

DRAGON-LINE[®]

MOBILE DRIP IRRIGATION

INSTALLATION GUIDE



844-424-3724 / www.DragonLine.net

US PAT # 9,420,752

Table of Contents

WHAT IS DRAGON-LINE®?	2
DRAGON-LINE® PARTS/ TOOLS REQUIRED	3 - 5
ALL HIGH/LOW LINE STYLES	
STARTER BRACKET	6
TOWER TERMINATION	7
HIGH LINE SINGLE CABLE HOSE - HLSCH	
CABLE/END BRACKET INSTALLATION	8
INSTALLING PVC SLEEVE (OPTIONAL)	9
ALL HIGH LINE STYLES	
SECURING HOSE/DRAGON DROP	9
HIGH LINE DUAL CABLE RIGID - HLDCR	
HIGH LINE DUAL CABLE MANIFOLD - HLDCM	
CABLE/ANGLE IRON INSTALLATION	10
CABLE INSTALLATION ACROSS TOWER	11
TUSS ROD CLIP ASSEMBLY INSTALL	12
ASSEMBLY/ATTACH MANIFOLD	13
ALL HIGH/LOW LINE STYLES	
ASSEMBLING THE DRAGON-LINE®	14
LOW LINE MANIFOLD - LLM	
CABLE/ANGLE IRON INSTALLATION	15
ASSEMBLY/ATTACH MANIFOLD	16
DRAGON-LINE® SUPPORT	17



What is Dragon-Line®?



DRAGON-LINE® is orange dripline tubing which is coextruded from a blend of high quality PE resin. The emitters are pressure compensating, and are continuous self-flushing. They are welded to the internal wall of the dripline, and are fully operational at five psi.

10' Dragon Flex Hose attaches to the end of a rigid or flexible drop and/or a manifold, whichever method is considered best for the crop being irrigated. DRAGON-LINE Emitter Tubing is then attached to Dragon Flex Hose to drag completely on soil surface, thus the name "DRAGON-LINE". As the DRAGON-LINE is pulled behind the system, the emitters deliver a uniform water pattern across the entire length of the irrigated area. The water is applied directly on the soil surface significantly reducing evaporation and eliminating wind drift. This increases the volume of water applied to the soil and allows for deeper percolation to the plant's root zone.

The patented technology of Dragon-Line combines the efficiency of surface drip irrigation with the flexibility and economics of center pivot and linear move irrigation systems. While conventional water application packages are efficient and provide many different options for distributing water, DRAGON-LINE technology provides increased system application efficiency through precision drip irrigation with the slow methodical release of water and nutrients directly to the soil area for optimal plant growth. This equates to less input costs, normally resulting in higher yields in comparison to a conventional sprinkler package, and a uniform high quality crop throughout the entire field.

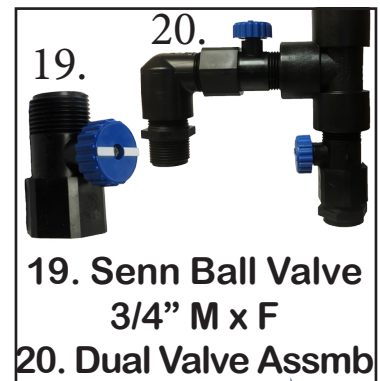
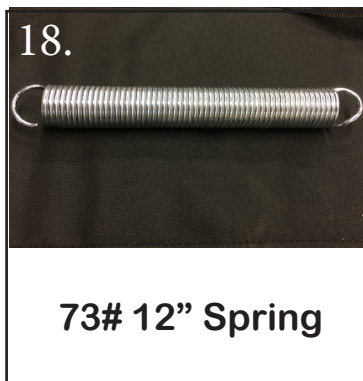
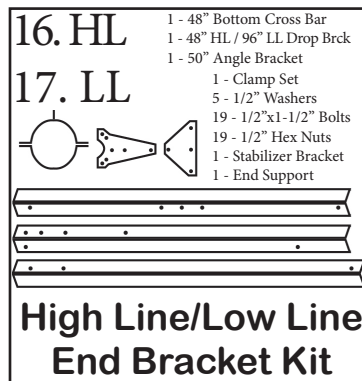
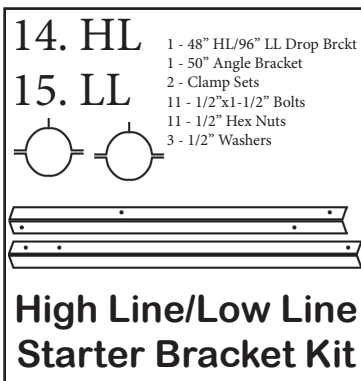
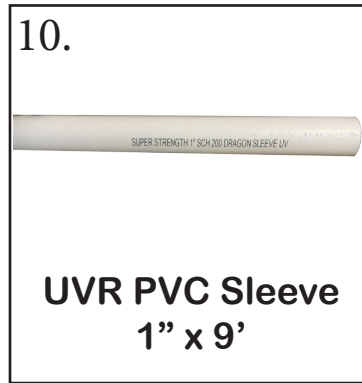
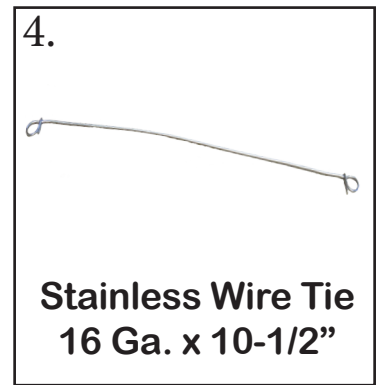
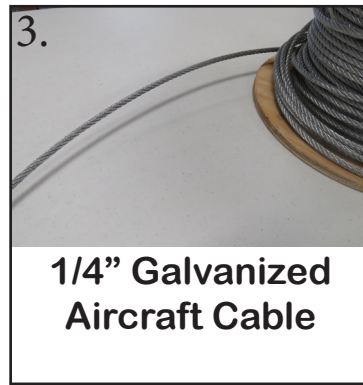
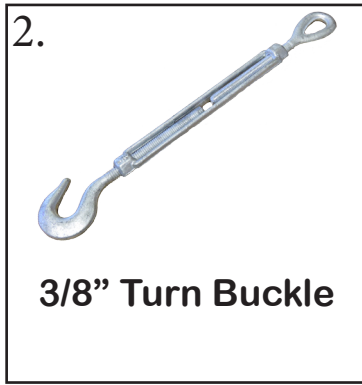
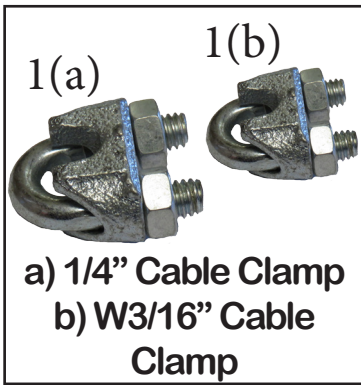
Dragon-Line systems can be designed and supplied with a computer generated printout which among other features indicates:

- The precise dripline placement
- The required pressure
- The flow and length of dripline that drags behind the pivot (this can range in length from 1' to 100' or more)

Dragon-Line systems can be combined with a conventional irrigation application package to provide germination, chemigation and fertigation.



