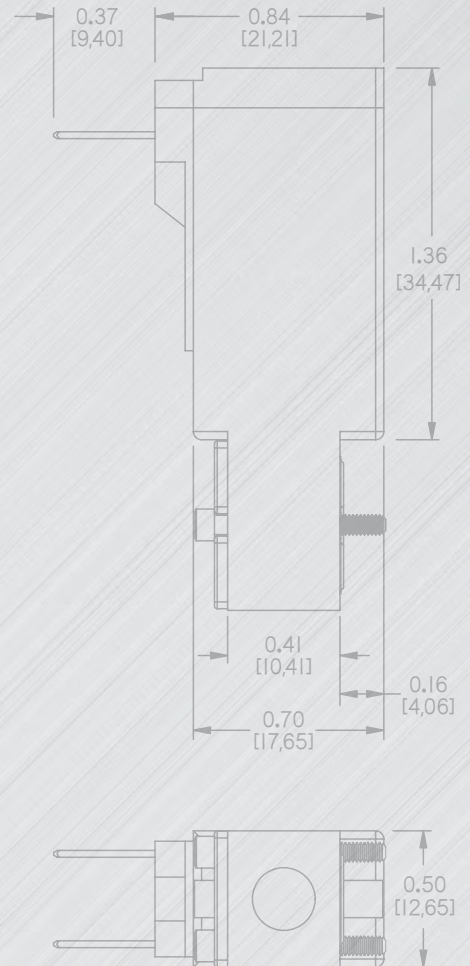


## Miniature Diaphragm-Poppet Instrumentation Valves

2- and 3-Port | Solenoid Operated

**HK5** Pneumatic | **HKL5** Liquid



MADE IN USA

The HK5/HKL5 Solenoid Valve Series are compact, versatile and ultra reliable based on their unique design and inert construction. Provides high flow, tight sealing and precise control of air and vacuum (HK5) or liquid and gas (HKL5) applications.



# Miniature Diaphragm-Poppet Instrumentation Valves

The Humphrey HK5/HKL5 Series are miniature 2- and 3-way direct-acting solenoid valves that provide outstanding performance, versatility and value when precise fluid control is needed in single and multimedia applications.

The valve's balanced diaphragm-poppet construction isolates media from the solenoid operator in an inert construction. The unique design along with its compact size make the HK5/HKL5 series ideal for equipment and device makers in high technology industries seeking tight sealing, integration flexibility and extremely reliable operation over millions of cycles.

Valves can be applied as 2- or 3-port, normally closed or open, diverter or selector function. The HK5 model is for use in pneumatic applications, while the HKL5 is ideal for controlling compatible liquids and gases in the most demanding fluid applications.

**HK5  
PIN TYPE**



## FEATURES

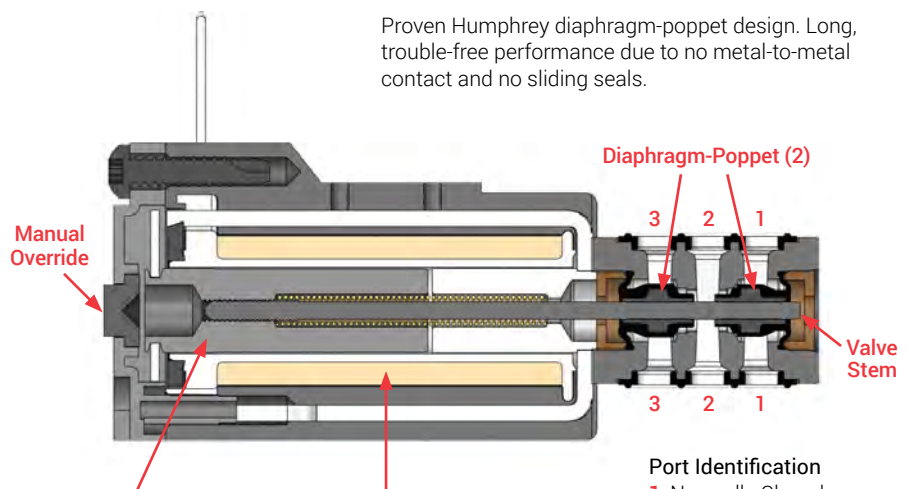
- 2- or 3-Way, Normally Closed or Normally Open, Diverter or Selector function
- Compact 12mm width
- Versatile plumbing, electrical, and mounting features
- Quiet operation
- High Flow: 85 SLPM @ 100 PSI
- Industry-Leading Low Leakage: <2 cc/minute @100 PSI (tested w/compressed air)
- HK5 Models for pneumatic application control, vacuum to 125 PSI; HKL5 Models for low pressure liquid control to 30 PSI
- Multimillion life cycle.
- RoHS, REACH compliant
- Made in the USA.

