISCHARGE	37126612	A75C2WSMB
	HP INLET	37022118	A60C1WSF
	HP DISCHARGE	37154275	A60C2WSNB
24.25 & 14.5 X 10	LP INLET	37022712	A81C1WSS
	LP DISCHARGE	37157997	A81C2WSKB
	HP INLET	37022118	A60C1WSF
	HP DISCHARGE	37154275	A60C2WSNB
25 & 14.5 X 10	LP INLET	37022712	A81C1WSS
	LP DISCHARGE	37157997	A81C2WSKB
	HP INLET	37022118	A60C1WSF
	HP DISCHARGE	37154275	A60C2WSNB
26 & 14.5 X 10	LP INLET	30430904	A92C1WSA
	LP DISCHARGE	37158037	A92C2WSC
	HP INLET	37022118	A60C1WSF
	HP DISCHARGE	37154275	A60C2WSNB
28 & 16 X 10	LP INLET	30430904	A92C1WSA
	LP DISCHARGE	37158037	A92C2WSC
	HP INLET	37036167	A75C1WSF
	HP DISCHARGE	37126612	A75C2WSMB

Plate Valves (Continued)

XLE CLEARANCE VALVES REFERENCE TABLE

Lubricated Configuration			
Cylinder Size	Frame Size	Drawing Number	CCN
11.5 & 12.5	8.5	2.75UL31C	34319822
11.5 & 12.5	8.5	2.75UL31CE	30502421
18.5 & 19	8.5	4.25SUL31CE	34345017
18.5 & 19	8.5	3-7/8SUL31CC	31502321
20.5 & 21.5 & 22	8.5 & 10	5.25UL31CE	30386643
13.5 & 14.5	10	3-3/8LUL31C	30386627
13.5 & 14.5	10	3-3/8LUL31CE	30666564
16 & 17	10	4.25LUL31C	37798295
16 & 17	10	4.25LUL31C	34344994
24.5 & 25	10	5-7/8SUL31CE	34358507
26 & 28	10	5-7/8UL31CB	37169166
Non-Lubricated Configuration			
Cylinder Size	Frame Size	Drawing Number	CCN
11.5 & 12.5	8.5	2.75UL31CD	30666648
11.5 & 12.5	8.5	2.75UL31CEA	31477813
18.5 & 19	8.5	4.25SUL31CEA	37040508
18.5 & 19.5	8.5	3-7/8SUL31CE	37040102
20.5 & 21.5 & 22	8.5 & 10	5.25UL31CEA	31532252
12.5 & 14.5	10	3-3/8LUL31CB	34332601
13.5 & 14.5	10	3-3/8LUL31CEA	37045259
16	10	4.25LUL31CD	37857364
24.25 & 25	10	5-7/8DUL31CEA	34358515
26 & 28	10	U:31C53062	37799608

INLET/DISCHARGE CHANNEL AND SPRING VALVE REFERENCE TABLE - LLE

MODEL	VALVE	VALVE CCN	P/N
LL2	LP INLET	42300392	A60
	LP DISCHARGE	42300533	A60
	HP INLET	42300350	A36
	HP DISCHARGE	42300491	A36
LL3	LP INLET	42300400	A67
	LP DISCHARGE	42300541	A67
	HP INLET	42300368	A40
	HP DISCHARGE	42300509	A40
LL4	LP INLET	42300418	A75
	LP DISCHARGE	42300558	A75
	HP INLET	42300376	A43
	HP DISCHARGE	42300517	A43
LL5	LP INLET	42300418	A75
	LP DISCHARGE	42300558	A75
	HP INLET	42300384	A48
	HP DISCHARGE	42300525	A48

Note: Other channel and spring valve CCNs can be selected by Parts ID.

Plate Valves (Continued)

