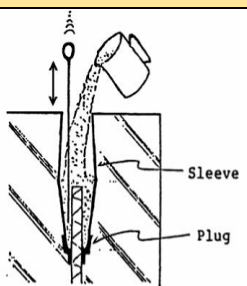
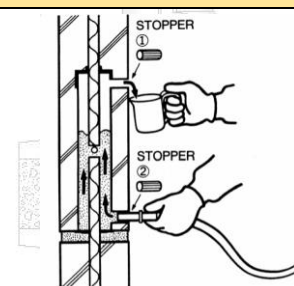
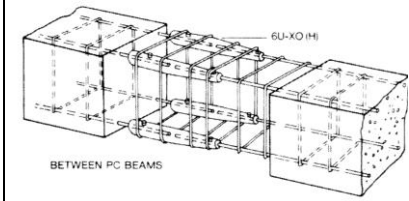


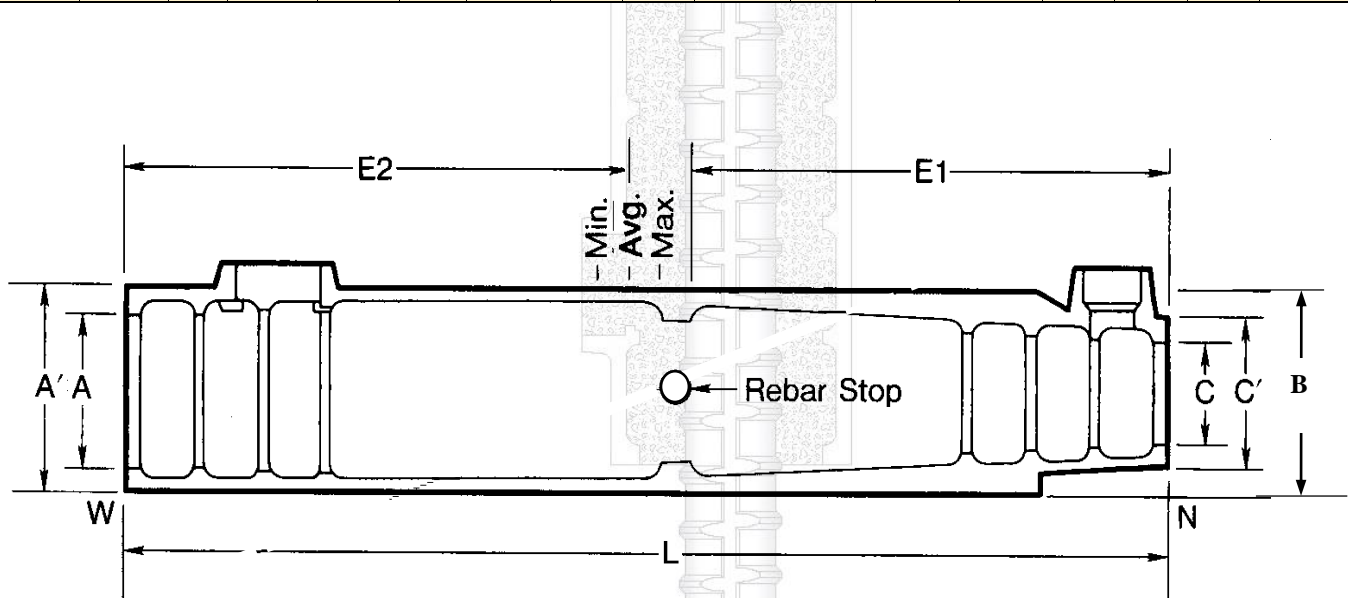
NMB SPLICE-SLEEVES® ORDER GUIDE



SYSTEM	PRE-GROUTING	POST-GROUTING	HORIZONTAL APPLICATION	
Operation				
Determine Number and Size of Sleeves	<p>A. One Sleeve per rebar per connection location, consider UPSIZE for more tolerance.</p> <p>B. If rebars change size across the joint, use LARGER size.</p> <p>C. Is Epoxy Coating or Galvanization required?</p>	<p>A. One Sleeve per rebar per connection location, consider UPSIZE for more tolerance.</p> <p>B. If rebars change size across the joint, use LARGER size.</p> <p>C. Is Epoxy Coating or Galvanization required?</p>	<p>A. One Sleeve per rebar per connection location.</p> <p>B. If rebars change size across the joint, use LARGER size.</p> <p>C. Is Epoxy Coating or Galvanization required?</p>	
At Precast Plant Site	NMB SPLICE-SLEEVES Supplied With	NMB SPLICE-SLEEVES Supplied With	NMB SPLICE-SLEEVES Supplied With	
	Splice Sleeve (SS)	Splice Sleeve (SS)	Splice Sleeve (SS)	
	Hole Seals (HS)	Hole Seals (HS)	Hole Seals (HS)	
	Rubber Plugs at Narrow end (RP)	Rubber Plugs at Narrow end (RP)	Rubber Plugs at Narrow end (RP)	
	Separate Order	Separate Order	Separate Order	
	Sleeve Setter (STR) – CAM or PIN Type	Sleeve Setter (STR) – CAM or PIN Type	Sleeve Setter (STR) - CAM or PIN Type	
	NO Tubing Required		PVC Tubing (PVC)	PVC Tubing (PVC)
			Model U-X	Model U-X
			22 mm - Inlet Port (Metric Size) 14 mm - Outlet Port (Metric Size)	22 mm - Inlet Port (Metric Size) 14 mm - Outlet Port (Metric Size)
