



NH3 Application Equipment



experts in our field

Anhydrous Ammonia (NH₃) Facts

- 1 part nitrogen (82% by weight) to 3 parts hydrogen (18% by weight).
- Is a gas unless cooled to minus 28 degrees Fahrenheit (-36 degrees Celsius) or is sufficiently compressed.
- Approximately 840 parts vapour must be compressed to equal 1 part liquid at atmospheric conditions. At 100 psi, liquid to vapour ratio is approximately 1:200.
- Exposure to liquid or high concentrations of vapour can cause severe burns.
- Excessive inhalation may cause severe damage to the lungs or suffocation.
- Classified by the Department of Transportation as a non-flammable compressed gas because ignition conditions are extremely difficult to achieve under normal agricultural operating conditions.
- Its strong pungent odour will discourage a person from voluntarily remaining in a concentration which could be injurious.
- The agent for controlling ammonia emergencies and the first aid treatment for exposure are the same: WATER and lots of it quickly!
- NH₃ gas is lighter than air and dissolves in water.
- Is typically stored & transported as a liquid under pressure.

Properties

Explosive Limits: 16% to 25% volume of vapour in air	Corrosiveness: Very corrosive to living tissue, copper, copper alloys and galvanized surfaces
Auto Ignition Temp.: 651°C (1,204°F)	Liquid Weight: 5.14 lbs. NH ₃ per USG or 4.22 lbs. N per USG
Affinity for Water: Very High	Odour: Pungent
Boiling Point: -33.3°C, -28°F	Viscosity @ 70°F: 0.0100 cP
Colour: Colourless	Specific Gravity: 0.62

<i>NH₃ Vapour Pressure</i>		
Pressure PSI	°C	°F
33	-6.7	20.0
45	-1.1	30.0
58	4.4	40.0
74	10.0	50.0
92	15.6	60.0
114	21.1	70.0
165	32.2	80.0

<i>% Liquid Volume in System</i>					
Pressure Drop	40° F	50° F	60° F	70° F	80° F
2%	68%	75%	81%	85%	88%
5%	45%	54%	62%	68%	75%
10%	26%	35%	48%	51%	58%

System Capacities

Helpful Formulas

Total pounds nitrogen per hour (Lbs. N / Hour) = Implement Width (ft.) X Speed (MPH) X Rate per Acre (actual N) X 0.1212

Gallons per Minute = Pounds nitrogen per hour X 0.004

Tank Capacity

Maximum withdrawal rate from a NH₃ nurse tank is about 2 to 2.5% of tank capacity per minute, but will vary somewhat with temperatures of liquid and atmosphere and intake line restrictions. For example, a 1,000 gallon tank will be limited to 25 gpm maximum withdrawal rate.

Recommended Plumbing Nurse Tank to Meter

Plumbing Size	Rates
1"	Up to 3,500 Lbs. N / Hour
1 - ¼"	Up to 7,000 Lbs. N / Hour
1 - ½"	Over 7,000 Lbs. N/ Hour

Feed Line Plumbing Considerations

A properly designed feed line will minimize vapour formation by limiting line restrictions and preventing vapour pocket formations. Since NH₃ will have a tendency to vaporize, the intake piping plays a critical role in the efficiency and longevity of every system. The following is a list of considerations to ensure you have optimal flow rates;

- Inlet piping from tank to the metering system should be as short as possible.
- Meter should be at a lower level than the tank's lowest liquid level.
- Use low restriction type valves and fittings. Long sweep radius bends are preferred.
- Use as few fittings on the inlet piping as possible.
- Nearest fitting or strainer should be at least 10 pipe diameters from the pump inlet.
- Check and clean inlet strainers regularly.
- Avoid up-across and down pipe loops where vapors can accumulate.

Traditional Metering System Capacities

	Maximum Capacity at Various Tank Pressures (Lbs. N / Hour)		
	50 PSI	75 PSI	100 PSI
Meter	50 PSI	75 PSI	100 PSI
Continental C-4103-6572	3000	3500	4000
Continental B-9500	4400	5300	6200
Thermal Transfer Unit (TTU)	3000	3500	4000
Accuflow	6000	6500	7000
Superflow 1-1/4"	6000	6500	7000
Superflow 1-1/2"	8,750	10,000	11,500