Dragon-Line® Parts



When ordering kits, please specify pipe size and system type that Dragon-Line will be installed on.

Dragon-Line® Parts Cont.

21.



**Dragon 3/4" Adapter
MPTxHB 17mm**

22.



**Dragon Insert Tee
HBxHBxHB 17mm**

23.



**Dragon Comb Tee
17mm x 3/4" FPT**

24.



**Dragon Insert
Elbow HB x HB 17mm**

25(a) 25(b)



**(a) 17mm HB Insert
(b) 3/4" x 3/4" HB
Insert**

26.



**3/4" Adapter
FPTxHB**

27.



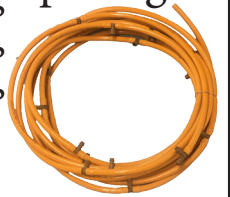
**3/4" Adapter
MPTxHB**

28. 20" Spacing

29. 30"

30. 40"

31. 60"



**1/2" Low Line Manifold
(100' Rolls)**

32.



**Tee
3/4" HBxHBxHB**

33.



**Tee
3/4" HBxHBxFPT**

34.



**Elbow
3/4" HB x 90° FPT**

35. 30" Spacing

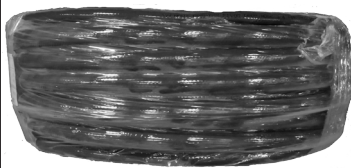
36. 40"

37. 60"



**3/4" High Line Manifold
(100' Rolls)**

38.



**3/4" Drop Flex Hose
250' Roll**

39.



**1/2" Flex Hose
300' Roll**

40(a) 6"

40(b) 12"

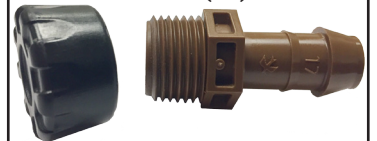
40(c) 18"

40(d) Blank



**Dragon-Line® 17mm
Emitter Tubing
1000' Roll**

41(a) 41(b)



**(a) End Cap
(b) 1/2" MPTxHB 17mm**

NOTE: Based upon your system type, additional parts may be needed. Visit with your local dealer regarding filtration assembly required for your system.

Dragon-Line® Tools

42.



Hose Cutter

43.



Pinch Pliers

44.



Twist Tie Tool

45.



**M12™ ProPEX
Expansion Tool w/
5/8" Head**

46.



**Tubing Cart &
Counter**

47.



**Rain Bird® XF
Insertion Tool**

48.



**KnipEx 1/16"
Cutter 95 62 190**

49b.



49a. **1/16" Table Crimper**
49b) **1/16" Hand Crimpers**

50.



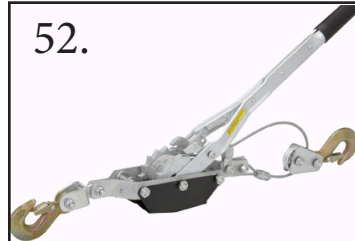
**Truss Rod Clip
Tool w/ 6' Handle**

51.



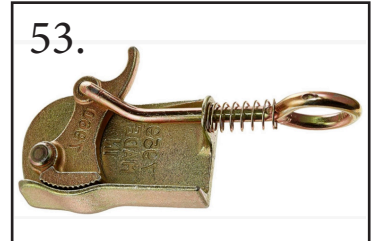
Tool Box

52.



**Cable Winch
4000# Capacity**

53.



**Grip Wire
1000# Capacity**

54.



18" Bolt Cutters

- Ladder up to 16'
- Measuring Tape
- Socket Wrench
- Perm. Marker

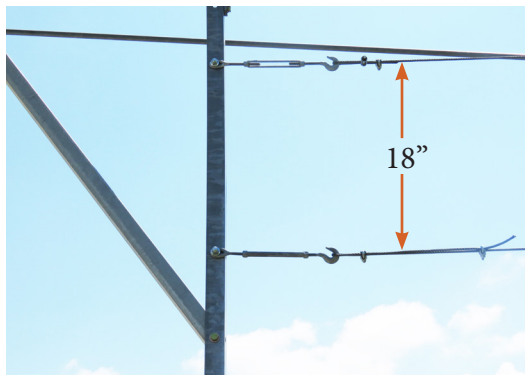
**Other Tools Needed
(Not for Sale)**



High Line & Low Line Systems

STARTER BRACKET

The Starter Bracket will be used for ALL DRAGON-LINE® STYLES. The picture below (Fig 1) shows how the High Line System bracket and cables are attached using the High Line Starter Bracket Kit shown in the parts list. (Fig 2) shows how the Low Line System bracket and cables are attached using the Low Line Starter Bracket Kit.



HIGH LINE SYSTEMS

Use High Line Starter Bracket Kit (#14)

Specify Pipe Diameter



(FIG 1)

LOW LINE SYSTEMS

Use Low Line Starter Bracket Kit (#15)



(FIG 2)



Tower Termination

Use For ALL Styles

PARTS NEEDED

- (24') 1/4" Cable
- (6) 1/4" Cable Clamps
- (1) 3/8" Turnbuckle

The Tower Termination will be used in ALL DRAGON-LINE® STYLES. Use the above parts for all styles per pivot leg. At the pivot leg, run a cable between the legs and use two cable clamps to complete the loop. Attach to turnbuckle. Loop other end of the cable, securing with an additional cable clamp. (See left picture) Depending on style chosen, addition cables will be attached to the Tower Termination in locations shown in diagram below.



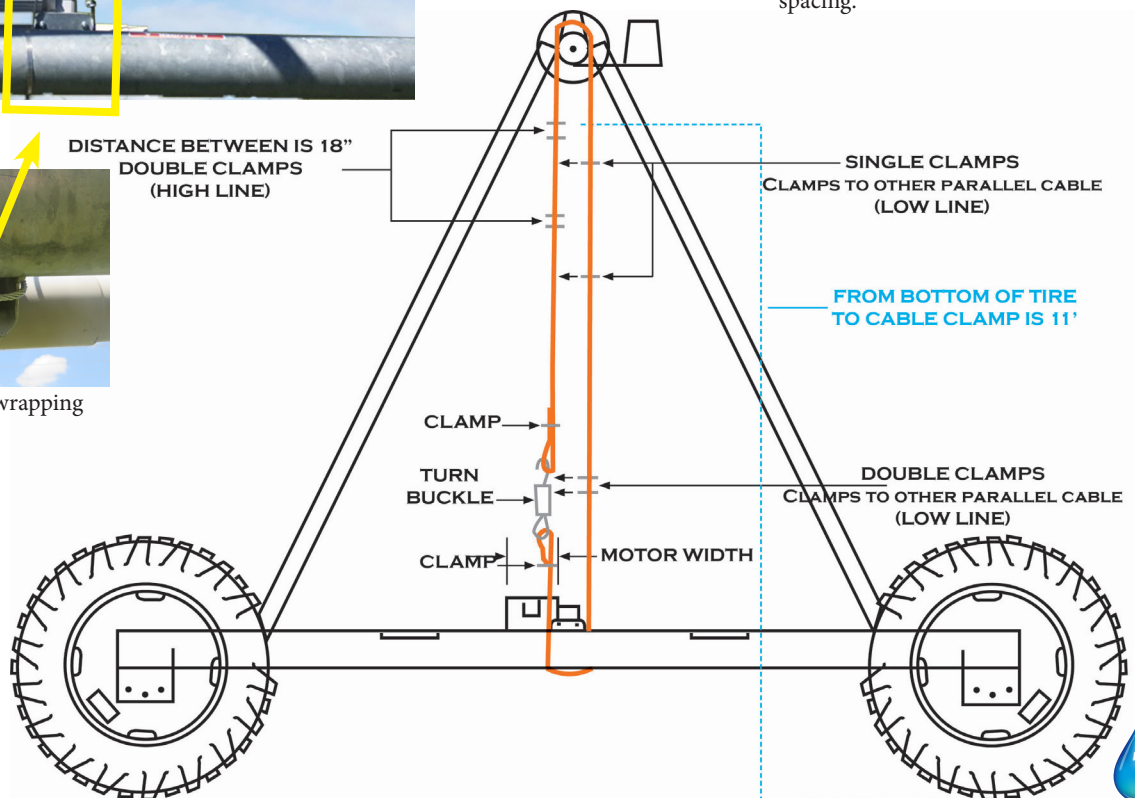
(Above) Close up of turnbuckle on tower termination.