			Model SNX 11 and A11W	Model SNX 11 and A11W
	3/4 in. - Inlet Port (US Schedule 40 Size) 1/2 in. - Outlet Port (US Schedule 40 Size) *Locally Available. Not Sold by SSNA.	3/4 in.- Inlet Port (US Schedule 40 Size) 1/2 in.- Outlet Port (US Schedule 40 Size) *Locally Available. Not Sold by SSNA.		
Cast-In-Place Construction	NMB SPLICE-SLEEVES Supplied With	NMB SPLICE-SLEEVES Supplied With	NMB SPLICE-SLEEVES Supplied With	
	Splice Sleeve (SS)	Splice Sleeve (SS)	Splice Sleeve (SS)	
	Hole Seals (HS)- Not Required	Hole Seals (HS)	Hole Seals (HS)	
	Rubber Plugs at Narrow End (RP)	Rubber Plugs at Narrow End (RP)	Rubber Plugs at Narrow End (RP)	
	PVC Tubing (PVC)- Not Required	PVC Tubing (PVC)- See Above for details	PVC Tubing (PVC)- If post grouting	
	Separate Order	Separate Order	Separate Order	
	~~~~N.A.~~~~	Rubber Plugs at Wide End (RP)	Rubber Plugs at Wide End (RP)	
<b>Erection</b>	~~~~N.A.~~~~	Grout Washer (GRW) [included with NMB Splice Sleeve Order] Coil Spring (CS) [ Separate Order]	Grout Washer (GRW) [included with NMB Splice Sleeve Order]	
<b>Grouting</b>	SS Mortar (See Chart on Page 3)	SS Mortar (See Chart on Page 3)	SS Mortar (See Chart on Page 3)	
	NMB approved Mixer Paddle (MP)	NMB approved Mixer Paddle (MP)	NMB approved Mixer Paddle (MP)	
	~~~~N.A.~~~~	Stopper with Indicator (SWI)	Stopper with Indicator (SWI)	
	~~~~N.A.~~~~	Self-Sealing Valve (SSV)	Self-Sealing Valve (SSV)	
	~~~~N.A.~~~~	Rubber Stoppers	Rubber Stoppers	
	~~~~N.A.~~~~	Grout Pump – GP2	Grout Pump- GP2	
	~~~~N.A.~~~~	Handy Pump (HDP) – Fill up to 9U-X	Handy Pump (HDP)- Fill up to 9U-X	