## TYPICAL APPLICATIONS

- Remote pilot operation of specialty gas and liquid valves.
- Direct control of air and inert gases.
- Vacuum applications.
- Media must remain unaffected.

## HK5/HKL5 CONSTRUCTION

- Media is controlled within two opposing diaphragm-poppet elastomers positioned on a stainless steel valve stem. Diaphragm-poppets are precision molded over a PEEK insert and flex when shifted, alternately shuttling into mating seats of valve body.
- Coil side diaphragm isolates media from the solenoid element. Identical cap side diaphragm seals media within and balances HK5 internal design.
- Solenoid encapsulation and valve body are precision molded of inert, thermoset epoxy into a single component. Body porting is symmetrical on opposing surfaces for ultimate integration and space savings.
- Valve may be manually operated for jogging/troubleshooting, when ordered with Override option.
- Below: In unenergized state, HK5 port 1 is blocked. Port 2 is open to port 3. When coil is energized, Port 1 opens to port 2. Port 3 becomes blocked.



Proven Humphrey diaphragm-poppet design. Long, trouble-free performance due to no metal-to-metal contact and no sliding seals.

Minimal armature travel and fast electrical response assure rapid cycling.

HK5 isolates coil operation from the media, heightening reliability and providing for multi-media use.

- Port Identification**
- 1:** Normally Closed (energize to open)
  - 2:** Common
  - 3:** Normally Open (energize to close)



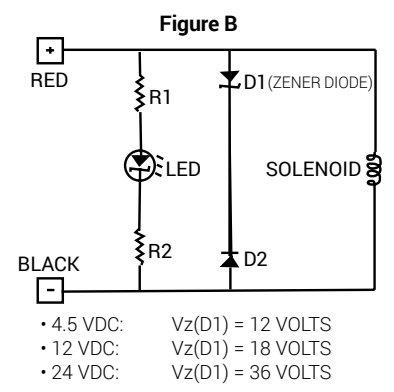
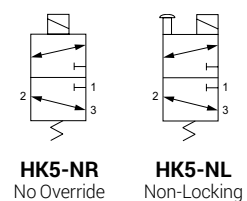
For additional valve mounting options, piping options, valve accessories and factory prepared valve-manifold assemblies, consult HK5 Technical Document (HK5TECH23).



# Specifications, Schematics, Valve Dimensional Drawings

SPECIFICATIONS	HK5	HKL5
TYPE OF OPERATION	Direct Single Solenoid, Spring Return	
FUNCTION	2- or 3-port, NC or NO; diverter, selector	
PIPING TYPE	Manifold, Subbase Piping	
MEDIA	Compressed Air & Vacuum, Compatible Gases	Compatible Liquids (and Gases)
WETTED MATERIALS	Thermoset Epoxy, PEEK, SST, NBR (or HNBR, EPDM or FKM)	
PRESSURE RANGE (BAR)		
B & H SEAL MATERIAL	28" Hg – 100 PSI (6.8)	28" Hg – 30 PSI (2.0)
E & F SEAL MATERIAL	28" Hg – 60 PSI (4.1)	
AMBIENT TEMPERATURE		
B SEAL MATERIAL	32° to 125°F (0 to 50°C)	
F SEAL MATERIAL	32° to 212°F (0 to 100°C)	32° to 125° F (0-50° C)
E & H SEAL MATERIAL	32° to 175°F (0 to 80°C)	
FLOW CAPACITY		
STD (1.7W) POWER	85 SLPM (3 SCFM) @ 100 PSI (Cv: 0.05)	
LOW (0.9W) POWER	42 SLPM (1.5 SCFM) @ 60 PSI (Cv: 0.035)	NA
EQUIVALENT SHARP EDGE ORIFICE DIAMETER (ESEOD)		
STD (1.7W) POWER	0.053" (1.3mm)	
LOW (0.9W) POWER	0.044" (1.12mm)	NA
MAX LEAK RATE	<2 cc/minute @100 PSI (tested w/compressed air)	
LUBRICATION	None required. If used, must be compatible w/seal materials.	
FILTRATION	40 micron, recommended	
WEIGHT – OZ (GRAMS)	1.2 (35)	
COMPLIANCE	RoHS, REACH	