(Above) Low line manifold attaching to tower termination cable w/ minimum of 4' in length remaining to adjust to row spacing.



(Above) Close up of cable wrapping around motor bracket.



High Line Single Cable Hose - HLSCH

CABLE/END BRACKET INSTALLATION

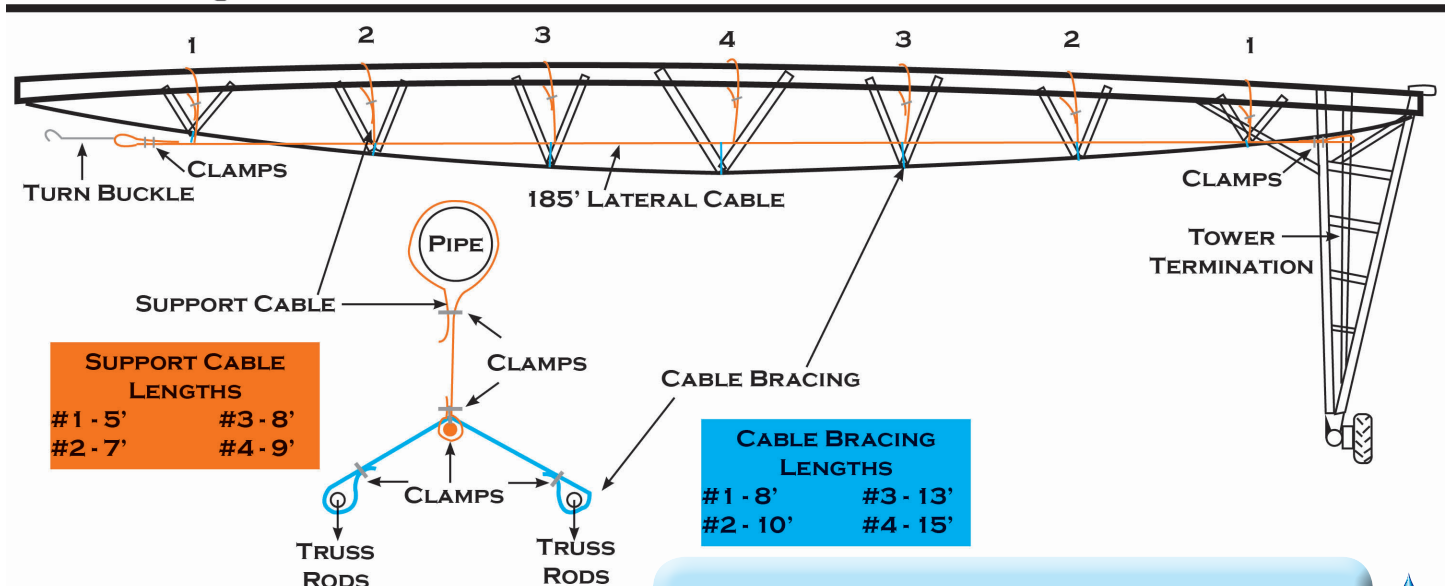
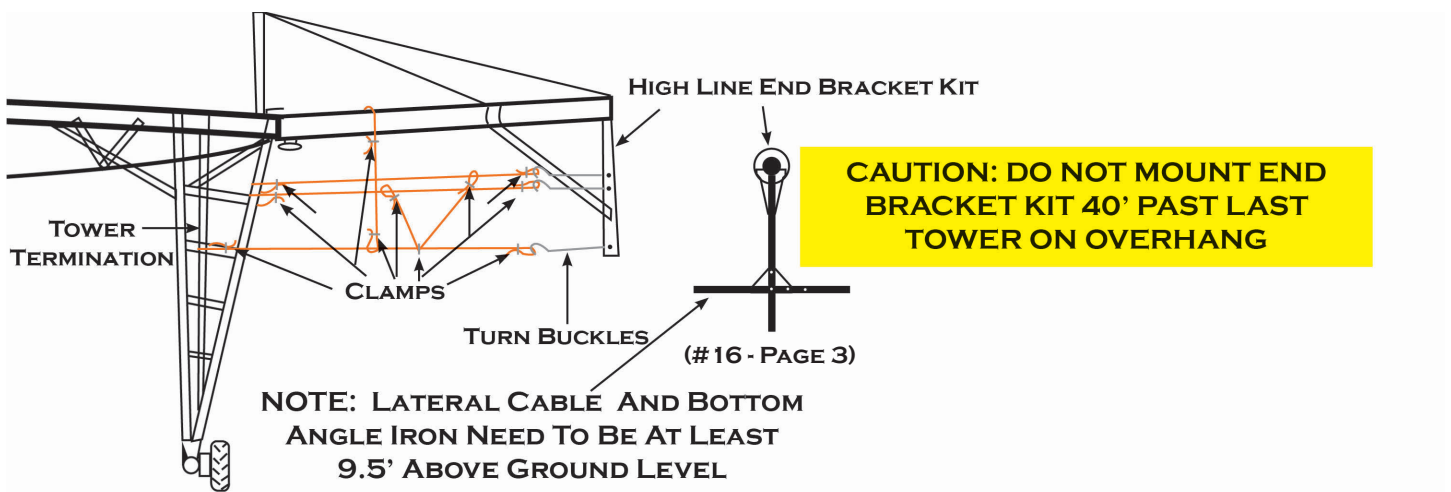
PARTS NEEDED (FIG 1)

- (1) High Line End Bracket Kit
- (165') 1/4" Cable
- (11) 1/4" Cable Clamps
- (3) 3/8" Turnbuckle

PARTS NEEDED (FIG 2)

- (319') 1/4" Cable
- (43) 1/4" Cable Clamps
- (1) 3/8" Turnbuckle

(FIG 1) - INSTALLING OVERHANG SUPPORTS (40' EXAMPLE)



(FIG 2) - 180' SPAN SUPPORTS

High Line Single Cable Hose - HLSCH

INSTALLING PVC SLEEVE (OPTIONAL)

PARTS NEEDED

- UVR PVC Sleeve
- 3/4" Adapter MPT x HB
- 3/4" Pinch Clamp
- Pinch Pliers

THIS CAN BE ADDED FOR EXTRA SUPPORT ON HLSCH OR CURRENTLY INSTALLED HOSE DROPS.