Maxflow VRC Metering System Capacities

	Maximum Pump Capacity at Various Differential Pressures (Lbs. N / Hour)			
	15 PSI	30 PSI	50 PSI	100 PSI
MAX2A Pump	10,000	9,375	8,750	7,500
LGLD2 Pump	20,000	18,750	16,750	14,250

Manifold System Capacities

	Maximum Capacity at Various Manifold Pressures (Lbs. N / Hour / Opener)		
	50 PSI	75 PSI	100 PSI
Manifold w/ 1/2" or 3/8" hose	115	130	150
Manifold w/ 0.170 hose	75	88	100
Manifold w/ 0.125" hose	60	70	80
Manifold w/ 0.125" hose & 0.085 SS Tubes (15")	48	55	62
Manifold w/ 0.085" hose	40	45	50

Note: Manifold capacities are based on 15 ft. hose lengths – longer hose lengths will reduce capacities with the 0.170", 0.125" and 0.085" hose sizes.

Splitter Capacity

	Maximum Capacity at Various Tank Pressures (LBS N / Hour)		
	50 PSI	75 PSI	100 PSI
3 Way Splitter w/ Cooler	3000	3500	4000
4 Way Splitter w/ Cooler	4100	4800	5400
5 Way Splitter w/ Cooler	5100	6000	6800
6 Way Splitter w/ Cooler	10,560	12,540	13,860

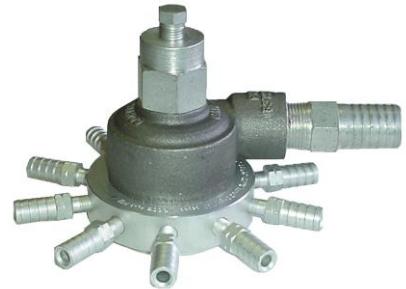
Note: 6 way splitter in not recommended on systems under 3500 LBS. / Hour.

Manifold Kits

Manifold kits with 1/2" Distribution Hose

Kits include:

- Secondary Manifolds (16 outlets)
- Splitter Manifold
- Manifold Stands
- 250' of 1/2" ID EVA hose for each manifold
- 1" ID EVA hose to connect secondary manifolds to splitter manifold
- 1-1/4" high flow breakaway
- 4" liquid filled pressure gauge for each manifold
- 10' of 1-1/4" high pressure hose
- Acme cap, Teflon tape, and misc. fittings.



No manifold plugs are included with the manifold kits. Please request these separately.

3/8" ID hose may be substituted for the 1/2" hose.

16 Port Manifold kits with 1/4" OD Distribution Hose

Kits include:

- Secondary Manifolds (16 or 24 Outlets)
- Compression Fittings
- Splitter Manifold
- Manifold Stands
- 1000' of 1/4" OD hose (ID available in either 0.085", 0.125" or 0.170")
- Reusable Hose Couplers
- 1-1/4" high flow breakaway
- 4" liquid filled pressure gauge for each manifold
- 10' of 1-1/4" high pressure hose
- Acme cap, Teflon tape, and misc. fittings.

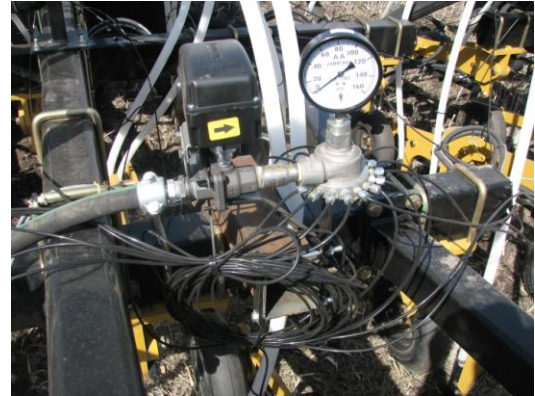


No manifold plugs are included with the manifold kits. Please request these separately.

Manifold Kits with On/Off Valves

Kits include:

- Secondary Manifolds (16 or 24 Outlets)
- Compression Fittings
- On/Off Valves for each Manifold w/ fittings
- Splitter Manifold
- Manifold Stands
- 1000' of 1/4" OD hose (ID available in either 0.085", 0.125" or 0.170")
- Reusable Hose Couplers
- 1-1/4" high flow breakaway
- 4" liquid filled pressure gauge for each manifold
- 10' of 1-1/4" high pressure hose
- Acme cap, Teflon tape, and misc. fittings.



High pressure hose (from splitter manifold to secondary manifold) is not included in the kits and the length must be specified with the kit order. No manifold plugs are included with the manifold kits. Please request these separately.