Note: Each set of NMB sleeve consists of Rubber Plug (RP) or Elastomer Plug (EP), Grout Washer (GWR), and Hole Seals (HS)
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DIMENSIONS OF NMB SPLICE-SLEEVES®											RECOMMENDED REBAR EMBEDMENT LENGTH					
Sleeve No.	Bar Diameter	ASTM Bar Size		Sleeve Length (L) inch (mm)	Narrow End Diameter		Max. Dia. (B) inch (mm)	Wide End Diameter			Factory Dowel (E1) inch (mm)		Field Dowel (E2) inch (mm)			SS Mortar lbs. per Sleeve (kg)
		U.S.	Metric		I.D. (C) inch (mm)	O.D. (C') inch (mm)		I.D. (A) inch (mm)	Total Tolerance inch (mm)	O.D. (A') inch (mm)	Min.	Max.	Min.	Avg.	Max.	
5U-X	0.625	#5	16 MM	9.65 (245)	0.87 (22)	1.50 (38)	1.89 (48)	1.26 (32)	0.63 (16)	1.89 (48)	4.13 (105)	4.33 (110)	4.13 (105)	4.53 (115)	4.92 (125)	1.26 (0.57)
6U-X	0.750	#6	20 MM	11.22 (285)	1.02 (26)	1.65 (42)	2.05 (52)	1.42 (36)	0.67 (17)	2.05 (52)	4.92 (125)	5.12 (130)	4.92 (125)	5.32 (135)	5.71 (145)	1.76 (0.80)
7U-X	0.875	#7	22 MM	12.80 (325)	1.14 (29)	1.77 (45)	2.36 (60)	1.73 (44)	0.86 (22)	2.36 (60)	5.71 (145)	5.91 (150)	5.71 (145)	6.11 (155)	6.50 (165)	2.65 (1.20)
8U-X	1.000	#8	25 MM	14.57 (370)	1.30 (33)	1.93 (49)	2.52 (64)	1.89 (48)	0.89 (23)	2.52 (64)	6.50 (165)	6.69 (170)	6.50 (165)	6.99 (178)	7.48 (190)	3.46 (1.57)
9U-X	1.128	#9	28 MM	16.34 (415)	1.42 (36)	2.06 (52)	2.67 (68)	2.01 (51)	0.89 (23)	2.67 (68)	7.40 (188)	7.56 (192)	7.40 (188)	7.88 (200)	8.35 (212)	3.95 (1.79)
10U-X	1.270	#10	32 MM	17.91 (455)	1.57 (40)	2.28 (58)	2.87 (73)	2.16 (55)	0.89 (23)	2.87 (73)	8.19 (208)	8.35 (212)	8.19 (208)	8.66 (220)	9.13 (232)	4.94 (2.24)
11U-X	1.410	#11	35 MM	19.49 (495)	1.73 (44)	2.40 (61)	3.03 (77)	2.32 (59)	0.91 (23)	3.03 (77)	8.98 (228)	9.13 (232)	8.98 (228)	9.45 (240)	9.92 (252)	6.02 (2.73)
SNX11	1.410	#11	35 MM	19.09 (485)	1.69 (43)	3.03 (77)	3.03 (77)	2.32 (59)	0.91 (23)	3.03 (77)	8.86 (225)	9.25 (235)	8.27 (210)	8.86 (225)	9.45 (240)	5.71 (2.59)
A11W	1.410	#11	35 MM	19.49 (495)	1.73 (44)	3.31 (84)	3.30 (84)	2.60 (66)	1.19 (30)	3.30 (84)	8.86 (225)	9.69 (246)	8.27 (210)	8.96 (228)	9.50 (241)	6.99 (3.17)
14U-X	1.693	#14	40 MM	24.41 (620)	2.01 (51)	2.80 (71)	3.46 (88)	2.60 (66)	0.91 (23)	3.46 (88)	11.42 (290)	11.61 (295)	11.42 (290)	11.91 (303)	12.40 (315)	9.19 (4.17)
18U	2.257	#18	57 MM	36.22 (920)	2.68 (68)	3.66 (93)	4.25 (108)	3.27 (83)	1.01 (26)	4.25 (108)	17.00 (432)	18.11 (460)	17.00 (432)	17.56 (446)	18.11 (460)	25.31 (11.48)



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NMB Splice- Sleeves Model 5U-X through Model 14U-X and 18U



NMB Splice- Sleeves Model 11U-X, A11W, SNX11

REBAR SIZE		SPLICE-SLEEVE	SS MORTAR	
U.S.	METRIC	MODEL	LB./SLEEVE	SLEEVES/BAG
#5	16 MM	5 U-X	0.94	58.8
#6	20 MM	6 U-X	1.31	42.0
#7	22 MM	7 U-X	2.06	26.7
#8	25 MM	8 U-X	2.7	20.4
#9	28 MM	9 U-X	3.2	17.2
#10	32 MM	10 U-X	4.01	13.7
#11	35 MM	11 U-X	5.01	11.0
#11	35 MM	SNX 11	4.91	11.2
#11	35 MM	A11W	6.07	9.2
#14	40 MM	14 U-X	7.67	7.2
#18	57 MM	18 U	22.62	2.4
Inlet + Outlet PVC tubes x 5"			0.25	≈ 225

Note: An additional overage of 15% is recommended to provide for typical waste and field loss. When upsizing add 20% for each rebar size.