(Above) Slip PVC sleeve over drop hose.



(Above) Insert 3/4" Adapter MPT x HB and secure with 3/4" pinch clamp.

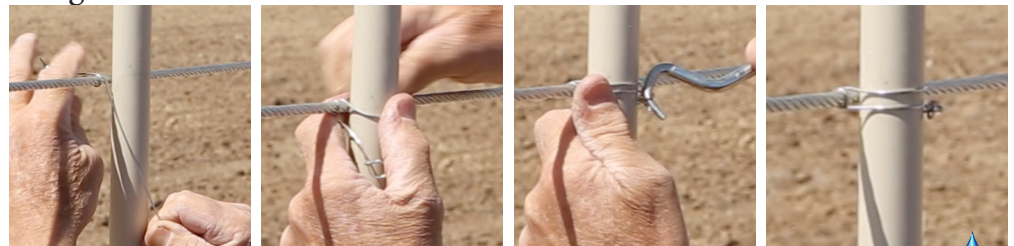
All High Line Styles

SECURING HOSE/DAGON DROP

(USE FOR SECURING ALL HIGH LINE STYLES)



After the bracket kit, lateral cable, and support cables have been installed, secure the hose/dragon drops to the lateral cable with 10 1/2" wire ties using twist tie tool.



USE THIS WIRE TIE METHOD TO ATTACH HOSE/DAGON DROPS FOR ALL HIGH LINE STYLES. VISIT WWW.DRAGONLINE.NET TO VIEW VIDEO ON PROPER WIRE TYING TECHNIQUE.



High Line Dual Cable Rigid - HLDCR

High Line Dual Cable Manifold - HLDCM

CABLE/ANGLE IRON INSTALLATION

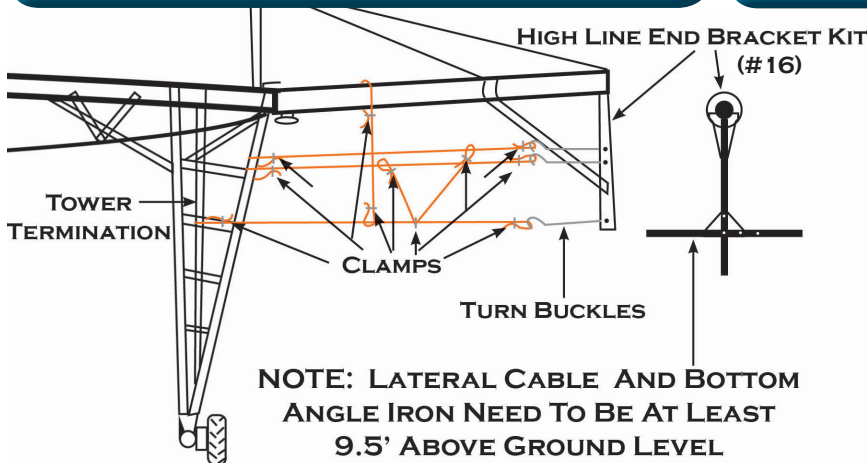
PARTS NEEDED (FIG 1)

- (1) High Line End Bracket Kit
- (205') 1/4" Cable
- (14) 1/4" Cable Clamps
- (3) 3/8" Turnbuckle

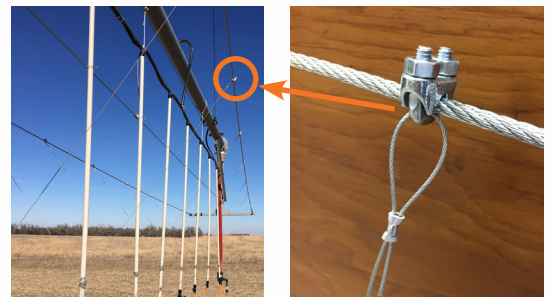
PARTS NEEDED (FIG 2)

- (651') 1/4" Cable
- (64) 1/4" Cable Clamps
- (2) 3/8" Turnbuckle

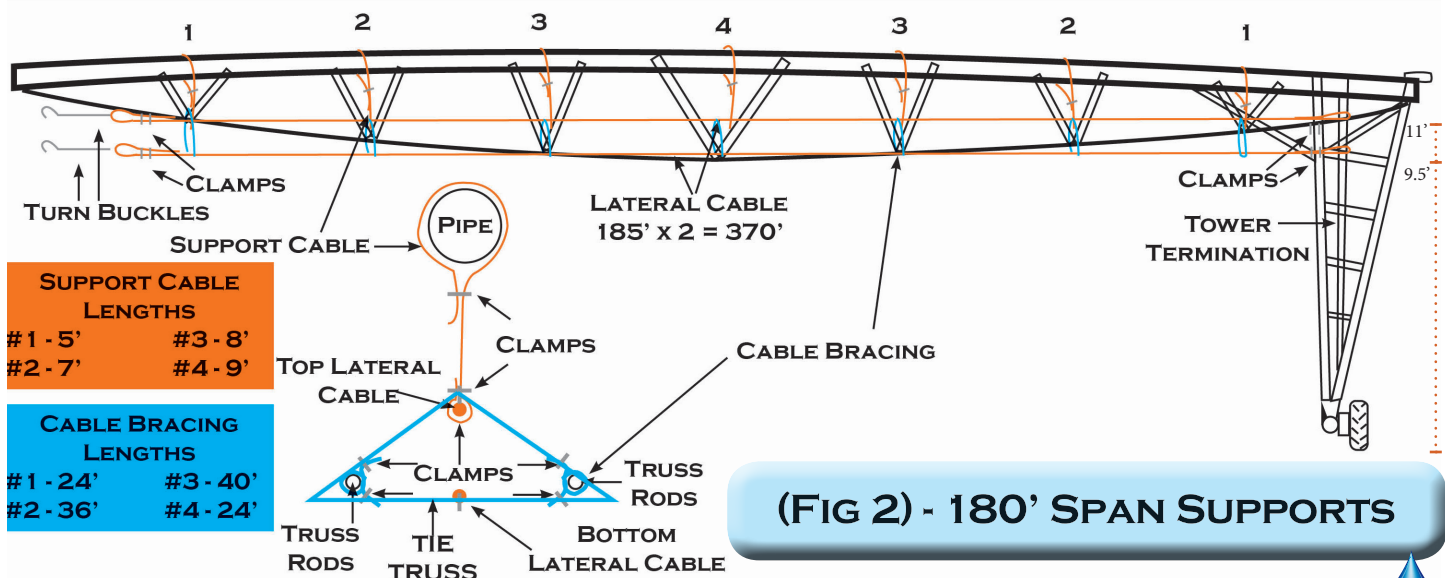
(FIG 1) - INSTALLING OVERHANG SUPPORTS (40' EXAMPLE)