ELECTRICAL SPECIFICATIONS	HK5	HKL5
COIL TEMPERATURE RISE		
STD (1.7W) POWER	45°F (25°C)	
LOW (0.9W) POWER	32°F (18°C)	NA
COIL RESPONSE TIME	10ms ON / 4ms OFF	
STD COIL VOLTAGES	12VDC, 24VDC, 4.5VDC	
VOLTAGE TOLERANCE	+10% / -15% of rated voltage	
POWER CONSUMPTION (WATTS)		
STD POWER	1.7	
LOW POWER	0.9	NA
INSULATION	Conforms to Class B	
FOR PLUG-IN ELECTRICAL TYPE	See Figure B. Includes LED and surge protection Zener Diodes	



## HK5 DIMENSIONAL DRAWINGS



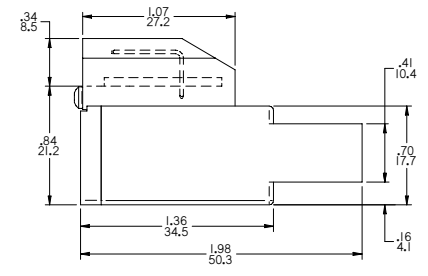
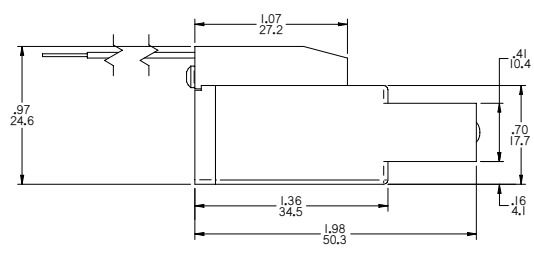
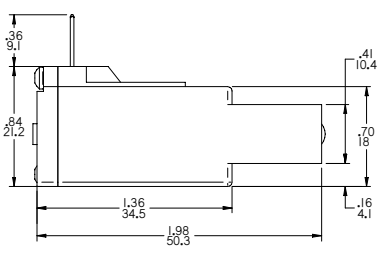
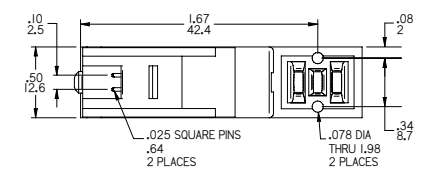
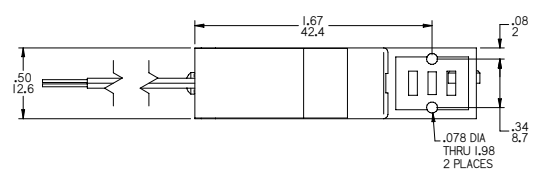
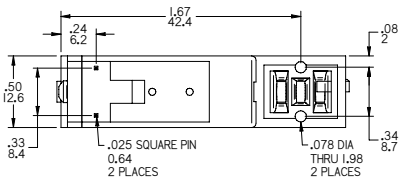
**0.025" SQ PIN ELECTRICAL ENTRY TYPE**  
Order Code: P



