

Munich Airport Aircraft Towing Plan



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1 Introduction

This document describes the operational procedures for the pushing and towing of aircraft at Munich Airport. These procedures are intended to provide safe, orderly and efficient pushing and towing of aircraft. They have been agreed on between operations department of the Flughafen München GmbH (FMG) and EFM - Gesellschaft für Enteisen und Flugzeugschleppen am Flughafen München mbH.

The regulations and procedures established in this Towing Plan do not replace the relevant international standards or internal regulations of airlines. This plan is intended to be primarily used by all airline operations staff for further information. It has been published in order to ensure that all regulations and procedures for pushing and towing aircraft at Munich Airport are applied.

Any variations must be authorised in writing by FMG Aviation and EFM before implementation.

2 Company portrait

EFM was jointly formed by Lufthansa and Munich Airport in 1992. The Lufthansa Commercial Holding GmbH holds a 51 percent share in the company, and Munich Airport holds the remaining 49 percent. Since July 1997 the EFM has been certified for its quality management according to ISO 9001 and for its environmental management according to ISO 14001. In 2017 we also introduced a safety management system (SMS) in accordance with ICAO Annex 19. EFM's high safety and quality standards are one of the foundations for the company's development into the leading aircraft towing service provider.

For pushback and inter-gate towing EFM is operationally integrated into the ground handling section of FMG, for maintenance towing EFM is integrated into FMG Aviation. On behalf of FMG, EFM pushes aircraft out of their parking positions (pushback) and tows them between parking positions. On behalf of Lufthansa Technik or airlines EFM tows aircraft between terminal, aprons and maintenance areas. On request EFM also performs pushback and towing operations for other ground handling companies and airlines at Munich Airport.

With the exception of the fully let (rented) maintenance aprons and maintenance halls, Munich Airport Airside Control Center (AVVZV) is responsible for positioning of aircraft at Munich Airport.

3 Towing tractors

The EFM fleet includes 29 towing tractors, among them 24 towbarless tractors and 5 towbar tractors.

EFM operates towbarless tractor types, Goldhofer AST 1X, Goldhofer AST 2X, Goldhofer AST 3, Kalmar TBL 50, TBL 190

All of the towbarless tractors are equipped with state-of-the-art safety systems (Oversteer- or Overtorque warning system).

Furthermore, towbar tractor types Schopf F110, F396C, Trepel C160 are in operation.

Towbars are available for the following aircraft types:

A 300 / 310	B 707	DC 9 / MD 80	FK 50 / 70 / 100
A 319 / 320 / 321	B 717	DC 10 / MD 11	IL 86 / 96
A 340-500 / 600	B 733 – 739	DH8A/B/C	L1011
A 330 / 340	B 747	Q400	SF34/SB20
A 380	B 757	DO 328	SU 100
A 350	B 767	EMB 135 / 145	YK42
AT 42 / AT 72	B 777	EMB 170 / 175	TU54
	B 787	EMB 190 / 195	
	CARJ 100 - 1000	EMB 190 / 195 (E2)	

4 EFM Operation Center (EOC - Towing coordinator)

In the EOC, trained dispatchers ensure that the right towing equipment with a suitably qualified driver is always in the right place at the right time. He also pays attention to the most efficient and therefore economical use of the vehicles. If, contrary to expectations, there are deviations in quality in daily operation, the dispatcher is the first point of contact for our customers. He will take immediate action so that the agreed service can still be provided to the full satisfaction of the customer. All partial steps are documented in the dispatching department: from receipt of the order to the message that the order has been completed and the vehicle is available for the next order. To accomplish this task and to archive the numerous data, special IT systems are in place. EFM records the quality-relevant characteristics of the service provided and makes them retraceable. Thus an analysis of the service is possible at any time.

The towing coordinator is available on a 24 hour basis (Telephone. 089/975-98677). Further information about aircraft towing at Munich Airport is also available in the system UDS on pages 195 to 197.

5 Services

5.1 Pushback

The towing coordinator automatically receives the pushback work order before the announced off-blocktime and initiates all necessary steps. Pushback coordination can, however, only work smoothly and to the satisfaction of all customers if all airlines or their handling agents update their Target Off-Block Time (TOBT) correctly and in this way make available a realistic basis for the work of the towing coordinator.

If the aircraft is not ready for pushback 7 Minutes after the Target Start-Up Approval Time (TSAT) at the latest, the towing tractor may be moved off.