CURING TEMPERATURE	SS MORTAR COMPRESSIVE STRENGTH, PSI (MPA)					
	12 HRS.	18 HRS.	1 DAY	3 DAYS	7 DAYS	28 DAYS
41°F (5°C)	----	834 (6)	1,869 (13)	5,823 (40)	8,871 (61)	13,860 (96)
50°F (10°C)	410 (3)	1,869 (13)	2,905 (20)	6,858 (47)	9,907 (68)	14,895 (103)
68°F (20°C)	1,869 (13)	3,328 (23)	4,364 (30)	8,317 (57)	11,366 (78)	16,354 (113)
86°F (30°C)	2,905 (20)	4,364 (30)	5,399 (37)	9,352 (64)	12,401 (86)	17,389 (120)
104°F (40°C)	3,708 (26)	5,167 (36)	6,202 (43)	10,155 (70)	13,204 (91)	18,192 (125)

WATER VOLUME	MIX TEMP	CURING TEMP	SET TIME HR-MIN		FLOW GUIDE	BLEEDING %
			INITIAL	FINAL		
0.98 gal (3.7 liters)	68°F (20°C)	41°F (5°C)	9 hr. 31 min.	13 hr. 35 min.	6 1/4" (160 mm)	0.00%
		68°F (20°C)	4 hr. 18 min.	5 hr. 55 min.	6 5/8" (170 mm)	0.00%
		86°F (30°C)	2 hr. 23 min.	3 hr. 20 min.	6 1/2" (165 mm)	0.00%

HOW TO DETERMINE THE LENGTH OF PVC TUBES

Size: Grout inlet tubes: I.D. 0.87" (22 mm) O.D. 1.02" (26 mm).

Grout outlet tubes: I.D. 0.55" (14 mm) O.D. 0.71" (18 mm).

The length of the PVC tubes (L1 and L2) shall be calculated as mentioned below:

$$\text{Outlet Port: } L_1 = A - B_1$$

$$\text{Inlet Port: } L_2 = A - B_2$$

where,

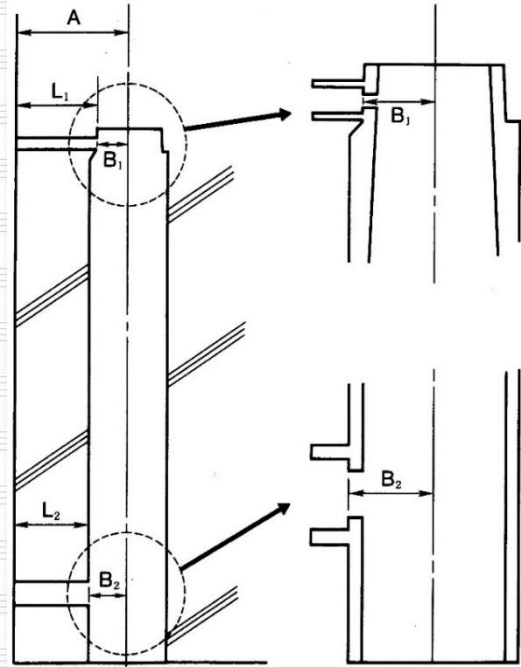
A : The length from the concrete surface to the center of the sleeve.

B₁ : The distance from the center of the sleeve to where the outlet port PVC tubes are attached.

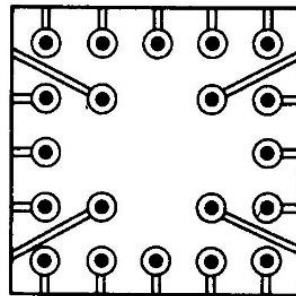
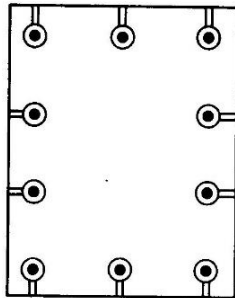
B₂ : The distance from the center of the sleeve to where the inlet port PVC tubes are attached.

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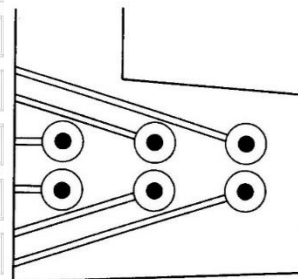
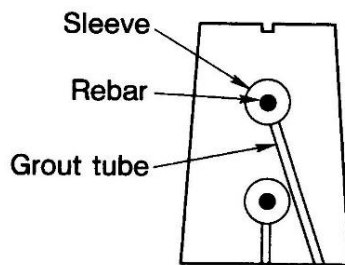
Sleeve Size	Bar Size	B1 (inch)	B2 (inch)
5U-X	#5	0.79	0.79
6U-X	#6	0.87	0.87
7U-X	#7	1.02	1.02
8U-X	#8	1.1	1.1
9U-X	#9	1.18	1.18
10U-X	#10	1.26	1.26
11U-X	#11	1.38	1.38
SNX-11	#11	1.52	1.52
A11W	#11	1.65	1.65
14U-X	#14	1.57	1.57
18U	#18	1.84	2.16



SQUARE & RECTANGULAR COLUMNS: Grouting can be done from any face.



SPECIAL SITUATIONS: Where grouting access is restricted, such as for architectural panels, or when certain faces are inaccessible or hidden.



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