**LEAD WIRE ELECTRICAL ENTRY TYPE**  
Order Code: A



**PLUG-IN W/LED ELECTRICAL ENTRY TYPE**  
Order Code: C



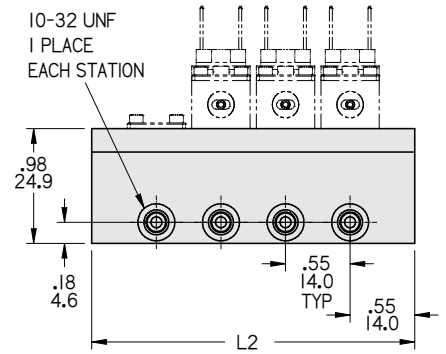
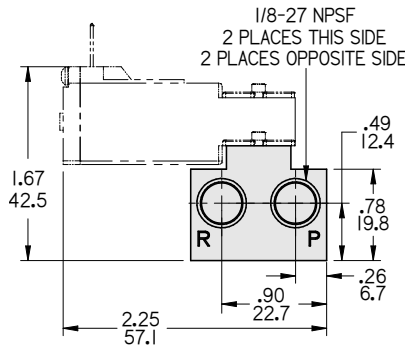
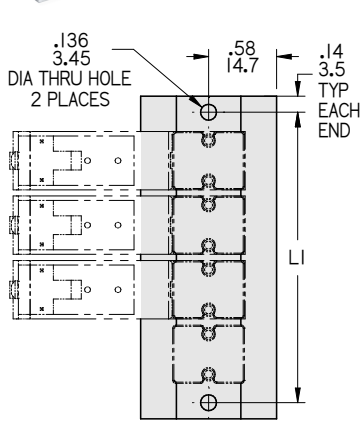
# Manifold, Subbase Dimensional Drawings

## HK5 MANIFOLD DRAWINGS



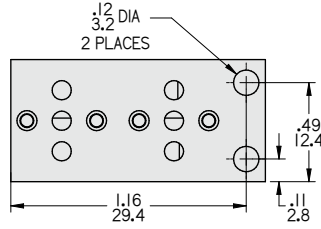
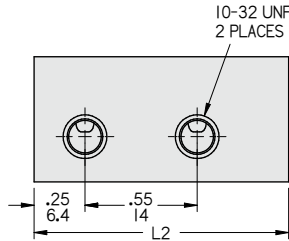
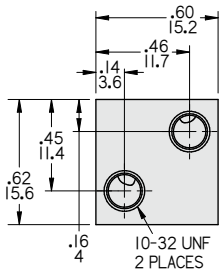
### HK5M SERIES

Stations: 4, 6, 8, 10, 12



### HK5MM SERIES

Stations: 2, 3



MODEL	STNS	L1	L2
HK5MM02	2	-	1.25
HK5MM03	3	-	1.80
HK5M04	4	2.480	2.76
HK5M06	6	3.582	3.86
HK5M08	8	4.684	4.96
HK5M10	10	5.786	6.06
HK5M12	12	6.888	7.16

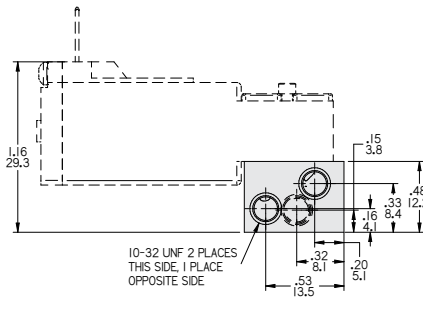
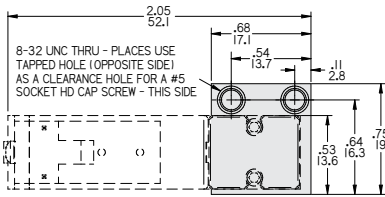
Normally Closed or Normally Open function is determined by the orientation of the valve on the manifold.

## HK5 SUBBASE DRAWINGS



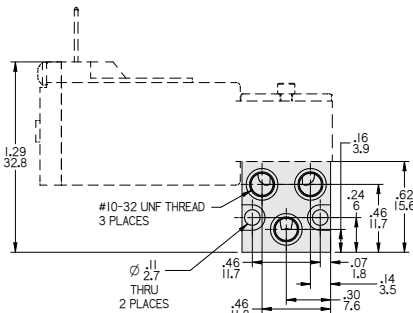
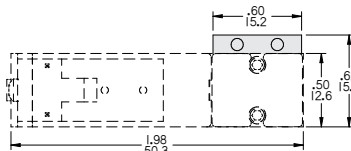
### SUBBASE S

3-port; 10-32 UNF ports on two surfaces  
Model: HK5025S



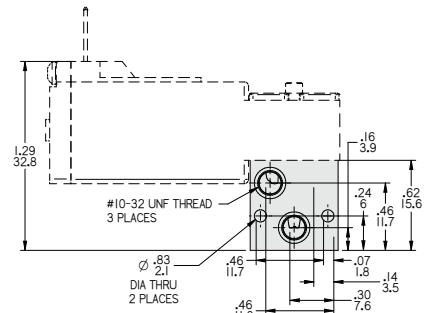
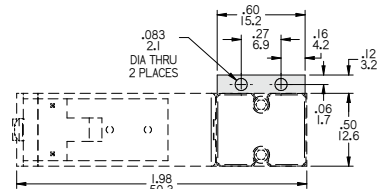
### SUBBASE Y