INLET/DISCHARGE CHANNEL AND SPRING VALVE REFERENCE TABLE - LLE

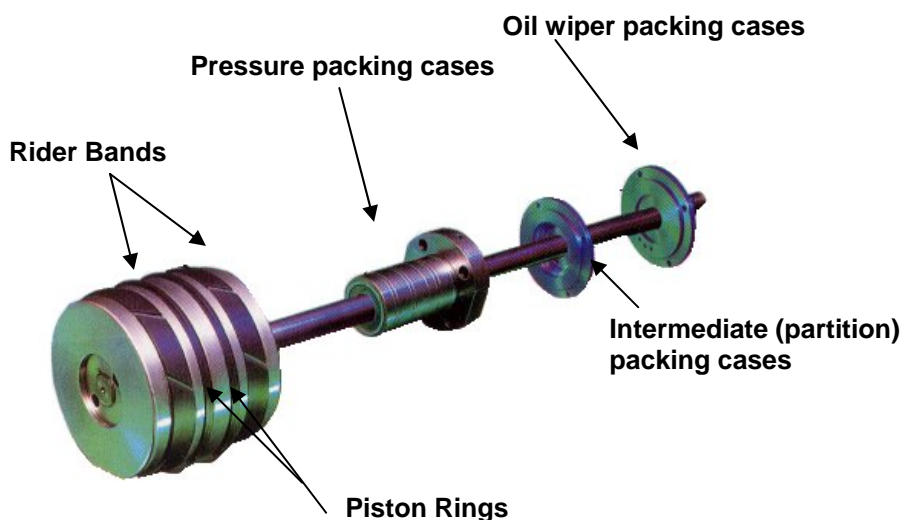
MODEL	VALVE	VALVE CCN	P/N
LL2	LP INLET	42300392	A60
	LP DISCHARGE	42300533	A60
	HP INLET	42300350	A36
	HP DISCHARGE	42300491	A36
LL3	LP INLET	42300400	A67
	LP DISCHARGE	42300541	A67
	HP INLET	42300368	A40
	HP DISCHARGE	42300509	A40
LL4	LP INLET	42300418	A75
	LP DISCHARGE	42300558	A75
	HP INLET	42300376	A43
	HP DISCHARGE	42300517	A43
LL5	LP INLET	42300418	A75
	LP DISCHARGE	42300558	A75
	HP INLET	42300384	A48
	HP DISCHARGE	42300525	A48

Pistons – Standard and Oversized

Ingersoll Rand offers replacement pistons to revitalize your Recip compressor. We can provide the duplicate of the original piston to oversized piston bores to fill a slightly enlarged cylinder bore or new designs of pistons to best meet your compressor's current needs.

New piston design technology can vastly improve the reliability of reciprocating compressors, decreasing the maintenance and increasing on-stream time.

Many oversized pistons pre-exist. CCNs for LLEs can be found on page 82. For all other compressors, submit the oversized piston (and ring) request.



LLE oversize pistons and rings come in various predetermined sizes (please refer to the attached "LLE Oversize Piston and Rings" table for part numbers). For any other compressor, including XLE, you must file an inquiry by using the "Oversize Piston and Rings Program Information Request Form" (see attached). This form has been designed to facilitate the quotation process – and should be faxed to Gary Dings in Davidson at (704) 896- 4898.

Remember to always call in your emergency parts orders for pistons and rings in order to guarantee the best delivery. Your electronic orders alone will not be visible until the next business day.

LEADTIME

Normal orders for LLE and XLE piston and rings will be shipped within 2-3 weeks of order approval in Davidson.

Emergency/EBD orders must be confirmed with product management but will normally ship within 8 – 11 business days. Actual lead time is subject to stock availability, payment and shipment arrangement. Advance phone notification is required!

ADVANTAGES

- Quick turnaround
- Inexpensive alternative to buying a new cylinder
- Engineered to original Ingersoll Rand specifications



Pistons – Standard and Oversized (Continued)

LLE OVERSIZE PISTON & RINGS

Model	Cylinder Size	Piston	Rings
LL2	12" STANDARD PISTON	41003815	37046935
	1/32" OVERSIZE	41037086	40076846
	1/16" OVERSIZE	41037078	40076838
	3/32" OVERSIZE	41037060	40076820
	1/8" OVERSIZE	41037052	40076812
	7¼" STANDARD PISTON	41003807	37105913
	1/32" OVERSIZE	41037003	40076663
	1/16" OVERSIZE	41036997	40076671
	3/32" OVERSIZE	41036989	40076689
	1/8" OVERSIZE	41036971	40076697
LL3	13½" STANDARD PISTON	41003831	37105889
	1/32" OVERSIZE	41036948	40076887
	1/16" OVERSIZE	41036963	40076879
	3/32" OVERSIZE	41036955	40076861
	1/8" OVERSIZE	41036930	40076853
	8¼" STANDARD PISTON	41003823	95648903
	1/32" OVERSIZE	41037045	40076721
	1/16" OVERSIZE	41037037	40076713
	3/32" OVERSIZE	41037029	40076705
	1/8" OVERSIZE	41037011	40076655
LL4	15" STANDARD PISTON	40502221	34128686
	1/32" OVERSIZE	40531907	40076929
	1/16" OVERSIZE	40531915	40076911
	3/32" OVERSIZE	40531923	40076903
	1/8" OVERSIZE	40531931	40076895
	9" STANDARD PISTON	40502239	37105939
	1/32" OVERSIZE	40532046	40076762
	1/16" OVERSIZE	40532053	40076754
	3/32" OVERSIZE	40532038	40076747
	1/8" OVERSIZE	40532020	40076739
LL5	16¼" STANDARD PISTON	40525313	39499819
	1/32" OVERSIZE	40531949	40076960
	1/16" OVERSIZE	40531956	40076952
	3/32" OVERSIZE	40531964	40076945
	1/8" OVERSIZE	40531972	40076937
	10" STANDARD PISTON	40502205	37046927
	1/32" OVERSIZE	40532012	40076804
	1/16" OVERSIZE	40532004	40076796
	3/32" OVERSIZE	40531998	40076788
	1/8" OVERSIZE	40531980	40076770