CAUTION: DO NOT MOUNT END BRACKET KIT 40' PAST LAST TOWER ON OVERHANG



1/16" Drop Support w/ 3/16" cable clamp



(FIG 2) - 180' SPAN SUPPORTS

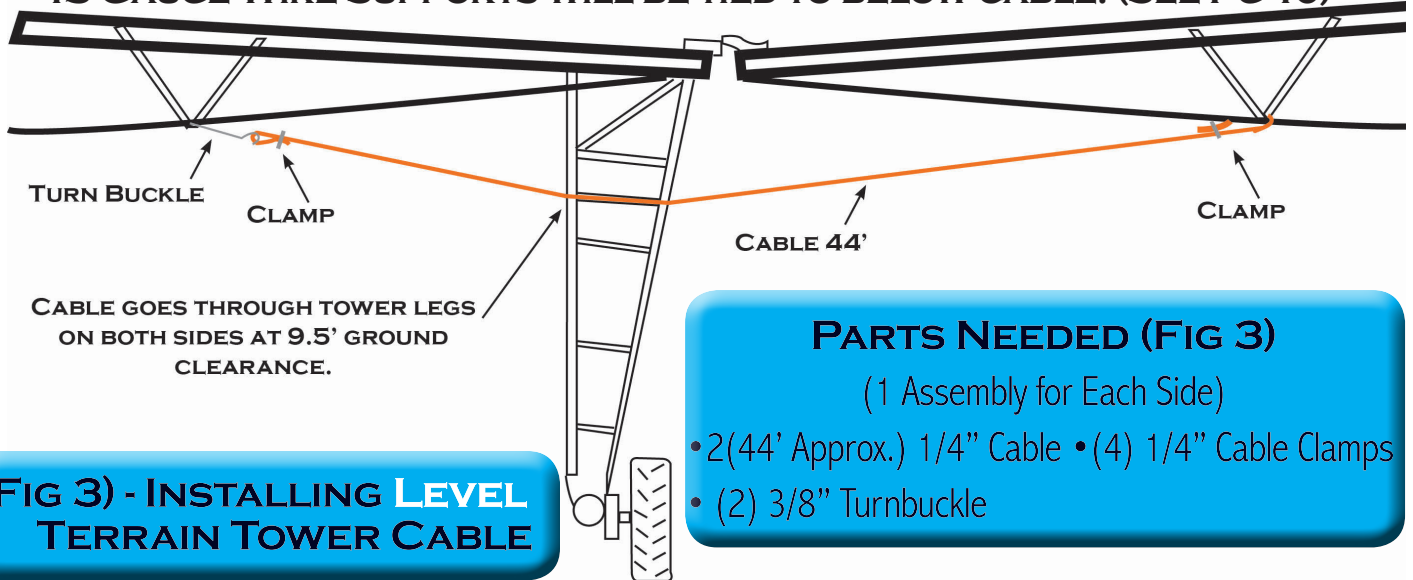
RIGID DROPS/MANIFOLD WILL BE WIRE TIED TO LATERAL CABLE. (SEE PG 9)

High Line Dual Cable Rigid - HLDCR

High Line Dual Cable Manifold - HLDCM

CABLE INSTALLATION ACROSS TOWER

13 GAUGE WIRE SUPPORTS WILL BE TIED TO BELOW CABLE. (SEE PG 10)



(FIG 3) - INSTALLING LEVEL TERRAIN TOWER CABLE

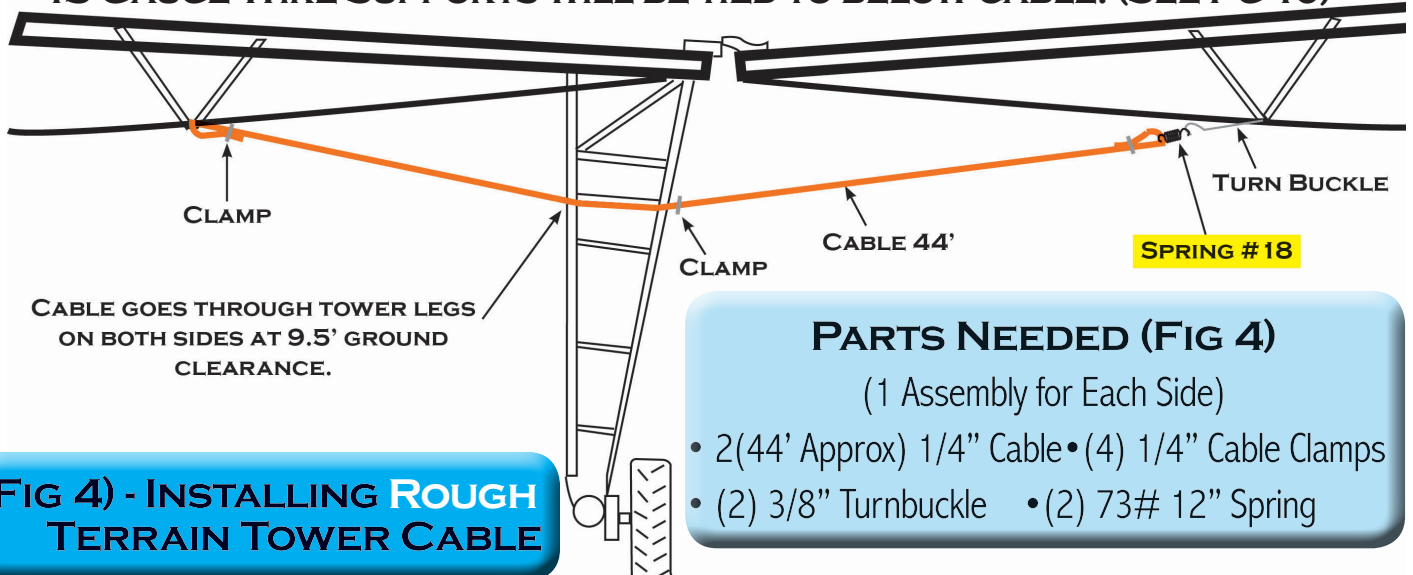
PARTS NEEDED (FIG 3)

(1 Assembly for Each Side)

- 2(44' Approx.) 1/4" Cable
- (4) 1/4" Cable Clamps
- (2) 3/8" Turnbuckle

The cable above (Fig 3) is installed if pivot does not have truss rods to tie stabilizing wires to the Dragon Drops. These cables will need to be installed on each side of the pivot at every tower leg.

13 GAUGE WIRE SUPPORTS WILL BE TIED TO BELOW CABLE. (SEE PG 10)



(FIG 4) - INSTALLING ROUGH TERRAIN TOWER CABLE

PARTS NEEDED (FIG 4)

(1 Assembly for Each Side)

- 2(44' Approx) 1/4" Cable
- (4) 1/4" Cable Clamps
- (2) 3/8" Turnbuckle
- (2) 73# 12" Spring

The cable above (Fig 4) is installed if pivot does not have truss rods to tie stabilizing wires to the Dragon Drops, and there is high/low areas in the field. Install on each side of the pivot at every tower leg.