MAX TBK1 Tow between Kit

Kit is required when air cart is installed between drill and NH₃ nurse wagon. Kits include a breakaway, acme cap, hose couplings and teflon tape. High pressure hose is not included and must be specified at the time of order.

MAX TBK1-1/4" Tow Between Kit

Kit is same as above except breakaway and couplers are 1-1/4" instead of 1". These are recommended on systems where rates are expected to exceed 3000 lbs. per hour and a Maxflow VRC pump is not being used prior to the breakaway.



Metering Systems

Maxflow VRC System

- Larger range of operating rates
- Higher manifold pressures & accuracy
- Faster response rates
- No freezing lines or openers
- Cooler not required when plumbing is optimized
- Compatible with most rate controllers
- Typically used with boom sectional control
- Can be configured with Raven flow meter & control valve
- Metering system is shipped pre-assembled



Continental Superflow Cooler Assembly

- Used with an auto rate controller to accurately adjust rates on the go.
- Does require vapour lines.
- Maximum Capacity with 1-1/4" plumbing: 6000 lbs./hr. @ 50 psi tank pressure, 7000 lbs./hr. @ 100 psi tank pressure.
- Maximum Capacity with 1-1/2" plumbing: 8,750 lbs./hr. @ 50 psi tank pressure, 11,500 lbs./hr. @ 100 psi tank pressure.
- Comes with 4 orifices to match your typical application rates
- Now available in a vertical or horizontal mounting configuration
- Can be configured with Dickey-John or Raven flow meter & control valve
- Metering system is shipped pre-assembled



Raven Accuflow Cooler Assembly

- Used with an auto rate controller to more accurately adjust rates on the go.
- Does not require vapour lines.
- Maximum Capacity: 6000 lbs./hr. @ 50 psi tank pressure, 7000 lbs./hr. @ 100 psi tank pressure.
- Can be configured with a single or a dual valve
- Metering system is shipped pre-assembled



Dickey-John Thermal Transfer Unit (TTU)

- Used with an auto rate controller to more accurately adjust rates on the go.
- Does not require vapour lines.
- Maximum Capacity: 3000 lbs./hr. @ 50 psi tank pressure, 4000 lbs./hr. @ 100 psi tank pressure.
- Can be used with Dickey-John or Raven flow meters and control valves.
- Metering system is shipped pre-assembled

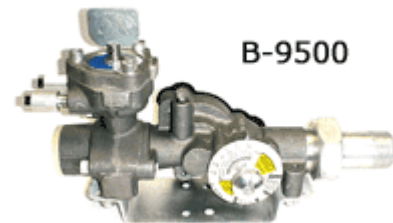


MAX TSU TTU Superflow Upgrade Kit

Kit includes all necessary components and hardware to change metering system from the Dickey-John Thermal Transfer Unit cooler to a Continental Superflow cooler.

Continental B-9500 NH3 Meter

- Manual meter where target rates are dialed in for given tank pressures and application speeds. Rates not adjustable on the go or with sectional control.
- Includes Hydraulic Shutdown
- Maximum Capacity: 4400 lbs./hr. @ 50 psi tank pressure, 6200 lbs./hr. @ 100 psi tank pressure



Continental C4103 NH3 Meter

- Manual meter where target rates are dialed in for given tank pressures and application speeds. Rates not adjustable on the go or with sectional control.
- Maximum Capacity: 3000 lbs./hr. @ 50 psi tank pressure, 4000 lbs./hr. @ 100 psi tank pressure



Raven Consoles, Harnesses & Parts



1-063-0171-220
450 Monitor



1-063-0172-979
Fast Valve



1-063-0171-666
RFM 60S (1-60 GPM)