XLE OVERSIZED PISTONS AND RINGS:

Call Large Recip Services Coordinator for ordering procedures and part numbers.

Pistons – Standard and Oversized (Continued)

OVERSIZE PISTON & RINGS PROGRAM INFORMATION REQUEST FORM

To: Global Services – Attention: Gary Dings
 Fax: (704) 896-4898

Date: _____

From: _____

Air Center/Distributor: _____

Contact Person: _____

PLEASE ADVISE PRICE AND DELIVERY OF OVERSIZED PISTON & RINGS FOR:

Compressor Model: _____

Compressor Serial Number: _____

Cylinder Size / Stroke: _____

Cylinder Final Bore Size: _____

DIVISION RESPONSE

Description	P/N	List Price (US\$)	Delivery
Oversize Piston			
Oversize Piston Rings			
Oversize Wearing Ring			

For Ingersoll Rand Use Only:

Completed by: _____ Date: _____

Record Card Updated: _____ Date: _____

Gasket Kits & Valve Kits

OVERVIEW

Gasket and Cylinder Maintenance Kits include all components required to rebuild all inlet and discharge valves for a given cylinder size under a single part number.

CONTENTS

- Seat Plates
- Channel & Spring Sets
- Gaskets
- Hardware required to rebuild both the inlet & discharge valves for the cylinder sizes listed
- For Non-lube, guide holders and inserts are furnished rather than guides

KITS AVAILABLE FOR LUBRICATED XLE CHANNEL AND SPRING VALVE

Stroke	Cylinder Bore & Pressure (Low or High)	Valve Size	Valve Qty	Kit CCN
7"	9" - High Pressure	A36	8	37153293
7"	10" - High Pressure	A43	8	37165610
7"	11½" - High Pressure	A54	8	39177308
7"	14½" - High Pressure	A48	12	37153285
7"	16" / 17" Low Pressure	A60	12	37165602
7"	19½" Low Pressure	A75	12	39177290
8½"	11½" - High Pressure	A48	8	37165578
8½"	12½" - High Pressure	A54	8	37165586
8½"	13" - High Pressure	A60	8	39179510
8½"	18½" / 19" Low Pressure	A67	12	39177266
8½"	20½" / 21½" Low Pressure	A75	12	39177258
8½"	23" Low Pressure	A81	12	39179536
10"	13½" / 14½" High Pressure	A60	8	37165594
10"	16" High Pressure	A75	8	37947868
10"	22" Low Pressure	A75	12	39177258
10"	24¼" / 25" Low Pressure	A81	12	39177282
10"	26" / 28" Low Pressure	A92	12	39177274

Gasket Kits & Valve Kits (Continued)

VALVE KITS FOR LLE CHANNEL AND SPRING VALVES

Cylinder Bore & Pressure (Low or High)	Valve Size	Valve Qty	Kit CCN
7 ¼" High Pressure - LL2	A36	8	40009250
8 ¼" High Pressure - LL3	A40	8	40009268
9" High Pressure - LL4	A43	8	40009276
10" High Pressure - LL5	A48	8	40009284
12" Low Pressure - LL2	A60	8	40009292
13 ½" Low Pressure - LL3	A67	8	40009300
15 & 16 ¼" Low Pressure - LL4 / LL5	A75	8	40009318