High Line Dual Cable Rigid - HLDCR

High Line Dual Cable Manifold - HLDCM

TRUSS ROD CLIP ASSEMBLY INSTALL

STABILIZING THE DRAGON DROP TO TRUSS ROD SUPPORTS & OVERHANG LATERAL CABLES

PARTS NEEDED

- (1) 14' Truss Rod Assembly (Per Drop)
- (1) 1-1/4" Screw Clamp
- Truss Rod Clip Tool
- (14) 3/16" Cable Clamp (5'x36' Ovhnng, 60" Spacing, 7 Drops)



(Above) Using the Truss Rod Assembly Tool, slip truss rod clip onto truss rod and repeat on opposite side.



(Above) HLDCM - Showing overhang cable supports. (See page 10 Figure 1)



(Above) HLDCM - Showing truss rod clip attachment.



(Above) Take truss rod cable and slip folded point into 1 1/4" screw clamp. Insert cable back through clamp and tighten screw clamp with cable inserted.



(Above) Six foot Truss Rod Assembly inserts into Truss Rod Clip Tool (#50) for easy installation to truss rods.

RIGID DROPS ARE 9' IN LENGTH WITH APPROX 24" GROUND CLEARANCE. UNDULATING TERRAIN OR MORE GROUND CLEARANCE WILL REQUIRE TRIMMING DROPS.

High Line Dual Cable Manifold - HLDCM

ASSEMBLY/ATTACH MANIFOLD

PARTS NEEDED

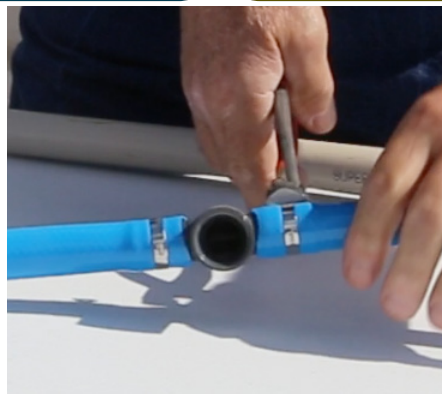
- ProPEX Expansion Tool
- Twist Tie Tool
- 3/4" Drop Hose
- Elbow 3/4" HBx90° FPT
- 3/4" Pinch Clamp
- Tee 3/4" HBxHBxHB
- Tee 3/4" HBxHBxFPT
- Hose Cutter/Pinch Pliers

HIGH LINE MANIFOLD SHOULD BE MADE AHEAD OF TIME IN SHOP. MAKE IN 100' SPANS.
1/4 MILE SYSTEM = (13) 100' SPANS.

RIGID DROPS ARE 9' IN LENGTH WITH APPROX 24" GROUND CLEARANCE. UNDULATING TERRAIN OR MORE GROUND CLEARANCE WILL REQUIRE TRIMMING DROPS.



(Above) Use ProPEX tool to expand ends of drop hose and insert fittings.



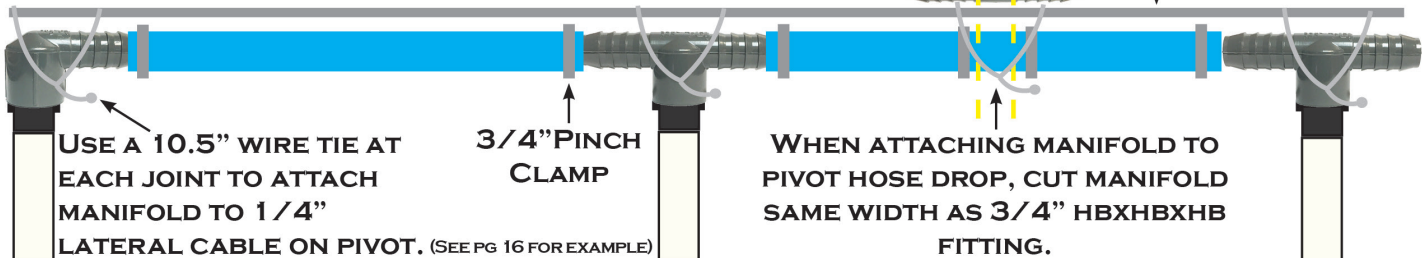
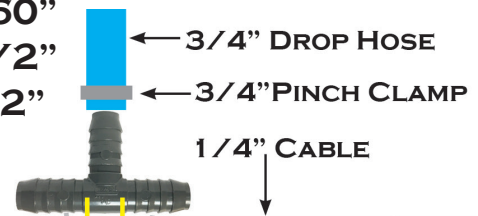
(Above) Place 3/4" pinch clamps on each side of fitting, but DO NOT CRIMP if assembling prior to install.



(Above) After manifold is attached to 1/4" lateral cable on pivot, screw in Dragon Drops.

MANIFOLDS CAN BE MADE TO 20", 30", 40" OR 60" SPACING. CUT SECTIONS OF 100' DROP HOSE TO 1/2" SMALLER THAN DESIRED SPACING. EX: 20" = 19 1/2"

A SPRINKLER CHART WILL DETERMINE SPACING NEEDED FOR YOUR SYSTEM.



All High/Low Line Styles

ASSEMBLING THE DRAGON-LINE®

PARTS NEEDED (FOR EACH ASSEMBLY LINE)

- ProPEX Expansion Tool w/ 5/8" Head
- (10') Dragon Flex Hose
- Dragon-Line Emitter Tubing
- Dragon 3/4" Adapter MPTxHB
- (2) 1/2" Pinch Clamp
- Dragon Insert Coupling HB
- 1/2" MPTxHB & End Plug



DRAGON FLEX HOSE SHOULD BE A MIN. OF 10' OR DOUBLE HEIGHT OF MANIFOLD



(Above) Use ProPEX tool to expand ends of Dragon-Line flex hose.



(Above) Insert Dragon 3/4" Adapter into one end and secure with 1/2" pinch clamp.



(Above) Place insert coupling into flex hose/emitter tubing, secure with 1/2" pinch clamp on flex hose side.



(Above) In the end of the emitter tubing, insert 1/2" MPTxHB 17mm and screw on end cap.

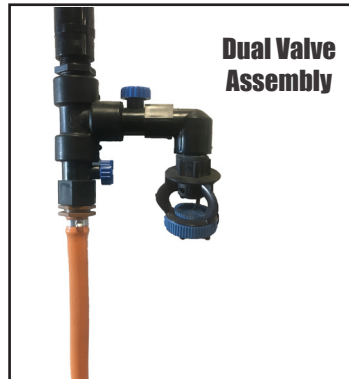
THE DRAGON-LINE EMITTER TUBING LENGTH IS DETERMINED BY THE NOZZLE CHART



**UP3 LDN®
Dragon-Line®
Adapter**



**UP3 LDN®
Dragon-Line®
Carrier/Pad**



**Dual Valve
Assembly**

(Above) Use ProPEX tool to expand ends of drop hose and insert fittings.

(Above) Use ProPEX tool to expand ends of drop hose and insert fittings.

(Above) Use ProPEX tool to expand ends of drop hose and insert fittings.

DRAGON-LINE CAN BE INSERTED INTO THREE DIFFERENT APPLICATIONS, DEPENDING ON FARMER'S NEEDS.