Part Number	Description
RVN 1-063-0171-183	CONSOLE, 440
RVN 1-063-0171-220	CONSOLE, 450
RVN 1-063-0172-192	8 GPM HYDRAULIC WITH FAST MOTOR
RVN 1-063-0172-978	1" ON/OFF VALVE
RVN 1-063-0172-979	FAST VALVE (NEW STYLE)
RVN 1-063-0171-666	FLOW METER, 60S
RVN 9-117-0159-822	RADAR GUN, C/W POWER CABLE
SQU SK-1007-R	SENSOR, I-SPEED GPS, RAVEN
RVN 1-115-0159-517	CASE IH & NEW HOLLAND TG (W/ SP2)
RVN 1-115-0171-304	CASE MX OR STX VEHICLES (W/ SP2)
RVN 1-115-0159-700	JOHN DEERE 7000/8000/9000 SERIES (W / SP2)
RVN 1-115-0159-519	JOHN DEERE (W/ SP2)
RVN 1-115-0159-709	FORD GEN./VERS./NEW HOLLAND (W/ SP2)
RVN 1-115-0159-580	CATERPILLAR WITH SP2
BEN 1-115-0171-085	CABLE, CONSOLE 10'
BEN 1-115-0159-856	EXT. CABLE, 12' CONSOLE TO FLOW CABLE, 440
BEN 1-115-0159-857	EXT. CABLE, 24' CONSOLE TO FLOW CABLE, 440
BEN 1-115-0171-840	EXT. CABLE, 12' CONSOLE TO FLOW CABLE, 450
BEN 215842	EXT. CABLE, 12' CONSOLE TO FLOW CABLE, 8 SECTION
BEN 215843	EXT. CABLE, 24' CONSOLE TO FLOW CABLE, 8 SECTION
RVN 1-115-0171-844	POWER CABLE, 6 SECTION, 450
BEN 1-115-0171-836	FLOW CABLE 12', 3 SECTION, 440 (NEW STYLE)
BEN 1-115-0171-838	FLOW CABLE 12', 6 SECTION, 450 (NEW STYLE)
BEN 215839	FLOW CABLE 12', 8 SECTION, 450 (NEW STYLE)
RVN 1-115-0171-807	ADAPTER CABLE FOR NEW STYLE FAST VALVE TO OLD STYLE HARNESS
RVN 1-115-0171-808	ADAPTER CABLE FOR NEW STYLE ON/OFF VALVE TO OLD STYLE HARNESS
BEN 215715	CABLE, EXTENSION, RAVEN FLOWMETER, 15', 440 & 450
BEN 215735	CABLE, EXTENSION, RAVEN FLOWMETER, 35', 440 & 450
BEN 215750	CABLE, EXTENSION, RAVEN FLOWMETER, 50', 440 & 450
BEN 215815	CABLE, EXTENSION, NH3. ON/OFF VALVE, 15', 440, 450

BEN 215830	CABLE, EXTENSION, NH3. ON/OFF VALVE, 30', 440, 450
BEN 215844	CABLE, EXTENSION, NH3. ON/OFF VALVE, 45', 440, 450
BEN 215915	CABLE, EXTENSION, NH3 FAST VALVE, 15', 440
BEN 215935	CABLE, EXTENSION, NH3 FAST VALVE, 35', 440
BEN 215950	CABLE, EXTENSION, NH3 FAST VALVE, 50', 440
BEN 215501	CABLE ADAPTER, HYD. CONTROL VALVE, 1'

Console
 440 - 1-063-0171-183
 450 - 1-063-0171-220



Power Cable, 6 Sections
 1-115-0171-844

Console Cable (10')
 1-115-0171-085

Hydraulic Control Valve
 Adapter Cable - 1'
 215501



Fast Valve 1-063-0172-979
 Hyd Control Valve 1-063-0173-192



Adapter Cables from Old
 Style Harness to
 Fast Valve 1-115-0171-807
 On/OFF Valve 1-115-0171-808



Extension Cable
 1-115-0171-840 (12' w/ power plug)
 1-115-0159-856 (12')
 1-115-0159-857 (24')

Control Valve
 Extension Cable
 215915 - 15'
 215935 - 35'
 215950 - 50'



ON/OFF Valve
 67f22-10DYO-C01

Flow Meter
 1-063-0171-666



Flow Meter
 Extension Cable
 215715 - 15'
 215735 - 35'
 215750 - 50'



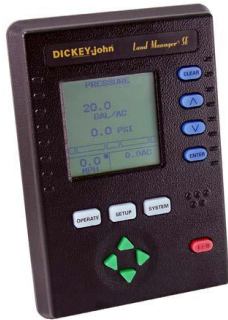
Flow Cable
 1-115-0171-836 - 3 Section
 1-115-0171-838 - 6 Section
 215839 - 8 Section
 (6 & 8 Section requires extra
 power)



ON/OFF Valve
 Extension Cable
 215815 - 15'
 215830 - 30'
 215844 - 45'