3-port; 10-32 UNF ports on single surface  
Model: HK5025Y



### SUBBASE Z



2-port; 10-32 UNF ports on single surface  
Model: HK5025Z






# How to Order | HK5/HKL5 Solenoid Valve Series

MODEL	SEAL MATERIAL				PORTING		VOLTAGE				ELECTRICAL ENTRY				OVERRIDE				
	NBR	EPDM	FKM	HNBR	2-WAY	3-WAY	4.5VDC LOW WATT	12VDC	12VDC LOW WATT	24VDC	24VDC LOW WATT	PINS (0.025" SQ.)	LEAD WIRES 50CM	100CM	PLUG-IN WITH LEADS 50CM	100CM	NO OVERRIDE	NON-LOCKING	
HK5	B	E	F	H	2	3	04	L04	12	L12	24	L24	P	A	AL	C	CL	NR	NL
HKL5								NA		NA		NA							

## MANIFOLDS

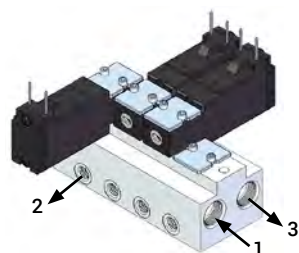
MODEL	PART NO.	DESCRIPTION
	HK5MM_____	<ul style="list-style-type: none"> <li>Small 10-32 UNF Port 1, 2 &amp; 3 type</li> <li>Select 2, 3 or 4 stations using order codes: 02, 03</li> </ul>
	HK5M_____	<ul style="list-style-type: none"> <li>Large type 1/8 PIPE Port 1 &amp; 3, 10-32 UNF Port 2.</li> <li>Select even-numbered stations 4-12 using order codes: 04, 06, 08, 10, 12</li> </ul>

## ACCESSORIES - MANIFOLDS

MODEL	PART NO.	DESCRIPTION
	HK5BOP	Block Off Plate for unoccupied station on manifold. NBR gasket.
	HK5BOPE	Block Off Plate for unoccupied station on manifold. EPDM gasket.
	HK5BOPF	Block Off Plate for unoccupied station on manifold. FKM gasket.
	HK5BOPH	Block Off Plate for unoccupied station on manifold. HNBR gasket.
	130-31	1/8 NPT Pipe Plug for manifold supply/exhaust ports.
	PFBAGOF10	10-32 UNF Port Plug Fitting w/gasket.





## ORDER EXAMPLE - MANIFOLDS

MODEL	DESCRIPTION
<b>HK5M04SA</b> <b>STN1:HK5B324PNRO</b> <b>STN2-3:HK5B224PNR</b> <b>STN4:HK5BOP</b>	<ul style="list-style-type: none"> <li>Four-station manifold assembly with Normally Open 3-Way valve at Station 1</li> <li>Two Normally Closed 2-Way valves at Station 2 &amp; 3</li> <li>Block Off Plate at Station 4</li> <li>Media; compressed air, supplied to Manifold Port 1</li> <li>Station 1, 2, 3 outlets at Port 2</li> <li>Station 1, Normally Open Valve's exhaust at Manifold Port 3.</li> </ul>



**Pre-assembled HK5 and HKL5 assemblies are possible.** Consult factory. Reference HK5 Technical Document (part no. HK5TECH23). Completed factory assemblies are identified with suffix code "SA" (Ship Assembled) following the specified manifold.