5.2 Aircraft towing

Customers must order towing operations in time at AVVZ (Telephone: 089/975-131). AVVZ or the towing coordinator then initiate all necessary steps. It takes 30 minutes for the preparation plus the time for the towing operation.

The following requirements must be fulfilled for towing operations:

- ✓ The aircraft is ready for towing
- ✓ AVVZ has prepared a towing data record for the towing coordinator and the apron control.
- ✓ The aircraft which is to be towed is clear of jetway, ground power unit etc.

6 Additional services

6.1 SMPB/Walkout

During a single man pushback (SMPB) the tractor driver is in direct contact with the cockpit and the apron control and performs the tasks of the walk-out assistant. This ensures a faster, more economical pushback and increases safety.

The following aircraft types are licensed for SMPB:

✓ B 737	all subtypes except 737 – 200
✓ B 747	all subtypes
✓ B 757	all subtypes
✓ B 767	all subtypes
✓ B 777	all subtypes
✓ B 787	all subtypes
✓ A 318 – A 321	all subtypes
✓ A 220	all subtypes
✓ A 300, A 310	all subtypes
✓ A 330, A 340	all subtypes
✓ A350	all subtypes
✓ A380	all subtypes
✓ EMB 170 – 195	all subtypes

The walkout assistant may be provided on request for several aircraft types.

For SMPB and walkout EFM adapts it's standard phraseology to the requirements of the respective airline.

If a customer does not provide EFM with an own phraseology for pushback and engine start; EFM uses it's own published phraseology (See 7.1 and 7.2)

6.2 Starting the engines with air start unit (ASU/air start) at SMPB/Walkout

During a pushback the walkout assistant is responsible for the correct execution of the engines start with the air start unit.

During a SMPB the responsibility lies on the tractor driver as he takes over the tasks of the walkout assistant.

7 Standard phraseology

7.1 SMPB/Walkout

During a pushback the tractor driver and cockpit observe the following standard phraseology.

Ground-to-Cockpit Communication Pushback	
Ground	Cockpit
Inform Cockpit about "Towbarless or Towbar Truck is used"	
1. "Confirm parking brake set"	2. "Parking break set"
4a. "Bypass pin inserted" (if applicable)	3a. "Confirm bypass Pin inserted " (if applicable)
4b. "Nose wheel steering deactivated" (if applicable)	3b. "Confirm nose wheel steering deactivated" (if applicable)
6. "Clear to pressurize" (if applicable)	5. "Confirm clear to pressurize" (if applicable)
7. "Pre-departure checks completed"	
8. "Elevating aircraft" (if applicable)	
9. "Ready for pushback"	10. "Standby"
12. "Confirm parking break released"	11. "Pushback approved" (mention aircraft nose direction, start up point etc.)
14. "Commencing pushback" (mention aircraft nose direction, start up point etc.)	13. "Parking break released"
15. "Clear to start engines"	16. "Starting engine(s)" (mention engine start-up sequence, if applicable)
17. "Pushback completed, set parking break"	18. "Parking break set"
20. "Disconnecting. Hold Position and wait for hand signal on the left/right" (Show steering bypass pin together with the hand signal on the agreed position)	19. "Clear to Disconnect"
	21. "Holding position and standing by for hand signal on the left/rigth"

7.2 Air Start

The following standard phraseology must be observed during an air start.

English version		German version	
COCKPIT	GROUND	COCKPIT	BODEN
ground from cockpit		Boden vom Cockpit	
	here ground steering-pin inserted set parking break		Hier Boden Steuer-Pin gesetzt Bremsen setzen
parking break set connect external electric		Bremsen gesetzt Externe Stromversorgung anschließen	
	external electric is connected		Externe Stromversorgung angeschlossen
ready for engine start ready for ground air		Fertig zum Triebwerk anlassen Fertig für Startluft	
	all engines clear ground air available		Alle Triebwerke klar Startluft bereit
remove external electric remove ground air		Strom entfernen Startluft entfernen	
	external electric removed ground air removed		Strom entfernt Startluft entfernt

After removing of the ground equipment the pushback will be continued accordingly.

A SMPB or walkout may be ordered at the EFM towing coordinator (Telephone: 089/975-98677). Individual cases are accounted on work order basis according EFM pricelist.

8 Contact

If you have any questions or requests please do not hesitate to contact us at any time:

EFM Operation Center **089/975-98677**

Supervisor **089/975-98667**

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