Dickey-John Consoles, Harnesses & Parts



DJN 46639-0029S1
LandManager SE Monitor



DJN 46482-0210S1
New Style Actuator



DJN 45790-1610S1
Complete Flow Meter

Part Number	Description
DJN 10842-0001	CABLE, 30' IMPLEMENT STATUS
DJN 15295-0002	CABLE, Y, OLDER MODELS CASE IH
DJN 155850-003AS1	SOIL COMPACTION TESTER
DJN 43940-0024	CABLE, 10' EXT FOR RADAR GUN
DJN 45632-1070	SWITCH, IMPLEMENT STATUS
DJN 45640-1912	RADAR GROUND SPEED SENSOR
DJN 45640-2520S3	CABLE, Y, DJ RADAR TO JD DASH
DJN 45640-2530S3	CABLE, Y, DJ RADAR TO JD MODEL #7600 - 8010T
DJN 45640-3030	CABLE, Y, DJ RADAR TO CAT A & B SERIES
DJN 45640-4360S1	CABLE, Y, DJ RADAR TO CAT MODEL C, D & E SERIES
DJN 45640-4440	CABLE, Y, DJ RADAR TO F/NEW HOLLAND 4WD & GENESIS
DJN 45640-4670	CABLE, Y, DJ RADAR TO CASE STEIGER 4WD & MAXUM
DJN 45640-4810	CABLE, Y, DJ RADAR TO JD MODEL # 8300, 9300, 9400
DJN 45714-1730SR1	GRANULAR HOPPER LEVEL SENSOR
DJN 45790-1260	FLANGE GASKET
DJN 45790-1270	FLOW METER GASKET
DJN 45790-1570AS1	SENSOR MODULE, FLOW METER NH3
DJN 45790-1610S1	FLOW METER (COMPLETE)
DJN 45790-1810	CABLE, 15' PRESSURE SENSOR & NH3 FLOWMETER
DJN 45790-1811	CABLE, 30' PRESSURE SENSOR & NH3 FLOWMETER
DJN 45790-1820	CABLE, 15' ACTUATOR
DJN 45790-1821	CABLE, 30' ACTUATOR
DJN 45790-1891S1	HARNESS, CCS 100 IMPLEMENT
DJN 45790-1892	HARNESS, CCS 100 TRACTOR
DJN 45790-2302S1	MONITOR, CCS 100 LIQUID & NH3
DJN 45790-2305S1	MONITOR, CCS 100 GRANULAR
DJN 45790-2320S1	SWITCH, FLUSH, DJ CCS
DJN 45790-2490S1	VALVE, BALL, 3/4"
DJN 45790-2880S1	FLOWMETER HARDWARE KIT
DJN 45790-2770S1	CABLE, 20 FT MAIN EXTENSION, CCS & LMSE
DJN 45790-3080S1	PADDLE WHEEL & PIVOT
DJN 45790-3310S1	HARDWARE KIT, SUPERFLOW
DJN 45790-3390	BRACKET FOR CON A-BVT

DJN 45790-3550	HARDWARE KIT, ACTUATOR COUPLER
DJN 45790-4000	BRACKET, NEW STYLE ACTUATOR TO A-BVT, NEW STYLE
DJN 46421-0431S1	PWM HYDRAULIC VALVE DRIVER
DJN 46482-0210S1	VALVE, 1"
DJN 46482-0350A	MICRO SWITCH ASSY. WITH SLIDE
DJN 46482-0430S1	BRACKET, 1" ACTUATOR ON NEW 3/8", 1/2" & 3/4" VALVE
DJN 46482-0520S1	LIFT SWITCH ASSEMBLY
DJN 46605-0030	SWITCH, FLUSH, LMSE & LM1
DJN 46639-0025S1	MONITOR, DJ LANDMANAGER 1
DJN 46639-0029S1	MONITOR, DJ LANDMANAGER SE
DJN 46639-0910S1	BRACKET, DJ LM IN DASH
DJN 46639-1003S1	HARNESS, DJ LM1 MAIN
DJN 46639-1030S1	HARNESS, DJ LM1, IMPLEMENT
DJN 46639-1050S1	HARNESS, LM RETRO POWER ACTUATOR
DJN 46639-1090S1	POWER HARNESS, LM1
DJN 46639-1101S1	LM TO CCS ADAPTER HARNESS
DJN 46639-1220S1	CABLE, 25 FT MAIN EXTENSION, LM1
DJN 46639-1260S1	HARNESS, ADAPTER LMSE TO CCS
DJN 46688-0020S1	BOOM CONTROL MODULE
DJN 46688-0140	HARNESS, 10'
DJN 46688-0150	HARNESS, 40'
DJN BC10KIT	BOOM CONTROL MODULE, WITH 10' HARNESS
DJN 46709-5060	ACTUATOR, 1", NEW STYLE
DJN 46783-2000	SENSOR, I-SPEED GPS, DICKEY-JOHN
DJN CMSY	MONITOR, SPEED/AREA C/W Y CABLE
DJN LM1/CCS RETRO	CCS TO LM1 UPGRADE KIT, INCLUDES MONITOR AND ADAPTER HARNESS
DJN RVSIII	RADAR GUN C/W HARDWARE & BRACKET