## SUBBASES

MODEL	PART NO.	DESCRIPTION
	HK5025M	3-port; M3x0.5 Ports on single surface
	HK5025S	3-port; 10-32 UNF Ports on two surfaces
	HK5025Y	3-port; 10-32 UNF Ports on single surface
	HK5025Z	2-port; 10-32 UNF Ports on single surface

## ACCESSORIES - VALVES

PART NO.	DESCRIPTION
35002B	NBR Gasket (Valve, 2-Way); Bag of 10
35002E	EPDM Gasket (Valve, 2-Way); Bag of 10
35002F	FKM Gasket (Valve, 2-Way); Bag of 10
35002H	HNBR Gasket (Valve, 2-Way); Bag of 10
35003B	NBR Gasket (Valve, 3-Way); Bag of 10
35003E	EPDM Gasket (Valve, 3-Way); Bag of 10
35003F	FKM Gasket (Valve, 3-Way); Bag of 10
35003H	HNBR Gasket (Valve, 3-Way); Bag of 10
35006	Plug-In Connector w/30cm Leads; Replacement for Valve Order Code C
35007	Plug-In Connector w/100cm Leads; Replacement for Valve Order Code CL
35008L	IDC Connector w/50cm Leads for 0.025 Square Pins (Valve Order Code P); Bag of 10
35008LL	IDC Connector w/100cm Leads for 0.025 Square Pins (Valve Order Code P); Bag of 10

## ORDER EXAMPLE - VALVES

MODEL	DESCRIPTION
<b>HK5H3L12CLNLM</b>	HK5; HNBR seals; 3-Way; Low Watt 12VDC; Plug-In w/LED coil; Nonlocking override; w/M3x0.5 ported subbase assembled.
<b>HKL5E224ANR</b>	HKL5; EPDM seals; 2-way; 24VDC; Lead wires with 50cm length; without override.

### All valve models include:

- A. Assembly Screws
- B. Cover Plate
- C. Gaskets (2)



For additional valve mounting options, piping options, valve accessories and factory prepared valve-manifold assemblies, consult HK5 Technical Document (HK5TECH23).

# Engineered Solutions

## Custom Valve Solutions featuring HK5 Solenoid Valves

Since 1995, the Humphrey Engineered Solutions Group has created numerous custom product solutions centered around the flexibility and capabilities of the HK5 platform.

While the medical, analytical instrumentation and health care industries have achieved optimum results from the valves' flexible features, HK5 valves will work for many other market segments. Its flexible design along with its inert construction, fast response time, compact size, low leakage and compatibility for several forms of media make it the key to many Engineered Solutions successes.



### NO LEAKAGE ALLOWED

Customer determined 2cc/hour total manifold leak rate required to ensure proper function. Custom HK5 assembly saved the project.

LEFT: Compact Analytical Instrument, CH-BK1



### SAFETY IN TOXIC ENVIRONMENT

HK5 delivers pilot signal for analytical medias. Must withstand trace elements of chemicals and cleaning agents from daily system flush that may enter pilot lines.



### VERSATILITY DESIRED

A single HK5 model number replaced 45 competitive model numbers used for air and liquid handling on an analytical chemistry equipment manufacturer's full product offering.



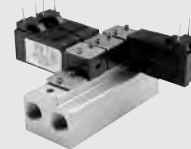
Nitrogen/Protein  
Determinator  
CH-LE2



Portable Oxygen  
Concentrator  
CH-IV1



High Volume  
Recycled Glass  
Processing System  
CH-EC1



Analytical  
Instrument for  
Medical Laboratory  
CH-VN1



Carbon/Sulfur  
Determinator  
CH-LE1

### CUSTOM VALVE SOLUTIONS

Scan the QR code below to learn more and read the case histories highlighted here, as well as the many other custom valve success stories that feature more Humphrey valves.

## ENGINEERED SOLUTIONS | Custom Valve Solutions Tailored to Your Needs



Our Engineered Solutions Group offers complete fluid handling and/or pneumatic system design, development and production capabilities to the OEM equipment or device maker. We are uniquely qualified to assist on projects where standard catalog components fall short, and a better valve, or valve system, is required.

Working peer-to-peer basis, our Engineered Solutions Team will concept, design, develop and produce a logical solution to your need. We'll select from and incorporate proven Humphrey valve technology into the design. We couple our application experience with advanced techniques, design tools and understanding of manufacturing processes to give you a logical and cost effective solution.

Direct more engineering time to leveraging your technology; outsource your fluid handling or pneumatic control to us.

Certified: ISO 9001:2015

### HUMPHREY-PRODUCTS.COM

A privately owned US company since 1901.

© 2023 Humphrey Products Company

Printed in U.S.A.

ISBHK523

Humphrey Products Company

5070 East N Avenue

Kalamazoo, MI 49048 USA

P: 269.381.5500

F: 269.381.4113