Low Line Manifold - LLM

CABLE/ANGLE IRON INSTALLATION

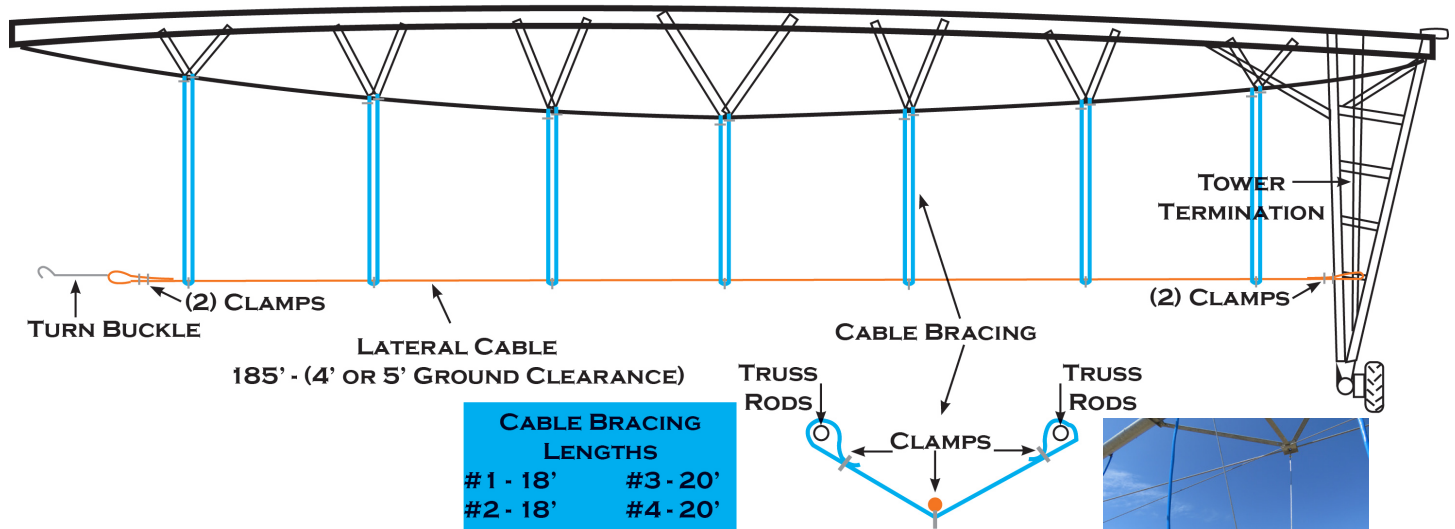
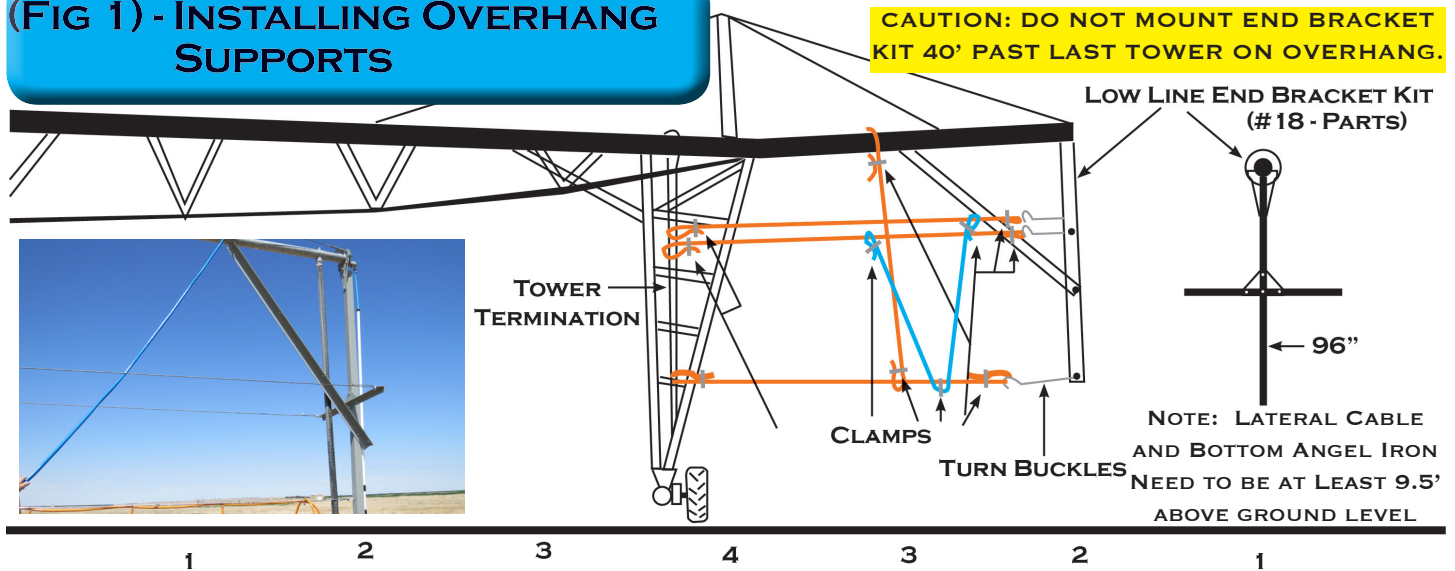
PARTS NEEDED (FIG 1)

- (1) Low Line End Bracket Kit (96")
- (180') 1/4" Cable
- (11) 1/4" Cable Clamps
- (3) 3/8" Turnbuckle

PARTS NEEDED (FIG 2)

- (320') 1/4" Cable
- (25) 1/4" Cable Clamps
- (1) 3/8" Turnbuckle

(FIG 1) - INSTALLING OVERHANG SUPPORTS



(FIG 2) - 180' SPAN SUPPORTS



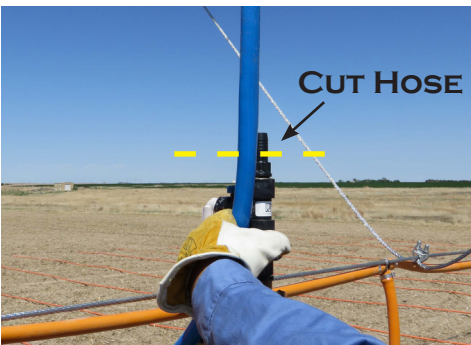
Low Line Manifold - LLM

ASSEMBLY/ATTACH MANIFOLD

PARTS NEEDED

- ProPEX Expansion Tool • Twist Tie Tool • Pinch Pliers • Hose Cutters
- 3/4" Drop Hose • 1/2" Flex Hose • Dragon Insert Elbow
- 1/2" & 3/4" Pinch Clamps • Dragon Insert • Dragon Insert Tee
- Dragon Comb Tee • Wire Ties • 3/4" Adapter MPTxHB

HIGH LINE MANIFOLD CAN BE MADE AHEAD OF TIME IN SHOP. MAKE IN 100' SPANS. A 1/4 MILE SYSTEM WILL NEED (13) - 100' SPANS.