Accessories



CON A-216-L
High Flow Hose End Valve



Wireless Tank Level Meter



NH3 On/Off Valve

GOO N2000-075	Century 2000 Hose 3/4" (6 YEAR) – 350 PSI Rated
G00 N2000-100	Century 2000 Hose 1" (6 YEAR) – 350 PSI Rated
G00 N2000-125	Century 2000 Hose 1-1/4" (6 YEAR) – 350 PSI Rated
GOO N2595-100	Rifleman Hose 1" SS Braid (8 YEAR) – 350 PSI Rated
GOO N2595-125	Rifleman Hose 1-1/4" SS Braid (8 YEAR) – 350 PSI Rated
CON A-216-L	1-1/4" High Flow Hose End Valve w/ coupler
REG A5767F	2-1/4" MALE ACME BY 1-1/4" MPT (Used with CON A-216-L)
UNA 18020316	1/8" OD Stainless Steel Tube (15" Length) 0.085" ID
UNA 18007015	1/8" OD Stainless Steel Tube (15" Length) 0.070" ID
FAI HC9-4	1/4" Two Ear Pinch Clamps
CON A-HFC-114-R	Dateless Breakaway 1-1/4" W Bleeder, ACME Adapter & 1-1/4" X 1" Reducer Bushing
SQU FM126-1004	Dateless Breakaway, 1-1/4" W Bracket
GOO-S6768-4A	1/4 Compress x 1/8 MPT
GOO-S6760-4	#4 Sleeve for compression fitting
FAI HC9-R	Pinch Clamp Crimping Tool
IPC BRS-000-1H	Rubber Grommet with 1/8" ID Hole
GRE SW-1/2-BK-600	1/2" Heat Shrink Tube
CON A-6135	1/8" Hex Plugs
GOO HS-6	3/8" Gear Clamp
GOO HS-4	1/4" Gear Clamp
GOO V118B-08	1/2" Black EVA Tube
GOO V3010-04	1/4" Clear Braided Hose
GOO 53-0104-085	1/4" OD X 0.085" ID Tube (1000' Roll) – 250 PSI
GOO 44P-NH3	1/4" OD X 0.125" ID Tube (1000' Roll) – 250 PSI
GOO 53-0304-19	1/4" OD X 0.170" ID Tube (1000' Roll) – 250 PSI
CEN RS-228-JR	Tank Level Meter W/JR Gauge RR
CEN RS-228-SR	Tank Level Meter W/SR Gauge RR
RAY 1/2-TUBE	1/2" Raymac NH3 Tube
RAY 3/8-TUBE	3/8" Raymac NH3 Tube
KZC 67F22-10DY0-C01	1" NH3 ON/OFF Valve W Connexall Connector
KZC 67B33-10DY0-C01	1/4" NH3 ON/OFF Valve W Connexall Connector





Surrey

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Surrey, British Columbia, V4N 4N4
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Fax: 604-513-0212

Calgary

6235A - 86th Avenue SE, Calgary, Alberta T2C 2S4
Toll Free: 1-866-Maxquip (629-7847)
Phone: 403-258-3685
Fax: 403-279-3099

Edmonton

11423 - 163rd Street, Edmonton, Alberta T5M 3Y3
Toll Free: 1-800-661-7770
Phone: 780-442-3320
Fax: 780-451-5810

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Unit 200 - 3530 Millar Avenue
Saskatoon, Saskatchewan S7P 0B6
Toll Free: 1-800-667-5886
Phone: 306-668-5582
Fax: 306-668-5583

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175 Avro Avenue, Pointe-Claire, Quebec H9R 6A9
Toll Free: 1-877-629-7847
Phone: 514-697-3415
Fax: 514-697-9491