VALVE KITS AVAILABLE FOR NON-LUBE XLE CHANNEL AND SPRING VALVES

Stroke	Cylinder Bore & Pressure (Low or High)	Valve Size	Valve Qty	Kit CCN
7"	9" High Pressure	A36	8	37165388
7"	10" High Pressure	A43	8	37165701
7"	11½" High Pressure	A54	8	39177316
7"	14½" Low Pressure	A48	12	37165800
7"	16 / 17" Low Pressure	A60	12	37165693
7"	19½" Low Pressure	A75	12	39177324
8½"	11½" High Pressure	A48	8	37165669
8½"	12½" High Pressure	A54	8	37165677
8½"	13" High Pressure	A60	8	39179528
8½"	18½" / 19" Low Pressure	A67	12	37165719
8½"	20½" / 21½" Low Pressure	A75	12	37165727
8½"	23" Low Pressure	A81	12	39179544
10"	13½" / 14½" Low Pressure	A60	8	37165685
10"	22" Low Pressure	A75	12	37165727
10"	24¼" / 25" Low Pressure	A81	12	37165735

Gasket Kits & Valve Kits (Continued)

GASKET KITS AND CHANNEL AND SPRING VALVE KITS

AVAILABLE FOR ER & ES (LUBRICATED)

Model	Bore & Stroke	Description	Kit CCN
ER (Lubricated)	5x4	Piston Ring/Packing/Gasket Kit	37137189
ER (Lubricated)	5x4 & 5x5	Valve Kit	37137106
ER (Lubricated)	5x5	Piston Ring/Packing/Gasket Kit	37137197
ER (Lubricated)	6x5	Piston Ring/Packing/Gasket Kit	37137205
ES (Lubricated)	10x11	Piston Ring/Packing/Gasket Kit	37137262
ES (Lubricated)	12x11	Piston Ring/Packing/Gasket Kit	37137288
ES (Lubricated)	12x13	Valve Kit	37137163
ES (Lubricated)	12x13	Piston Ring/Packing/Gasket Kit	37137304
ES (Lubricated)	12x9	Piston Ring/Packing/Gasket Kit	37137270
ES (Lubricated)	12x9 & 12x11	Valve Kit	37137155
ES (Lubricated)	14x11	Piston Ring/Packing/Gasket Kit	37137296
ES (Lubricated)	14x11 & 14x13	Valve Kit	37137171
ES (Lubricated)	14x13	Piston Ring/Packing/Gasket Kit	37137312
ES (Lubricated)	6x7	Piston Ring/Packing/Gasket Kit	37137213
ES (Lubricated)	7x7	Valve Kit	37137122
ES (Lubricated)	7x7	Piston Ring/Packing/Gasket Kit	37137221
ES (Lubricated)	8x7	Piston Ring/Packing/Gasket Kit	37137239
ES (Lubricated)	8x7, 8x9, 10x9 & 10x11	Valve Kit	37137130
ES (Lubricated)	8x9	Piston Ring/Packing/Gasket Kit	37137247
ES (Lubricated)	9x9	Valve Kit	37137148
ES (Lubricated)	9x9	Piston Ring/Packing/Gasket Kit	37137254
ES/ER (Lubricated)	6x5 & 6x7	Valve Kit	37137114

Note:

DO NOT USE THE ABOVE KITS FOR MULTI-STAGE COMPRESSORS, NON-LUBRICATED COMPRESSORS OR UNITS ON GAS SERVICE.

Gasket Kits & Valve Kits (Continued)

**GASKET KITS AND CHANNEL AND SPRING VALVE KITS AVAILABLE
FOR ESH/V-1 (LUBRICATED)**

Model	Bore & Stroke	Description	Kit CCN
ESH/V-1 (Lubricated)	10x9	Piston Ring/Packing/Gasket Kit	37123510
ESH/V-1 (Lubricated)	11x7	Piston Ring/Packing/Gasket Kit	37178217
ESH/V-1 (Lubricated)	11x7	Valve Kit	37178233
ESH/V-1 (Lubricated)	12x11	Piston Ring/Packing/Gasket Kit	37123577
ESH/V-1 (Lubricated)	12x9	Piston Ring/Packing/Gasket Kit	37123536
ESH/V-1 (Lubricated)	12x9,13x9,13.5x9 & 12x11	Valve Kit	37123312
ESH/V-1 (Lubricated)	14x11	Piston Ring/Packing/Gasket Kit	37123593
ESH/V-1 (Lubricated)	14x9	Piston Ring/Packing/Gasket Kit	37123551
ESH/V-1 (Lubricated)	14x9 & 14x11	Valve Kit	37123338
ESH/V-1 (Lubricated)	6x5	Piston Ring/Packing/Gasket Kit	37123379
ESH/V-1 (Lubricated)	6x5 & 7x5	Valve Kit	37100062
ESH/V-1 (Lubricated)	7x5	Piston Ring/Packing/Gasket Kit	37123395
ESH/V-1 (Lubricated)	8.5x9, 9x9, 9.5x9 & 10x9	Valve Kit	37123296
ESH/V-1 (Lubricated)	8x5	Piston Ring/Packing/Gasket Kit	37123411
ESH/V-1 (Lubricated)	8x5 & 8x7	Valve Kit	37100070
ESH/V-1 (Lubricated)	8x7	Piston Ring/Packing/Gasket Kit	37123452
ESH/V-1 (Lubricated)	9.5x5	Piston Ring/Packing/Gasket Kit	37123437
ESH/V-1 (Lubricated)	9.5x7	Piston Ring/Packing/Gasket Kit	37123494
ESH/V-1 (Lubricated)	9x7	Piston Ring/Packing/Gasket Kit	37123478
ESH/V-1 (Lubricated)	9x7, 9.5x7	Valve Kit	37100088