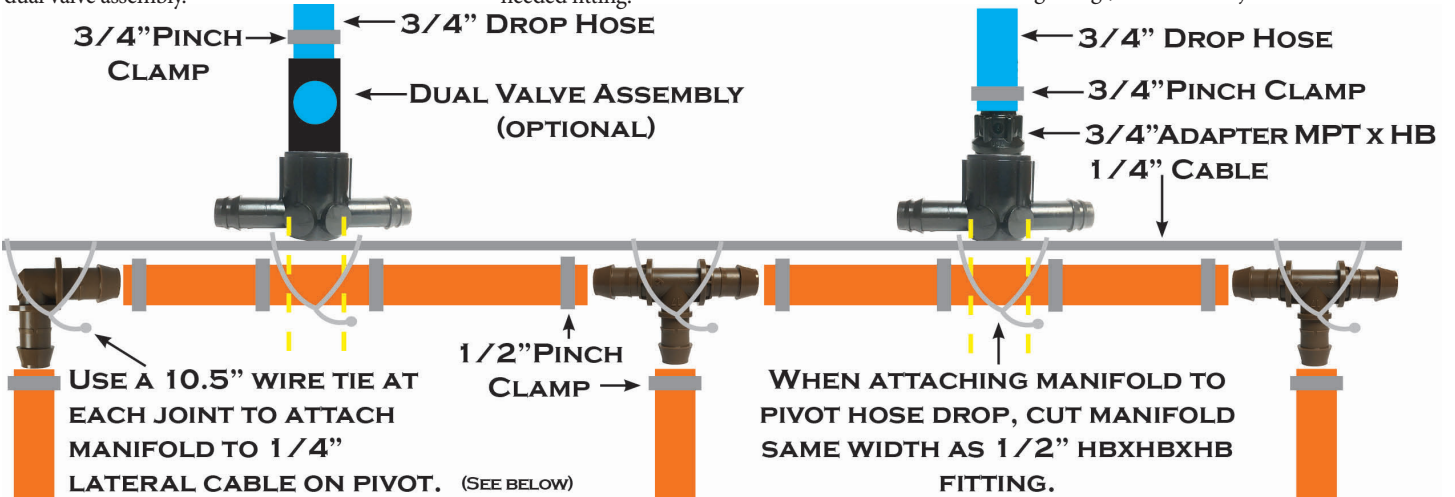
(Above) Showing where to cut hose drop if installing dual valve assembly.



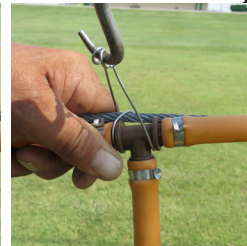
(Above) 1/2" section that is cut out to allow for needed fitting.



(Above) Place pinch clamps on each connection before inserting fittings, and secure all joints with wire ties.



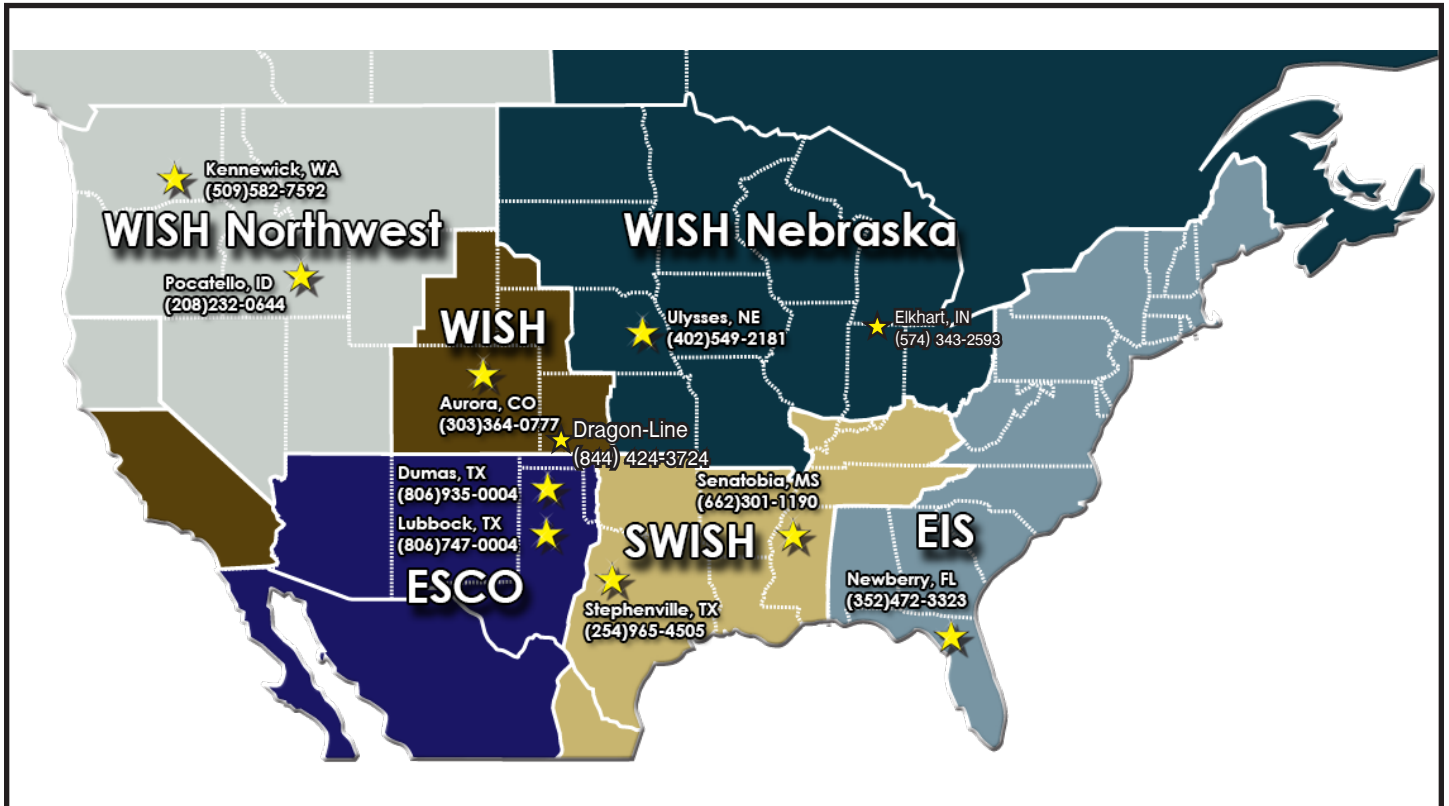
After the bracket kit, lateral cable, and support cables have been installed, secure the manifold to the lateral cable with 10.5" wire ties using twist tie tool. (Below) Then attach Dragon-Line® as shown on page 13.



Dragon-Line® Support

DRAGON-LINE (844) 424-3724

DRAGON-LINE	(844) 424-3724	ULYSSES, KS
WISH	(303) 634-0777	AURORA, CO
WISH NORTHWEST	(208) 232-0644	POCATELLO, ID
	(509) 582-7592	KENNEWICK, WA
WISH NEBRASKA	(402) 549-2181	ULYSSES, NE
WISH NEB. GREAT LAKES	(574) 343-2593	ELKHART, IN
ESCO	(806) 747-0004	LUBBOCK, TX
	(806) 935-0004	DUMAS, TX
SWISH	(662) 301-1190	SENATOBIA, MS
	(254) 965-4505	STEPHENVILLE, TX
EIS	(352) 472-3323	NEWBERRY, FL



www.DragonLine.net