Note: Do not use the above kits for multi-stage compressors, lubricated compressors or units on gas service.

Gasket Kits & Valve Kits (Continued)

GASKET KITS AND CHANNEL AND SPRING VALVE KITS AVAILABLE

FOR ESH/V-1-NL-2 & ESV-1-NL-2

Model	Bore & Stroke	Description	Kit CCN
ESH/V-1-NL-2	10x9	Piston Ring/Packing/Gasket Kit	37123502
ESH/V-1-NL-2	11x7	Piston Ring/Packing/Gasket Kit	37178225
ESH/V-1-NL-2	11x7	Valve Kit	37178241
ESH/V-1-NL-2	12x11	Piston Ring/Packing/Gasket Kit	37123569
ESH/V-1-NL-2	12x9	Piston Ring/Packing/Gasket Kit	37123528
ESH/V-1-NL-2	12x9,13x9,13.5x9 & 12x11	Valve Kit	37123304
ESH/V-1-NL-2	14x11	Piston Ring/Packing/Gasket Kit	37123585
ESH/V-1-NL-2	14x9	Piston Ring/Packing/Gasket Kit	37123544
ESH/V-1-NL-2	14x9 & 14x11	Valve Kit	37123320
ESH/V-1-NL-2	6x4,6x5,7x4 & 7x5	Valve Kit	37100096
ESH/V-1-NL-2	6x5	Piston Ring/Packing/Gasket Kit	37123361
ESH/V-1-NL-2	7x5	Piston Ring/Packing/Gasket Kit	37123387
ESH/V-1-NL-2	8.5x9,9x9,9.5x9 & 10x9	Valve Kit	37123288
ESH/V-1-NL-2	8x5	Piston Ring/Packing/Gasket Kit	37123403
ESH/V-1-NL-2	8x5 & 8x7	Valve Kit	37100104
ESH/V-1-NL-2	8x7	Piston Ring/Packing/Gasket Kit	37123445
ESH/V-1-NL-2	9.5x5	Piston Ring/Packing/Gasket Kit	37123429
ESH/V-1-NL-2	9.5x7	Piston Ring/Packing/Gasket Kit	37123486
ESH/V-1-NL-2	9x7	Piston Ring/Packing/Gasket Kit	37123460
ESH/V-1-NL-2	8x59x7,9.5x5 & 9.5x7	Valve Kit	37100112
ESV-1-NL-2	6x4	Piston Ring/Packing/Gasket Kit	37123346
ESV-1-NL-2	7x4	Piston Ring/Packing/Gasket Kit	37123353

Note:

Do not use the above kits for multi-stage compressors, lubricated compressors or units on gas service.

XLE Intercooler

Ingersoll Rand offers a full line of new XLE intercoolers. Use the chart to select the appropriate intercooler for your application.

XLE Intercoolers	CCN – New Assemblies
7" Short – Bare	30360705
7" Short – Complete	31457112
7" Long – Bare	42127688
7" Long – Complete	42127662
8.5" Short – Bare	30360713
8.5" Short – Complete	30802078
8.5" Long – Bare	42344119
8.5" Long – Complete	42127670
10" Short – Bare	30360721
10" Short – Complete	31172513
10" Long – Bare	37786670
10" Long – Complete	37762390

Field Conversion Request Form

Date: _____
 From: _____
 Distributor/Air Center: _____
 To: Gary Dings
 Fax: (704) 896-4898

Revitalize  **ze**
your
Recip Compressor!

FIELD CONVERSION REQUEST FOR MACHINE:

Model: _____ Manufacturer: _____
 Serial #: _____ Gas: _____
 Size/Stroke: _____

Operating Conditions	Pressure:	Temperature:
1 st Stage		
2 nd Stage		
3 rd Stage		
4 th Stage		

Description of Request: _____

Additional Machine Information _____
